Key Words:
Precipitation
Filtration
Separation
Organic

Retention:
Permanent

Key WTP R&T References:
Test Specification: 24590-WTP-TSP-RT-01-029, Rev 0
Test Plan: SRT-RPP-2002-00054, Rev 0
Test Scoping Statement(s): S-132
Test Exception: 24590-WTP-TEF-TR-03-027

FINAL REPORT: PILOT-SCALE CROSS-FLOW ULTRAFILTRATION TEST USING A HANFORD SITE TANK 241-AN-102 WASTE SIMULANT (U)

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LIST OF ACRONYMS

ADS	Analytical Development Section (part of WSRC/SRTC)
AN-102	Department of Energy Hanford Site Tank 241-AN-102
AN-102R2	Radioactive cold slurry simulant of AN-102 that was revised twice (R2) to be a better match to the actual radioactive waste. It was the principal simulant used for this test.
AN-107	Department of Energy Hanford Site Tank 241-AN-107. A simulant of this waste was used to precondition the cross-flow filter before testing began with AN-102R2
BC	Baseline Conditions (see Fig. 17)
BNI	Bechtel National, Inc.
CFD	Computational Fluid Dynamics
cP	Centipoise
cSt	Centistoke
CUF	Cells Ultrafiltration facility (bench-top cross-flow filter used with both radioactively cold and hot wastes)
°C	Degree Centigrade (or Celcius)
ρ	density, g/ml
D	Diameter
DF	Decontamination Factor: (Slurry Molarity / Filtrate Molarity)
DIF	Deionized and Filtered (0.1 micron) Water
DOE	United States Department of Energy
dP	Differential Pressure
ft	Foot
γ	Shear Rate, sec^{-1} (Rheology Parameter)
i.d. or ID	Inside Diameter
IS	insoluble solids
in.	inch
hr	Time: Hour
HLW	High Level (Activity) Waste
l or L	Liter
LAW	Low (Level) Activity Waste
μ	Dynamic Viscosity, cP, (Rheology Parameter)
μ_0	Consistency or Plastic Viscosity, cP, (Rheology Parameter)
NOC	Newly Optimized Conditions (see Fig. 17)
m	Meter
M	Molar
min	Time: Minute
ml or mL	Milliliter
mm	Millimeter
nominal	The word "nominal" for a filter rating is a vague term because its meaning is manufacturer dependent. Further, a "nominal" rating does not give an exact size to a filter medium, but rather an approximation to the expected performance of a filter. In the case of Mott, a nominal rated 0.1-µm filter means that approximately 95% of particles greater than 0.1 µm will not pass the filter.
NTU	Nephelometric Turbidity Unit

LIST OF ACRONYMS
(Continued)

Pa	Pascal
PJM	Pulse Jet Mixer
PSD	Particle Size Distribution
psi	Pounds Per Square Inch
psig	Pounds Force Per Square Inch Gauge
psid	Pounds Force Per Square Inch Difference
PXU	Pilot-scale Cross-flow Ultrafiltration facility
QA	Quality Assurance
Re	Reynolds number, $Re = \rho VD/\mu$, non-dimensional number
RPP	River Protection Project (at the DOE Hanford Site)
o.d. or OD	Outside Diameter
s or sec	Time: Second
SRTC	Savannah River Technology Center (part of WSRC)
Sr/TRU	Strontium/Transuranic
Std Dev	Standard Deviation
τ	Shear Stress, dynes/cm^2, (Rheology Parameter)
τ_0	Yield Stress (Shear Stress at Shear Rate = 0), dynes/ cm^2, (Rheology Parameter)
TS	Total Solids
EDL	Engineering Development Laboratory (part of WSRC/SRTC)
TMP	Transmembrane Pressure (the average pressure drop across the thickness of the filter medium – perpendicular to the slurry flow.)
TRU	Transuranic
TTR	Technical Task Request
UF	Ultrafiltration
ug	microgram
V	Velocity of the slurry flow along the length of the filter tubes
WGI	Washington Group International
WTP	Waste & Immobilization Treatment Plant
WSRC	Westinghouse Savannah River Company

1.0 SUMMARY OF TESTING

1.1 OBJECTIVES

This report discusses the results of cross-flow filter operation in a pilot-scale experimental facility that was designed, built, and run by the Engineering Development Laboratory of the Westinghouse Savannah River Company Savannah River Technology Center. This filter technology was evaluated for its inclusion in the pretreatment section of the nuclear waste stabilization plant being designed by Bechtel National, Inc. The waste treatment plant will be built at the U.S. Department of Energy's Hanford Site as part of the River Protection Project.

The test objectives, which are listed in the task plan (Duignan, 2002a), were to demonstrate using a simulated waste of AN-102R2:

- Separation of insoluble solids
- Filterability during simulant dewatering after precipitation
- Concentration of the simulant to above 15 wt%
- Filterability of the concentrated simulant during a steady-state solids loading
- Washing the slurry

1.2 CONDUCT OF TESTING

The general test matrix was as follows:

- Baseline the filter with water
- Baseline the filter with a standard slurry
- Dewater simulant from ~ 1 wt% to >15 wt% insoluble solids
- Filter simulant at the highest concentration of solids at steady state solids loading
- Wash slurry
- Acid Clean Filter

Four batches of AN-102R2 simulant, precipitated under different conditions, were tested, but only one, Batch 3B, completed all the steps above due to its good filterability. This reports discusses in detail the problems and successes with each of those batches.

1.3 RESULTS AND PERFORMANCE AGAINST OBJECTIVES

The filter element under study was manufactured by the Mott Metallurgical Corporation in Connecticut. The filter unit was made of seven 316 stainless steel sintered metal tubes. Each tube was a nominal-rated 0.1-micron filter with an inside diameter of 0.5 inch, an outside diameter of 0.625 inch, and a porous length of 90 inches. These dimensions give an active filter surface area of 6.7 ft^2. At the time of this task these aforementioned dimensions were given as prototypic; therefore, each filter tube was considered full size to the filter, which

would be built for the plant. Only the number of tubes was expected to change. [Current plans call for 241 tubes (~231 ft^2 of filter area) in each of the cross-flow filter bundles of which there will be 3 bundles in series for each of the two filtration flow loops.]

The filter was tested with a simulated nuclear waste of Tank 241-AN-102, which is referred to as an Envelope C waste. The recipe for the simulant was developed by the SRTC Waste Treatment Technology Department and the simulant was procured and prepared by EDL personnel specifically for this task. The supernatant portion of the simulant contained numerous inorganic salts, soluble organics, had a pH ≈ 12, and a sodium molarity of approximately 6.0 M. Insoluble solids were added to the supernatant to simulate entrained solids in the real waste. The particle size distribution was designed to be bimodal; one group ranged from 1 to 2 microns and the other ranged from 5 to 10 microns. Finally, to this slurry three precipitating agents were added: Sodium Hydroxide, Strontium Nitrate, and Sodium Permanganate, which raised the pH to approximately 14. After all the additions, the insoluble solids loading started at 0.8 to 1.6 wt% and after dewatering it was eventually raised to about 25 wt%. The total solids ranged from as low as 28 wt% for post-washed slurry to as high as 49 wt% for the pre-washed slurry. At 25°C and a solids loading of 1.0 wt%, this slurry had a density of approximately 1.29 g/mL, a viscosity of 4 cP, and Newtonian rheological characteristics. However, as the solids loading increased, a yield stress was present. At the highest loading, the slurry rheology showed time dependent characteristics of a thixotropic fluid, e.g., certain paints, inks, and foods like ketchup. The flow conditions for the test varied as follows: Axial slurry velocities ranged from 7 ft/s to 15 ft/s (2.1 m/s to 4.6 m/s) and transmembrane pressures ranged from 20 psid to 60 psid (138 kPa to 414 kPa) at a temperature of 25°C.

1.3.1 Filter Baselining and Acid Cleaning

Before each test the filter was tested with inhibited (0.01 M NaOH) water and a standard slurry (5 wt% $SrCO_3$) to baseline its operation. After each test the filter was acid cleaned with 2 M HNO_3 and retested with water and the standard slurry. The summary results are:

1.3.1.1 Inhibited Water

Inhibited water tests before and after each slurry test indicated a return to “clean” filter fluxes.

1.3.1.2 Standard Slurry

The use of a standard slurry to show a filter’s return to cleanliness was confounded by the level of cleanliness of not just the filter but of the entire filter system. Unless the entire filtration loop was clean, then determining the cleanliness of just the in-line filter may not be possible.

1.3.1.3 Acid Cleaning

The method used, two 90-minutes circulations of 2 M nitric acid, cleaned most of the solids away from the filter but there were always some remaining solids. The complex wastes may need more targeted cleaning to remove all waste remnants

1.3.2 Solids Separation

With respect to insoluble solids separation the results were excellent. Turbidity for all filtrate samples measured considerable less than 1 NTU and generally ranged from 0.1 to 0.3 NTU.

1.3.3 Filterability

With respect to filterability, the results ranged from unacceptable to good as compared to the target mean filtrate flux of 0.020 gpm/ft^2 at 15 wt% insoluble solids and as explained below.

1.3.3.1 Dewatering

Under the flow conditions of a slurry velocity of 12.0 ft/s and a transmembrane pressure of 40 psid (3.7 m/s and 275 kPa), the observed filtrate flux during dewatering ranged from one unacceptable test (Batch 3C) to three acceptable tests (Batches 3A, 3B, and 4A, with 3B giving the best results) when compared to the target mean filtrate flux of 0.020 gpm/ ft^2. The results are summarized in Fig. 75, which is reproduced here for convenience. There can be many reasons why the filtration results varied among the batches, some of which are discussed herein, but the largest difference was between the poor filterability of Batch 3C, which had the lowest concentration of free hydroxide, and the good filterability of Batch 3B, which had a higher free hydroxide concentration and was precipitated at a higher temperature, i.e., 50°C. The filterability of remaining two batches fell between the extremes. They both had the higher level of free hydroxide, but Batch 3A was precipitated at the lower temperature of 25°C and Batch 4A used a pulse jet mixer during precipitation instead of an impeller agitator.

Batch Number	Precipitation Conditions*	Precipitation Mixing	Precipitation Temp, °C	Final Conc of Free OH^-	Final Conc of $SrNO_3$	Final Conc of $NaMnO_4$	Filter Flux (gpm/ft^2) at 2 wt%	at 15 wt%	Avg to 15 wt%	Location
3C	NOC =	well	25	0.3 M	0.03 M	0.03 M	0.019	0.005**	0.010***	(Fig. 38)
3B	BC =	well	50	1.0 M	0.075 M	0.050 M	0.066	0.024	0.049	(Fig. 40)
3A	BC @ 25°C =	well	25	1.0 M	0.075 M	0.050 M	0.052	0.019	0.020	(Fig. 42)
4A	BC w/PJM =	PJM	50 > 25	1.0 M	0.075 M	0.050 M	0.021	0.014	0.020	(Fig. 44)

* These are the dewatering results and the precipitation conditions nomenclature can be found in Fig. 17
** Batch 3C only went to 8.3 wt% but flux was constant from 5 to 8.3 wt%
*** Batch 3C average assumes the filtrate flux continues at 0.005 gpm/ft^2 to 15 wt%

Figure 75. Dewatering results

1.3.3.2 Steady State

Steady state tests at high concentrations of insoluble solids (>20 wt%) indicated that slurry axial velocity is an important parameter in filtrate flux, while the transmembrane pressure is less so. Flow parameters of 12 ft/s and 40 psid are reasonable. With hourly backpulsing the filter depth fouling decreased the filtrate flux by approximately 60% after 24 hours of continuous operation.

1.3.4 Washing

A test to wash slurry with an equal volume of water showed good removal of sodium; approximately 65%.

1.3.5 Scaling

Comparisons made with the small amount of existing data from similar small and pilot-scale tests show that relating small to plant-scale operation may not be possible.

1.3.6 Recommendations

It is recommended that:

1. Axial slurry velocity be greater than 11 ft/s and the transmembrane pressure more than 30 psid. Higher velocities will filter slurries faster, but higher transmembrane pressures will not increase filter fluxes significantly.
2. Baseline conditions (BC in Fig. 75) be used when precipitating Envelope C-type wastes like AN-102 to obtain the best filterability.
3. Backpulsing be minimized because increasing backpulsing increases depth fouling of the filter and thus reduces time between acid cleanings.
4. A more effective cleaning method be determined than the use of 2 M nitric acid, alone.

1.4 QUALITY REQUIREMENTS

This work was conducted in accordance with the RPP-WTP Quality Assurance requirements specified for work conducted by SRTC as identified in DOE IWO MOSRLE60. Researchers followed the WSRC QA program, which has been approved by WTP, and the WSRC QA Management Plan (WSRC-RP-92-225). The program applied the appropriate QA requirements for this task, as indicated by the QA Plan Checklist in section IX of the Task Technical and Quality Assurance Plan (Duignan, 2002a).

Analytical sample labeling and tracking complied with established procedures (WSRC Manual L1, Procedure 7.15). The SRTC Analytical Development Section (ADS) conducted all analyses using the routine level QA program. Calibrated measuring and test equipment

were utilized for all flow rate, pressure, and temperature measurements on the Pilot-scale Cross-flow Ultrafiltration Facility.

The Task Technical & QA Plan provided the quality requirements for this work (Duignan, 2002a). NQA-1 1989, part 1, Basic and Supplementary Requirements and NQA-2a 1990, Part 2.7 were applied as appropriate.

1.5 ISSUES

Originally, this task was planned to filter only two slurry simulant batches, i.e., Batches[†] 3 and 4. Those batches only differed by how well they would be mixed during the precipitation process. Batch 3 was to be well mixed with a mechanical agitator and Batch 4 was to be mixed with pneumatically driven pulse jet mixer (PJM). Previous work (Duignan, 2000b) with Envelope C-type simulants using well mixed baseline precipitation conditions has already been shown to attain an acceptable level of decontamination and filterability. Since RPP-WTP has been designed to use PJM to agitate the precipitating wastes; therefore, it was important to show its effects on decontamination and filterability. Unfortunately, the Batch 3 test demonstrated very poor filterability, which necessitated changes to the precipitation process and thus increased the number of tests to four batches[‡], i.e., 3C, 3B, 3A, and 4A.

2.0 CD-ROM ENCLOSURES

The report is contained on a CD-ROM in the following file format:

Microsoft Word, Version 97
Adobe Acrobat, Version 5.0

[†] Batches 1 and 2 were strictly related to the precipitation task (Steeper and Williams, 2003) and were not part of this task.

[‡] The batch numbering nomenclature is arbitrary and the sequence shown above is the chronological order in which the batches were tested. Batch 4 is referred to 4A because a 4B was planned in the event Batch 4A indicated that more testing was needed. Batch 4B was not required.

3.0 DISCUSSION

3.1 INTRODUCTION

Bechtel National, Inc. (BNI) has been contracted by the Department of Energy (DOE) to design a Waste Treatment and Immobilization Plant (WTP) to stabilize liquid radioactive waste that is stored at the Hanford Site as part of the River Protection Project (RPP). Because of its experience with radioactive waste stabilization, the Savannah River Technology Center (SRTC) of the Westinghouse Savannah River Company (WSRC) is working with BNI and Washington Group International (WGI), to help design and test certain parts of the waste treatment facility. One part of the process is the separation of radioactive solids from the liquid wastes by cross-flow ultrafiltration. This task tested a cross-flow filter, prototypic in porosity, length and diameter, with a simulated radioactive waste, made to prototypically represent the chemical and physical characteristics of a Hanford waste in tank 241-AN-102 (AN-102) and precipitated under prototypic conditions.

This technical baseline research and development work was initiated by a Technical Task Request (TTR) (Duignan, 2002a) that was issued in April of 2002. This TTR is a result of a WGI test specification (Townson, 2002a) to test a simulated radioactive waste in an existing pilot scale cross-flow filtration system in the Engineering Development Laboratory (EDL) of SRTC. With the initial documentation in place (Blunt, 2002; Duignan, 2002a,b,c,d; Edmunds, 2002) the task began by first preconditioning the filter. Since the first test would be using a brand new filter it was subjected to the flow of an archived simulant (AN-107) in order to attain a "used" filter state, which would be more prototypic of actual plant daily use. That is, a new filter could give falsely high filtrate flux rates, which would not be conservative. The preconditioned filter was then used to filter the AN-102R2 simulant. This waste simulant, along with other complexant containing wastes, like the preconditioning simulant, is referred to as Envelope C (see Eibling and Nash (2001) for a description of the entire range of radioactive wastes and their simulants). How well this simulant matched the actual waste is beyond the scope of this task and not addressed; it was used as given input. However, details can be found in Steeper and Williams (2003), which is a report that deals with the preparation and precipitation of AN-102R2. Finally, to this simulant several compounds were added to simulate the step of precipitating Strontium and Transuranic constituents. After precipitation, the simulant was ready for filtering, which began the test.

The simulant of AN-102R2 was the second in a series of two Envelope C-type wastes that have been tested. The first (AN-107) has been previously tested by Duignan (2000b) and these two tests followed an Envelope A (AN-105) simulant test (Duignan, 2000a). This report deals solely with the AN-102R2 simulant.

The chosen filter was manufactured by the Mott Metallurgical Corporation to meet RPP-WTP specifications (Townson, 2002a), as follows:

> 7 filter tubes with each having an inside diameter of 0.5-inch
> 90-inch porous length for each filter tube and made of stainless steel
> Nominal rated 0.1 micron filter element (the List of Acronyms explains 'nominal')

and the pilot test rig was designed to have the following:

> Maximum axial velocity through filter tubes of 4.6 m/s (15 ft/s)
> Maximum transmembrane pressure (TMP) of 60 psid
> Maximum axial velocity to be achievable at the maximum TMP
> Instrumentation to monitor the axial velocity, the filtrate flow rate, the TMP, and the slurry temperature
> All materials to be compatible with the high-caustic simulants and the 2 M nitric acid cleaning solution

All specifications were met or exceeded.

A summary of EDL task activities is as follows:

Draft WGI Test Specification Received – May 8, 2001
Order placed (P.O. AC26481A) for filter from Mott Incorporated – May 17, 2001
Arrival of the filter from Mott Incorporated – August 15, 2001
Approved WGI Test Specification Received – January 16, 2002
WSRC Task Technical & Quality Assurance Plan Approved – April 9, 2002
Principal shakedown activities began – October 1, 2002
Test Procedure Approved – September 5, 2002 (Revision 0)
Activities for preconditioning filter with AN-107 – September 9-29, 2002
Activities for AN-102R2, Batch 3C test – September 30 - October 17, 2002
Activities for AN-102R2, Batch 3B test – October 21 – November 5, 2002
Activities for AN-102R2, Batch 3A test – November 6 – November 26, 2002
Activities for AN-102R2, Batch 4A test – February 12-18 & March 12-26, 2003
Final test activities (post calibrations) ended – April 15, 2003
Draft final report completed and sent for review to WGI – May 14, 2003

3.2 EXPERIMENTAL

3.2.1 Equipment

The equipment assembled for this task was done to conform to the Task Plan (Duignan, 2002a). To facilitate understanding of the experimental equipment an explanation of the salient features follows.

3.2.1.1 Test Rig

Figure 1 is a partial drawing (Restivo, 2003) of the as-built test rig and Fig. 2 is a simplified schematic of the test rig. The facility stands approximately 25-feet tall and is serviced by a two-level mezzanine. The test rig is taller than the 90-inch tall filter element because it originally was used to test a 10-foot tall filter (Steimke, 1994). Several modifications were made in order to install the current cross-flow filter. The entire test rig was made of 300 series stainless steel with the majority being of 304 stainless steel.

The test rig is made up of three basic flow loops:

1. Slurry loop, which contains the filter and its housing and serves as the primary flow path for circulating slurries. This loop has an internal volume of approximately 26 liters, excluding the reservoir tank. It is made of primarily* 1.5-inch sch 40 pipe, which has an inside diameter of 1.610 inches.
   [*Some sch10 pipe was used, which has an inside diameter of 1.682 inches.]
2. Filtrate loop, which begins at the filter housing, allows the separated filtrate liquid to flow through the backpulse pulse pot before circulating back to the slurry reservoir to close the circuit. This loop has an internal volume of approximately 15 liters. It is made of primarily* 0.375-inch tubing.
   [*The pulse pot is made from 6-inch sch 80 pipe. The backpulse will be described in more detail after this section.]
3. Cleaning loop was not used for this test but is mentioned to point out valves that exist, but were not used, i.e., V8, V10, V12, and V19.

Two other flow circuits that are subsections of the other loops are the recirculation and the backpulse loops:

1. The recirculation loop is part of the slurry loop (by using valve V6) and is used to better control the slurry flow. The recirculation loop helps to increase mixing and to maintain a well mixed slurry.

2. The backpulse loop is part of the filtrate loop and stands ready to reverse the flow of filtrate. A pulse forces filtrate back through the seven filter elements in order to knock off built-up slurry cake on the inside diameter of the porous tubes. [The loop underwent significant changes to make it more prototypic to planned WTP operation; therefore, a more detailed explanation of the modified backpulse loop follows this section.]

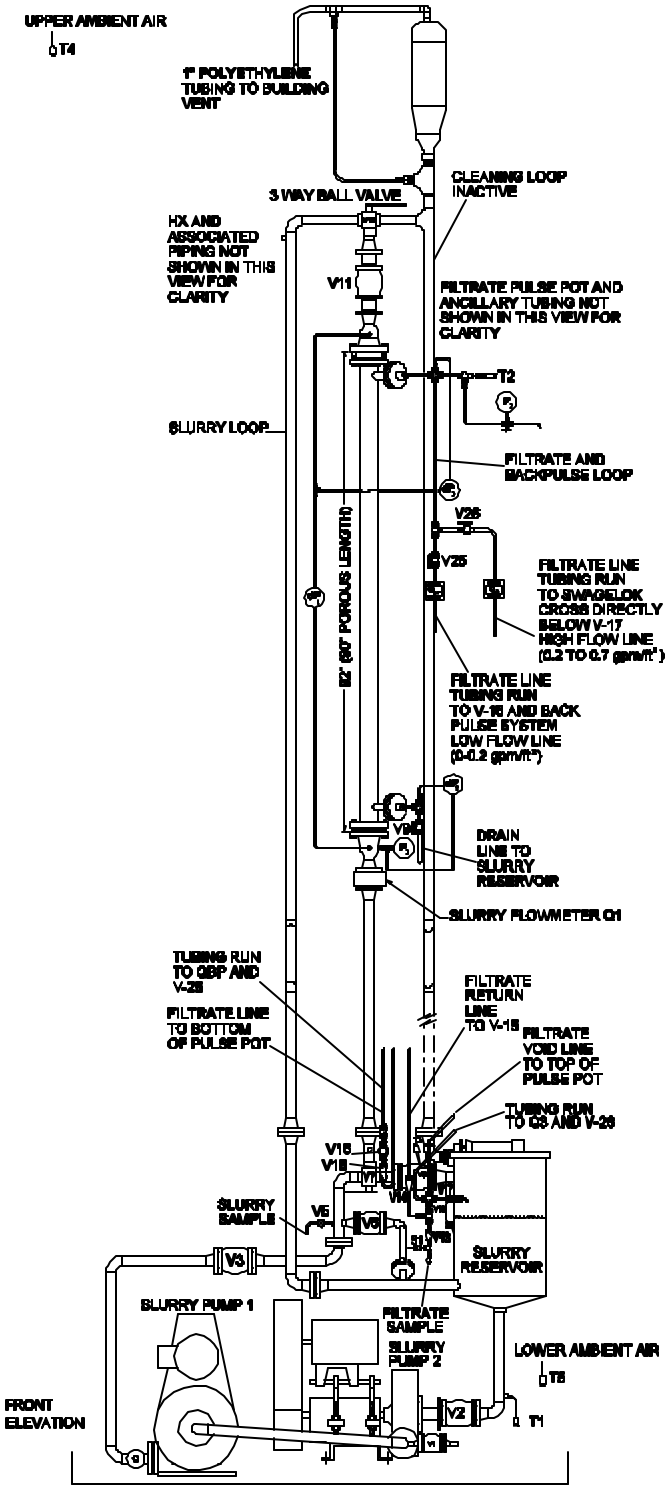


Figure 1. Partial drawing of the Pilot-scale Cross Flow Ultrafiltration Test Facility

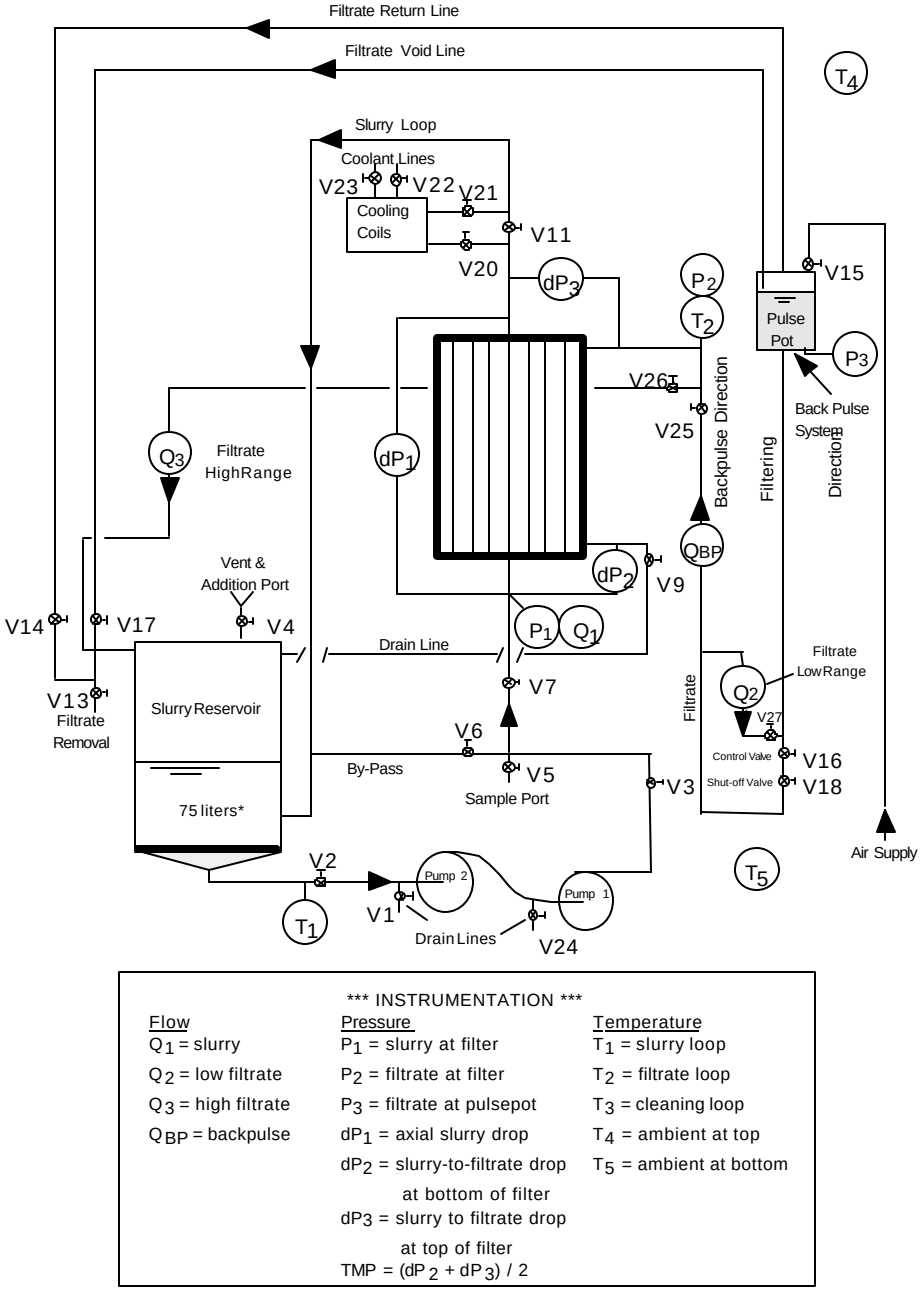


Figure 2. Schematic of the Pilot-scale Cross Flow Ultrafiltration Test Facility

The test rig is controlled through a series of valves, which are described below:

V1: Drains slurry from the test rig at pump 2.
V2: Isolates the slurry reservoir from the pumps
V3: Isolates the slurry loop from the pumps
V4: Allows liquid to be introduced to the slurry reservoir
V5: Allows slurry to be sampled (not used for this test)
V6: Recirculates slurry to the reservoir
V7: Directs slurry to the filter; 3-way valve
V8: Not in use – see below
V9: Drains the filtrate loop
V10: Not in use – see below
V11: Controls the slurry flow downstream of the filter
V12: Not in use – see below
V13: Sample port for filtrate
V14: Shut off for filtrate return line
V15: Allows air to pressurize the pulsepot
V16: Preset pressure drop for backpulse filtrate line
V17: Allows liquid evacuation of pulsepot in preparation for backpulsing
V18: Actuates a backpulse
V19: Not in use – see below
V20: Upstream slurry flow to heat exchanger
V21: Downstream slurry flow from heat exchanger
V22: Upstream coolant flow to heat exchanger
V23: Downstream coolant flow from heat exchanger
V24: Drains slurry from the test rig at pump 1
V25: Shut low-flow filtrate line when high filtrate flows are needed (e.g. water)
V26: Directs high filtrate flow to slurry reservoir and flow meter
V27: Shuts filtrate flow to low-flow meter during a backpulse

Note: Valves V8, V10, V12, and V19 are for the cleaning loop, which was not used.

To circulate slurries in the test rig two 10 hp Galigher centrifugal pumps were used. The impeller and impeller housing were made from EPDM to be compatible with both the pH=14 slurry to be tested and the 2 M nitric acid cleaning solutions. The two pumps were used in series on the slurry loop to attain a head of 70 psig at 60 gpm (~ 4.6 m/s in each filter tube).

3.2.1.2 Cross Flow Filter

The heart of this entire experimental task was the cross-flow filter element that was to be tested to define its operational characteristics under required flow conditions when using the Sr/TRU precipitation simulant. There were several candidates that could have been used for this test but due to availability and past experience in robust designs, a Mott filter was chosen. The specifications for the filter unit were:

Material:	316 stainless steel (sintered metal)
Porosity:	nominal rated 0.1 micron
Length:	90 inches
Diameter:	1/2-inch I.D., 5/8-inch O.D.
Number:	7 tubes

The unit which was received from Mott met the requirements. Figure 3 and 4 show the 90-inch length was made from four 22.5-inch lengths that were welded together.

Figure 3. 7-tube bundle of a nominal rated 0.1 micron filter, 1.2" i.d., 5/8" o.d., 90" long

Figure 4. Adjoined filter tube sections

Besides the inter-tube weldments, Fig. 5b, the 7 tube bundle was welded together with the tube sheets, Figs 5a, d, and extra support was made with stabilizing plates and supporting solid metal ¼-inch rods which ran the length of the tube bundle, Fig. 5c.

(a) (b) (c) (d)

Figure 5: (a) Large-tube sheet, (b) tube-to-tube weldment, (c) tube supports, (d) small-tube sheet.

The stainless steel sintered surface has a fairly robust construction. Figure 6 shows an enlargement of two different pore-size filter elements, 0.5 and 100 microns. (Mott did not

have a picture of a nominal rated 0.1 micron filter but stated that the appearance is identical to the larger sizes.)

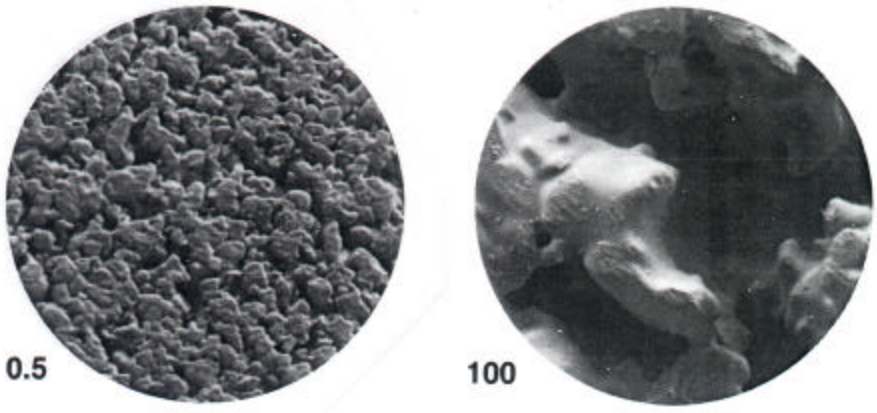
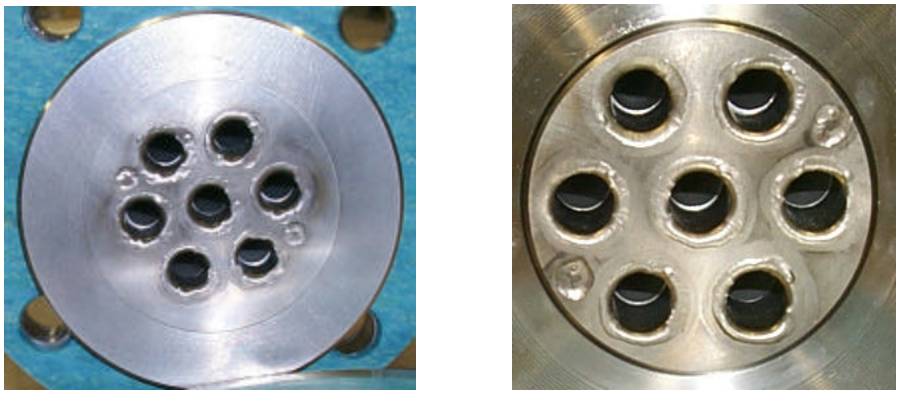


Figure 6. Magnified views (approximately 150x) of surfaces of two different pore-size rated Mott filters (the number to the left of each figure is the pore-size rating in microns)

When the test rig is in operation, slurry enters the porous tubes at the small tube sheet, Figs. 5d and 7b, and exits the tubes at the large tube sheet, Figs. 5a and 7a. Each tube sheet is sealed to a 1.5-inch to 3-inch plenum.



(a) (b)

Figure 7: Tube-sheet profiles (a) Downstream (b) Upstream

The tube housing, Fig. 8, was made from a 3-inch schedule 10 pipe with two pipes connected at either end to remove filtrate. For this test the filter unit was oriented vertically in the test rig, see Figs. 1, 2, and 8. The tube bundle sat in the housing such that the large tube sheet, Figs. 5a and 7a, was secured to the top flange of the housing; this tube sheet also supported the weight of the assembly. The smaller, lower, tube sheet, Fig. 5d and 7b, was able to pass through the housing and separated the slurry side of the flow channel from the filtrate side with an "O" ring between the outer perimeter of the lower tube sheet and the inside diameter of the filter housing.

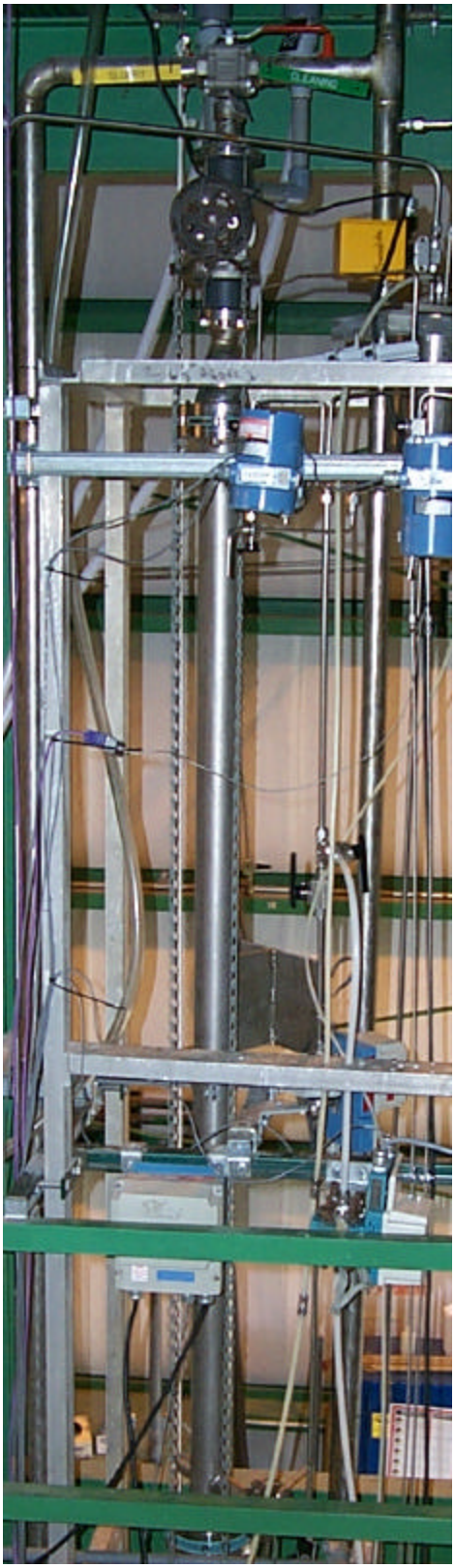


Figure 8. Installed 90-inch tall cross-flow filter housing

3.2.1.3 Backpulse System

On March 20, 2002 the RPP-WTP customer requested that the backpulse system be changed from the piston-type, used for previous tests (Duignan, 2000a, b), to a pneumatic-type that would be more prototypic of the current RPP-WTP design. That is, a filtrate system, which is normally liquid solid, would introduce a gas into an small vessel, called a pulse pot to evacuate some of the liquid so that it can then be pressured. When ready, a valve is opened very fast to allow the pressurized liquid to flow back, "pulsed," into the crossflow filter. Figure 9 is a schematic of the RPP-WTP backpulse system and Fig 10 is a simplified operational procedure.

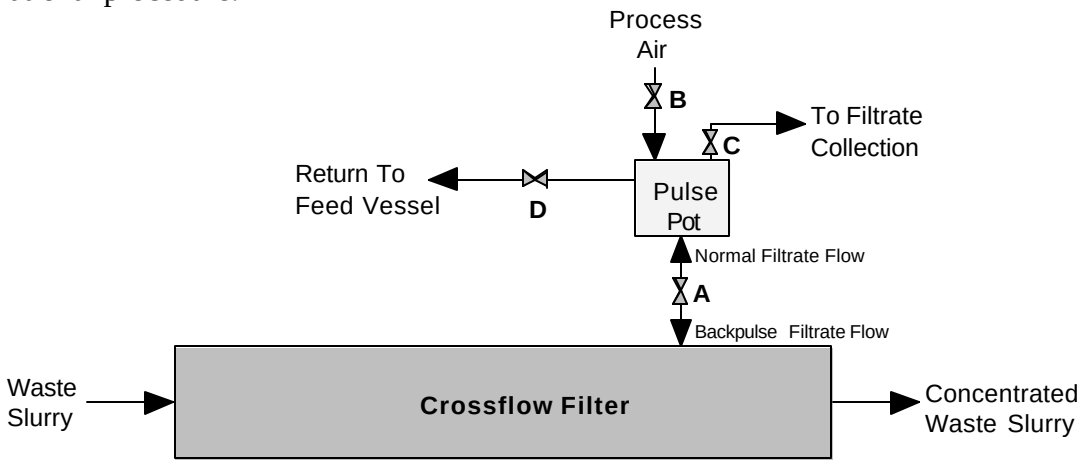


Figure 9. Planned RPP-WTP backpulse system

\/ Mode \/ / Valve >>	A	B	C	D
Filtering	Open	Closed	Open	Closed
Stop Filtration	Closed	Closed	Closed	Closed
Void Pulsepot	Closed	Open	Closed	Open
Pressure Pulsepot	Closed	Open	Closed	Closed
Isolate Pulsepot	Closed	Closed	Closed	Closed
Back Pulse	Open	Closed	Closed	Closed
Resume Filtration	Open	Closed	Open	Closed

Figure 10. Procedure to operate backpulse system

The planned plant backpulse system is designed to have a:

1. Backpulse pressure 30 psi above the slurry pressure at the filter.
2. Pressure drop from the pulse pot to the filter of 10 psid during a backpulse.
3. Pulse liquid volume of at most 2/3^{rds} of the total pulse pot volume.
4. Volume of the pulse liquid enough for efficient back pulsing.
   (This volume was stated to be a minimum of 70% of the volume of the porous tube walls.)
5. Back pulse cycle duration of 5 to 10 seconds.

The pilot test rig was changed to meet the above requirements. However, what could not be matched were the dynamic characteristics of the plant system. That is, because of differences

in scale, and therefore mass, the momentum of the plant system will be considerably different. The operation of the pilot system followed the sequence shown in Fig. 10 and it was designed to meet all five criteria above. For the volume of pulse liquid, past experience (Duignan, 2000a, b) has shown an effective volume to be 0.036 gallons per square foot of inside area of the cross-flow filter. Therefore, the volume used was:

$(0.036\ gal/ft^2)$ x (7 tubes) x π [(0.5 inch/12)] x 90 inches/12 = 0.25 gal.

By using the 4^{th} criterion above the volume would be:

70% x [(7 tubes) x volume of porous tube wall] =

70% x [(7 tubes) x $\pi/4$ $[(0.625\ inch/12)^2 - (0.5\ inch/12)^2]$ x 90 inches/12 x $7.48\ gal/ft^3$]= 0.21 gal.

Therefore, using 0.25 gallon would be conservative to effectively removing the filter cake.

Designing for the 10 psid pressure drop from the pulse pot to the filter housing, during the backpulse, was a little harder to obtain and, therefore, the pilot system was made to have an adjustable pressure drop using a valve. Several tests were done before the experiment began to estimate how to set that valve so that the backpulse pressure drop was near the target 10 psid. To illustrate the backpulse system, Figure 11 shows a subset of Fig. 2 and valve letters corresponding to those in Fig. 10 are included to compare operation. Note that for the pilot system, the voiding line, leading to valve D, is through the top of the pulse pot instead of the side, Fig 9, in order to change the void space size if necessary.

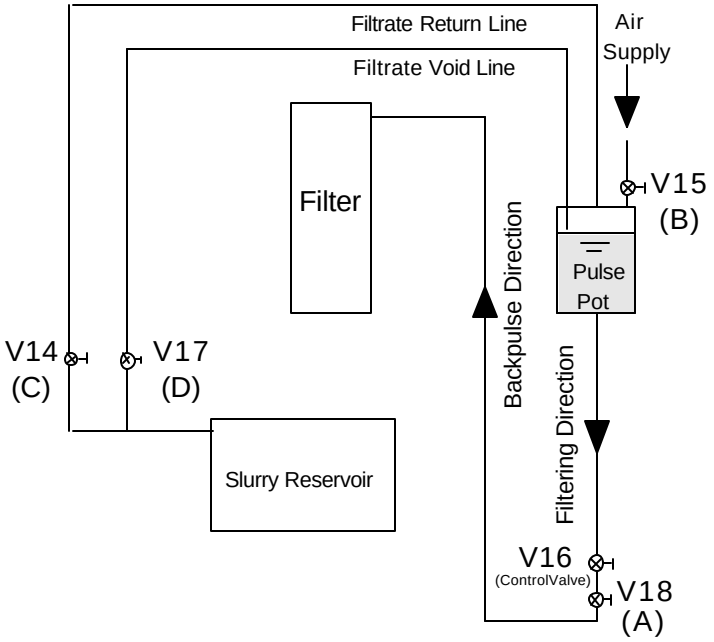


Figure 11. Pilot test rig backpulse loop, see also Fig. 2

To see how the system of Fig. 11 operates and how the pressure drop control valve, V16 was set see Fig. 12, which shows the data from one of the many shakedown tests done with water. The instrumentation indicated in Fig. 12 can be found in Fig. 2. It shows the slurry (water) pressure in the filter to be approximately 50 psig; therefore, the air overpressure (P3) was set at 90 psig, or approximately 30 psig at the filter housing when considering the pressure drop across the backpulse system at the highest backpulse flowrate. That is, as seen in Fig. 12, the backpulse flowrate peak after 2 seconds from opening valve A, at about 0.5 gpm/ft^2 and the backpulse pressure drop, i.e., P3-P2, was at approximately 10 psid.

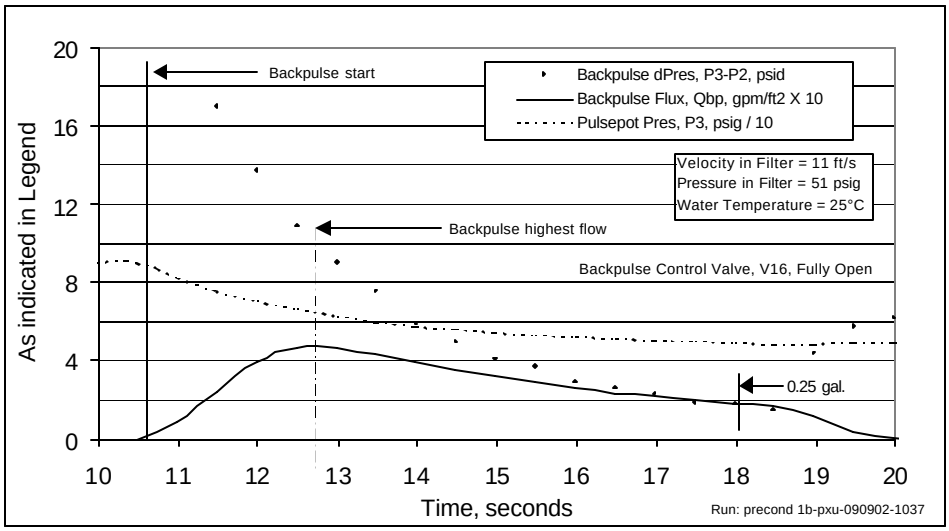


Figure 12. Pilot test rig backpulse operation with water

Figure 12 data show the sequence of events as indicated in Fig. 10, with the valves shown in Figs. 2 and 11:

1. Stop Filtration: Prior to data taking – all valves were closed.
2. Void Pulsepot: Prior to data taking – only valves B and D are open.
3. Pressurize Pulsepot: Prior to data taking – only valve B is left open.
4. Isolate Pulsepot: 0-10.5 seconds – all valves were closed.
5. Back Pulse: 10.5-18 seconds – valve A opened as fast as possible, then closed at some predetermined time, see Fig. 11.
6. Resume Filtration – valve C is opened, followed by opening valve A slowly.

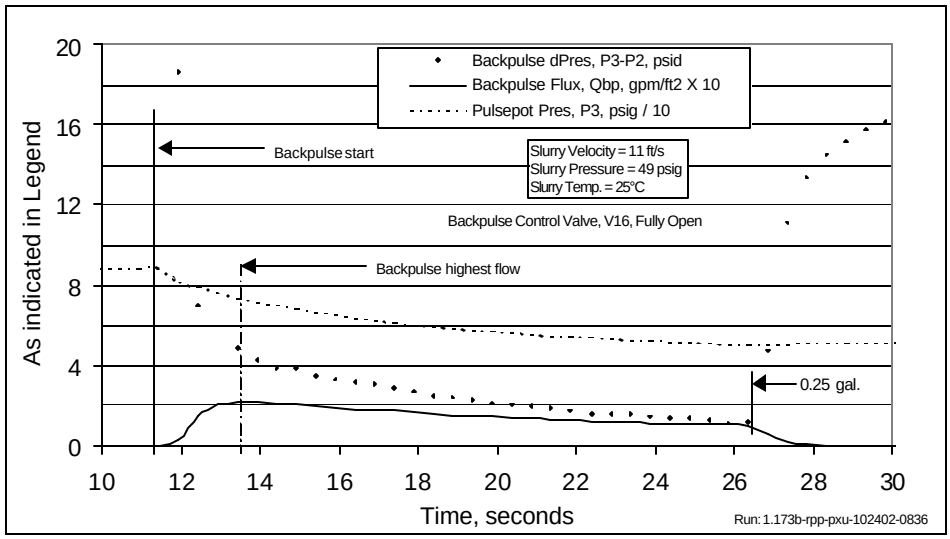
Note that in step 6 valve C is opened first to relieve any residual pneumatic pressure and prevent further, albeit weak, backpulsing. Valve A is opened very slowly, over 60 seconds to uniformly form the filter cake when reestablishing filtrate flow.

As Fig. 12 indicates, the backpulse control valve was fully opened; therefore, this would be the position set for future slurry tests. Many tests were done to determine the number of seconds to leave the backpulse flow open before the 0.25 gallon of filtrate passed through the filter wall. When slurry was introduced into the test rig, the backpulse conditions were checked again. By trial and error the times in Fig. 13 were used to obtain 0.25 gpm of pulsed

filtrate for each run, which must change due to pressure of the slurry in the filter and thus leading to different air overpressures, leading to different values of backpulse flowrates.

Pressure at the filter (P1), psig	10	20	30	40	50	60	70
Duration of Pulse, seconds	9	11	12	14	15	17	18

Figure 13. Pilot test rig backpulse duration (time to hold valve A open)



d

Figure 14. Pilot test rig backpulse operation with AN-102R2, Batch 3B

Figure 14 backpulse results were taken during one of the slurry tests (AN-102R2, Batch 3B) and indicates different results from those for water, basically because the slurry filtrate was 4 times more viscous than water. The peak backpulse flowrate occurred at almost the same time period as water, i.e., 2 seconds, but the rate only reached just under one half that of water. Moreover, at the peak flowrate, the backpulse system pressure drop was also about one half that of water, i.e., 5 psid. The times at which 0.25 gallon of filtrate passed back through the filter can be compared because both of the tests shown in Figs. 12 and 14 were done at a filter pressure of 50 psig. The water took 7.5 seconds and the slurry took 15 seconds. As can be verified in Fig. 13, the times shown are for slurry operation. Even though the backpulse system only presented a pressure drop of 5 psid at the peak filtrate flowrate, valve V16 was left open for all tests. The actual pressure that will exist in the full-size RPP-WTP backpulse piping will be considerably less than the assumed 10 psid because the project began a design change, making the filtrate flow paths much bigger. It is unlikely that the plant pressure drop will be more than 1 or 2 psid. Besides, if V16 were closed enough to attain a 10 psid it is unlikely that the filtrate momentum would be enough to affect the filter cake. As it is, the filtrate backpulse flowrate was only 0.2 gpm/ft^2 (or only 10 times greater that the target mean filtration rate of 0.02 gpm/ft^2), which turned out not to be very effective in removing the Envelope C-type simulant filter cake.

3.2.1.4 Instrumentation

The measurement equipment used for this experiment was:

5 Type E thermocouples with average accuracies from* 0.9 to 1.0°C,
6 Variable capacitance pressure transducers with average accuracies from* 0.05 to 0.40 psi, and
4 Magnetic flow meters with accuracies from* 0.005 to 0.5 gpm.
*accuracies are a function of the instrument and calibration. The uncertainty introduced through the use of the 16-bit data acquisition system was insignificant (<0.1% reading) and was not included in the values above.

Figure H1, Appendix H, shows several tables which list all those instruments and data acquisition system (DAS) channels for each of the non-thermocouple instruments. The thermocouples had their own dedicated computer card to interface and convert the temperatures properly. The calibration of the DAS was checked and that information can also be found in Fig. H1, which includes tables and graphs that show the results and the transfer functions used for each channel.

From Figs. 1, H1, and H2 the location and the usage of each instrument can be determined, however the following list will better describe the placement and usage of all the measurement instruments:

T1 – A thermocouple located in the exit pipe of the slurry reservoir to measure the slurry temperature on its way to the filter.
T2 – A thermocouple located in the filtrate line at the end of the upper filter housing filtrate exit pipe to measure the filtrate temperature as it leaves the filter housing.
T3 – A thermocouple located in the cleaning loop at the exit of the cleaning loop[†] pump.
T4 – A thermocouple located outside of the top of the test rig to measure ambient temperature.
T5 – A thermocouple located outside at the bottom of the test rig to measure ambient temperature.
For the 6 pressure transducers also refer to Fig. H2 which indicate pressure-line locations as well as their heights.
P1 – A gauge pressure transducer located at the beginning of the filter housing to measure the pressure of the slurry just before entering the filter tubes.
P2 – A gauge pressure transducer located in the filtrate line at the top filter housing filtrate exit pipe to measure the pressure of the filtrate as it leaves the filter housing.
P3 – A gauge pressure transducer located at the bottom of the filtrate pulsepot to measure the pressure applied to produce a backpulse.
dP1 – A differential pressure transducer located across the slurry side of the filter to measure the drop in pressure along the filter tubes.
dP2 – A differential pressure transducer located across filter and housing at the filter to measure the transmembrane pressure at the beginning of the filter.

[†] The cleaning loop in general was not used for this experiment, therefore its temperature measurement is generally irrelevant.

dP3 – A differential pressure transducer located across filter and housing at the filter to measure the transmembrane pressure at the end of the filter.
[The transmembrane pressure is determined from the average of dP2 and dP3.]
Q1 – A magnetic flowmeter located at the entrance of the filter to measure the slurry flowrate.
Q2 – A magnetic flowmeter located in the filtrate line between the exit of the filtrate housing and pulse pot to measure the low filtrate flowrates. This device was calibrated from 0 to 1.2 gpm (or a filtrate flux of 0 to 0.17 gpm/ft^2), which covers most of the filtrate flux range expected for slurries.
Q3 – A magnetic flowmeter located in the filtrate line between the exit of the filtrate housing and the slurry reservoir tank, downstream of valve V26 to measure the high filtrate flowrates. This device was calibrated from 0 to 5 gpm (or a filtrate flux of 0.75 gpm/ft^2), which covers all expected filtrate fluxes. This was used for water and nitric acid tests.
Qbp – A magnetic flowmeter located in the filtrate line between the filtrate housing and the pulsepot to measure the reversed filtrate flowrate during a backpulse. When a backpulse is made flowmeter, Q2, is isolated from the loop.

3.2.1.5 Measurement Uncertainty

Appendix H has all the pertinent information on the uncertainties. The measurement uncertainties (95% confidence level) for the important calculated quantities are:

Slurry Velocity in a Filter Tube	=	V	± 6.2 %
Transmembrane Pressure	=	TMP	± 2.2 %
Temperature Corrected Filtrate Flux	=	Fc	± 5.4 %
Permeability	=	P	± 5.8 %

These number are based on pre- and post-test calibrations of the instruments.

3.2.2 Simulated Waste Slurry

Beside the cross-flow filter, the most important aspect of this experiment was the slurry used to simulate a Hanford Site waste. The waste that was simulated is referred to as Envelope C. Envelope C are radioactive wastes that include tank 241-AN-102 from the Hanford Site, which is made up of organic and other complexants. The simulant used for this task was cold (non-radioactive), but chemically it was made as close as was known to actual waste. Once the base Envelope C simulant was ready for use, it was prepared for filtration by adding several precipitation reagents. Some information on the slurry tested will be given below but the goal of this task was to test filterability of a given waste simulant at a pilot scale and not to determine suitability of the simulant to the actual waste. Information of the actual waste can be found in Urie, et al. (2002), the development of the SRTC simulant can be found in Eibling (2003), and information on the preparation and precipitation of the simulant can be found in Steeper and Williams (2003).

Filterability, notwithstanding, to understand how this experiment was run it is necessary to know the general aspects of the slurries that were tested. This task tested one base simulated waste, which was subjected to four different methods of precipitation. The pilot-scale cross-flow facility was then used to filter each prepared simulant to determine the effect the methods had on filterability. The base simulant was developed by SRTC and it was made of many compounds, Fig. 15. The resulting mixture was deluted to a sodium concentration of 6.0 M.

Base Compound	Formula	Mol Wt	AN-102R2	
Aluminum Nitrate	$Al(NO_3)_3.9H_2O$	375.13	4.539E-01	M
Cadmium Nitrate	$Cd(NO_3)_2.4H_2O$	308.48	4.096E-04	M
Calcium Nitrate	$Ca(NO_3)_2.4H_2O$	236.15	9.257E-03	M
Cerium Nitrate	$Ce(NO_3)_3.6H_2O$	434.22	2.411E-04	M
Cesium Nitrate	$CsNO_3$	194.91	9.054E-05	M
Cobalt Nitrate	$Co(NO_3)_3.6H_2O$	353.03	3.524E-05	M
Copper Nitrate	$Cu(NO_3)_2.2.5H_2O$	241.60	2.783E-04	M
Ferric Nitrate	$Fe(NO_3)_3.9H_2O$	403.99	5.662E-04	M
Lanthanum Nitrate	$La(NO_3)_3.6H_2O$	433.01	2.097E-04	M
Lead nitrate	$Pb(NO_3)_2$	331.20	6.784E-04	M
Manganous Chloride	$MnCl_2.4H_2O$	197.90	4.028E-04	M
Neodymium Nitrate	$Nd(NO_3)_2.6H_2O$	376.36	4.959E-04	M
Nickel Nitrate	$Ni(NO_3)_2.6H_2O$	290.81	5.381E-03	M
Potassium Nitrate	KNO_3	101.11	3.779E-02	M
Rubidium Nitrate	$RbNO_3$	147.48	7.376E-05	M
Zinc Nitrate	$Zn(NO_3)_2.6H_2O$	297.47	5.818E-05	M
Zirconyl Nitrate	$ZrO(NO_3)_2.H_2O$	249.23	1.111E-04	M
EDTA	$Na_2C_{10}H_{14}N_2O_8.2H_2O$	372.24	7.286E-03	M
HEDTA	$Na_3C_{10}H_{15}N_2O_7$	278.26	1.524E-03	M
Sodium Gluconate	$CH_2OH(CHOH)_4COONa$	218.14	5.709E-03	M
Citric Acid	$HOC(CH_2CO_2H)_2CO_2H$	192.13	2.038E-02	M
Nitrilotriacetic Acid	$N(CH_2COOH)_3$	191.14	1.042E-03	M
Iminodiacetic Acid	$HN(CH_2CO_2H)_2$	133.10	2.591E-02	M
Succinic Acid	$C_4H_6O_4$	118.04	2.346E-04	M
Glutaric Acid	$C_5H_8O_4$	132.12	3.786E-04	M
Adipic Acid	$C_6H_{10}O_4$	146.14	1.288E-03	M
Azelaic Acid	$C_9H_{16}O_4$	188.22	4.183E-03	M
Suberic Acid	$C_8H_{14}O_4$	174.20	7.949E-03	M
Ammonium Acetate	NH_4CH_3COO	77.08	6.162E-03	M
Boric acid	H_3BO_3	61.83	2.575E-03	M
Sodium Chloride	NaCl	58.44	1.013E-01	M
Sodium Fluoride	NaF	41.99	6.846E-02	M
Sodium Sulfate	Na_2SO_4	142.04	9.953E-02	M
Potassium Molybdate	K_2MoO_4	238.14	3.561E-04	M
Sodium Hydroxide	NaOH	40.00	2.927E+00	M
Sodium Phosphate	$Na_3PO_4.12H_2O$	380.12	3.476E-02	M
Sodium Tungstate	$Na_2WO_4.2H_2O$	329.86	6.903E-04	M
Sodium Metasilicate	$Na_2SiO_3.9H_2O$	284.14	2.695E-04	M
Sodium Formate	NaHCOO	68.01	1.416E-01	M
Sodium Glycolate	$HOCH_2COONa$	98.01	1.056E-01	M
Sodium Acetate	$NaCH_3COO.3H_2O$	136.08	3.737E-03	M
Sodium Oxalate	$Na_2C_2O_4$	134.00	3.983E-03	M
Sodium Chromate	Na_2CrO_4	161.97	3.663E-03	M
Sodium Carbonate	Na_2CO_3	105.99	6.925E-01	M
Sodium Nitrate	$NaNO_3$	84.99	9.594E-01	M
Sodium Nitrite	$NaNO_2$	69.00	1.086E+00	M
Strontium Nitrate	$Sr(NO_3)_2$	211.63	3.576E-05	M

Figure 15. Chemical make-up of the AN-102 simulant (AN-102R2)

To the base simulant, a very small amount of other solids, to remain mostly insoluble, were added to represent the entrained solids expected in the real waste, Fig. 16.

Entrained Solid (ES)*	Formula	Mol Wt	Mass %
Aluminum Oxide	Al_2O_3	101.96	15.12%
Barium Sulfate	$BaSO_4$	233.4	0.02%
Calcium Oxalate	$CaC_2O_4.H_2O$	146.11	0.13%
Calcium Tungstate	$CaWO_4$	287.93	0.11%
Cerium Oxalate	$Ce(C_2O_4)_3.9H_2O$	544.29	0.02%
Chromic Oxide	Cr_2O_3	151.99	0.93%
Ferric Hydroxide	FeO(OH)	88.85	0.68%
Lanthanum Oxalate	$La_2(C_2O_4)_3.10H_2O$	722.03	0.02%
Lead Sulfate	$PbSO_4$	303.25	0.08%
Manganese Dioxide	MnO_2	86.94	0.15%
Neodymium Oxalate	$Nd_2(C_2O_4)_3.10H_2O$	732.69	0.04%
Nickel Oxide	NiO	74.71	0.01%
Silicon Oxide	SiO_2	60.09	0.05%
Sodium Carbonate	$Na_2CO_3.H_2O$	124.01	42.71%
Sodium Fluoride	NaF	41.99	3.15%
Sodium Oxalate	$Na_2C_2O_4$	134.00	16.10%
Sodium Phosphate	$Na_3PO_4.12H_2O$	380.12	12.28%
Sodium Sulfate	$Na_2SO_4.10H_2O$	322.04	8.35%
Zinc Oxalate	$ZnC_2O_4.2H_2O$	189.45	0.02%
Zirconium Oxide	ZrO_2	60.09	0.02%
		Total* >	100.00%
* Total ES added to be 0.1 wt% of simulant			

Figure 16. Entrained solids added to the AN-102R2 simulant

The combination of the base simulant, Fig. 15, and the entrained solids, Fig. 16, represent the Hanford waste AN-102 that will be treated by the RPP-WTP. The initial treatment is precipitation. For organic-based wastes, like AN-102, three reagents are added to precipitate the strontium and transuranic components to decontaminate the wastes more effectively and to improve the wastes' filterability. Originally, this task was planned to filter only two slurry simulant batches, i.e., Batches[†] 3 and 4. Those batches differed only by how well they would be mixed during the precipitation process. Batch 3 was to be well mixed with a mechanical agitator and Batch 4 was to be mixed with a pneumatically driven pulse jet mixer (PJM). Previous work (Duignan, 2000b)[‡] with Envelope C-type simulants using well mixed baseline precipitation conditions, explained below, has already been shown to attain an acceptable level of decontamination and filterability. Since RPP-WTP has been designed to use PJM to agitate the precipitating wastes; therefore, it was important to show its effects on

[†] Batches 1 and 2 were strictly related to the precipitation task (Steeper and Williams, 2003) and are not part of this task.

[‡] The previous dewatering test with an Envelope C-type waste was done with a simulant of AN-107 from 30 November to 1 December of 1999 and the average filtrate flux was 0.045 gpm/ft^2 over the 28.5 hours of the test.

decontamination and filterability. Unfortunately, the Batch 3 test demonstrated very poor filterability[†], which necessitated changes to the precipitation process and thus increased the number of tests to four batches[‡], i.e., 3C, 3B, 3A, and 4A.

The reason the Batch 3 test did not show the same level of acceptable filterability is that the precipitation recipe was changed to minimize the amount of reagents. Those changes are referred to as the newly optimized conditions (NOC). The quantities of precipitating reagents which were previously shown to give good filterability (Duignan, 2000b) for Envelope C-type simulants also produced decontamination factors many times greater than were necessary. Hallen, Brooks, and Jagoda (2000) showed exceptionally high decontamination factors and recommended lowering the concentration of precipitation reagents to minimize the amount of chemicals that would have to be added to the wastes, thus creating more wastes. Those new concentrations are referred to as NOC. Unfortunately, while the NOC did produce acceptable levels of decontamination they had a deleterious effect on filterability. Once the low filtrate flux was obtained with the NOC Batch 3 the test scope was expanded to revisit precipitation with the successful baseline conditions (BC). The next three tests used BC with slight variations on the precipitation preparation in the way of mixing temperatures and agitation. Figure 17 lists the differences among the four batches of AN-102R2 simulant, which were ultimately tested. This report documents the filtering results of each of these batches.

Batch Number	Precipitation Conditions (1)	Precipitation Mixing (2)	Precipitation Temp, °C (3)	Final Conc of Free OH^-	Final Conc of $SrNO_3$	Final Conc of $NaMnO_4$
3C	NOC =	well	25	0.3 M	0.03 M	0.03 M
3B	BC =	well	50	1.0 M	0.075 M	0.050 M
3A	BC @ 25°C =	well	25	1.0 M	0.075 M	0.050 M
4A	BC w/PJM =	PJM	50 > 25	1.0 M	0.075 M	0.050 M

Notes
(1) - Condition nomenclature:
NOC = newly optimized conditions (*to minimize volume of precipitating reagents*)
BC = baseline condtions (*known to obtain good decontamination and filterability*)
BC @ 25°C = baseline conditions but precipitated at 25°C
BC w/PJM = baseline conditions but mixed with a pulse jet mixer
(2) - Precipitation mixing nomenclature:
well = the precipitation solution was considered well mixed with a Lightin A-310 style impeller in a 42-inch diameter baffled tank rotating at 508 rpm (an impeller tip speed of 26.6 ft/s) imparting 4.3 hp/1000 gallons
PJM = pulse jet mixer which agitated the solution with pulses of air. The level of mixing is not know, but was less well mixed than with the impeller.
(3) Precipitation Temperature - after the last precipitating reagent was added the mixture was maintained at the listed temperature for four hours before filtration began. Additionally, batch 4A was further mixed another 18 hours as its temperature dropped from 50°C to 25°C before filtration began.

Figure 17. Nomenclature for the four AN-102R2 simulant batches

[†] The dewatering target was to have an average filtrate flux of 0.02 gpm/ft^2 or higher, with a final concentration of better than 15 wt% insoluble solids. As will be seen, the first Batch 3 test resulted in an average flux of 0.011 gpm/ft^2 over 45 hours of dewatering and the slurry was only concentrated to 8.5 wt% insoluble solids.

[‡] The batch numbering nomenclature is arbitrary and the sequence shown above is the chronological order in which the batches were tested. Batch 4 is referred to 4A because a 4B was planned in the event Batch 4A indicated a larger quantity was needed to reach 15 wt% insoluble solids. Batch 4B was not required.

3.2.3 Test Procedure/Matrix

Details of the test matrix and procedure that were carried out can be found in the Test Procedure (Duignan, 2002e), but an illustrated matrix is shown as Fig. 18.

Test No.	Test Activity	Trans-membrane Pressure (psid)	Slurry Velocity (ft/s)	Slurry Temp (°C)	Run Time (min.)
1.00A	Water (1)	10	12	25	20
1.00B	Water	20	12	25	20
1.00C	Water	30	12	25	20
1.01A	5 wt% $SrCO_3$ + Water	10	12	25	20
1.01B	5 wt% $SrCO_3$ + Water	20	12	25	20
1.01C	5 wt% $SrCO_3$ + Water	30	12	25	20
1.02	Water Rinse	20	12	25	60
1.03-1.15	Low solids concentration tests are no longer required (2)				
1.16	Dewater to 20 wt% (3)	40	12	25	(4)
1.17	20 wt%	40	12	25	120
1.18	20 wt%	40	12	25	120
1.19	20 wt%	40	12	25	120
1.20	20 wt%	30	9	25	60
1.21	20 wt%	30	13	25	60
1.22	20 wt%	50	13	25	60
1.23	20 wt%	50	9	25	60
1.24	20 wt%	40	12	25	120
1.25	20 wt%	40	7	25	60
1.26	20 wt%	40	15	25	60
1.27	20 wt%	20	12	25	60
1.28	20 wt%	60	12	25	60
1.29	20 wt%	40	12	25	120
Wash	(5)	40	12	30	(6)
1.30	> 20 wt%	40	12	25	(7)
1.31A	Water Rinse	40	12	25	60
1.31B	Acid clean (8)	40	12	25	90
1.31C	Acid clean	40	12	25	90
1.32	Water Rinse	20	12	25	60
1.33A	5 wt% $SrCO_3$ + Water	10	12	25	20
1.33B	5 wt% $SrCO_3$ + Water	20	12	25	20
1.33C	5 wt% $SrCO_3$ + Water	30	12	25	20
1.34A	Water	10	12	25	20
1.34B	Water	20	12	25	20
1.34C	Water	30	12	25	20

Notes:
(1) - The water was deionized, filtered with a 0.1-micron absolute filter, then made caustic to 0.01 M NaOH.
(2) - Before testing began a test exception (Townson, 2002b) to the test specification was issued to eliminate all low solids concentration tests.
(3) - wt% = weight percent of insoluble solids
(4) - Run time is the time to dewater the simulant from the low wt% to the final concentration. The only test specification requirement was to run for no less than 12 hours.
(5) - The concentrated slurry used for test 1.29 was washed with a volume of water (see note 1) equal to 21/18 x simulant volume The water volume was broken down into 21 mini-washes.
(6) - The wash run time was the time necessary to introduce and remove all 21 subvolumes.
(7) - Test 1.30 run time was not fixed. Filtering was to continue until the simulant plugged the filter, or some test rig limit was reached.
(8) - 2 M nitric acid was used.

Figure 18. Test matrix used for AN-102R2 testing

Special attention should be given to test no. 1.16, dewatering. As will be seen in the results section and in the respective appendices, dewatering was the most important test. As previously mentioned, only 2 batches were originally planned, but as the number of batches grew to four, it was not necessary to carry out the entire test matrix listed in Fig. 18. The results section will discuss to what extent each batch was tested. Beside the test procedure, there were many Work Instructions issued to handle the daily changes that occurred. Those instructions can be found in the task notebook (Duignan, 2002b). To facilitate understanding the general operation of the test, a simplified version of the procedural steps is summarized below (see Figs. 1 and 2 for valve locations):

Daily pre-test activities –

1. Equipment is turned on to warm up if not already on.
2. The equipment was checked for functionality and after each of the four liquid-filled pressure sensing lines (see Fig. H2; Appendix H) were purged with 5 ml of distilled and filtered water, the transducers were checked at their zeroes for drift. The zeroes are recorded for 2 to 3 minutes by the DAS. Those data are included in each day's data sheets.

Daily testing activities for constant solids runs (high concentrations) –

3. Begin circulating the slurry in the recirculation loop until the temperature reached 25°C.
4. Turn on the reservoir cooling coil.
5. Allow the slurry to flow through the cross-flow filter.
6. Set the appropriate flow conditions as per the test procedure by iterating between the pumps' speeds and V11.
7. Set the DAS to read every minute.
8. Backpulse the filter. See the preceding backpulse section for its operation.
9. Allow the test rig to run for approximately 1 or 2 hours (as required).
10. Backpulse the filter once again.
11. Repeat from Step 6 for next set of flow conditions or shut down the test rig, if near the end of the work day.
12. End the test run.

Daily testing activities for wash test runs –

[Before beginning the test, prepare a volume of inhibited DIF water (i.e., deionized and filtered (0.1 micron filter) water to which caustic is added to obtain 0.01 M NaOH). The volume is to be 21/18 times the volume of slurry to be washed, which is broken down into 21 small volumes to be added to the slurry one at a time. With the wash water ready, do Steps 3 to 8 from above, then continue below.]

9. Add a small volume of wash water to the slurry in the test rig.
10. Switch valve V13 to the open-loop position so that the filtrate is not returned to the slurry loop, but is collected outside the test rig.
11. Allow the test rig to run until a volume of filtrate is removed that is equal to the volume of water that was put in. (Slightly more mass is taken out than was put in because of the filtrate's higher density.)
12. Maintain the axial filter velocity and the TMP constant.
13. Repeat Steps 9 through 12 for all 21 small volumes.

14. Switch valve V13 to the close-loop position.
15. Backpulse the filter once again.
16. End the test run.

Testing activities for pre-wash dewatering –
[Do Steps 3 to 8 from above.]

9. Switch valve V13 to the open-loop position so that the filtrate is not returned to the slurry loop, but is collected outside the test rig.
10. When the slurry level in the slurry reservoir drops to the 100-liter mark refill with more slurry from the precipitation test rig.
11. Repeat 10 until the entire contents of the prepared simulant is contained in the slurry reservoir of the filtration test rig.
12. If the filtrate flux drops below 0.015 gpm/ft^2 do a backpulse.
13. Continue concentrating the slurry until there is less than 75 liters or as otherwise indicated by the task lead.
14. Close V13 to stop slurry concentration and do a backpulse.
15. End the test run.

3.3 RESULTS

3.3.1 Insoluble Solids Separation

The majority of the Results discussion concerns filterability because of the difficulties encountered, however, one absolute success of all the tests was the filter's ability to separate insoluble solids from the slurry simulants. The simulants' turbidity was measured at the beginning and end of each batch test and the result is:

Turbidity (for batches 3 and 4) = 0.17 NTU ±0.06 NTU (one standard deviation)

One source (Martino, 2001) that deals with 5.8 M Na^+ simulated wastes, which was used in research connected to the SRS Defense Waste Processing Facility at DOE's Savannah River Site, states that 5 NTU represents less than 6 ppm of insoluble solids. If this measure is used, than the 0.17 NTU would indicate that the filtrates obtained during the Batch 3 and 4 tests had less than 0.2 ppm of insoluble solids.

3.3.2 Filterability

The actual events that took place to test all four simulated AN-102 batches did not follow the test matrix, Fig. 18[†]. The most important aspect was the dewatering test, i.e., 1.16; therefore,

[†] A slurry test not shown in Fig. 18 was one that was done with archived AN-107 simulated slurry. Before any testing was done the filter, which was new, was subjected to filter this old slurry to put the filter in a "used" condition. Prior to preconditioning the filter it was baselined with water and the standard slurry and then a steady state slurry run was done for several days. The test number terminology used for preconditioning was similar to that used in Fig. 18, except that each test number was preceded with the word "precond."

that is the only test which all four simulants have data. In general, the matrix can be broken down into the following categories:

1. Baseline with water
2. Baseline with a standard slurry
3. Test slurry at a low concentration of solids (eliminated just before testing began)
4. Dewater
5. Test slurry at a high concentration of solids
6. Wash slurry
7. Dewater until pluggage
8. Acid Clean
9. Repeat step 2
10. Repeat step 1

Due to filterability difficulties and the change in the number of batches to test, the following is what actually occurred:

Batch 3C (test period: 1 to 3 October 2002)
1. Baseline with water
2. Baseline with a standard slurry
3. Dewatering from 0.8 wt% to 8.4 wt% insoluble solids (test stopped – poor filterability)
4. Acid Clean
5. Repeated step 2
6. Repeated step 1

Batch 3B (test period: 22 October to 5 November 2002)

The entire matrix was completed

Batch 3A (test period: 6 to 26 November 2002)
1. Baseline with water
2. Dewatering from 1.6 wt% to 25 wt% insoluble solids
3. Limited number of high concentration tests to verify operation
4. Acid Clean
5. Baseline with a standard slurry
6. Repeated step 1

Batch 4A (test period: 18 February & 12 to 26 March 2003)
1. Baseline with water (18 February)
2. Dewatering from 1.5 wt% to 18 wt% insoluble solids
3. Limited number of high concentration tests to verify operation
4. Acid Clean
5. Baseline with a standard slurry
6. Repeated step 1

The results for each of categories are discussed below. The discussion will first deal with baselining and cleaning, which will be then followed by the test data for the simulated waste.

3.3.2.1 Baseline with Water

3.3.2.1.1 Water and Cross-flow Filtration

Normally a crossflow filter would not be used with just a liquid because there is nothing to filter. However, flowing water through a filter is useful in the sense of determining the cleanliness of the filter element. That is, to show if the same water filtrate flux is obtained before use and after use and after cleaning. Since there are no solids to deposit on the filter surface, and thus challenge the filter, water will produce results that seem counter-intuitive. This section will not discuss the nature of filtering without solids, since this has been dealt with in some depth elsewhere (Duignan, 2000a or b). Discussed here will be the data obtained with water throughout the tests with the AN-102R2 slurry simulant in the Pilot-scale Cross-flow Ultrafiltration (PXU) facility.

3.3.2.1.2 Overall Evaluation

At the start and end of each slurry test with the 0.1-micron Mott filter, it was required to test with water, as requested by the RPP-WTP customer (Townson, 2002a). Before use, the water was to be filtered with a 0.1-micron absolute filter and deionized. Further, the water was made mildly caustic to a concentration of 0.01 M NaOH (referred to as inhibited water). In most cases, the caustic addition was done, but there were some exceptions because the addition of even a small amount of caustic caused a significant reduction in filtrate flux when the inhibited water followed an acid cleaning. After using slurry, it was removed and then the slurry loop was cleaned with acid. The acid was followed with water rinses, however there could have been small pockets of slurry or acid solution left somewhere in the loop. The water with the mild caustic was thought to have caused some precipitation of solids that could not be totally removed from the slurry loop. Those solids would then affect the filtrate flux; confounding water-flux comparisons; therefore, some water runs did not include a caustic addition in order to see the effect.

To reiterate, the purpose of the water tests was to determine if the filter returned to the same level of cleanliness after being used with slurry. However, since water generally does not contain significant insoluble solids it does not act like a slurry; therefore it was followed by a standard slurry, 5 wt% $SrCO_3$, to better determine the level of filter cleanliness. The standard slurry tests had their own problems and they will be discussed in the next section.

Water tests were actually done at several places in the test matrix, as already mentioned, see Fig. 18: at the very beginning (test 1.00), a rinse after the initial standard slurry tests (test 1.02), a rinse immediately after doing an entire slurry matrix (test 1.31A), another rinse after the acid cleaning (test 1.32), and the final test that comes immediately after the final standard slurry tests (test 1.34). The purpose of this section is to describe the before and after water tests, i.e., 1.00 and 1.34, but some of the rinses are included to better explain the,

sometimes conflicting, results as the filter went from a new state to some other level of cleanliness after its use.

For the testing of slurry simulant AN-102R2, there were a total of five batches of slurry runs: Preconditioning (with archived AN-107), AN-102R2 Batch 3C, AN-102R2 Batch 3B, AN-102R2 Batch 3A, AN-102R2 Batch 4A. [Note: For the preconditioning test, the test nomenclature is different. For example, while the initial water test number is 1.00, the initial preconditioning water test was called PreCond 1.] As mentioned, originally, there were only two tests planned and with preconditioning it would have been three: Preconditioning, AN-102R2 Batch 3, and AN-102R2 Batch 4. However, due to problems with filtering Batch 3 it was done three different ways, which wound up being three completely different batches. With so many tests run close together, there was no point doing water runs before and after each slurry test. Between any two tests, the final water test (1.34) of one slurry test would be used for the initial water test (1.00) for the next slurry test. There were some exceptions, which will be seen throughout the following presentation.

Figure 19[†] illustrates some of the data sets taken before and after each slurry test. (Note, each datum point in the figure is the time average filtrate flux over the period of each test, which lasted approximately 20 minutes each.) Ideally, a clear indication was expected on how effective the filter cleaning was, or if depth fouling progressed with time. While there is a tendency which indicates a return to the same clean level, the data do not elicit straight forward information. The separation among the two data sets before-Batch-3C (open and closed circles) and after-Batch-3C data (triangles) is significant. The main reason was that the slurry loop was very well cleaned after the end of the filter preconditioning, before starting with Batch 3C. This cleaning was not planned but there was a pump-liner failure, which forced the more thorough cleaning. After preconditioning the filter with the AN-107 slurry simulant, the filter was cleaned with 2 M nitric acid for 3 hours and then tested with the standard slurry, which was then followed by a water rinsing and the inhibited water test runs (open circles). The low filtrate flux was unexpected and was thought to be the result of chemicals that were left over from the cleaning that precipitated due to the caustic (0.01 M NaOH) added to the water. However, the acid cleaning caused the pump liners to fail during the water runs and needed replacing. Because pieces of the pump liner had to be removed from the entire filtration test rig, a very thorough cleaning was done. After the cleaning, the inhibited water runs were repeated before starting the slurry test with AN-102R2, Batch 3C. Those results show significantly higher filtrate fluxes (the closed circles). After filtering with Batch 3C slurry, the filter was cleaned once again with the standard method of 3 hours with 2 M nitric acid, followed by the standard slurry test, and then by a water rinsing and the inhibited water tests (triangles). Those subsequent water tests showed, once again, a low water flux. This low flux seemed to confirm the assumption of the presence of precipitated solids (e.g. aluminum). One option to return to the higher water flux was to ultraclean the slurry loop each time a slurry run is done, but that would have been very time consuming and the actual plant will not do such extensive measures unless it is absolutely necessary.

[†] The data for all the figures in this section can be found in Appendix A.

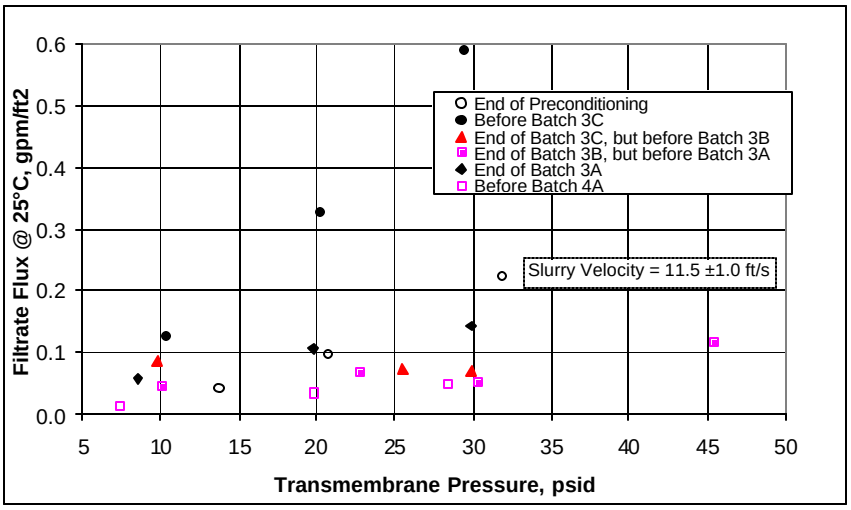


Figure 19. Water tests made before and after filtering several slurries. The filtered and deionized water was made mildly caustic (0.01 M NaOH).
The related data files are:
Open Circles=tests after Preconditioning with AN-107 and before Batch 3C, tests: 8a, 8b, 8c
Closed Circles=tests before slurry Batch 3C, tests: 1.00a-3C, 1.00b-3C, 1.00c-3C
Triangles=tests before slurry Batch 3B, tests: 1.00a-3B, 1.00b-3B, 1.00c-3B
Square=tests before slurry Batch 3A, test: 1.34a-3B, 1.34b-3B, 1.34c-3B
Triangles=tests before slurry Batch 3B, tests: 1.00a-3C, 1.00b-3C, 1.00c-3C
Open Squares=tests before slurry Batch 4A, tests: 1.00a-4A, 1.00b-4A, 1.00c-4A

The bottom five sets of data (open circles, diamonds, triangles, open squares, and closed squares) are much closer to each other than to the initial data set (closed circles). Considering that the level of filter cleanliness can change from one cleaning to the next, and that the filtrate flux is very sensitive to any debris in the filter, then the scatter seems understandable. Unfortunately, it is not possible to determine if depth fouling was increasing with time because the data sets do not chronologically become lower and lower. For instance, the set indicated by diamonds (after Batch 3A) is higher than the triangles and squares even though it was obtained after the sequence of Batch 3C, 3B, and 3A was complete. If depth fouling was increasing with time, its effect was confounded by other complications and not clearly observed.

3.3.2.1.3 Individual Evaluations

The different phases of testing where water runs were made are the following:

1. New Filter and the Effect of Inhibited Water after Nitric Acid Cleaning
2. Water Runs before and after Preconditioning with AN-107 slurry simulant
3. Water Runs before and after AN-102R2, Batch 3C slurry simulant
4. Water Runs before and after AN-102R2, Batch 3B slurry simulant
5. Water Runs before and after AN-102R2, Batch 3A slurry simulant
6. Water Runs before and after AN-102R2, Batch 4A slurry simulant

3.3.2.1.3.1 New Filter and the Effect of Inhibited Water after Nitric Acid Cleaning

Figure 20 shows data (diamonds) taken with inhibited water (IW = 0.01 M NaOH) just before testing it with the standard slurry of 5 wt% $SrCO_3$ and then data (squares) just after. However, the water after the standard slurry test did not have caustic and, in fact, was left mildly acidic (0.03 HNO_3) because the addition of caustic caused the filtrate flux to drop significantly. The TMP was very low (4.9 psid) because the filtrate loop had a significant pressure drop. After the initial test the loop was modified to reduce the pressure drop. However, by that time the filter already experienced flow with the standard slurry of 5 wt% $SrCO_3$. After the $SrCO_3$ tests were complete, and the slurry loop was flushed with water several times, the filtrate flux would not return to the higher values when using the IW; therefore a weak acid was used to prevent precipitation of solids to see if the filtrate flux could return to new-filter fluxes. Several water runs were done after adding the mild acid, as well as at the lower TMP to make a comparison to the new filter data. The two curves in Fig. 20 are significantly different but much closer to the each other than when the water was made caustic.

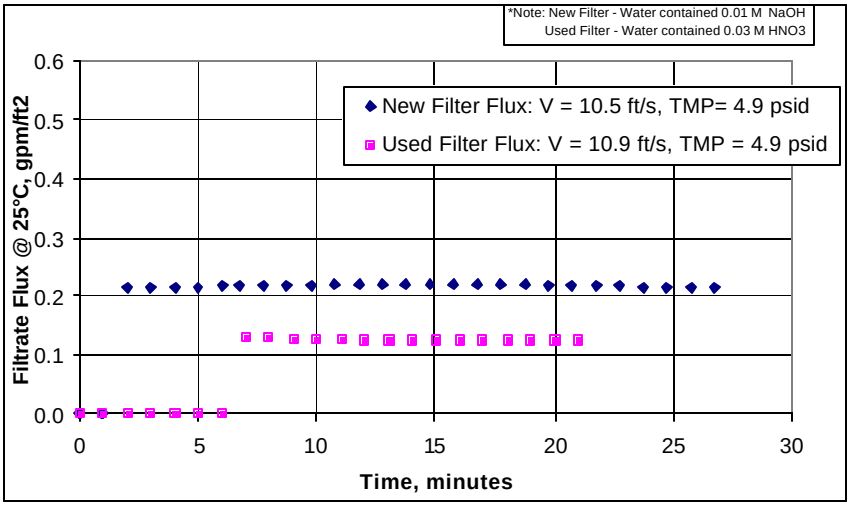


Figure 20. Water tests made on the new filter and after filtering with the standard slurry. The water was filtered and deionized. The related data files are:
Diamonds=test on the new filter, and water had 0.01 M NaOH: PreCond 1a
Squares=test after standard slurry, and water had 0.03 M HNO_3: PreCond 3

For example, see Fig. 21. After the standard slurry test and after rinsing the slurry with water, a fresh charge of IW was put into the test rig to do the water tests (PreCond 3a, 3b: squares in Fig 21, and 3c). Since the flux was very low, the test rig was cleaned with more acid and the runs were repeated (PreCond 3a;Rev.1, 3b;Rev1:diamonds in Fig. 21, and 3c) but the water was left slightly acidic (0.03 N HNO_3). Both test runs in Fig. 21 were done at approximately the same flow conditions, therefore it was only the addition of caustic that made the difference. The presence of solids is evident from the lower data set in Fig. 21 by the drop in filtrate flux with time. As time goes by, the solids in the water are slowly accumulating on the surface of the filter.

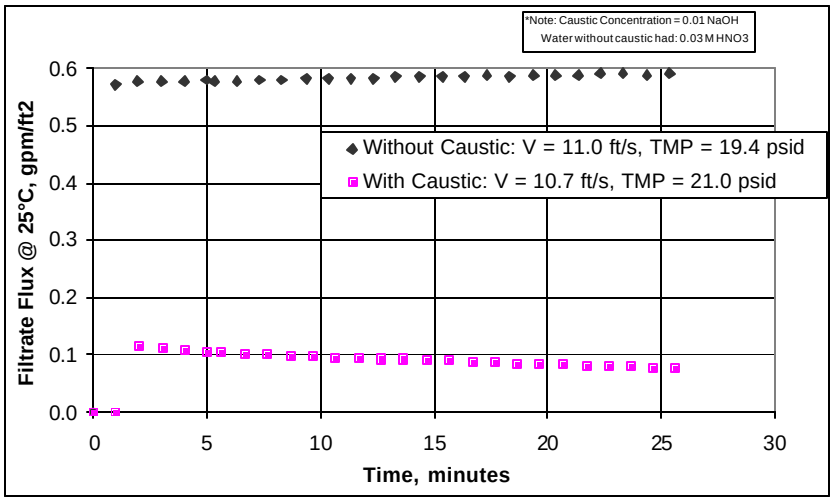


Figure 21. Water tests with and without caustic.
The water was filtered and deionized. The related data files are:
Diamonds=water had 0.03 M HNO_3: PreCond 3b, Rev1
Squares=water had 0.01 M NaOH: PreCond 3b

The effect of adding caustic to a freshly cleaned and rinsed filter is further illustrated by Fig. 22. After Batch 3 testing was complete in November 2002, the test rig sat idle for about 3 months, until February of 2003, while waiting for Batch 4 simulant and the new precipitation mixing equipment to be ready. Just before Batch 4 testing began, the test rig was once again "baselined" with inhibited water. Those data are shown by the open squares in Fig. 22. Not only was the flux low for water, it was lower than any of the previously inhibited water test runs, see Fig. 19.

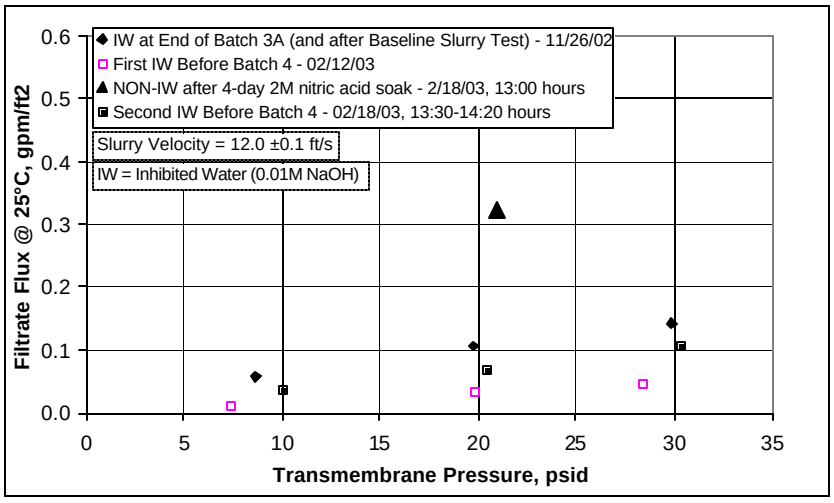


Figure 22. Water tests with and without caustic. Tests done between Batches 3 and 4.
Large triangle was obtained with filtered (0.1 micron) and demineralized water only.
For all other data the water had 0.01 M NaOH

The filled diamonds in Fig. 22 are the water data at the end of Batch 3A testing done on 11/26/2002. During time between the end of Batch 3A testing until next water data were

taken on 2/12/2003, the filter was submerged in inhibited water. It is not known why the data were lower. In an attempt to bring the flux up, the filter was soaked in 2 M nitric over a 4-day period[†] (2/14/03 to 2/17/03). Immediately before doing a new set of inhibited water runs an extra water test was done before adding the caustic. The single filled triangle at a TMP=20 psid shows the flux increased from about 0.05 gpm/ft^2 to just above 0.3 gpm/ft^2! Caustic was subsequently added to have a concentration of 0.01 M NaOH and the full set of water runs was done. The flux immediately dropped and at TMP=20 psid the flux was approximately 0.075 gpm/ft^2, which fell between the post Batch 3A water results and the water results of 2/12/02. The 4-day cleaning improved the flux slightly, but it still did not return to the November 2002 flux of just above 0.1 gpm/ft^2. It seems that unless every single surface is cleaned in this type of filtration system, the addition of caustic will always reduce the filtrate flux.

3.3.2.1.3.2 Water Runs before and after Preconditioning with AN-107 Slurry Simulant

To put the filter in a "steady state" condition, it was preconditioned with a used slurry simulant (AN-107) so that its performance would be closer to a "used" filter. As for all other slurry tests the filter was checked before and after the slurry run for its water flux. Figure 23 depicts the data. Like the data of top curve in Figure 21, no caustic was added to the water to prevent solids from precipitating out of solution. The top curve of Fig. 23, (diamonds) was obtained just before running slurry through the filter. The bottom curve (circles) represent the filtrate flux after the filter experienced the slurry for many hours and underwent acid cleaning. The lower post-slurry curve must be attributed to some of the slurry not being removed with the acid.

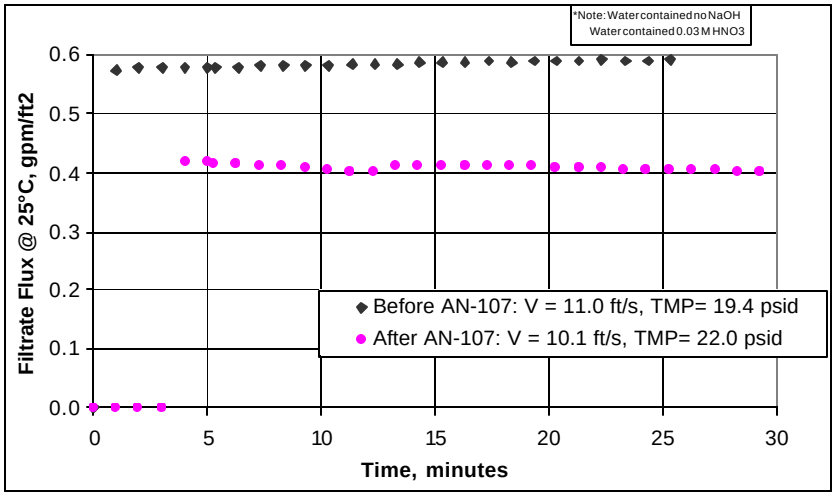


Figure 23. Water tests after cleaning the filter.
The water was filtered and deionized. The related data files are:Diamonds=water had 0.03 M HNO_3: PreCond 3b, Rev1 Circles=water had 0.03 M HNO_3: PreCond 6

[†] This cleaning was atypical. Generally, the filter would be subjected to two 90-minute cleanings with 2 M nitric flowing at 12 ft/s and a TMP = 20 psid. However, the upcoming Batch 4 slurry was expected to have poor filterability because of its preparation with poor mixing during the precipitation phase simulant using a Pulse Jet Mixer. SRTC and the RPP customer decided to clean the filter more thoroughly.

3.3.2.1.3.3 Water Runs before and after AN-102R2, Batch 3C Surry Simulant

Just after the preconditioning slurry test and before the first Batch 3 test (3C) the filter was tested with water again. Figure 24 shows the data. These data sets are unique in that the test rig had a very thorough cleaning before the water test. During the first acid cleaning, after the preconditioning test, the coating on the impellers of the two slurry pumps began to break apart. It turned out that the 3-hour acid cleaning fatally degraded the pump liners, requiring replacement and upgrading of the liners.

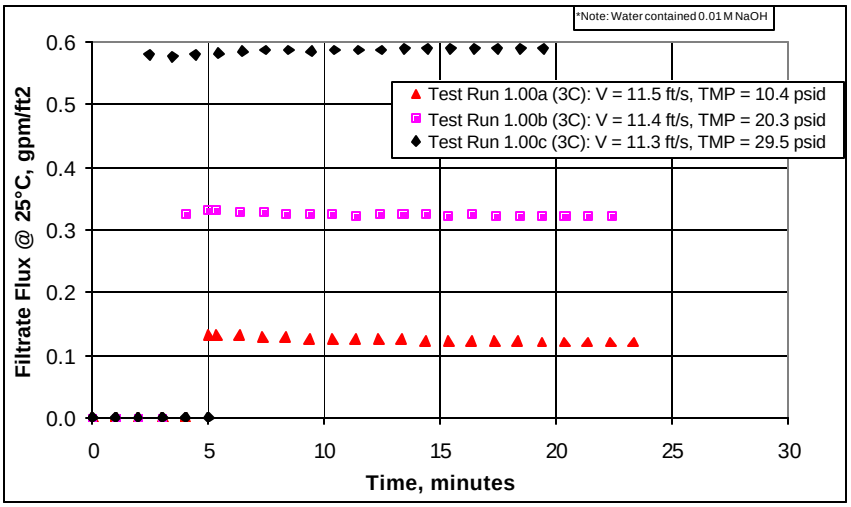


Figure 24. Water tests before test slurry AN-102R2, Batch 3C.
The water was filtered and deionized.
The related data files are:
Triangles=water had 0.01 M NaOH: Run 1a – 3C
Squares=water had 0.01 M NaOH: Run 1b – 3C
Diamonds=water had 0.01 M NaOH: Run 1c – 3C

During the replacement, the entire test rig underwent a thorough cleaning to remove all vestiges of the old pump liner. When it came time to test the filter with water again, IW water was used because it was thought that there would not be any solids in the slurry loop to precipitate when caustic was added. Indeed, this seems to be the case because the filtrate fluxes were relatively high, e.g., compare the middle data set of Fig. 24 (squares) to the data set with squares in Fig. 21, which had the same flow conditions, and had the same amount of caustic addition, i.e., 0.01 M NaOH. Also, evident in Fig. 24 is that the filtrate flux remained constant during the 20+ minutes of the tests, indicating the lack of insoluble solids.

3.3.2.1.3.4 Water Runs before and after AN102, Batch 3B Slurry Simulant

In contrast to the data in Fig. 24, Fig. 25 indicates a significant reduction in filtrate flux. There are three significant features to note: 1. The lower filtrate flux as compared to Fig. 23, 2. the almost independence on TMP, and 3. that the flux decreases with time.

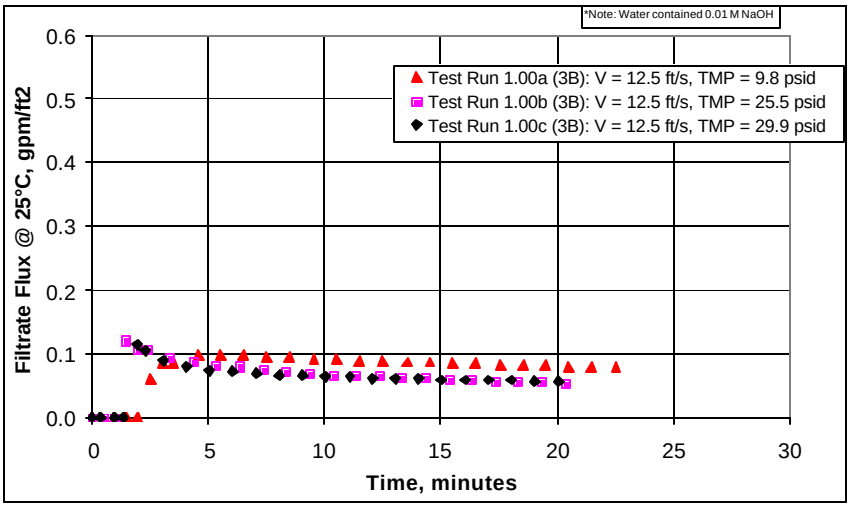


Figure 25. Water tests before test slurry AN-102R2, Batch 3B or after Batch 3C.
The water was filtered and deionized.
The related data files are:
Triangles=water had 0.01 M NaOH: Run 1a – 3B
Squares=water had 0.01 M NaOH: Run 1b – 3B
Diamonds=water had 0.01 M NaOH: Run 1c – 3B

The inhibited water data in Fig. 25 were obtained between two AN-102R2 Batches, i.e., 3C and 3B. As per the test specification (Townson, 2002a) requirements, the water was inhibited with 0.01 M NaOH, but as shown above, the caustic may have caused precipitation of solids that were left over from the 3 hours of nitric acid cleaning or the standard slurry test runs. Whether from precipitation or another cause, the filtrate flux was significantly reduced from clean test rig conditions (Fig. 24).

3.3.2.1.3.5 Water Runs before and after AN-102R2, Batch 3A and 4A Slurry Simulant

The water results after other slurry tests, e.g. Batches 3A and 4A, were similar to those shown in Fig. 25, as can been seen from average data shown in Fig. 19. Those data are not shown here but the entire set of data can be found in Appendix A.

3.3.2.1.4 Relationship between Water and Slurry Filtrate Fluxes

One other important thing to note on the relationship of filtrate flux between water and slurries is that there appears to be none. This is described in the following two bullets:

- For the water test just before the testing of AN-102R2, Batch 3C, Fig. 19 and Fig. 24 show the highest filtrate flux was approximately 0.6 gpm/ft^2 at an average slurry velocity of 11.3 ft/s and a TMP of 29.5 psid. Batch 3C slurry dewatering (Test 1.16 done on 1-3 Oct. 2002) with a velocity of 11.5 ft/s and a TMP of 41.8 psid, the filtrate flux started at 0.055 gpm/ft^2. That is, the slurry filtrate flux started at an order of magnitude LESS than the water flux.

- For the water test just before the testing of AN-102R2, Batch 3B, Fig. 19 and Fig. 25 show the highest filtrate flux for all three tests was under 0.1 gpm/ft^2 at an average slurry velocity of 12.5 ft/s and a TMP from 9.8 to 29.9 psid. Batch 3B slurry dewatering (Test 1.16 done on 22-23 Oct. 2002) with a velocity of 12.1ft/s and a TMP of 40.5 psid, the filtrate flux started at 0.110 gpm/ft^2. That is, the slurry filtrate flux started ABOVE the water flux, which further supports the theory that solids can stay in the test rig.

3.3.2.2 Baseline with Standard Slurry (5 wt% $SrCO_3$)

Using a standard slurry to determine the level of cleanliness of the cross-flow filter was requested by the RPP-WTP customer. This standard slurry was a 5 wt% solution of Strontium Carbonate in water. Before making the slurry the water was to be deionized, filtered with a 0.1-micron absolute filter, then made caustic to 0.01 M NaOH.

The purpose of using a standard slurry was to determine if the filter, after being used and after it was cleaned with acid, would return to the same level of cleanliness. Using a standard slurry, instead of just water, was preferred because water generally does not contain any significant insoluble solids that will challenge the filter; therefore, it is not a true measure of filter performance. In concept, using a standard slurry is a good idea, however, in reality the filtrate flux obtained with any slurry is highly dependent not only on the level of filter cleanliness, but also on the slurry itself. The particles in the slurry are very important as to their size, shape, ability to deform, time stability, stickiness, etc.

The objective in conducting a standard slurry test before and after each test was to show that the filter returned to its original conditions before filtering. In this way permanent depth fouling could be measured. However, the variation from run to run was too large to make such a determination, except when the filter was new and after its first use. Figure 26[†] shows those data.

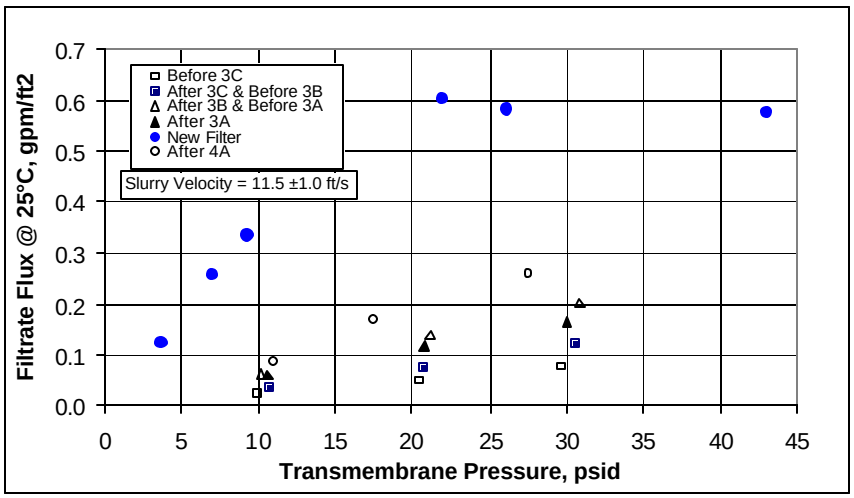


Figure 26. New and Used Filter Standard Slurry Filter Tests

[†] The data for all the figures in this section can be found in Appendix B.

A distinct feature in Fig. 26 is the large difference between the new-filter data and all the rest. With respect to the new-filter data, all used-filter data can be judged as the same. That is, the variation in the four sets of data is small compared to their filtrate flux magnitude, as compared to the new filter. This argument is made stronger by realizing that with a flux measurement uncertainty of approximately 5.4 %, the variation among the non-new filter data is still significant, but the significance is not large.

An interesting aspect of the new-filter data is the almost linear increase in flux with TMP up to 20 psid, at a constant slurry velocity of approximately 11 ft/s. To understand this effect, see Fig. 27, which is the time data for new-filter data in Fig. 26. For the three test runs with the lowest TMP, below 10 psid, it appears as if there is no slurry at all. It is as if just a liquid is flowing because the filter is not challenged at all. As the TMP increases to above 20 psid the typical crossflow Filtrate Flux vs. Time decay appears. This indicates that the first three points for the new-filter data in Fig. 26 represent the constant filtrate flux value, while the last three points represent an average of the decaying filtrate flux. It is possible the TMP=20 psid cut-off point indicates that fast settling $SrCO_3$ particles will not accumulate on the vertical filter surface until the TMP > 20 psid. (Note, from a well mixed condition the standard slurry solids settle out by gravity in only 1 minute and the particle density is 3.7 g/ml.). Another point of interest is for TMP>20 psid, where it appears that the filtrate flux is independent of TMP. The last three data points for the new filter in Fig. 26 are statistically the same. This similarity tends to imply that at 11 to 12 ft/s of slurry velocity the slurry cake cannot build up further (or is compressed) with increasing pressure, only with increasing time. As time increases, the filter cake becomes thicker, but for different TMP, above 20 psid, the thickness is the same for a given time period.

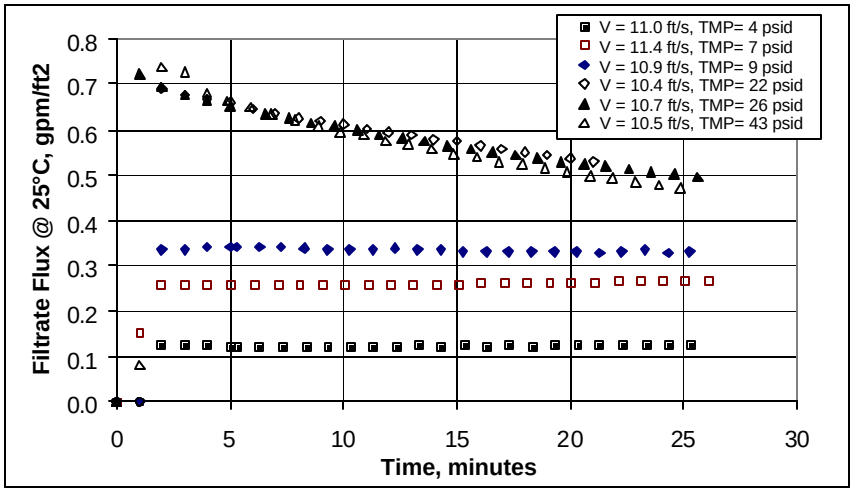


Figure 27. Filtering with Time After a Backpulse for the New Mott Filter

Because of the fast settling $SrCO_3$ particles, and their difficulty in forming a filter cake (or ease in being compressed), this material may not be the best candidate for a standard. For the used filter, after it had experience several different slurries, and was cleaned, the temporal

data are similar to the new filter, see Fig.28. The average values for these data are the black triangles in Fig. 26.

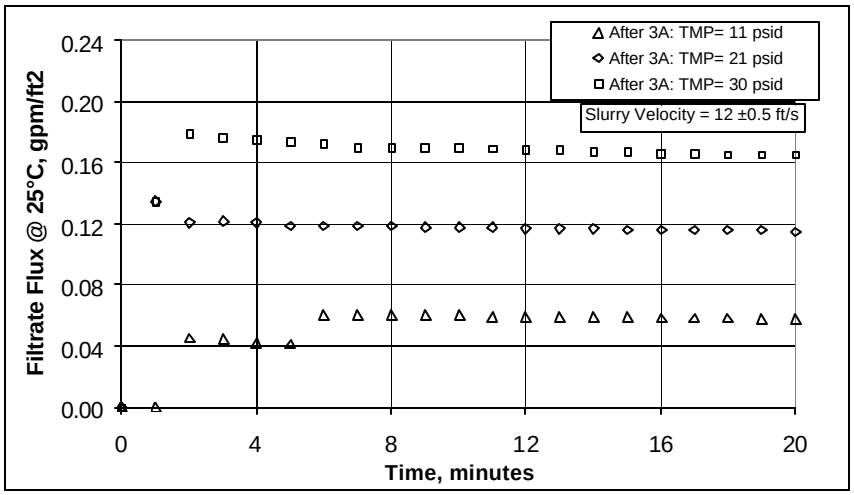


Figure 28. Filtering with Time After a Backpulse for the Used Mott Filter

The lowest data set shows that the filter is not being challenged, as well as the mid data set. However, the highest does show some reduction in flux with time. All other data sets for the used filter are similar, but the overall filtrate flux magnitude changes with the level of filter cleanliness.

A closer look at the used filter data is shown in Figure 29. Before and after each test with Batches 3 and 4 slurries, the standard slurry tests were done. To better understand the series of events, note the chronological order of the tests, i.e., 3C, 3B, 3A, and 4A. There were a total of 5 standard slurry tests.

As stated before, there is some significant difference among the five sets of data, but not by much, when compared to the new filter results shown in Fig. 26. In chronological order the earliest is the lowest set of data, before testing any of the slurry batches (i.e., before Batch 3C). The next lowest set was after completing sub-Batch 3C, but just before doing the second sub-Batch, 3B. The second highest set was obtained just before doing the last sub-Batch, i.e., 3A. Then the next set, which was just after 3A, was lower than the pre-3A test. This implies that time is not an issue, but that it is the level of cleanliness of the filter, which is important. That is, just before each standard slurry, the filter was cleaned with 2 M nitric acid for 3 hours. The acid does clean the filter but the filter does not return to its "new" state, as is evident in Fig. 26. How well the filter is cleaned is a function of several factors, like the level of fouling, and the type of material that is fouling the filter. The filter flux is very sensitive to any residual fouling or solids still in the slurry flow loop, therefore varying results of standard slurry testing are not surprising. The variation seen in the five data sets shown in Fig. 29 attest to the different level of filter cleanliness. This idea is further reinforced with the data obtained after the Batch 4A test. Just before the 4A test, the filter was soaked in 2 M nitric acid for 4 days, which may have left it slightly cleaner and therefore the baseline data were

slightly higher. With the limited cleaning protocol currently in practice, a standard slurry set of data cannot be expected to be more reproducible than that shown in Fig. 29.

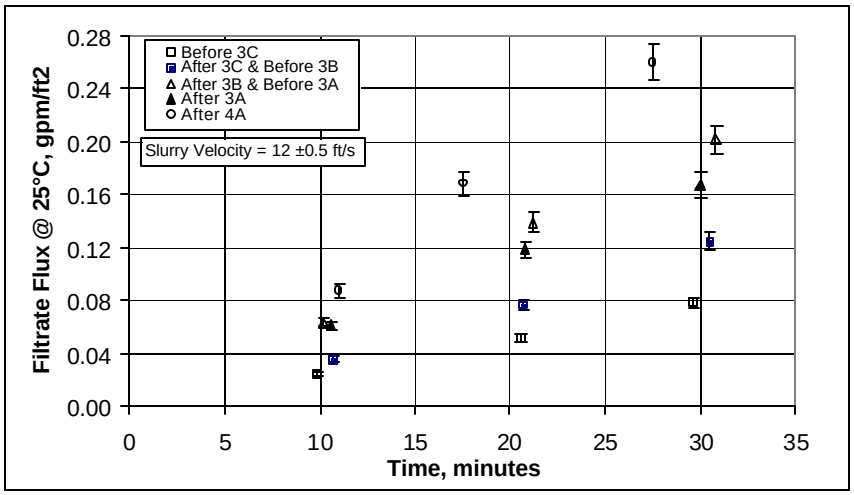


Figure 29. Used-Filter Standard Slurry Filter Tests

3.3.2.3 Cleaning the 0.01-micron Mott Filter with 2 M Nitric Acid

To clean the cross-flow filter a concentration of 2M nitric acid was requested by the RPP-WTP customer; no other requirements were made except to document the results, which are herein recorded. No method to clean the filter was specified, so the one used was based on early bench-top filter testing by using two batches, each circulating for 90 minutes. Other researchers (i.e., Zamecnik, 2003) have used longer cleaning intervals, like soaking for 24 to 48 hours, using different chemicals, or different nitric acid concentrations, but other methods are beyond the scope of this task. Being limited to 2 M nitric acid, then the 3-hour cleaning cycle was used because it was thought that the actual plant would not want to use longer cleaning periods due to expensive down time.

The purpose of cleaning the filter is to remove material, e.g., sludge, slurry, solids, etc., which would cause unacceptable filter fluxes, or operating pressures, that cannot be improved by either simply flushing with water or backpulsing. Backpulsing is the process of temporarily reversing the direction of filtrate flow by pulsing a fixed quantity through the filter wall to knock off built up filter cake from the inside surface of the filter tube. This material build-up occurs when fine slurry material is lodged in the filter wall, which is usually referred to as depth fouling. The wall thickness of the porous tubes used is 0.0625 inch or 1.5875 mm, which is 15,875 times larger than the nominal pore size of 0.1 micron; that is, there is considerable space in which to deposit solids.

To prepare the filter for use with the test slurry (AN-102R2), it was preconditioned with a similar slurry, AN-107, in order to start with a “used” filter, which would be more typical of daily plant operation. That is, a new filter was first subjected to AN-107 for a predetermined time interval (several days), then the filter was cleaned with 2 M nitric acid. For that first cleaning, the target acid flow parameters were an axial filter velocity (V) of 11 ft/s and a

transmembrane pressure (TMP) of 20 psid. Figure 30[†] shows the actual parameters used (filled and open diamonds). During the first period (filled diamonds), the filter was challenged during the first 10 minutes with undissolved solids and then the filtrate flux improved from about 0.42 gpm/ft^2 to above 0.45 gpm/ft^2. After changing the nitric acid solution, the second period (open diamonds), there appears to be a reduced presents of solids, since the filter was not challenged as much. While there seemed to be a slight improvement in the filter cleanliness during the second period it appears that most of the cleaning occurred during the first period.

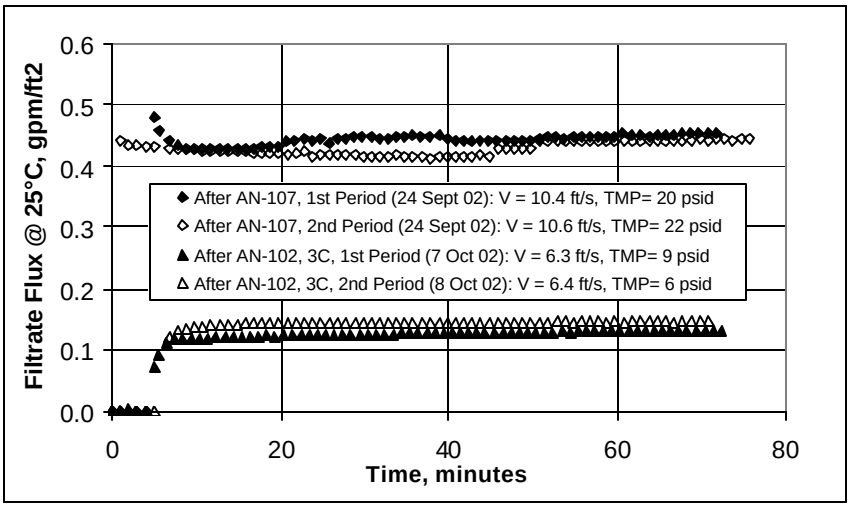


Figure 30. 2 M nitric acid cleaning after AN-107 & AN-102R2, Batch 3C

Unfortunately, the nitric acid cleaning after the preconditioning test damaged the pumps liners of the experimental test rig. While waiting for replacement liners that were of a material more impervious to nitric acid the filter had to be cleaned using a separate cleaning loop, which prevented acid from entering the pumps. That cleaning loop only had a small motor, which could not supply the energy necessary to attain the original flow parameters. Figure 30 shows that both V and TMP used for the Batch 3C acid cleaning were considerably less than those used for the preconditioning run. The post Batch 3C cleaning data are slowly increasing with time, but a plateau is not reached indicating that the filter may not have been brought to the same level of cleanliness as seen for the AN-107 cleaning.

Figure 31 shows a more dramatic effect from cleaning. After the second Batch 3 slurry test (3B), the first-period nitric acid cleaning shows how the filter was challenged during the first 60 minutes, after which the filtrate flux increased from 0.26 to 0.37 gpm/ft^2. After replacing the nitric acid solution with a new charge, the second-period cleaning showed an improved filtrate flux and the filter was only mildly challenged for the first 15 minutes, then the flux increased to a steady value of approximately 0.56 gpm/ft^2. This cleaning cycle implies that the two ninety-minute periods were necessary to clean the filter, but that further cleaning may not result in any significant filter performance. Note, the specified axial velocity was

[†] The data for all the figures in this section can be found in Appendix C.

increased by the customer from V = 11 to V = 12 ft/s and the high TMP for the first period, Batch 3B, cleaning, i.e., 43 psid, was done in error.

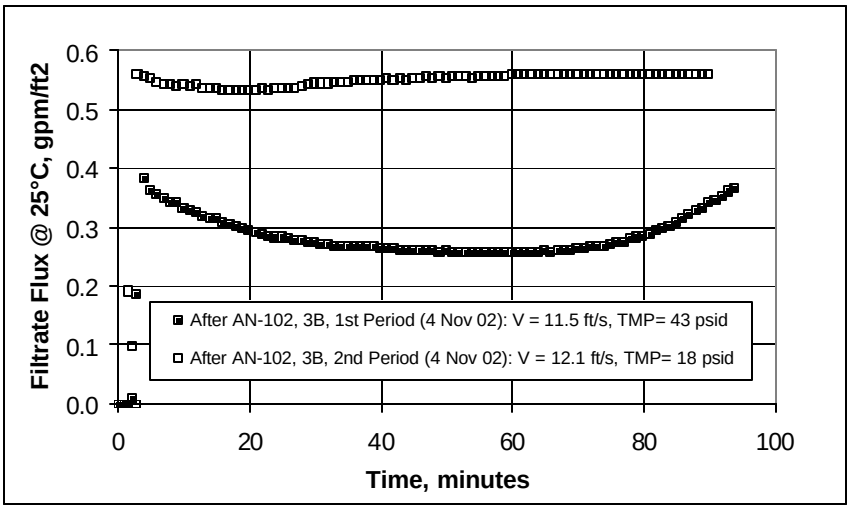


Figure 31. 2 M nitric acid cleaning after AN-102R2, Batch 3B

Figure 32 depicts another set of cleaning data, with the first period having the largest filtrate flux fluctuations and the second period indicating a basically clean filter. During the first cleaning period after Batch 3A the flux appears rather steady for about 35 minutes, but then it dropped for about 15 minutes before increasing.

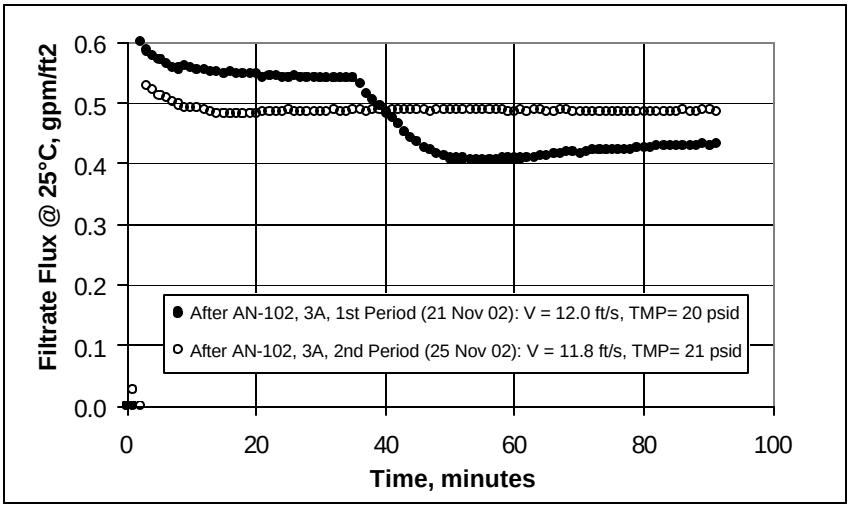


Figure 32. 2 M nitric acid cleaning after AN-102R2, Batches 3A

The reason for the sudden drop is not known, however, the test rig had a lot of small locations where slurry could have been lodged. It is possible that some slurry broke loose within the test loop and began challenging the filter. Once the slurry was circulating the solids would be dissolving in the nitric acid causing the filtrate flux to rise. During the

second cleaning period the slurry stops challenging the filter after 10 minutes and comes to steady state. This implies that there must have been some small amount of solids that were not dissolved by the nitric acid, but there was not enough to continue challenging the filter.

Just before doing the last AN-102R2 slurry test, Batch 4A, the filter was soaked for four days in 2 M nitric acid in an attempt to obtain better water fluxes. The water runs displayed the lowest filtrate fluxes since the 0.1 micron filters were first used in September 2002 (see the section on water runs). Figure 33 shows the results.

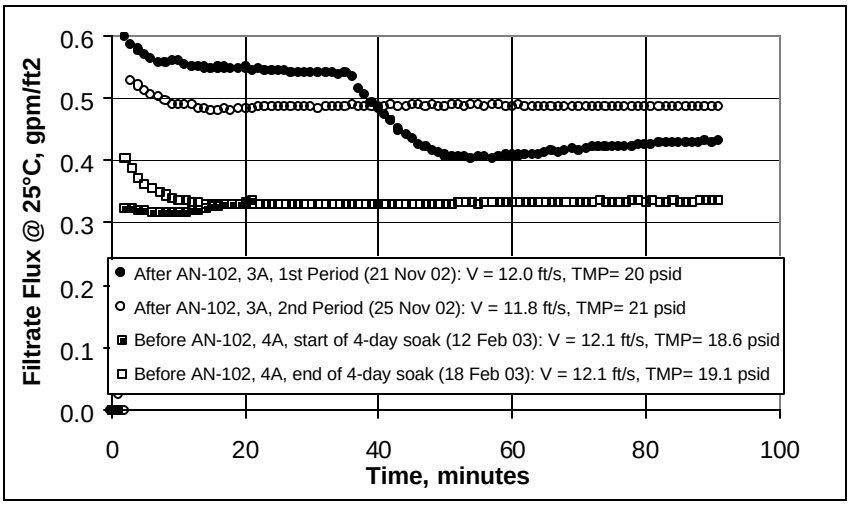


Figure 33. 2 M nitric acid cleaning after AN-102R2, Batches 3A & 4

Some interesting features of these pre-Batch 4A cleaning data are the lack of significant effects of the 4-day soaking and the lower filtrate flux values compared to the cleaning values done in November 2002. The test rig sat idle for approximately 3 months between the last Batch 3 slurry test (3A) and the acid cleaning done before the pre-Batch 4A test. During that time period, the filter was submerged in inhibited water. However, after the acid cleaning on 25 Nov 02 a standard slurry test (5 wt% $SrCO_3$) was performed, also on 25 of November. While the test rig was rinsed out several times and had final inhibited water test runs, it is possible that pockets of slurry remained in the test rig. This could have contributed to the lower filtrate flux obtained on 18 Feb.03, as shown in Fig. 33. The fact that the post-soak (18 Feb.) results show the filter was challenged during the first 15 minutes indicate that there were still some insoluble solids in the acid which coated the filter. Furthermore, since the pre-soak (12 Feb.) and post-soak (18 Feb.) results indicate approximately the same steady state flux value, then the soak itself did very little to dissolve the solids remaining in the acid or lodged in the filter wall.

Figure 34 shows some confusing results. After the last batch of AN-102R2, i.e., 4A, was complete the filter was cleaned again. The initial 90-minute cleaning gave similar flux results as the cleaning flux just before Batch 4A was tested. The filled circles show how the filter was initially challenged and as the solids dissolved the filtrate flux first leveled out, which then increased to asymptotically approach the before-Batch 4A cleaning flux. Since this first period

of final cleaning was at the end of a workweek the test rig was emptied of acid and filled with deionized and filtered water. On the following Monday nitric acid was added to the water to bring the concentration to 2 M in order to begin the second 90-minute period of cleaning. Surprisingly, the filtrate flux was about double that from the previous period. Moreover, the very small flux drop during the first 30 minutes indicated the system had very little solids, after which the flux became stable. Somehow, the water soaking, over the weekend, and the second acid cleaning removed some material which caused to lower filtrate flux.

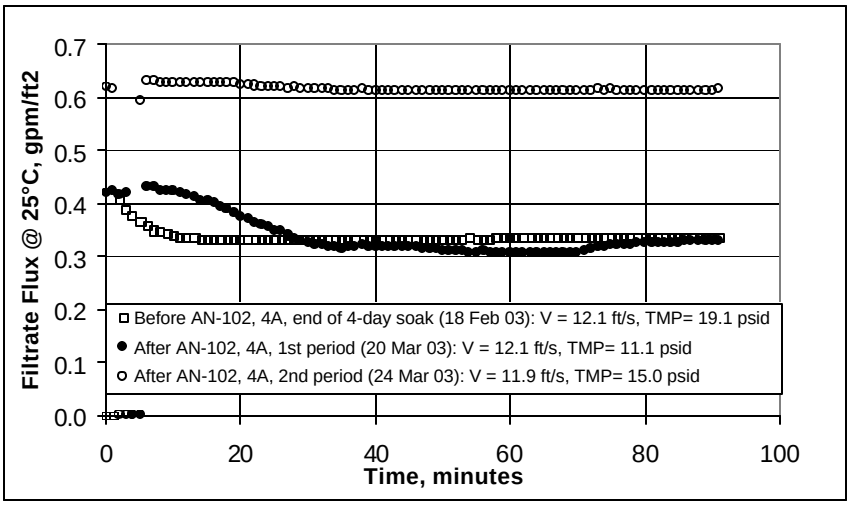


Figure 34. 2 M nitric acid cleaning after AN-102R2, before & after 4A

To conclude, Fig. 35 shows all the final period nitric acid cleanings that were done for the AN-102R2 simulant slurry tests, including the AN-107 filter preconditioning test.

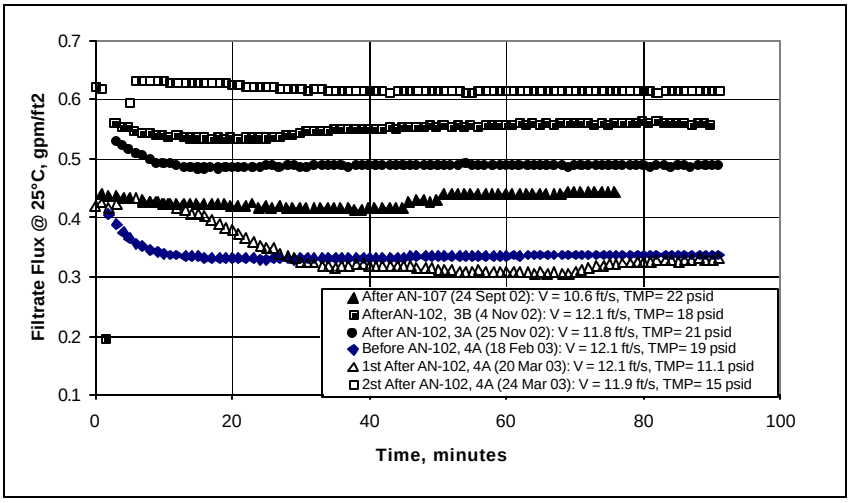


Figure 35. 2 M nitric acid cleaning of the AN-107 and AN-102R2 slurry tests

Neglecting the cleaning done on the filter after the preconditioning test the filtrate flux of acid chronologically becomes lower. The cleaning flux after the Batch 3B test is about 0.56 gpm/ft^2, then after the Batch 3A test it goes to 0.49 gpm/ft^2. Now from Batch 3A to Batch 4A the test rig sat idle so it was cleaned before 4A. The flux continued its downward trend to 0.33 gpm/ft^2. Just after Batch 4A, the cleaning flux during the first cleaning period was slightly lower at about 0.32 gpm/ft^2. This steady flux reduction with time may indicate that some of the solids are not soluble in 2 M nitric acid and are building up in the porous wall of the filter tubes. However, when the second cleaning was done after Batch 4A the flux doubled to close to 0.6 gpm/ft^2! The reason why is not known, but something had to have been dissolved, which was previously in the system.

3.3.2.4 Dewatering of AN-102R2 Slurry Simulant

To reiterate, the principal reason for the pilot-scale cross-flow ultrafiltration test was to determine the filterability of different preparations of an organic-based precipitated slurry. The slurry was a simulant of waste in the Hanford Tank 241-AN-102. The particular simulant used is referred to as AN-102R2 because its original recipe was revised twice. See the Simulated Waste Slurry section for more information on the recipe.

The test runs described in this section deal with four batches of AN-102R2:

1.16, Batch 3C This AN-102R2 simulant was precipitated under NOC*
1.16, Batch 3B This AN-102R2 simulant was precipitated under BC*
1.16, Batch 3A This AN-102R2 simulant was precipitated under BC at 25°C
1.16, Batch 4A This AN-102R2 simulant was precipitated using PJM*

*See Fig. 17 for nomenclature and the number 1.16 refers to test 1.16 which is listed in the task plan (Duignan, 2002a) as the "dewatering" test.

After a slurry was made, all dewatering tests followed the same procedure:
1. Fill the pilot cross-flow test rig with slurry and take initial slurry and filtrate samples
2. Begin filtering while directing filtrate to a storage location so dewatering could commence.
3. Dewater until the insoluble solids concentration was > 15 wt% (but > 20 wt% was preferable).
4. Dewater for at least 12 hours and backpulse the filter when the filtrate flux < 0.015 gpm/ft^2.
5. Stop dewatering and take final slurry samples.

Each of the dewatering tests result will be discussed in this section. Figure 36 shows the highlight results for each test as well as the simulant properties measured from samples taken before and after all four tests. They will be used throughout this section.

Batch of AN-102R2 Simulant>>	3C	3B	3A	4A
Date of Test	1-3 Oct. 02	22-23 Oct. 02	6-7, 11 Nov. 02	12-13 Mar. 02
Duration of Test	46 hours	12 hours	29 hours	20 hours
Volume of Slurry Dewatered	899 liters	900 liters	920 liters	650 liters
Mixing Conditions	Well Mixed/Agitator	Well Mixed/Agitator	Well Mixed/Agitator	Poorly Mixed/PJM
Slurry Precipitation Conditions	Newly Optimized	Baseline	Baseline (but 25°C)	Baseline
Highest Measured Filtrate Flux	0.06 gpm/ft1	0.11 gpm/ft2	0.06 gpm/ft2	0.05 gpm/ft2
Average Filtrate Flux over duration	0.011 gpm/ft1	0.048 gpm/ft2	0.019 gpm/ft2	0.019 gpm/ft2
Low Solids Concentrations at the start of dewatering				
Insoluble Solids	0.8 wt%	1.2 wt%	1.6 wt%	1.5 wt%
Total Solids	33.6 wt%	32.7 wt%	33.0 wt%	33.3 wt%
Slurry Consistency	3.6 cP	4.0 cP	4.1 cP	4.2 cP
Yield Stress	0 Pa	0 Pa	0 Pa	0 Pa
Filtrate Viscosity	2.7 cP	3.8 cP	3.7 cP	3.7 cP
Slurry Density	1.29 g/ml	1.29 g/ml	1.29 g/ml	1.29 g/ml
Filtrate Density	1.25 g/ml	1.279 g/ml	1.276 g/ml	1.277 g/ml
PSD [2] (by volume dist.): Mean	8.6 micron (68%) [1]	8.6 micron (48%) [1]	9.8 micron (42%) [1]	
PSD (by volume dist.): Mean	2.6 micron (32%) [1]	2.3 micron (52%) [1]	2.8 micron (58%) [1]	2.7 micron
PSD (by volume dist.): Std Dev	4.8 micron	4.3 micron	4.4 micron	1.9 micron
PSD (by volume dist.): spread	1 to 74 micron	1 to 52 micron	1 to 26 micron	0.8 to 37 micron
PSD (by number dist.): Mean	2.1 micron	1.9 micron	2.0 micron	1.8 micron
PSD (by number dist.): Std Dev	0.7 micron	0.5 micron	0.7 micron	0.6 micron
PSD (by number dist.): spread	1 to 22 micron	1 to 19 micron	1 to 19 micron	<0.7 to 16 micron
High Solids Concentration at the end of dewatering				
Insoluble Solids	8.4 wt% [3]	21.7 wt%	25.3 wt%	18.3 wt%
Total Solids	38.6 wt%	47.2 wt%	49.3 wt%	45.8 wt%
Slurry Viscosity	19 cP	20 cP	24 cP	14.8 cP
Yield Stress	7.5 Pa	8.6 Pa	24 Pa	7.7 Pa
Filtrate Viscosity	1.7 cP	3.7 cP	4.5 cP	3.8 cP
Slurry Density	1.31 g/ml	1.43 g/ml	1.45 g/ml	1.38 g/ml
Filtrate Density	1.276 g/ml	1.285 g/ml	1.283 g/ml	1.286 g/ml
PSD (by volume dist.): Mean	6.7 micron (51%) [1]	8.2 micron (13%) [1]		
PSD (by volume dist.): Mean	2.5 micron (49%) [1]	0.9 micron (87%) [1]	2.5 micron	2.1 micron
PSD (by volume dist.): Std Dev	3.0 micron	0.25 micron	1.8 micron	0.8 micron
PSD (by volume dist.): spread	<0.7 to 52 micron	<0.7 to 44 micron [4]	<0.7 to 26 micron	0.9 to 16 micron
PSD (by number dist.): Mean	1.9 micron	0.8 micron	1.8 micron	1.8 micron
PSD (by number dist.): Std Dev	0.7 micron	0.1 micron	0.5 micron	0.4 micron
PSD (by number dist.): spread	<0.7 to 16 micron	<0.7 to 2 micron [4]	<0.7 to 13 micron	0.9 to 11 micron

Notes: [1] - Bi-modal distribution, [2] - PSD = particle size distribution, [3] - Test stopped after 46 hours: poor filterability
[4] - Ranges for 3B (only) should have been significantly less than 0.8 micron, but PSD method was limited to 0.7 micron

Figure 36. Comparison among the four AN-102R2 dewatering tests

3.3.2.4.1 Filtering Batch 3C

Figure 37 is the time plot of the first Batch 3 test, which filtered very poorly and thus was stopped after about 46 hours of continuous filtering. The dewatering test began with the Envelope C-type slurry that was precipitated under what is referred to as "newly optimized conditions." In short, the optimization was done to minimize precipitation reagents of sodium hydroxide, strontium nitrate, and sodium permanganate while still obtaining the needed decontamination factors for strontium and transuranic components. Unfortunately, the reduced concentration of reagents had a negative impact on filterability.

- Poor Filter Performance with Batch 3C

  As stated above, at just under 46 hours of continuous filtering the cross-flow test rig was stopped and the test was terminated. The slurry that started out at about 1 wt% was only dewatered to an insoluble solids concentration of about 8.5 wt%; far short of the 15 wt% target. The overall filtrate flux average was 0.011 gpm/ft^2 for the 46-hour test but for the last 25 hours of the test the flux was below that value and for the last 10 hours it remained at 0.005 gpm/ft^2, well below the target mean value of 0.02 gpm/ ft^2. It was decided to repeat the test with another Batch 3 slurry but at the original precipitation conditions where this type (another organic type simulated slurry: AN-107, see Duignan 2000b) of slurry had already been shown to filter well. In fact, two more tests were added, so that now there would be four AN-102R2 tests, instead of two.

  Due to the poor filter performance and the inability to concentrate the slurry to 20 wt% in a reasonable time period, no steady-state filtration runs were done with Batch 3C, i.e., High Solids Concentration Test Runs Nos. 1.17 to 1.30 (Duignan, 2002a). These runs were to determine the filter operational parameters, V and TMP, that would give the highest filtrate flux. Steady state runs were put off until after the next slurry batch, or after the slurry batch that could be concentrated to at least 15 wt% of insoluble solids.

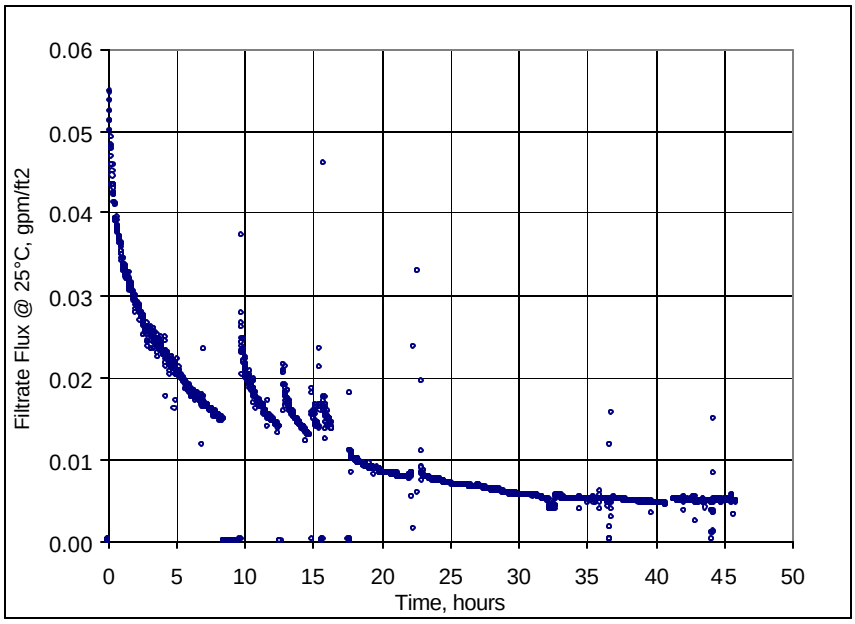


Figure 37. Batch 3C: Dewatering filter flux of AN-102R2 precipitated with the newly optimized conditions at 25°C.

Over the filtering period the average slurry velocity was V = 11.5 ft/s, the average transmembrane pressure was TMP = 42 psid, and the average slurry temperature was T = 26°C (the filtrate flux was adjusted to T = 25°C). The test was done from 10/1 to 10/3/2002 and concentrated the insoluble solids from approximately 1 wt% to 8.5 wt%.

- Backpulsing did not prove useful
  Figure 37 shows that after 5 hours of dewatering, the flux dropped precipitously to the target mean flux of 0.02 gpm/ft^2. The criterion to initiate a backpulse was when the filtrate flux dropped below 0.015 gpm/ft^2 and this occurred after about 8.7 hours into the test and the solids concentration increased to just 2 wt%, Fig. 38. The backpulse increased the flux rate but after only 4 hours it returned to the criterion level again. The approximate 1-hour period that appears to show no flow in Fig. 37, just before the tenth hour, occurred because the filtrate flowmeter could only measure flow after the entire backpulse system was purged of air. That is, during that period the system was refilling, there was filtrate flow but it could not be measured since no liquid was flowing through the filtrate system flowmeter. (Note, after this test the filtrate flowmeter was relocated to begin measuring the filtrate immediately after a backpulse.) During a backpulse the filtrate flow actually is stopped and reversed for only a few minutes, then the flow reestablishes almost immediately. After the first backpulse, the filter was backpulsed four more times, each being less effective than the preceding one. After four backpulses that action was stopped. The increase in the filtrate flux and the fast return to the original low flux indicated that backpulsing was not effective. Actually, backpulsing was intended to be stopped after the second one, but at about the 16th hour (at 8 AM on Wednesday, 10/2/2003) the RPP customer was present and made two requests: to increase the slurry velocity from 11 ft/s to 12 ft/s to conform to the bench-top tests and to perform a backpulse to observe its operation and how it was being performed. Unfortunately, the filtrate flux returned to a low flux in less than an hour's time and then one more backpulse was done at 8:45 AM, resulting in similar response. No further backpulsing was to be done, but at about the 22nd hour a final backpulse was done with actuating air pressure increased from 30 psid to approximately 100 psid to see if the high pulse energy could dislodge the filter cake. As can be seen on Fig. 37 the increase of filtrate flow only lasted moments before it returned to the low filtrate flux. Backpulsing was totally ineffective and no longer used.

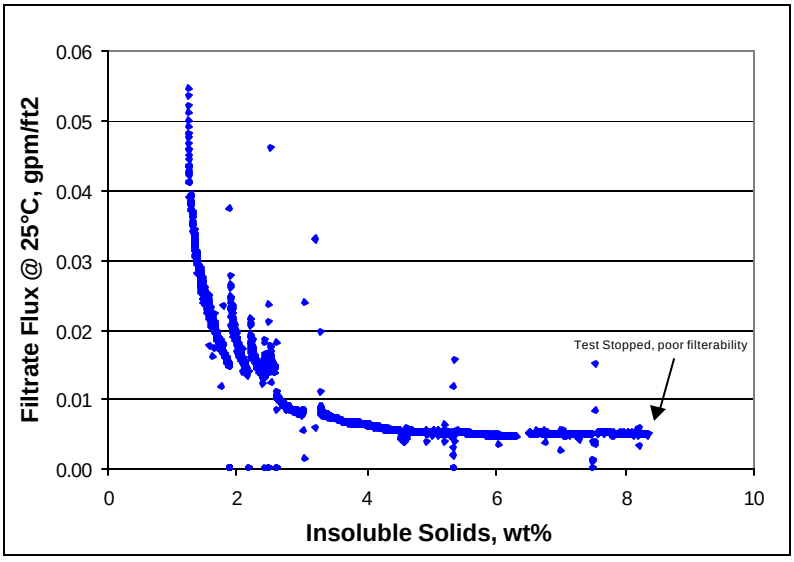


Figure 38. Pilot-scale X-flow UF Dewatering of AN-102R2, Batch 3C

3.3.2.4.2 Filtering Batch 3B

The second Batch 3 test (called 3B) followed the first Batch 3 test (called 3C) to confirm that good filterability could be attained with the organic based slurry by using baseline conditions, BC, during the precipitation step of the slurry preparation. The reluctance to initially use the BC slurry was because of the larger reagent quantities needed and the higher process temperature of 50°C, which were not necessary to attain the decontamination of the Strontium and Transuranic constituents from the slurry. However, using the newly optimized conditions, NOC (see above), resulted in an unfilterable slurry, but with BC Batch 3B, using the same flow parameters of V = 12 ft/s and TMP = 40 psid, an acceptable filter flux resulted.

Figure 39 shows a filtrate flux above the target mean of 0.02 gpm/ft^2 during the first 11.5 hours of the test. In fact, the entire test lasted just over 12 hours when the insoluble solids concentration went above 20 wt%, Fig. 40. The large drop off at the end was after the concentration was determined to be approximately 14 wt% and dewatering was continued until it went above 20 wt%. Even at the highest concentration the filtrate flux was still higher than the overall average of 0.011 gpm/ft^2 that was obtained during Batch 3C; therefore, the test was consider a success. Over the entire 12.2 hours of dewatering, the filtrate flux averaged at 0.048 gpm/ft^2, or better than a factor of 4 over Batch 3C. Subsequently, the decontamination factors were measured for Batch 3B and were found to be acceptable (Steeper and Williams, 2003).

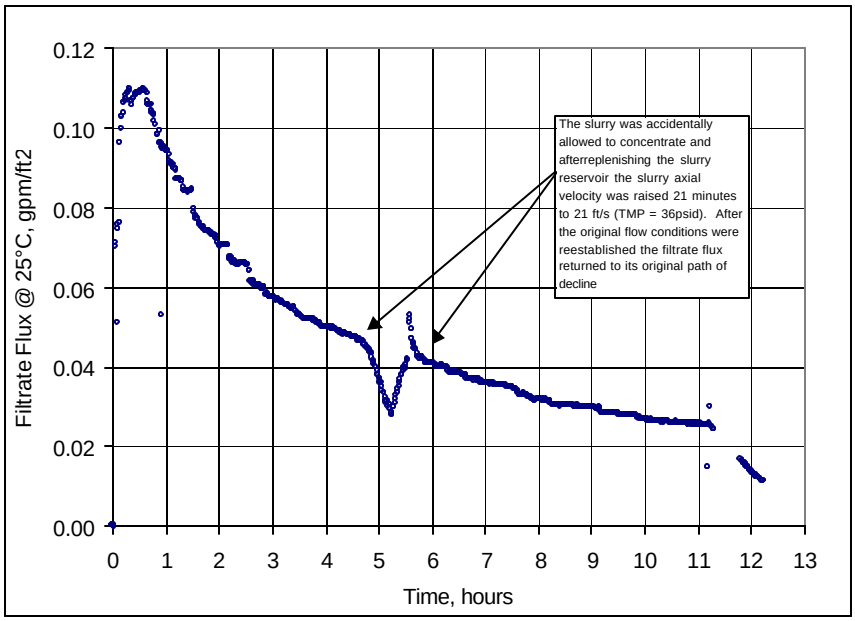


Figure 39. Batch 3B: Dewatering filter flux of AN-102R2 precipitated with the baseline conditions at 50°C.

Over the filtering period the average slurry velocity was V = 12.1 ft/s, the average transmembrane pressure was TMP = 41 psid, and the average slurry temperature was T = 26°C (the filtrate flux was adjusted to T = 25°C). The test was done from 10/22 to 10/23/2002 and concentrated the insoluble solids from approximately 1 wt% to 22 wt%.

As a result of reaching the targeted solids concentration, this dewatering test run was followed by the steady-state runs, i.e., 1.17 to 1.29. These runs will be discussed in the next section of this report. Some other aspects of the Batch 3B dewatering test were: that no backpulse was done, a temporary drop of filtrate flow occurred around the 5th test hour, and a data gap at the 11.3 hour.

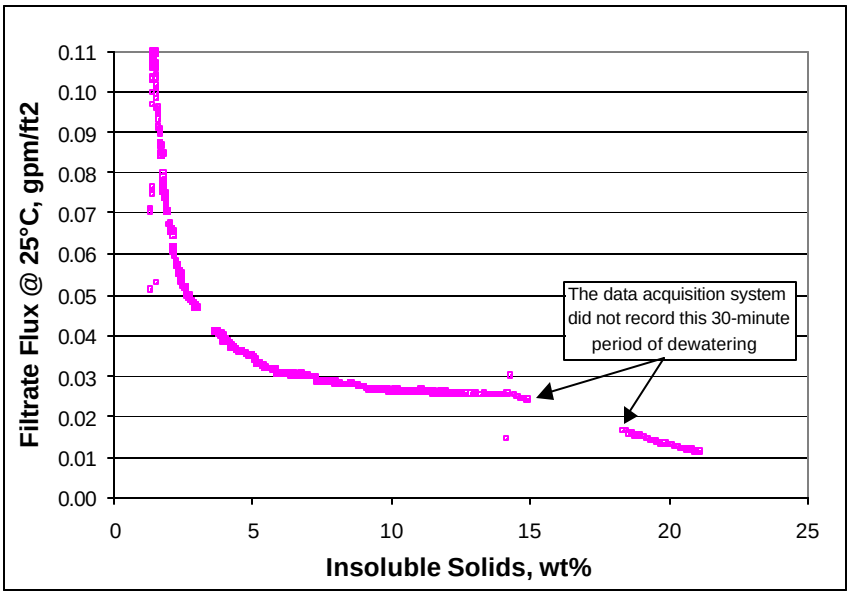


Figure 40. Pilot-scale X-flow UF Dewatering of AN-102R2, Batch 3B

- No Backpulse
  No backpulse was done for Batch 3B because the criterion of a filtrate flux below 0.015 gpm/ft^2 didn't occur during most of the test. At about the 12th hour the backpulse criterion was reached but by that time the test was all but complete, so a backpulse was not done.

- Apparent data glitches were real events
  At just past 4.5 hours into the test on Tuesday, 10/22/02, at around 8:15 PM the filtrate flux dropped precipitously, which continued until about 9:00 PM. During this time the slurry volume was not replenished and the slurry prematurely reached a high solids concentration. When the problem was discovered, more slurry was added to the test rig reservoir and the slurry axial velocity was increased from 12 to 21 ft/s for 21 minutes, in an attempt to recover the filtrate flux, without resorting to a backpulse which would have disturbed the filter cake. After 21 minutes, the filtrate flux appeared to be fully recovered, therefore the slurry velocity was returned to 12 ft/s. However, the filtrate flux continued to increase and then decrease to the original flux. At about 9:30 PM the excursion had passed and the flux was recovered. It appeared that the filter cake had returned to its appropriate thickness, as if the upset never occurred. On Wednesday, 10/23/2002, at 3:00 AM, 11.3 hours after starting the test, dewatering was stopped to evaluate the solids concentration and wait for another batch of simulant to be made. However, the solids concentration, turned out to be slightly more than 14 wt%. This was

deemed sufficiently high such that the remaining slurry could be concentrated above 20 wt%. This was very important because it meant the remaining chemicals on hand could be saved to make enough slurry to carry out a third test and save the program considerable expense. At about 6:00 PM on the same day, the Batch 3B test restarted to further concentrate the slurry. That last concentration process took about one hour. Unfortunately, during the first 30 minutes of dewatering the data logger was not operating, but it did capture the last 30 minutes (from 6:30 PM to the end at 7:00 PM), when the concentration reached 22 wt%. The actual final concentration was only known with a subsequent solids analysis. The actual filtrate flux, when the test rig was restarted at 6:00 PM, began above the final flux of 0.024 gpm/ft^2, when the test was stopped at 3:00 AM earlier.

3.3.2.4.3 Filtering Batch 3A

After completing a successful Batch 3B test, it was important to know if filterability was sensitive to precipitation temperature. The reduced amount of simulant used for Batch 3B, approximately 1000 liters, enabled one more Batch 3 of approximately 900 liters to be made with the remaining chemicals. A third and final Batch 3 test (called 3A), was done, but the precipitation temperature of 50°C was lowered to 25°C. If good filterability could also be obtained at a lower temperature, then less hardware and energy would be needed by the Waste Treatment Plant.

The use of BC, while precipitating at 25°C, did obtain a filtrate flux better than Batch 3C, but unfortunately it was not as good as Batch 3B. Figure 41 shows the time plot of the entire data set as the insoluble solids concentration increased from 1.6 to 25 wt% as seen in Fig. 42, which plots filter flux as a function of insoluble solids wt%. The average filtrate flux over that period was 0.019 gpm/ft^2, which is a factor of 1.7 better than Batch 3C, but only 40% that of Batch 3B. After only 8 hours of filtering, the flux dropped below the target mean of 0.02 gpm/ft^2, and after 13 hours the flux dropped below the backpulsing criterion of 0.015 gpm/ft^2, which initiated backpulsing. Over the next 7 hours the filter was backpulsed six times with each successive backpulse less effective. At the 21st hour, the RPP customer asked to stop backpulsing to see where the filtrate flux would end up as the concentration increased. At about the 26th hour, the flux reduced to close to 0.01 gpm/ft^2 and permission was obtained to stop the test on Thursday, 11/7/02. The test was then continued on the following Monday, 11/11/02. At that point the insoluble solids concentration was evaluated and found to be 15 wt%. For about 3 hours on Monday the slurry was concentrated from15 to 25 wt%. Interestingly, the slurry filtrate flux increased from its value when the test was stopped on Thursday, 11/7/2003, of just above 0.01 gpm/ft^2 to just below 0.02 gpm/ft^2. Something occurred during the 88 hours it sat idle, from Thursday evening at 5 PM until Monday morning at 9 AM. However after about one hour of filtering the filtrate flux dropped very fast as the solids concentration approached 20 wt% and then onto 25 wt%. It is possible that during the time period some of the filter cake fell off the filter surface since the filter was vertically oriented. At the end of Batch 3A filtering the filtrate flux dropped to the same rate that Batch 3C ended, i.e., 0.005 gpm/ft^2. It seems clear from the three Batch 3 filtering tests that if a flux of better than 0.02 gpm/ft^2 is needed, it is very important to precipitate at the higher temperature, i.e., 50°C.

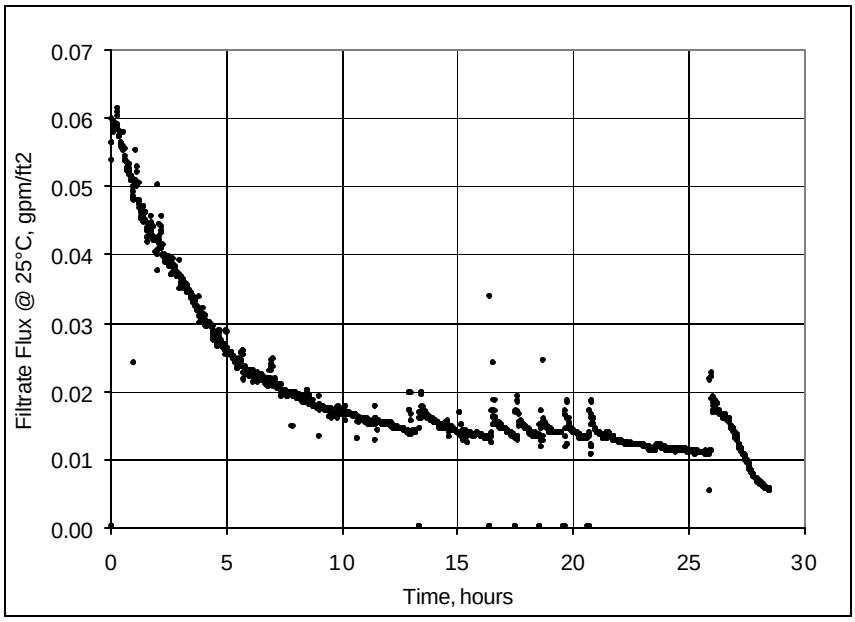


Figure 41. Batch 3A: Dewatering filter flux of AN-102R2 precipitated with the baseline conditions at 20°C.

Over the filtering period the average slurry velocity was V = 12.0 ft/s, the average transmembrane pressure was TMP = 40 psid, and the average slurry temperature was T = 25°C (the filtrate flux was adjusted to T = 25°C). The test was done from 11/6 to 11/11/2002 and concentrated the insoluble solids from approximately 1.6 wt% to 25 wt%.

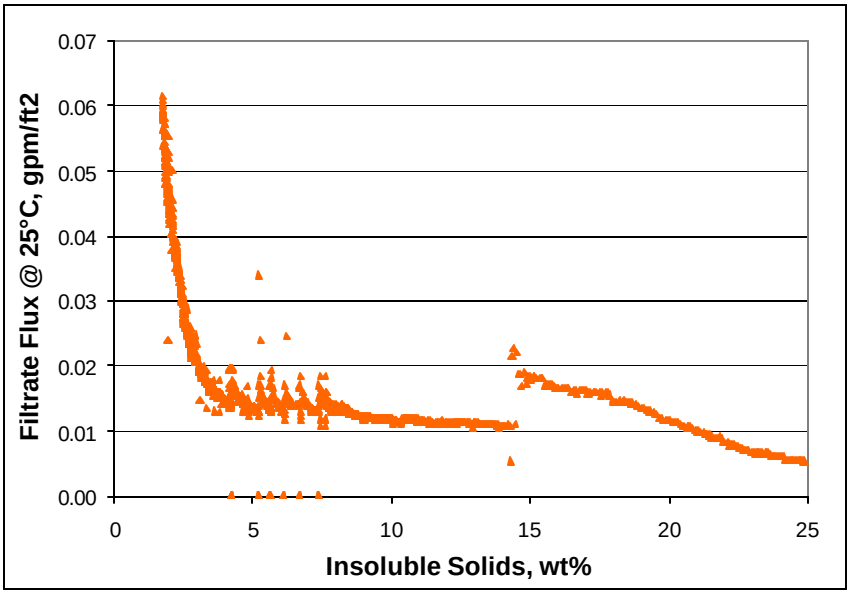


Figure 42. Pilot-scale X-flow UF Dewatering of AN-102R2, Batch 3A

3.3.2.4.4 Filtering Batch 4A

After completing the Batch 3 tests, for which the simulants were all prepared under well-mixed precipitation conditions, a Batch 4 test was planned to precipitate under more WTP-prototypic mixing conditions. That is, the WTP will use pulse jet mixers (PJM) that creates a completely different mixing environment as compared to standard impeller-type agitator. A new precipitation test rig was developed for this test (see Steeper and Williams, 2003). Two tests were planned, 1. Batch 4A, where the AN-102R2 simulant would be made at baseline conditions, and 2. Batch 4B, which would be done depending on the results of 4A.

Figure 43 shows the results of Batch 4A testing. The results were similar to Batch 3A, for which the filtrate flux was considered borderline acceptable. Figure 44 shows the entire data set as the insoluble solids concentration increased from 1.5 to 18 wt%, over the 19.5-hour period of dewatering. The average filtrate flux over that period was 0.019 gpm/ft^2, which was the same as Batch 3A. That is, a factor of 1.7 better than Batch 3C, but only 40% that of Batch 3B. However, instead of only 8 hours of filtering, the flux dropped below the target mean of 0.02 gpm/ft^2, in just under 5 hours! Conversely, even after 18 hours the flux still did not drop below the backpulsing criterion of 0.015 gpm/ft^2. For this test the RPP-WTP customer requested a backpulse when the flux dropped below 0.02 gpm/ ft^2. This occurred at about 5.5 hours into the run. As before, the flux dropped very fast after the backpulse and after two more backpulses, around the 9th hour of filtering, there seemed to be no further advantage to backpulsing, therefore it was stopped

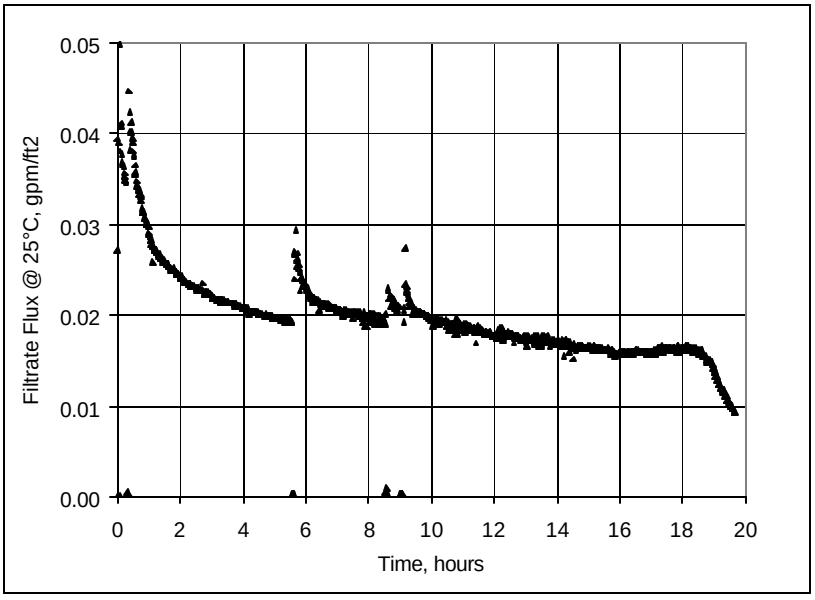


Figure 43. Batch 4A: Dewatering filter flux of AN-102R2 precipitated with the baseline conditions at 25°C.

Over the filtering period the average slurry velocity was V = 11.9 ft/s, the average transmembrane pressure was TMP = 40 psid, and the average slurry temperature was T = 25°C. The test was done from 03/12 to 03/13/2003 and concentrated the insoluble solids from approximately 1.5 wt% to 18 wt%.

Batch 4A was smaller than the Batch 3, i.e., 650 liters, see Fig. 36; therefore there was no stopping point to see if the target insoluble solids concentration was reached. Because the filterability was only borderline the RPP-WTP customer decided not to have another batch of simulant made and that Batch 4A should be concentrated as high as possible in the hope of reaching the target 15 wt%. The slurry volume was reduced to just before the test rig reservoir began to aspirate air, which would have stopped slurry circulation and thus filtering. When the approximate 650 liters were reduced to 60 liters the test was stopped and slurry samples were taken. It turned out the target was exceeded, since the final concentration was 18.3 wt%. For dewatering operation, the test was a success.

Once again, the conclusion for Batch 4A is the same as for Batch 3A. That is, if a filtrate flux of better than 0.02 gpm/ft^2 is required then the precipitation mixing environment needs to be better. While Batch 3A needed to be mixed at the Batch 3B temperature of 50°C, Batch 4A needed to be mixed with more vigorous agitation than was available with the single pulse jet mixer. While the pilot test used only one PJM in the precipitation tank, the WTP plant has multiple PJM units planned for its precipitation tank. Creative uses of different mixing cycles for the many PJMs in the WTP tank may overcome the poor mixing results for this single PJM test.

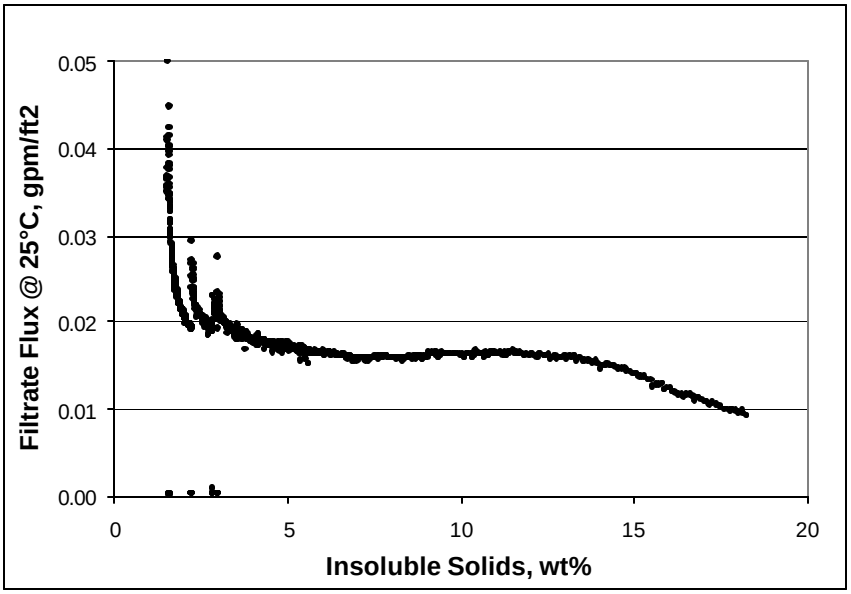


Figure 44. Pilot-scale X-flow UF Dewatering of AN-102R2, Batch 4A

3.3.2.4.5 Overall Dewatering Results of AN-102R2

For comparison Fig. 45 combines the filtrate flux curves for all four runs. The slurry simulant that filtered the best was Batch 3B, which was precipitated under the original baseline conditions, and the worst was Batch 3C, which was done under a set of optimized conditions. Looking at the slurry data in Fig. 36 the reason for the disparity is not obvious. Out of all the simulants 3B had the smallest particles and was the only slurry where there was a significant reduction in the particle size after dewatering, i.e., from the low to high solids concentration. For all other properties the four simulants started at about the same

conditions, i.e., total solids of 33 wt%, viscosity of 4 cP and no yield stress, slurry density of 1.29 g/ml, bi-modal particle volume distribution of about half with particles between 8 to 10 microns and half between 2 and 3 microns (the exception was 4A which only had one particle size mean of 2.7 microns). Also, a scan of the rheological data characteristics in Appendix G does not elicit significant differences. All the simulants act as time-dependent pseudoplastics at the highest solids concentrations.

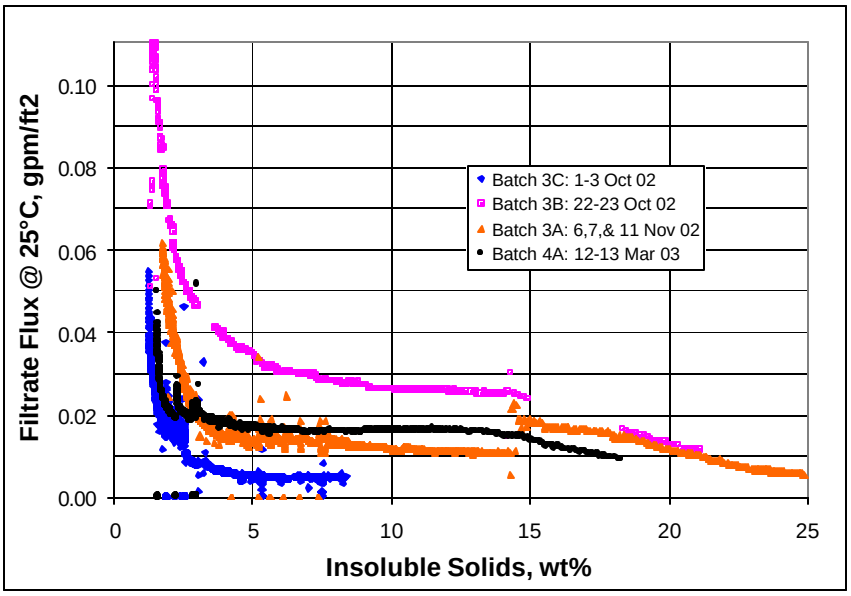


Figure 45. Pilot-scale X-flow UF Dewatering of AN-102R2, Batches 3 & 4

To definitively state why the filtrate fluxes differed among the simulants a lot more information would be needed about different chemical characteristics of the simulants. For instance, the particle-to-particle attractiveness. All the slurries appeared to be very sticky and thick as the solids concentration increased. How this affected the filter and the integrity of the filter cake is unknown. One telling feature was that backpulsing was not very affective. This indicates that much of the cake was not removed when a backpulse was made and as the cake became thicker backpulsing became completely ineffective. Small differences in a slurry's ability to adhere to the filter surface, and itself, very probably would lead to large differences in impeding filtrate from entering the porous substrate.

One notable feature in Fig. 45 is the sharp drop in filter flux when the insoluble solids concentration went beyond about 14 wt%. Roughly speaking there appears to be three distinct filtering regions:

1. From 0 to 5 wt% the filter flux drops precipitously as the filter cake forms and grows fast, relative to its initially formed thickness.
2. From 5 wt% to 15 wt% the filter flux is relatively stable. The filter cake is formed and further growth is slow, relative to the established thickness.

3. Greater than 15 wt%, the filter flux begins to drop faster because the solids are close enough together to significantly increase the slurry viscosity, probably exponentially. See Fig. 46.

To understand these different regions it may help to look at some of the individual measured parameters shown in Fig. 36, or in Appendix G. Figure 46 shows one batch, Batch 3A, (using a modified Fig. 41) with some of the rheological data superimposed.

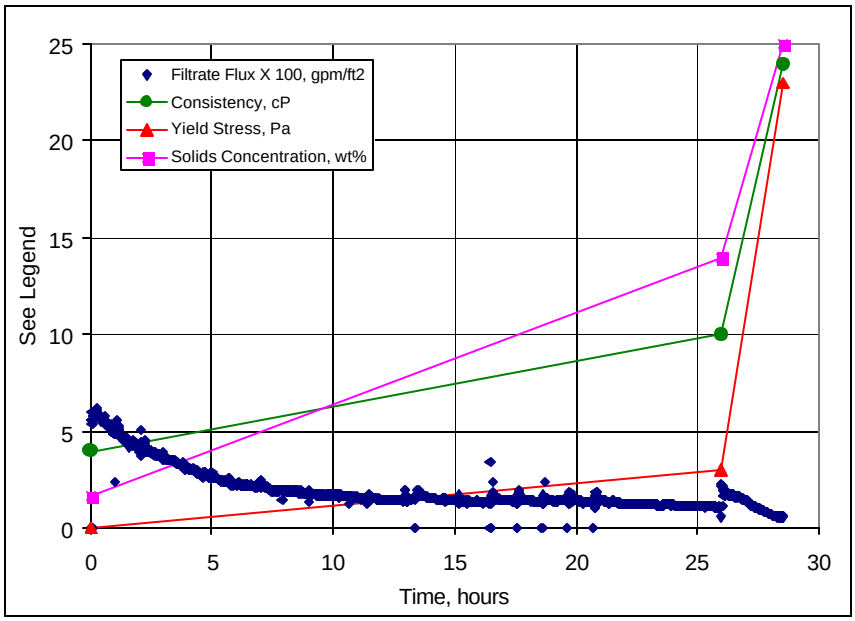


Figure 46. Batch 3A filtrate flux with selected rheological properties

It does appear that in region 3, after 14 wt% of insoluble solids, the rheological properties change significantly causing the filtrate flux to drop. Other differences among the different slurries are shown in Figs. 47 through 51 below.

Figures 47 and 48 show a distinct difference in the rheological properties of all the slurries made using baseline conditions (3B, 3A, and 4A) and the first test of 3C which was made with the newly optimized conditions. The much higher slurry consistency and yield stress was probably a major contributor in making 3C much harder to filter. This implies baseline conditions should be used during the precipitation of Envelope C slurries. However, the density for all the simulants seemed to be similar, Fig. 49.

From Figs. 50 and 51 it appears that all the slurries started with approximately the same size particles. That is, in the entire population of particles the mean particle size was very close to 2 microns and if particle volume is considered the particles were approximately equally distributed around two means, i.e., 2.5 microns and 9 microns.

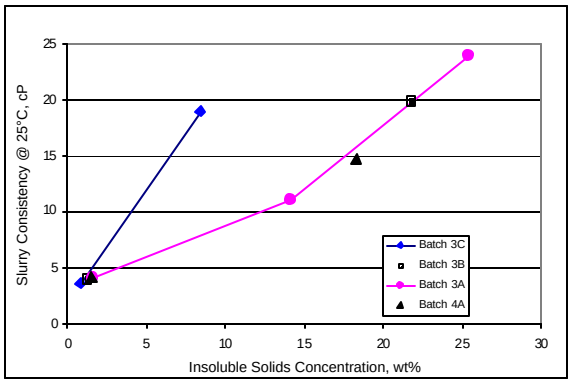


Figure 47. Batch 3&4 Slurry Consistency

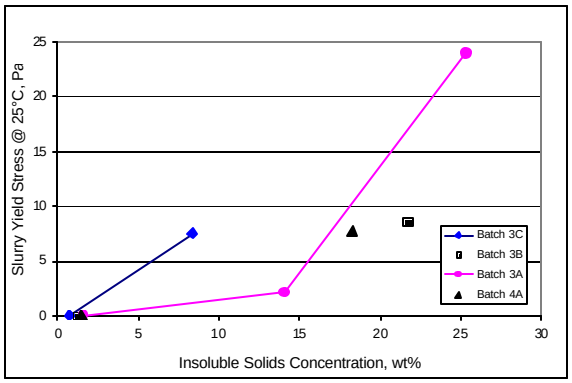


Figure 48. Batch 3&4 Slurry Yield Stress

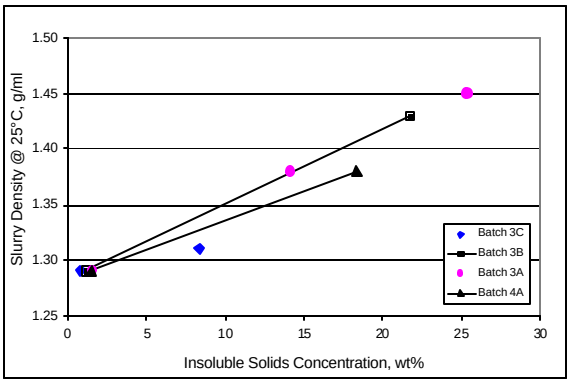


Figure 49. Batch 3&4 Slurry Density

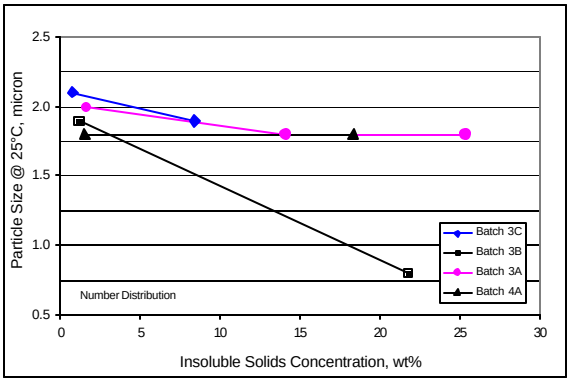


Figure 50. Batch 3&4 Mean Particle Size (by Number Distribution)

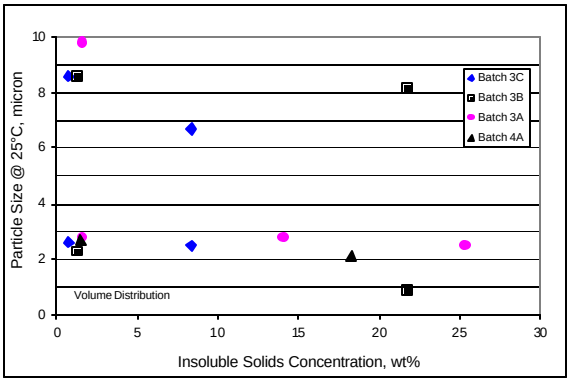


Figure 51. Batch 3&4 Mean Particle Size (by Volume Distribution)

As the simulants were circulated in the filtration facility some particle changes are evident. Figure 50 shows that mean population particle size did not change significantly for most of the simulants. However, Batch 3B stands out because its particles ended up to be less than one half as small. Remember, Batch 3B had the best filterability. With respect to the volumetric distribution of particles, all but Batch 4A started with bi-modal distributions. After dewatering the particle distributions for all but Batch 3B became mono-modal. (Actually they all did because the bi-modal distribution of Batch 3B was weak, i.e., only 13% of the particles had a distribution around the mean of 8 microns.) A notable difference was Batch 4A, which started and ended with a single mean particle size, though the size became slightly smaller, i.e., 2.2 microns to 0.9 microns.

3.3.2.5 Steady State Filtering of AN-102R2 Slurry Simulant

The requirement of the Task Plan (Duignan, 2002a) was that after dewatering the Envelope C simulant to some high concentration of insoluble solids[‡], it would be filtered while maintaining the solids concentration constant. In this way, a series of filter tests could be done to determine an optimum slurry velocity and transmembrane pressure.

3.3.2.5.1 Typical Constant Insoluble Solids Concentration Steady-State Test Run

Before discussing the overall steady-state results it is useful to look at one filter flux versus time to better understand the average data results. Figure 52 shows test run 1.17, for Batch 3B, which is a typical filter flux with time. While the other test runs have different magnitudes of filter fluxes the overall characteristics of filter flux with time are similar and therefore not shown here, but these can be found in Appendix E.

At the beginning of each steady-state run the typical operation is as follows: a backpulse is done in an attempt to start at the same point. However, due to depth fouling the filtrate flux will always decrease a small amount with each successive backpulse. This will be discussed later in this section. During the first few minutes there is no filtrate flux, while the filter is backpulsed. This then jumps to the highest flux, as a result of reestablishing filtrate flow after a backpulse. As soon as flow begins the flux drop precipitously as the filter cake begins to build. Within 30 to 40 minutes approximately 90% of the cake has been established (as indicated by the 90% drop in the filtrate flux from approximately 0.017 gpm/ft^2, right after the backpulse, to 0.010 gpm/ft^2 after about 40 minutes) and then there is a very slow reduction in flux with time. After about 2 hours an asymptote is reached (Fig. 29 in Duignan (2000a) shows that after 8 hours the 2-hour flux is still basically the same). Note what appears to be a second backpulse just before the 10-minute mark. No second backpulse was given and this is a feature of how this particular filter test rig works. Just before the Batch 3B test the meter which measures filtrate flow was reoriented. Figure 2 shows the schematic of the test rig where the low flow filtrate flowmeter, Q2, is just downstream of valve V27. Originally the filtrate flowmeter was in the filtrate return line from the pulsepot, so that its large pressure drop would not affect the backpulse filtrate flow. Unfortunately, in that location it was necessary for the entire backpulse system to be liquid solid before the meter

[‡] For dewatering the target insoluble solids concentration was 15 wt%, but a high concentration was preferable.

began registering a flow. For the unexpectedly very low flowrates experienced during the Batch 3C campaign, it took close to 30 minutes to replace the approximately 1.8 liters of filtrate evacuated during a backpulse. Having data during the first half an hour of operation is very important, as can be seen in Fig.52.

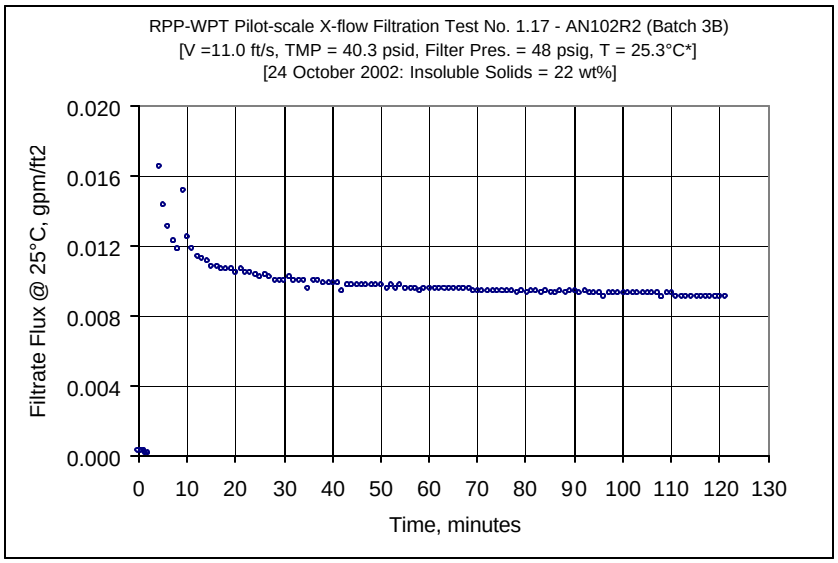


Figure 52. Batch 3B: Test Run 1.17
Over the filtering period the average slurry velocity was V = 11.0 ft/s, the average transmembrane pressure was TMP = 40.3 psid, and the average slurry temperature was T = 25.3°C (the filtrate flux was adjusted to T = 25°C).

The low flow filtrate flowmeter was moved to the tubing between the filter housing and the pulsepot so immediate measurements could be taken; a special bypass line was used to valve out the flowmeter during a backpulse to avoid the high pressure drop that the meter would cause. Even though the new meter location allows the immediate measurement of filtrate flux, after filtrate flow is reestablished, the filtrate system still has a charge of air that needs to be expelled as the system is refilled with filtrate. In the case of test run 1.17 it took about 5 minutes to refill. Indeed, at 1.8 liters (= 0.48 gallons) the average flowrate over that time period of 0.014 gpm/ft^2 gives a time of 0.48 / 0.014 gal/min/ft^2 / 6.707 ft^2 = 5.1 minutes (6.707 ft^2 is the flow area for the seven filter tubes). This happens because during refilling the air-filled system takes more pressure to flow, reducing the TMP. After becoming liquid solid the filtrate system pressure goes down and the TMP increased to its original setting before the backpulse was made.

In the figure caption of Fig. 52 some average measurements, i.e., V, TMP, and Slurry Temperature, T, are given and are based on all the data points taken during the test run, excluding the first few minutes during the backpulse. For example, the data for Figure 52 can be found in Appendix E, Figs. E2-1 and E2-2. The averages were based on 119 data points from the 3rd minute until the 121st minute. The abscissa shows the filtrate flux at

25°C, which indicates that while the actual slurry temperature may have been different from 25°C (it was actually 25.3 ±0.3°C) it was adjusted for the effects of fluid viscosity and surface tension (Townson, 2002a) with the equation:

$$\text{Flux @ } 25°C = P/A \times C$$

where Flux = filtrate flux at 25^oC (gpm/ft^2)
P = filtrate flow rate (gpm)
A = filter surface area (ft^2)
C = temperature correction factor = $e^{(2500*((1/(273+T))-(1/298)))}$
T = slurry/filtrate temperature in degrees Celsius

3.3.2.5.2 Filtering Batch 3C

No steady state tests were performed because the dewatering test was stopped after 46 hours because of low filterability and that the insoluble solids concentration only reached 8.5 wt%.

3.3.2.5.3 Filtering Batch 3B

The second Batch 3 test (called 3B) experienced good filterability and at the end of the dewatering, test run 1.16, it still was filtering at just above 0.01 gpm/ft^2 when the insoluble solids concentration reached its highest concentration, i.e., 22 wt%. The steady-state filter runs completed at 22 wt% insoluble solids were:

1.17, 1.18, 1.19, 1.20	done on 24 October 2002
1.21, 1.22, 1.23, 1.24	done on 28 October 2002
1.25, 1.26, 1.27, 1.28, 1.29	done on 29 October 2002

Figure 53 depicts the average filtrate flux results for all the Batch 3B test runs. As per the Task Plant (Duignan, 2002a) five of the runs (1.17, 1.18, 1.19, 1.24, and 1.29) were done for two hours and the remaining eight runs were done for one hour. However, the average filtrate flux values for all test runs are shown for one hour to make a better comparison. If the two-hour average were used it would only lower the average of those five test runs by 5 to 8%, or about to the lower part of the error bars shown, which are ±5.4%; this can be seen in Fig. 53. Also note that the temperature for two runs (1.26 and 1.27) exceeded the target of 25°C ±5°C. One had the highest slurry velocity, V=14.7 ft/s with a low TMP, i.e., 31 psid, and the other had the lowest TMP, i.e., 23 psid. At these pressures[†] the test rig cooling coil was unable to provide the necessary cooling.

[†] The temperature control problem is an aspect of the pilot-scale test rig. Figure 2 shows the slurry cooling coil to be on either side of the pressure control valve, V11, which is in parallel with the main slurry flow. In order to obtain low filter pressures V11 is run almost wide open, which starves slurry flow to the cooling coil and thus cuts down on cooling. The coil could not be put in series with the main slurry flow because the pressure drop would have been too large for most of the test runs.

Figure 53 shows the Batch 3B test runs in chronological order and the total operational time the filter was active during these runs was about 18 hours. As time progressed the filtrate flux continually decreases. This is the result of depth fouling which is not removed by backpulsing. Fouling is actually increased because of backpulsing, which exposes the filter surface to the smallest particles in a slurry. For these tests the filter was backpulsed each time a new test began. Before a statement can be made about the dependence of filtrate flux on V and TMP, the effect of depth fouling needs addressing. Fortunately, the five 2-hour test runs were all done at the same V and TMP so a comparison can be made. By plotting only those five test runs the effect of fouling becomes more evident.

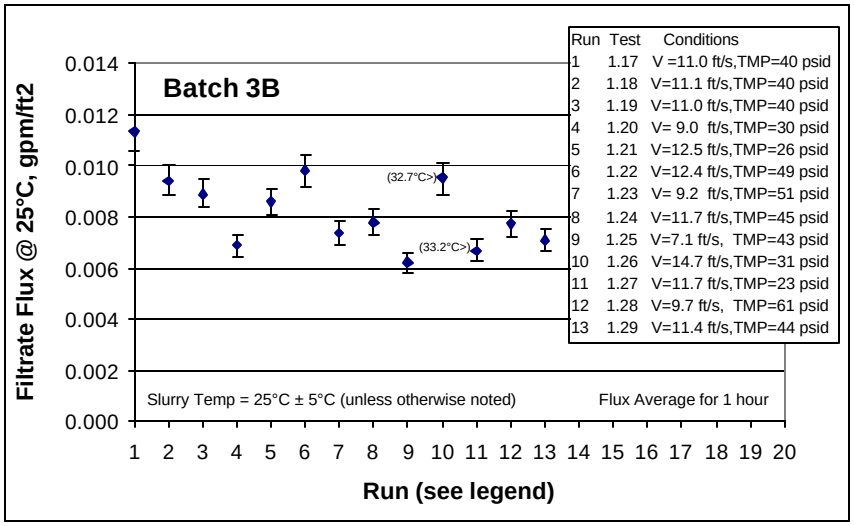


Figure 53. Batch 3B: Filtrate flux results averaged over the first hour of testing, including the five 2-hour test, i.e., 1.17, 1.18, 1.19, 1.24, and 1.29.
The tests were done from 10/24 to 10/29/2002 and at a constant insoluble solids concentration of 22 ***wt%.***

Figure 54 shows just the five test runs with the same V and TMP. There was a small variation in these parameters, which are shown on the figure.

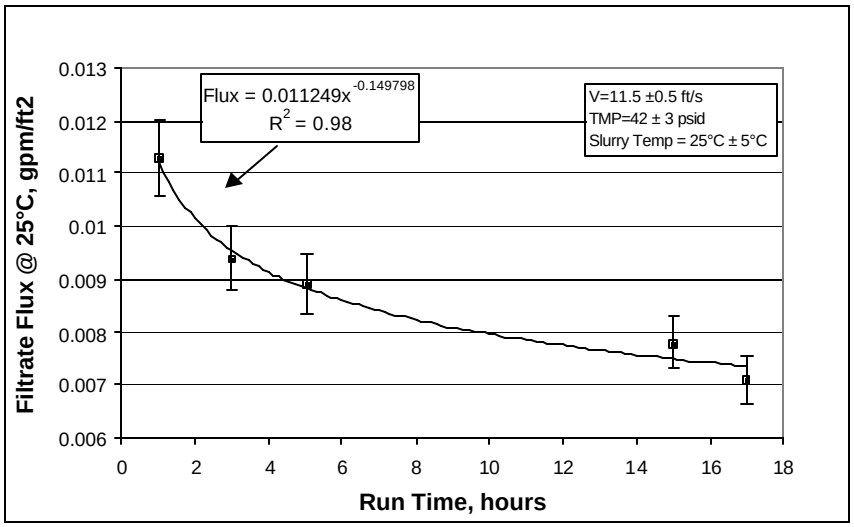


Figure 54. Batch 3B: Filtrate flux results averaged over the first hour of testing for the five 2-hour test runs, i.e., 1.17, 1.18, 1.19, 1.24, and 1.29.
These runs are unique in that they all have the same flow parameters V ~ 11 ft/s and TMP ~ 40 psid.

The data indicate a decreasing average filtrate flux with time. Now this decrease could also indicate a slurry that is changing with time becoming more difficult to filter. It may be that the solid particles in the slurry were changing and making the filter cake less permeable. However, particle analyses do not support this theory[†]. As shown on Fig. 54, the data were correlated to the power relation indicated and each point includes the measurement uncertainty. This relation can then be used to adjust the steady-state data to remove the effect of fouling.

Figure 55 repeats Fig. 53, but with the data adjusted with the relation shown in Fig. 54. A comparison between the data in Figs. 53 and 55 indicate a difference as to which are the most appropriate parameters to obtain the best filtrate flux. As expected, from past tests (e.g., Duignan, 2000a and b) the key factor was the slurry axial velocity. Figure 55 shows that for run 10, test 1.26, with V = 14.7 ft/s, the best filtrate flux occurred, despite the fact it had a very low TMP (31 psid). The next highest, but statistically the same filtrate flux, was run 6, test 1.22, where both the slurry velocity, V = 12.4 ft/s, and TMP (49 psid) were moderately high.

[†] From the particle size analysis results on the slurry done before the steady state test runs (Appendix G, sample 300188110) and after (Appendix G, sample 300189271): Before - the population distribution particle average diameter was 0.8 ±0.2 and the volume distribution particle average diameter was 0.9 ±0.5 micron. After - the population distribution particle average diameter was 1.2 ±0.4 and the volume distribution particle average diameter was 1.3 ±0.5 micron. The uncertainty given is twice the standard deviation representing the 95% confidence level. Statistically the particle did not change in size.

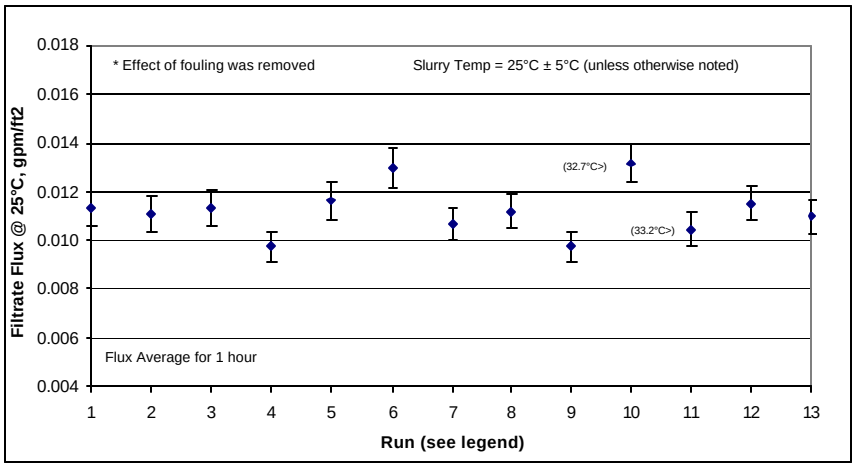


Figure 55. Batch 3B: This figure repeats the data shown in Fig. 53 with depth fouling effect removed. [The legend indicated in the abscissa title is that of Fig. 53.]

To more easily see the individual effects of V and TMP on the filtrate flux the data are shown for both. Figure 56 shows the effect of TMP and statistically there is none. The data were correlated with a linear least-squares fit and the correlation coefficient is near zero. Considering measurement uncertainty a coefficient of zero cannot be ruled out. Therefore, a decision of which operating TMP to use should be based on other consideration and not improvement of filtrate flux.

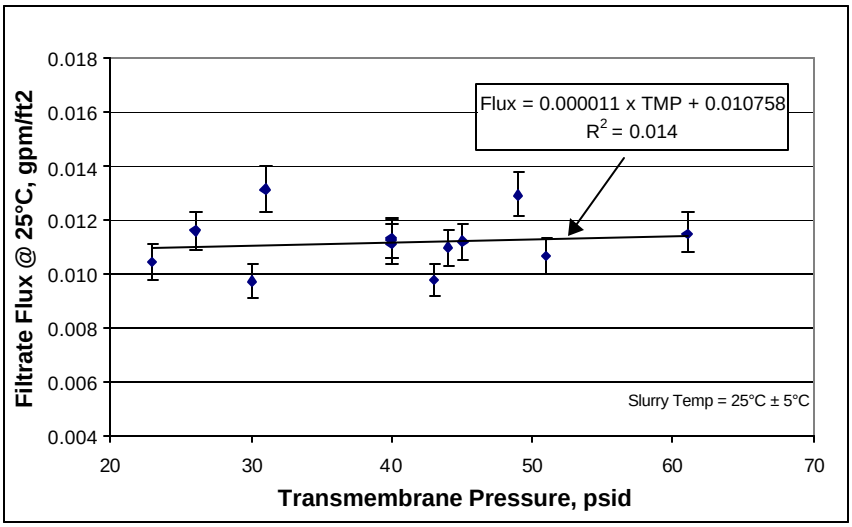


Figure 56. Batch 3B: All the steady-state data that were adjusted for depth fouling effect removed (Fig. 55) as a function of transmembrane pressure, TMP.

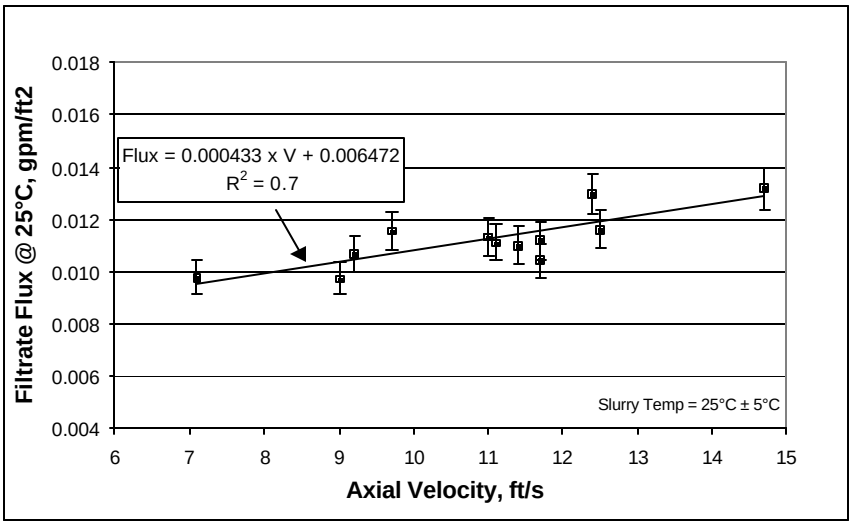


Figure 57. Batch 3B: All the steady-state data that were adjusted for depth fouling effect removed (Fig. 55) as a function of slurry axial velocity, V.

Figure 57 shows the Batch 3B data as a function of the slurry axial velocity, V. The figure includes a linear least-squares fit of the data with a correlation coefficient of 0.7 and therefore the filtrate flux is clearly dependent upon V, even when considering the measurement uncertainty as shown on the figure. The conclusion that can be made from this analysis is that to increase filtrate flux, V must increase.

3.3.2.5.4 Filtering Batch 3A

The third Batch 3 test (called 3A) experienced better filterability then Batch 3C, but not as good as Batch 3B. Because of the length of the Batch 3A dewatering test, i.e., around 30 hours, and good Batch 3B results, the RPP customer did not require the full series of steady state test runs. However, due to the available time, slurry, and the desire to make some inter-Batch 3 comparisons, a limited number of steady-state runs were performed. Once the high insoluble solids concentration was attained (it ended up being 25 wt%) the steady-state runs began. The runs completed were:

1.17, 1.20	done on 11 November 2002
1.23, 1.25, 1.28, 1.29	done on 12 November 2002

The choice of test runs to perform depended on the ability to keep the slurry within the temperature limit of 25°C ±5°C. For instance, two attempts were made to do test run 1.27, which had the lowest TMP of 20 psid (see the first footnote in section 1.3.2.5.3). Unfortunately, within minutes of test initiation the temperature climbed above 30°C and reach 40°C before it could be controlled.

Figure 58 depicts the average filtrate flux results for all the Batch 3A test runs. The six tests done were limited to one hour of filtering. The RPP customer did not required the extra hour because these tests were only to confirm filtrate fluxes and not to be used to optimize flow

parameters. That is, all of the average filtrate flux values shown in Fig. 58 are over the entire run time for each test of one hour.

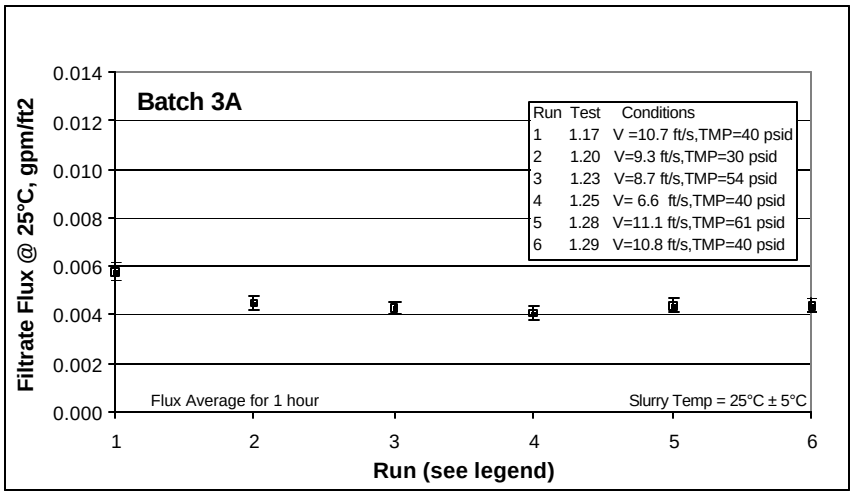


Figure 58. Batch 3A: Filtrate flux results averaged over the one hour of each test.
The tests were done from 11/11 to 11/12/2002 and at a constant insoluble solids concentration of 25 wt%. The same filtrate flux range as shown on Fig. 53 was used for comparison.

Because the Batch 3A filtrate flux data are approximately a factor of 2 lower than the Batch 3B data (see Fig. 53) it's a bit harder to perceive trends, but both batches are similar. In fact, the depth fouling characteristics were very similar. Run 1, test 1.17, and run 6, test 1.29 for Batch 3A have the same flow conditions as those shown in Fig. 54. Since the Batch 3B and 3A filtrate flux magnitudes are different, the data shown in Figure 59 were normalized by the first result (at the 1-hour mark) from each data.

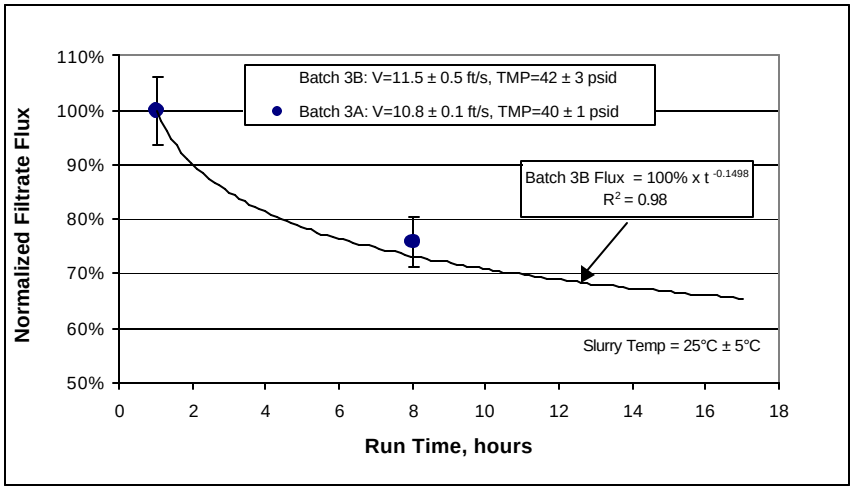


Figure 59. Batch 3A: Two filtrate flux data points shown are the average over the one hour test runs, i.e., 1.17 and 1.29. The Batch 3B curve fit is also shown for comparison. Both data sets were normalized by their respective first test run result (test run 1.17).

For example, the 1-hour average filtrate flux for Batch 3B was 0.0113 gpm/ft^2, so each of the five points shown in Fig. 54 were divided by 0.0113; along with the fitted curve equation. The same was done for the two data points of Batch 3A using the 1-hour average filtrate flux of 0.0058 gpm/ft^2. While the slurry solids were precipitated in a slightly different way, making Batch 3A not as filterable as Batch 3B, the filter depth fouling mechanism seems to be the same. This similarity is seen in Fig. 59 by the closeness of the Batch 3A datum point at the 8th hour to the Batch 3B data curve fit. Of course, because of the normalization the first point of Batches 3B and 3A were forced to be 100% and thus that degree of freedom was lost.

Using the same process to adjust the Batch 3B data to minimize the effects of depth fouling the Batch 3A data are shown in Figure 60. Note that the ordinate range has been reduced to better display the data because of the low magnitude and small differences.

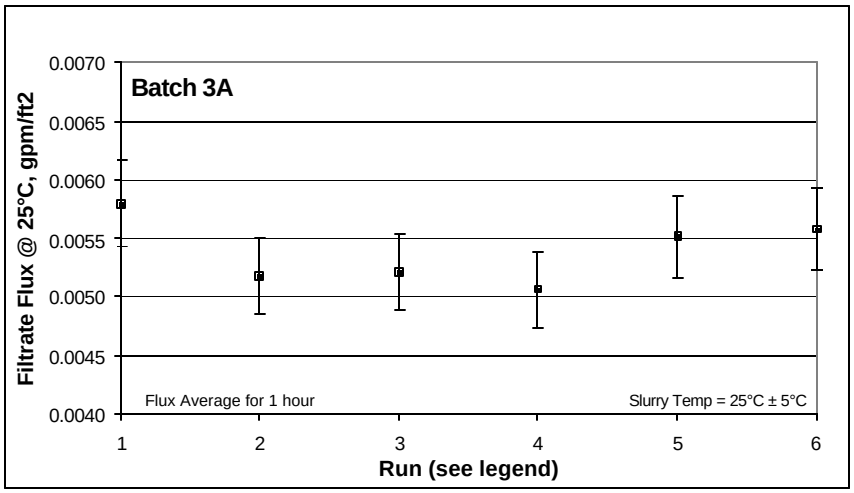


Figure 60. Batch 3A: This figure repeats of the data shown in Fig. 58 with depth fouling effect removed. [The legend indicated on the abscissa title is that of Fig. 58.]

As with Batch 3B data, if the Batch 3A results are shown as a function of TMP and V then filtrate flux dependence becomes evident. Figure 61 has TMP as the independent variable and Fig. 62 the axial velocity, V.

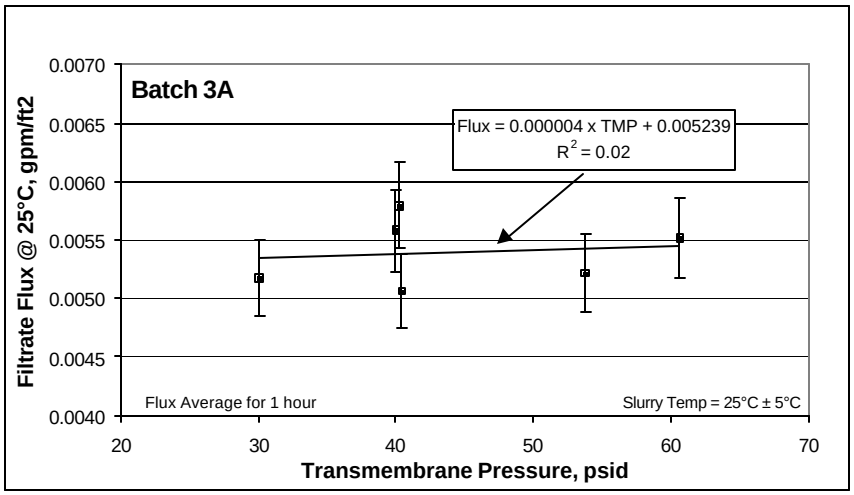


Figure 61. Batch 3A: All the steady-state data that were adjusted for depth fouling effect removed (Fig. 60) as a function of transmembrane pressure, TMP.

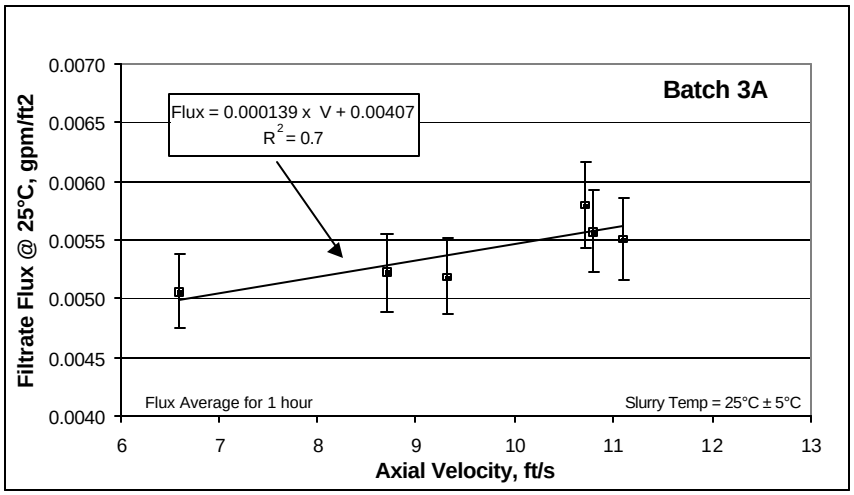


Figure 62. Batch 3A: All the steady-state data that were adjusted for depth fouling effect removed (Fig. 60) as a function of slurry axial velocity, V.

Once again, it appears that filtrate flux is not (or only very weakly) dependent upon the transmembrane pressure, while there is strong correlation with the slurry axial velocity in the filter tubes.

3.3.2.6 Washing and Concentration of Washed[†] AN-102R2 Slurry Simulant

To reduce the concentration of sodium of the waste slurry after being dewatered to some high concentration, e.g., between 15 wt% and 20 wt%, WTP will wash the slurry. The current

[†] All Steady State Filtering data can be found in Appendix F.

WTP plan is to have a concentrated slurry volume of approximately 18,000 gallons. To this volume will be added 21,000 gallons of inhibited water to perform the washing. This wash water will be added in 21 mini-batches of 1,000 gallons. After the addition of each mini-batch, the slurry will be dewatered to remove 1,000 gallons of diluted filtrate. This process will be repeated 21 times to complete the washing cycle.

The pilot-scale cross-flow test performed a similar washing cycle, but of course at a reduced scale. While this report deals with four different batches of AN-102R2 simulant, only after the first successful dewatering test could the steady state runs be done, and therefore, the washing test run. This occurred after the second batch, i.e., 3B. For subsequent batches most steady-state runs were not required, as well as the washing. After the last steady-state run with AN-102R2, Batch 3B, i.e., run 1.29, the test rig was made ready to wash the slurry.

At the end of test run 1.29 there were approximately 67 liters of concentrated slurry. As required by the test specification (Townson, 2002a), the slurry insoluble solids concentration was reduced from what was attained during the dewater test run 1.16 to 20 wt%, if it happened to be higher. The actual concentration for Batch 3B was approximately 22 wt%; therefore, before washing some of the previously removed filtrate was added back to the slurry to reduce the solids concentration. The added filtrate was 7.5 kg, or approximately 5.8 liters. The filtrate addition reduced the solids concentration of the simulant to 18.8 wt%. The slurry volume was approximately 73 liters, so 85 liters (i.e., 73 x 21,000/18,000 = 73 x 1.16 = 85) of wash water were prepared. The 85 liters were added in 4.04-liter batches while 4.04 liters of washed filtrate were removed before adding the next batch. Of course this was done 21 times.

3.3.2.6.1 Washing of AN-102R2, Batch 3B

Figure 63 show the filtrate flux during the entire 3.7-hour process of washing the slurry. While the washing run was performed with a constant slurry velocity, 12 ft/s, and TMP, 40 psid, the test is not really a steady-state run. This is because the properties of the slurry are constantly changing with the wash-water additions. Figure 64 shows the properties before and after the entire washing process.

Note that in Fig. 64 there is a significant drop in total slurry solids, which is basically due to the loss of soluble solids because there was very little change to the insoluble solids concentration. The loss of solids caused the density to drop, but more importantly the slurry consistency reduce to more that half, which means that the solution presents less shear for the same motive force. Interestingly, the yield stress almost doubled. The increase in yield stress would have little effect for the slurry in motion, but it does indicate that from rest it would take about double the energy to put the slurry in motion again.

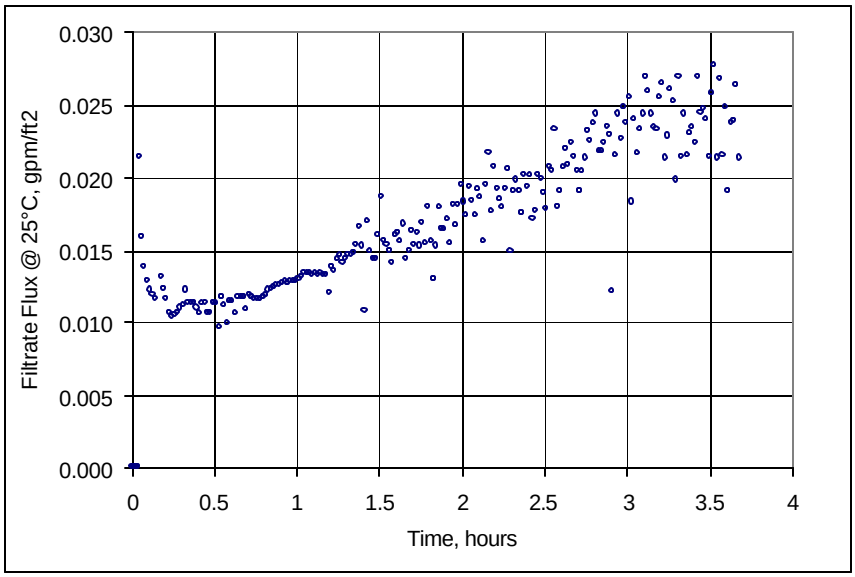


Figure 63. Washing of AN-102R2, Batch 3B after test run 1.29 and before concentration test run 1.30.

Over the filtering period the average slurry velocity was V = 12.1 ft/s, the average transmembrane pressure was TMP = 40.2 psid, and the average slurry temperature was T = 29°C (the filtrate flux was adjusted to T = 25°C). The insoluble solids started at 19.0 wt% and ended at 18.8 wt%]

Vol. Wash / Vol. Slurry	Total Solids Solids	Insoluble Solids	Slurry Density	Filtrate Density	Slurry Consistency	Slurry Yield Stress
	wt%	wt%	g/ml	g/ml	cP	Pa
0%	45.4	19.0	1.36	1.28	16	7.6
116%	28.5	18.8	1.15	1.09	7.1	14

Figure 64. Starting and ending slurry properties for the washing test run. The total amount of inhibited water added was 21/18 X the initial slurry volume or approximately 116%.

These changes in slurry properties imply the scattering of filtrate flux data after about the first 60 minutes of washing. Figure 63 shows an increasing less stable flux as time (and added wash water) increased. The slurry velocity and TMP had to be continually trimmed to maintain that target values mentioned above. It is probable that as the slurry became successively more washed the filtrate cake was being affected and forcing the velocity and TMP to change. As the flux was trimmed to maintain it constant then the process repeated itself, leading to the shotgun scatter depicted in Fig. 63.

Of course, the reason for the washing was to remove some of the soluble salts, especially sodium. Figure 65 shows the result of the removal.

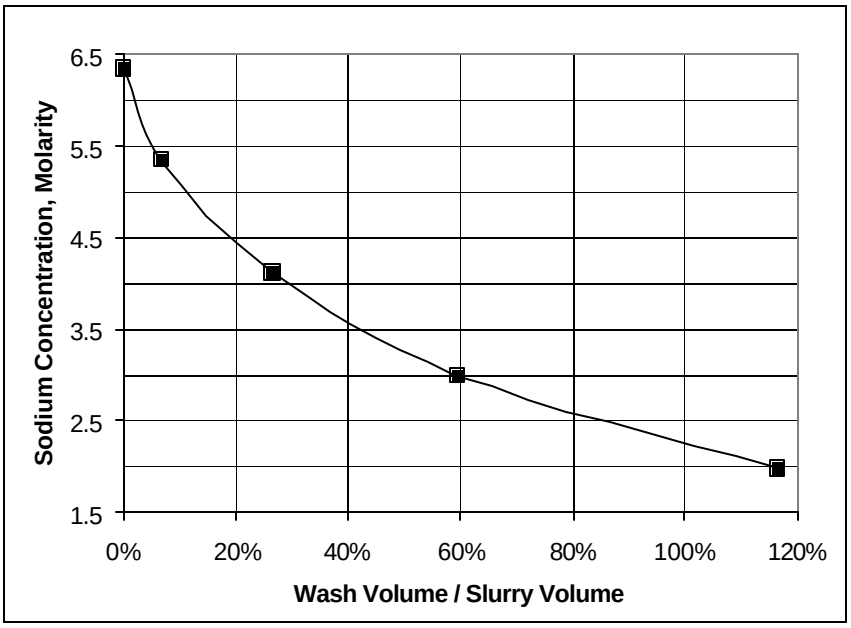


Figure 65. Reduction of Na^+ by washing with 21 mini-batches of inhibited water to AN-102R2, Batch 3B

3.3.2.6.2 Concentration of Washed AN-102R2, Batch 3B

Immediately following the washing test run the resulting slurry was concentrated under a constant slurry velocity of 12 ft/s and TMP = 40 psid. Figure 66 shows the results.

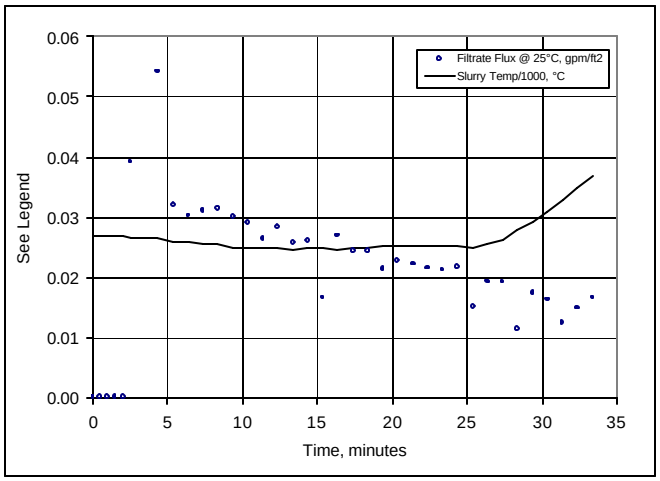


Figure 66. Dewatering of washed slurry (AN-102R2, Batch 3B): Test Run 1.30.
The average slurry velocity was 11.9 ft/s and the average transmembrane pressure was TMP = 40.1 psid. The insoluble solids increased from 19 wt% to 25 wt%. The average slurry temperature was T = 27°C, but as is shown the temperature rose rapidly after 25 minutes. (The filtrate flux was adjusted to T = 25°C.)

The slurry began at approximately 19 wt% insoluble solids but the test was stopped when it reached 25 wt%. After about 25 minutes the slurry temperature began increasing rapidly and the test rig cooling system could no longer maintain the temperature stable. When the slurry temperature reached approximately 38°C the test was terminated. If fact, the thermal momentum caused the slurry temperature to continue rising until it reached 46°C. While the slurry was definitely thick in appearance it flowed freely and no plugging was observed.

3.3.3 Scaling: Differences between the PXU and Bench Top Cross-flow Test Facilities

3.3.3.1 Comparison Challenges

The goal of the task at hand was to test several RPP WTP Envelope-C-type slurry simulants in a pilot-scale cross-flow ultrafiltration (PXU) facility. In many ways the pilot test rig is prototypic of the planned plant cross-flow ultrafiltration system. Figure 67 shows a comparison among the planned WTP filter bundle with that of the PXU facility and to the bench top test facility referred to as Cells Unit Filtration (CUF) facility.

Filter Tube Comparison	Planned WTP	Pilot Scale	Small Scale
Material	316 stainless steel	same	same
Pore Size	0.1 micron	same	same
Length	90 inches	same	24 inches
Tube Inside Diameter	1/2 inch	same	3/8 inch
Tube Outside Diameter	5/8 inch	same	1/2 inch
Arrangement	multiple	same	single
Number	241 per bundle	7	1
Grid Pattern	60° Triangular	same	not applicable
Center-to-Center Distance	7/8 inch	same	not applicable
Orientation†	Horizontal	Vertical	Horizontal
Other Features			
Slurry Pump	centrifugal	same	low shear

Figure 67. Comparison of full-scale to scaled† test facilities

Details of the CUF work are not given here, but can be found in Zamecnik et al. (2003). Only salient features of the CUF results are discussed in an attempt to see the effect of scale on experimental results. The purpose of the CUF test was two-fold: 1. Test actual waste, which is radioactively hot, and 2. compare the real waste filterability to simulants of that waste. To test actual radioactive wastes at pilot or plant scales would have been impractical. The handling of radioactively hot waste is very time consuming and costly and as scale increases so do the costs and risks. The CUF facility can operate with only 3 liters of slurry

† Orientation is included in the scaled criteria for completeness, however, it is not considered a significant difference. During an Oct 17, 2001 meeting, Prof. Joseph L. Gaddis of the Dept. of Mechanical Engineering of Clemson University, an expert on cross-flow filtration, stated that at the high velocities, i.e., high turbulence, that will be used for the cross-flow filtration facilities, orientation will not affect operation. He further stated that it is only important during shut down when gravity can assist emptying vertical tubes.

and has a small enough footprint that it can fit into most shielded cells to protect workers. Unfortunately, due to the complexities of the waste and the filter flow fields, extrapolating the small scale CUF data to the full-scale plant facility is not simple and at the very least would contain large uncertainties. The PXU facility was designed to be close to prototypic to minimize scaling issues so that confident full-scale data could be obtained. Of course, the drawback of the larger pilot scale is the amount of waste it needs and that it has to operate radioactively cold. This means a simulant must be used. For each waste a simulant, or simulants, is developed for large-scale testing. These simulants were made to match the real waste with respect to chemical and physical properties, while not being radioactive.

Because of the major differences between the PXU and CUF facilities filterability results were not expected to match. However, by showing statistically similar filter results for the actual waste and a simulant at the same scale, the CUF, then confidence was established for that simulated waste. A simulant verified with the CUF could then be used for testing at the pilot-scale to obtain results that would more closely match actual waste filterability at that large scale. The PXU results for the many conditions under which they were obtain, e.g., steady state, dewater, cleaning, rinsing, etc. have been previously discussed in this report. This section will be limited to discussing only comparable small-scale and pilot-scale results where possible. Even if results do not match between the scales, it is hoped that insight is obtained by making such a comparison.

Besides differences in scale of the CUF and PXU facilities, the other confounding feature is dissimilar simulants. This report deals with an organic based waste, classified as an Envelope C type waste. There are others, e.g., Envelopes A and B, which are non-organic and Envelope D, which is basically sludge based, containing most of the solids. All of these wastes are chemically complex and simulants are equally complex being comprised of dozens of compounds. Further, the Envelope C wastes are pre-treated to remove strontium and transuranics by precipitation before filtration occurs. This level of complexity makes one-to-one comparisons very difficult because no one simulant is the same. Even when two groups make the same simulant, following the same recipe, the resulting slurry may not be the same due to differences of how the recipe was applied and subsequent aging before filtration begins.

Because of differences in equipment of the CUF and PXU facilities and in formulations of waste simulants, there do not exist, to date, any data to make a quantitative side-by-side comparison of scale. However, there are some data that can be utilized to make some qualitative estimations of the effect of scaling.

Going back to 1997 (Nash and Siler, 1997) RPP-WTP work began with Envelope C simulated slurries. [In 1997 the waste types were just being defined and Envelope-C-type wastes were referred to as Envelope A. The important feature to remember is that this type of waste contained organic complexants, which necessitated precipitation to remove strontium and transuranic components. An explanation of the different types of Hanford wastes and simulant slurries developed for the project can be found in Eibling and Nash (2001).] This early version of the benchtop filter unit contained a single porous tube that had a 0.5-inch inside diameter, it was 4 feet long, and the 0.1-micron porous tube was of a

different design altogether. Besides the different filter structure, that 1997 test resulted in very poor filterability. After a little over a year of development SRTC recommended precipitation of Envelope C wastes with the additions of strontium nitrate and sodium permanganate. By the end of 1998 and into the early part of 1999 tests with the CUF showed that the new precipitation process with strontium and permanganate increased filterability (Nash, et al., 2000). Unfortunately, the CUF porous tube had been changed to a 0.2 porous tube and a 0.5-inch inside diameter, which made comparisons with to 0.1 micron porous tube filtration difficult.

3.3.3.2 A First PXU-to-CUF Comparison with an Envelope C Simulant (AN-107)

After making some modifications to the SRTC CUF design, to conform to RPP-WTP needs, and refining the strontium and permanganate quantities, this new precipitation process was verified by PNNL by the end of 1999 with simulated Envelope C waste (AN-107) (Hallen, et al., 2000). The PNNL modified CUF had a two-foot long, 0.375-inch inside diameter filter tube with 0.1-micron porosity. That filter's initial filter flux was 0.03 gpm/ft^2 (averaged over 1 hour) at filter slurry velocity of 12.2 ft/s and a TMP = 50 psid. PXU (Duignan, 2000b) testing for Envelope C simulated waste (AN-107) began in October 1999 and it too had a 0.375-inch inside diameter filter tube with 0.1-micron porosity, but it was 3.3-feet long. That filter's initial filter flux was 0.08 gpm/ft^2 ±0.01 gpm/ft^2 (averaged over 1 hour). Why was the PXU (AN-107) result higher than the CUF (AN-107)? The reason is not known. For the PXU 2000 test the Envelope C simulant was based on an SRTC recipe (Eibling and Nash, 2001). After precipitation steps and then mixing for 4 hours at 50°C the simulant had a density of 1.29 g/mL, a viscosity of 4 cP, insoluble solids of approximately 1.9 wt%, sodium of 5.9 M, strontium of 0.075 M, and permanganate of 0.05 M. The CUF, used at PNNL (Hallen, et al., 2000) used the same recipe, that is, after precipitation it was mixed for 4 hours at 50°C. The PNNL simulant had a density of 1.26 g/mL, a viscosity of 7 to 18 cP, insoluble solids of approximately 1.9 wt%, sodium of 6 M, strontium of 0.075 M, and the permanganate of 0.05 M. It appears that both simulants were similar but for some reason the SRTC simulant did not start out as viscous. Now the differing viscosities could be attributed to measurement of rheological properties, but since the simulants were made from 3 dozen different compounds it would take significant analyses to understand the subtle differences and how those difference affect filtration.

3.3.3.3 A Second PXU-to-CUF Comparison with an Envelope C Simulant (AN-102R2)

The reason data exist for the first comparison was simply a coincidence. That is, those data are available due to simultaneous programs being done in the DOE Complex to meet RPP-WTP requirements. In both cases, the only driver was to have a simulant as close as possible to actual waste. No attempt was made to have exactly the same slurries so that such

a comparison could be made. The only subsequent situation that occurred, which allowed[†] a conscious effort to be made to make a better comparison was during the precipitation and dewatering tests at SRTC of another Envelope-C-type simulant (AN-102R2). The first dewatering test of an AN-102R2 simulant (called Batch 3C and previously discussed in this report) resulted in very low filter fluxes for both the CUF (< 0.02 gpm/ft^2 at 8 wt% insoluble solids: Zamecnik, et al., 2003) and the PXU facility (= 0.005 gpm/ft^2 at 8 wt% insoluble solids: this report). For this first AN-102R2 test both the CUF and the PXU personnel made their own slurry simulants. To increase the filterability another dewatering test was done with some changes to the simulant. However, this time, after making the PXU 1000-liter batch, then precipitating and mixing for 4 hours at 50°C, 75 liters of simulant were removed and sent for use in a CUF facility. The hope was that differences in scale could be measured if the slurry were exactly the same in both facilities and operated under the same flow conditions. Unfortunately, while the CUF facility was the same as mentioned above, i.e., it had a two-foot long, 0.375-inch inside diameter filter tube with 0.1-micron porosity, the PXU facility had been changed to meet new RPP-WTP requirements of a 0.5-inch inside diameter and a 90-inch long porous tube. Figure 68 shows the comparison of the PXU and CUF tests which dewatered the AN-102R2 slurry from 1.2 wt% to 22 wt% (for the PXU) and 1.6 wt% to 19 wt% (for the CUF)[‡] over a 12-hour period.

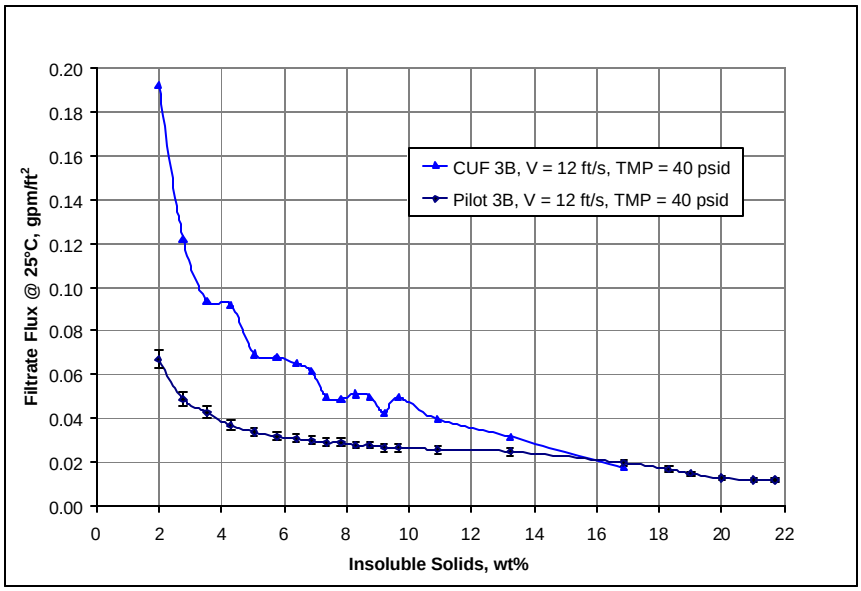


Figure 68. PXU to CUF filtrate flux comparison using an AN-102R2 simulant

It is important to note that the data in Figure 68 were obtained differently for each facility. For the CUF, each datum point was an average of a 3 liter batch of slurry. That is, filtrate flux is measured by the time it took for 3 liters to be filtered. The CUF test dewatered until

[†] The RPP-WTP research and technology project did not plan for dedicated one-to-one comparison testing; therefore, any such work had to be done in conjunction with other planned and funded tasks and at the initiative of the principal investigators.

[‡] The difference in the initial PXU and CUF insoluble solids concentrations may be due to analytical measurements or sampling techniques

the slurry solids concentration reached approximately 19 wt% but the last average flux value was at approximately 17 wt%. The PXU facility measured filtrate flux instantaneously and data were taken every minute. To make the Fig. 68 comparison the values of the PXU flux were taken at each of the averaged CUF insoluble solids points. This is the reason why all the abscissa points seem to line up. However, since the PXU dewatered up to 22 wt% insoluble solids, those points were also included. At about 16 wt% insoluble solids the two curve cross. At this point the CUF facility was close to its operational limit.

In general, it looks like the CUF filtrate flux is about a factor of 2 larger than the PXU facility up to approximately 10 wt% insoluble solids, after which the curves merge. At that point the thickness of the filter cake and increased slurry consistency minimize any scale differences. The data obtained from both tests do not give a clear indication as to why the curves are significantly different. Figure 69 includes some of the pertinent information of the facilities and the slurry used in both.

The PXU data have been taken from this report and those for the CUF have been estimated from data displayed in Zamecnic, et al. (2003). As already stated above, the starting slurry was exactly the same. It was made at one time and then 75 liters were separated for use in the CUF. The only starting difference is time. The PXU began filtration immediately after the newly precipitated slurry was mixed at 50°C for 4 hours. The CUF test began the following day, approximately 16 hours after the PXU test beginning; therefore, further precipitations reactions could have occurred. In fact, the particle-size distributions (PSD) for the initial CFU slurry appears to be slightly, but significantly, larger. However, all other characteristics, i.e., solids concentration, rheology, and density, appear to be the same[†]. The PSD difference may have existed or it may have simply been how the PSD was performed. For instance, the PSD samples sit for a while before processing so they are given a mild amount of sonication to reduce the particles to their base size. The question is, "What is that base size?"

However, in both tests the particle-size distribution show three distinct changes:

1. The mean particle size was reduced to approximately one half.
2. The spread of particle sizes was reduce to approximately one half.
3. The bimodal volume distribution was reduced to predominately a single size.

In discussing the filtrate flux differences shown in Fig. 68 Zamecnik, et al. (2003); (on page 63 of that reference), hypothesized that the different pump types, i.e., PXU high shear centrifugal to CUF low shear progressive cavity, caused the particles in the PXU test to become smaller and therefore be harder to filter. Unfortunately, the data do not back this claim up. The mean particle size of the concentrated slurry for the PXU may be slightly smaller than the CUF, but the difference is minimally significant. Further, the same difference is apparent in the initial slurry, which was exactly the same before each facility began testing, therefore this size difference is questionable. However, even if the particle were significantly smaller the same report contradicts its hypothesis by stating, "Surprisingly, the most filterable slurries appear to have more smaller particles in the 1-4 micrometer range

[†] See the preceding footnote.

and, in general, have a flatter distribution of particle size." Indeed, Fig. 14 of that report shows that as the mean particle size became smaller the average filter flux increased. This counter-intuitive result makes sense when looking at the micrograph of that report, Fig. 17, which shows "sheet-like flat" particles in the 5 to 20 micron range for less filterable slurries.

Test Facility	**Pilot-scale* (PXU)**	**Small-scale* (CUF)**
Date of Test	22-23 Oct.2002	23-24 Oct. 2002
Approximate duration of test	12 hours	14 hours
Approximate starting slurry volume	1000 liters	75 liters
Slurry mixing during precipitation	well mixed	same batch
Cross-flow slurry reservoir capacity	120 liters	6 liters
Flow Loop volume (without reservoir)	~ 34 liters	< 0.2 liters
Slurry circulation rate	193 lpm (27.6 lpm/tube)	15 lpm
Longest residence time of slurry	~ 48 seconds	~ 25 seconds
Slurry circulation time in flow loop	~ 10 seconds	~ 1 second
Type of circulation pumps	2 centrifugal	1 progressive cavity
Constant axial slurry velocity	12.1 ft/s	12 ft/s
Constant transmembrane pressure	40.5 psid	40 psid
Slurry at Low Solids Concentration		
Insoluble Solids	1.2 wt%	1.6 wt%
Total Solids	33 wt%	33 wt%
Slurry Consistency	4.0 cP	4.2 cP
Yield Stress	0 Pa	0 Pa
Filtrate Viscosity	3.8 cP	
Slurry Density	1.3 g/ml	1.3 g/ml
PSD (by volume dist.): Mean	8.55 micron**(48%)	~ 15 micron**
PSD (by volume dist.): Mean	2.25 micron**(52%)	~ 3.5 micron**
PSD (by volume dist.): Std Dev	4.27 micron	
PSD (by volume dist.): spread	1.2 to 52 micron	0.5 to 75 micron
PSD (by number dist.): Mean	1.94 micron	2.5 micron
PSD (by number dist.): Std Dev	0.45 micron	
PSD (by number dist.): spread	1.2 to 19 micron	0.8 to 6 micron
Slurry at High Solids Concentration		
Insoluble Solids	21.7 wt%	18.8 wt%
Total Solids	47.2 wt%	45.4 wt%
Slurry Consistency	20 cP	14.8 cP
Yield Stress	8.6 Pa	11 Pa
Filtrate Viscosity	3.7 cP	
Slurry Density	1.4 g/ml	1.4 g/ml
Filtrate Density	1.3 g/ml	
PSD (by volume dist.): Mean	8.2 micron**(13%)	6 micron
PSD (by volume dist.): Mean	0.9 micron**(87%)	1.5 micron
PSD (by volume dist.): Std Dev	0.25 micron	
PSD (by volume dist.): spread	<0.7 to 44 micron	0.3 to 45 micron
PSD (by number dist.): Mean	0.8 micron	2 micron
PSD (by number dist.): Std Dev	0.1 micron	
PSD (by number dist.): spread	<0.7 to 2 micron	0.8 to 5 micron
* PXU data can be found in Appendix G samples: 300187815,816,857,858 and 300188109,110,150,152		
* CUF data can be found in Zamecnik, et al.(2003)		
**bimodal distribution		

Figure 69. PXU to CUF comparison AN-102R2, Batch 3B simulant

As the slurry is processed in the filter facilities some of the large flat particle break up through shear. This breakup can happen in both the CUF and the PXU. Moreover, the fact that the CUF used a low shear pump does not mean the slurry does not experience significant

shearing. By design the CUF was made to minimize the amount of slurry needed to filter because radioactive slurry samples are small; therefore, the circulation rate is high. Note that in Fig. 69 the slurry in the CUF takes under 1 second to traverse the loop. If the longest residence time, as shown in Fig. 69. is used, then for the first charge of 6 liters of slurry, of which 3 liters was dewatered over a 20.4-min period, the slurry was circulated 20.4*60/24 = 51 times. By the end of the 14-hour test the initial batch of slurry had circulated 14*3600/24 = 2,100 times. For the PXU, the first slurry batch circulated only 12*3600/48 = 900 times. Considering the high turn over rate of the slurry, the speed of the slurry, i.e., 12 ft/s, and the pipe fittings and control valve in the CUF flow loop, the slurry does experience a considerable amount of shear. Many of the compounds that make up the slurry have strong oxide particles, which seem not to get any smaller than approximately ½ micron. In fact, it appears (Nash and Siler, 1997) the particle breakup occurs mostly in the first few minutes of circulation and then remains fairly constant. The conclusion here is that when large flat particles are broken down to smaller, less flat, particles the slurry filters better. Since the smaller particles seem to be 3 to 20 times larger that the nominal pore rating of 0.1 micron, then the slurry becomes more filterable. That is, the flat particles are broken down so that they do not blind the filter element.

Another possible reason for differences in CUF and PXU filter fluxes is the difference in wall shear. Figure 70 shows a cartoon of how a cross-flow filter works. As the slurry and most of its liquor travels through the inside of the porous tubes a filter cake builds up on the inside. The thickness of the cake is exaggerated in Fig. 70 for illustration, but it could eventually build up to only about the thickness of a piece of paper.

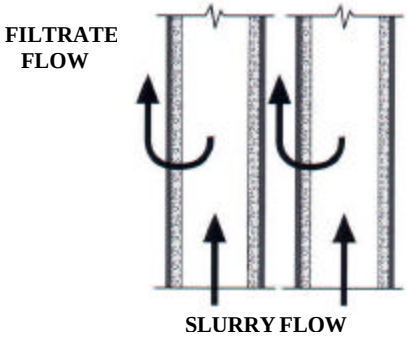


Figure 70. Operation of a multi-tube cross flow filter like the PXU

An advantage of the cross-flow filter over a dead-end filter is not needing periodic changing because the moving slurry constantly shears the cake, keeping it at reasonable thickness and a fairly constant filtering rate. Since the wall shear affects the cake formation on the porous wall, differing levels of wall shear may strongly influence that rate at which the slurry liquor can permeate through the porous wall, thus giving different filtration rates. As shown in Fig. 67 the CUF has a smaller diameter and shorter porous tube than the PXU, while Fig. 69 shows the axial slurry velocity was maintained the same at 12 ft/s.

To see the wall-shear effect more quantitatively a simple computational fluid dynamic model was made for two slurries that represent the initial slurry and the concentrated slurry.

Figure 71 shows the parameters assumed for the CUF and the PXU facilities. The slurry was assumed to be Newtonian and fully turbulent, i.e., Reynolds number greater than 2000. The slurry at low solids concentration does indeed behave as a Newtonian solution, however, as the solids concentration increased it become slightly thixotropic, i.e., shear thinning with a time dependent shear stress. This non-Newtonian effect is not strong and as long the slurry is flowing it still behaves like a Newtonian solution. While the turbulence in the larger diameter tube is 1/3rd more than the smaller tube for the same slurry velocity, i.e., Re(large) / Re(small) = large ID / small ID = 0.5/0.375 = 1.333, they are both much larger than the turbulence threshold of Re = 2000. By using some rough parameters, Fig. 71, for the two situations a comparison can be made between the two flow situations.

Physical Parameters	1.5 wt% Slurry	25 wt% Slurry
Porous Tube I.D.	3/8 and 1/2 inch	3/8 and 1/2 inch
Axial Slurry Velocity	12 ft/s	12 ft/s
Slurry Density	1.3 g/ml	1.5 g/ml
Slurry Viscosity	4 cP	20 cP

Figure 71. Parameters used in a wall shear CFD model

Figure 72 shows the low solids concentration CFD results. Immediately obvious is the much higher wall shear for the small tube. At 24 inches (0.6 m) the steady state wall shear is 24% higher for the small tube. Further, it takes approximately 1/3rd of the 24-inch span for the wall shear to come to steady state because of entrance effects. There is approximately the same entrance effect on the larger tube, but since it is 90 inches long the effect is much less. When taking into account the entrance effects, the wall shear for the 3/8-inch tube is approximately 30% higher than the ½-inch tube.

As the slurry concentrates the wall shear difference decreases. Figure 73 shows the results. When taking into account the entrance effects, the wall shear for the 3/8-inch tube is approximately 20% higher than the ½-inch tube. However, since the filtrate cake built up when the slurry had a low concentration of insoluble solids, then the differences at the high concentrations may not be significant, as may be implied by the two filtrate flux curves coming together above approximately 16 wt% in Fig. 68.

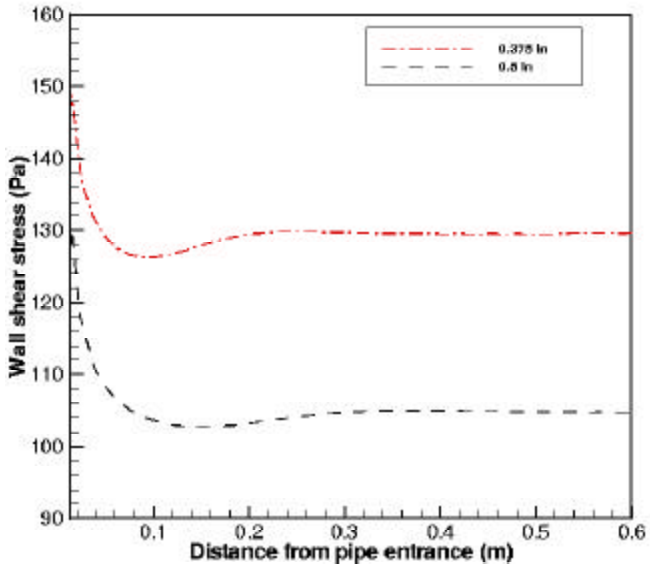


Figure 72. Wall shear comparison for two different tube IDs at 12 ft/s and a viscosity of 4 cP.

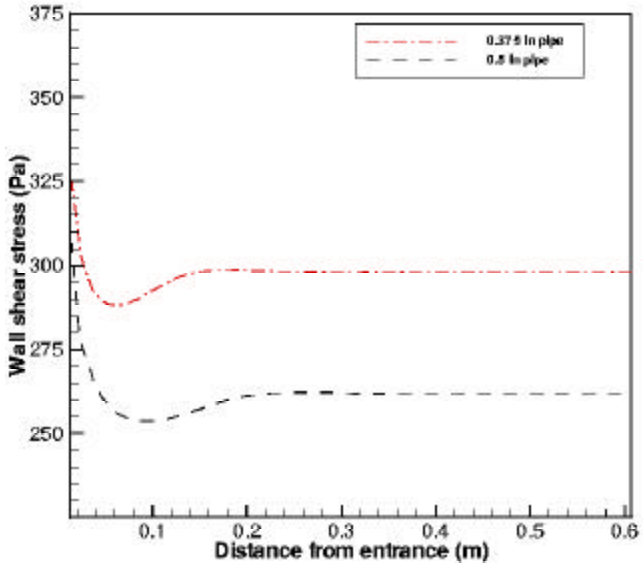


Figure 73. Wall shear comparison for two different tube IDs at 12 ft/s and a viscosity of 20 cP.

As stated by Murkes and Carlsson (1988) about crossflow filtration: "The method is basically a cake-free method (or intended to be such). Its purpose is to prevent the formation of the cake. Particles deposited on the filter medium are swept away by the feed flow. The clean-keeping efficiency of the flowing liquid increases with its velocity. Thus, the particle of the solute concentration polarization is controlled by the flow velocity." In the comparison between the PXU and the CUF facilities the velocities were kept the same, however, due to differences in porous tube channel size, the larger the channel the lower the wall shear, which is the mechanism that shears away the particles deposited on the filter medium. Shear stress is directly related to fluid velocity through Newton's law of viscosity, i.e.,

$$\tau = \mu \, dv/dy \qquad \text{and at the wall} \qquad \tau_{wall} = \mu \, [dv/dy]_{y=0}$$

where v is the local slurry velocity, y is the spatial coordinate perpendicular to the slurry flow, μ is the slurry dynamic viscosity, and τ is the local shear stress. Further Murkes and Carlsson show that the filtrate flux is related directly proportional to the filtrate cake permeability and inversely related to filtrate cake thickness. As the cake forms under the local wall shear both parameters will be affected. Figure 74 shows a schematic of slurry flow in a porous tube with an established filter cake. As the diameter, D, gets smaller so does the turbulence level, because it is directly proportional to the Reynolds number, which is directly proportional to this dimension. However, as D becomes smaller the boundary layer, where wall shear stress occurs, grows, and becomes a larger portion of the flow area, which is proportional to the square of the diameter. Therefore, wall shear stress is larger for smaller flow channels as long as the velocity remains constant.

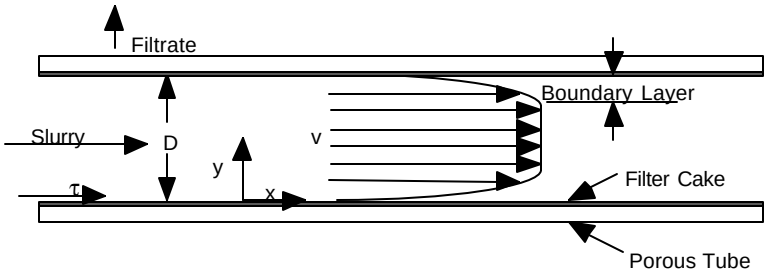


Figure 74. Slurry flow through a cross-flow ultrafiltration tube

Does the higher wall shear stress, and thus the higher "clean-keeping efficiency" of the CUF shown in Fig. 72 cause it to have a higher filtrate flux? The evidence seems to imply the affirmative. Is the initial 30% higher wall shear stress in the CUF enough to make its filtrate flux approximately double that of the PXU? It is possible, but there is not enough quantitative data to show this fact. These organic-based waste slurries appear to be very sticky, that is, there seems to be sufficient inter-particle forces to make the solids cling to each other more than, for example, sand in water. These solids probably form some kind of a gel-like cake on the filter surface, which does not lend itself to available analyses. However, the changing wall shear stress with scale must have an effect and possibly an effect large enough to cause the differing results obtained with the CUF and the PXU facilities.

3.3.3.4 Other PXU-to-CUF Differences

Even if the wall shear differences could be accurately taken into account it may not be enough to show the differences between these two filter facilities. Other differences must exist and have not been quantified. Consider the differences in the hardware like the two porous tubes used and the pumps that circulate the slurries, or in the slurry simulants, etc.

3.3.3.4.1 Differences in filter hardware

- Porosity - Both the CUF and the PXU facilities used 0.1 micron nominal porous tubes. However, each batch sintered-metal tubes is different. The 0.1 micron is an average value. At this ultrafiltration pore size small differences in porosity may have significant permeability effects. Besides, through the years a manufacturer like the Mott Corporation has changed, perfected, and enhanced their porous materials which sometimes has caused confusion of ordered products. For instance, the size 0.1 micron porosity sometimes means several difference things as described in Duignan (2001), and only with a closely monitored post-manufactured test can the porosity of any two tubes be equated.
- Tube Wall Thickness – While the inside diameter of tubes should be close to purchased size due to the process of forming sintered metal around a very accurately ground mandrel, the outside diameter depends on the force of a flexible surface to maintain the metal particle under pressure. This is evidenced by the measurements made on the seven-tube PXU tube assembly when it arrived from the manufacturer. Each of the seven tubes was made of four subsections (see Figs. 3 and 4) and a total of 100 measurements were made on the tubes to determine the dimensions. The manufacturer's stated inside diameter was 0.5 inch and the received tubes had an average diameter of 0.488 inch, with a maximum of 0.490 inch and a minimum of 0.485 inch. This 0.005-inch variation is considered very good. . However, the manufacturer's stated outside diameter was 0.625 inch and the received tubes had an average diameter of 0.654 inch, with a maximum of 0.674 inch and a minimum of 0.640 inch. This 0.034-inch variation is large but expected. While the 7-tube bundle of the PXU had 28 subsections, the CUF was comprised of a single 24-inch tube. The CUF would represent the PXU dimensionally only by coincidence, but more likely it was dimensionally different, which may have had some significant flux differences. The PXU will be more representative of the full-size plant filter unit because of the large variations in dimensions.

  As the filter cake builds up on the inside of the porous tube the differences in porosity and wall thickness should become less evident because then the cake becomes the filtering medium and the largest source of pressure drop. However, it is probably very important how the filter cake is initially formed, which may persist for a significant amount of time until the cake is thick enough to make the two filters act the same. This seems to have happened as seen in Fig. 68.
- Feed Pumps – As mentioned in the section 3.3.3.3, the pumps for the two facilities were different. The CUF facility used a single air-driven progressive-cavity pump made by Oberdorfer. This pump had a stainless steel rotor, which was covered with a layer of hardened chrome. The rotor operated in a Buta-N stator, which has good resistance to caustic service but limited resistance to acid service, and moved the slurry in a piston-like fashion, through a helix-shaped cavity. Up to a threshold pressure this type of pump acts like a positive displacement pump, however, when the maximum pressure is reached (in this case it was approximately 90 psig) the elastomer liner gives. At a steady-state operation of a slurry velocity of 12 ft/s, the CUF pump flow was 4 gpm. As mentioned in section 3.2.1.1, the PXU facility used two centrifugal pumps in series and were made by

Galigher. The impellers and housings were made of EPDM, which has good resistance to both acid and caustic services. At a steady-state operation of a single filter tube slurry velocity of 12 ft/s, the PXU pumps flow was 51 gpm. With respect to shear, the progressive-cavity pump imparted less than the centrifugal pumps, however, as seen in Fig. 69, the CUF circulated the slurry at a much higher rate due to the very small flow loop. Unfortunately, the high shear at the CUF control valve may have negated any benefit to the lower shear present by the pump.

3.3.3.4.2 Differences in slurry simulant

- Time – The simulant used in the AN-102R2 comparison for both the CUF and the PXU facilities was made at one time and when it was ready for filtration some of the large batch was removed and transported to the CUF location. However, the filtration of the separated sub-batch of simulant for the CUF only began about 15 or 16 hours after the PXU began. Figure 69 shows some characteristics of the simulant at the beginning filtration for the respective facility, like slightly larger particles for the CUF simulant, however, it does not show the complex number of reactions that occurred in making the simulant, nor the changes due to the reactions with time. The precipitation report (Steeper and Williams, 2003) shows that while most of the simulant was predominantly stable after 4 hours of mixing, just before feeding to the PXU facility, there are still some reactions occurring. For instance, about 10% of the aluminum available as a solid, when the PXU began filtering, is incorporated into the aqueous after about 20 hours. The presence of solid aluminum is known to inhibit filtration and being present for the PXU testing and not for the CUF testing may have had an effect. The point here is that chemically the simulants were slightly different due to aging, which could have contributed to the differing results.

3.4 CONCLUSIONS

3.4.1 Water

1. In general, inhibited water (0.01 M NaOH) tests before and after each slurry test indicate a return to "clean" filter fluxes (Fig. 19).
2. However, when water was used without the addition of caustic the filtrate flux was significantly higher (Fig. 21), which is assumed to be the result of having fewer precipitating solids left in the test rig.

3.4.2 Standard Slurry ($SrCO_3$)

1. The use of a standard slurry to show a filter's return to cleanliness was confounded by the level of cleanliness of not just the filter but of the entire filter system (Fig. 29). That is, unless the entire filtration loop was clean then determining the cleanliness of just the in-line filter may not be possible.
2. The heavy solids of the 5 wt% $SrCO_3$ standard slurry required transmembrane pressure above 20 psid for a filter to be challenged (Fig. 27).

3. The standard slurry could only be effectively removed from the filter system with the used of acid because it dissolves carbonate. A concentration of 0.05 M HNO_3 was used.

3.4.3 Acid Cleaning

1. The method used, two 90-minutes circulations of 2 M nitric acid, cleaned most of the solids away from the filter, but there were always some remaining solids, which reduced the acid filtrate fluxes from that of a clean filter. (Fig. 35). That is, the complex wastes may need more targeted cleaning to remove all waste remnants.
2. Cleaning periods of more than three hours with the 2 M nitric acid may not improve effectiveness. (Fig. 33).

3.4.4 Dewatering

Batch Number	Precipitation Conditions*	Precipitation Mixing	Precipitation Temp, °C	Final Conc of Free OH^-	Final Conc of $SrNO_3$	Final Conc of $NaMnO_4$	Filter Flux (gpm/ft^2) at 2 wt%	at 15 wt%	Avg to 15 wt%	Location
3C	NOC =	well	25	0.3 M	0.03 M	0.03 M	0.019	0.005**	0.010***	(Fig. 38)
3B	BC =	well	50	1.0 M	0.075 M	0.050 M	0.066	0.024	0.049	(Fig. 40)
3A	BC @ 25°C =	well	25	1.0 M	0.075 M	0.050 M	0.052	0.019	0.020	(Fig. 42)
4A	BC w/PJM =	PJM	50 > 25	1.0 M	0.075 M	0.050 M	0.021	0.014	0.020	(Fig. 44)

* These are the dewatering results and the precipitation conditions nomenclature can be found in Fig. 17
** Batch 3C only went to 8.3 wt% but flux was constant from 5 to 8.3 wt%
*** Batch 3C average assumes the filtrate flux continues at 0.005 gpm/ft^2 to 15 wt%

Figure 75. Overall dewatering results

1. Filtering to above 15 wt% insoluble was attainable. (Fig. 36), with results in the 18 wt% to 25 wt% range.
2. Precipitation with Newly Optimized Conditions left the wastes poorly filterable. (Figs. 37, 38, and the 1st line in Fig. 75)
3. AN-102R2 had the best filterability when prepared at precipitation baseline conditions which included being well mixed and prepared at 50°C. (Figs. 39, 40, and the 2nd line in Fig. 75.)
4. AN-102R2 was more filterable when solid particles were broken down to near the micron size. (Compare Fig. 50 to the penultimate column in Fig. 75 and see section 3.3.3.3, which discusses how larger sheet-like particles may reduce filtration.)
5. Rheological properties of simulants underwent large changes as the slurry increases above 14 wt% insoluble solids. (Fig. 46)
6. Backpulsing the filter with this Envelope C-type slurry was not very effective and after reaching an insoluble solids concentration of approximately 5 wt% backpulsing became ineffective. (Figs. 38, 42, and 44)
7. Excellent solids separation was obtained with turbidities on the order of 0.2 NTU, possibly indicating that the separated filtrates had had less than 0.2 ppm of insoluble solids (see section 3.3.1).

3.4.5 Steady State

1. Increasing the slurry axial velocity by a factor of 2 increased the filtrate flux by approximately 20%. (Figs. 57 and 62)
2. Filtrate flux was not significantly dependent upon transmembrane pressure. (Figs. 56 and 61)
3. Slurry axial velocity should not go below 11 ft/s or the transmembrane pressure below 30 psid. Doing so will cause a significant loss of filtrate flux. (Fig. 55, Batch 3B runs: 4, 7, 9, 11, and 12) (Fig. 60, Batch 3A runs: 2, 3, and 4)
4. With backpulsing at a frequency of one to two hours, a 0.1-micron filter will depth foul with the result of the filtrate flux loss of approximately 60% ($24^{-0.15}$) after 24 hours of continuous operation. (Figs. 54 and 59)
5. Excellent solids separation was obtained with turbidities on the order of 0.2 NTU, possibly indicating that the separated filtrates had had less than 0.2 ppm of insoluble solids (see section 3.3.1).

3.4.6 Washing

1. While washing a volume of AN-102R2 with an equal volume of inhibited water cuts its consistency in approximately one half, its yield stress approximately doubles. (Fig. 64)
2. Washing a volume of AN-102R2 with an equal volume of inhibited water removes approximately 65% of soluble sodium. (Fig. 65)

3.4.7 Scaling

1. Not enough data are available to make quantitative comparison between the benchtop (CUF) data and the pilot-scale (PXF) data. Qualitatively the limited data sets are not comparable and caution is recommended when relating small-scale results to full-scale operation. A detailed discussion can be found in section 3.3.3.

4.0 RECOMMENDATIONS

SRTC recommends that:

1. Axial slurry velocity be greater than 11 ft/s and the transmembrane pressure more than 30 psid. Higher velocities will filter slurries faster, but higher transmembrane pressures will not increase filter fluxes significantly.
2. Baseline conditions (BC in Fig. 75) be used when precipitating Envelope C-type wastes like AN-102 to obtain the best filterability.
3. Backpulsing be minimized because increasing backpulsing increases depth fouling of the filter and thus reduces time between acid cleanings.
4. A more effective cleaning method be determined than the use of 2 M nitric acid, alone.

5.0 REFERENCES

Blunt, A. L. (2002),"Notice of NEPA Approval (NONA)," Westinghouse Savannah River Company Inter-office memorandum No. FSS-FSE-2002-301. (5 November).

Duignan, M. R. (2000a) "Final Report: Pilot-scale Cross-flow Ultrafiltration Test Using a Hanford Site Tank 241-AN-105 Waste Simulant – Envelope A + Entrained Solids," Westinghouse Savannah River Company Document No. BNF-003-98-0221, Rev. 0, (23 February).

Duignan, M. R. (2000b), "Final Report: Pilot-scale Cross-flow Ultrafiltration Test Using a Hanford Site Tank 241-AN-107 Waste Simulant – Envelope C + Entrained Solids + Strontium-Transuranic Precipitation," Westinghouse Savannah River Company Document No. BNF-003-0226, Rev. 0. (24 March)

Duignan, M. R. (2001), "Myths and Facts of Mott Tube Filters," Westinghouse Savannah River Company Inter-office Memorandum No. SRT-RPP-2001-00130. (28 August, cover letter 30 August)

Duignan, M. R. (2002a), "Pilot-scale cross-flow ultrafiltration test with a simulant of a LAW waste from Hanford Tank 241-AN-102 Sr/TRU Precipitants," Test Technical and Quality Assurance Plan, Westinghouse Savannah River Company Document No. WSRC-TR-2002-00112 (or SRT-RPP-2002-00054). (12 April)

Duignan, M. R. (2002b), "RPP-WTP Pilot Scale Cross Flow Filtration," Westinghouse Savannah River Company Notebook No. WSRC-NB-2002-00076. (began on 14 May)

Duignan, M. R. (2002c), "Analytical Study Plan: RPP-WTP Pilot-scale cross-flow filtration of AN-102," Document No. SRT-RPP-2002-00142. (11 June)

Duignan, M.R. (2002d), SRS Final Acceptance Inspection (SM-51), Approved on 6 September.

Duignan, M. R. (2002e), "RPP-WTP Pilot-scale Cross-flow Ultrafiltration Test Procedure," Westinghouse Savannah River Company Field Procedure No FP-932, (5 September: Rev.0, 12 September: Rev. 1, 21 October: Rev. 2)

Edmunds, J. (2002), "EPD Concurrence with Exemption Request for EEC-TC-A-2002-086, Rev. 0: Hanford Protection Project Cross-flow Filter Test," Westinghouse Savannah River Company Inter-office memorandum No. FSS-FSE-2002-300. (5 November).

Eibling, R. E. (2003), "Development of Supernate Simulant of Hanford Tank 241-AN-102 Waste (U)," Westinghouse Savannah River Company Document No. WSRC-TR-2003-00040, Rev. 0 (or SRT-RPP-00012). (February).

Eibling, R. E. and C. A. Nash, (2001), "Hanford Waste Simulants Created to Support the Research and Development on the River Protection Project – Waste Treatment Plant," Westinghouse Savannah River Company Document No. WSRC-TR-2001-00338, Rev. 0. (or SRT-RPP-2000-00017). (22 February)

Hallen, R. T, P. R. Bredt, K. P. Brooks, and L. K. Jagoda, (2000) "Combined Entrained Solids and Sr/TRU Removal from AN-107 Dilute Feed," Battelle Pacific Northwest Division Document No. PNWD-3035 (or BNFL-RPT-027, Rev.0). (August)

Hallen, R. T, K. P. Brooks, and L. K. Jagoda (2000), "Demonstration of Entrained Solids and Sr/TRU Removal Processes with Archived AN-107 Waste," Battelle Pacific Northwest Division Document No. PNWD-3033 (or BNFL-RPT-026, Rev.0). (July)

Mandel, J. (1964), *The statistical Analysis of Experimental Data*, Dover Publications, Inc.

Martino, C. J., M. R. Poirier, F. F. Fondeur, and S. D. Fink (2001), "Flocculating, Settling, and Decanting for the Removal of Monosodium Titanate and Simulated High-Level waste sludge from salt supernate," Westinghouse Savannah River Company Document No. WSRC-TR-2001-000413, Rev. 0. (16 October) [specifically: pp. 12-13, section 3.5.1 and p. 29, section 4.4.2]

Murkes, J. and C. G. Carlsson (1988), *Crossflow Filtration: Theory and Practice*, John Wiley & Sons, Ltd.

Nash, C. A., S. W. Rosencrance, W. W. Walker, and W. R. Wilmarth (2000), "Investigation of Varied Stontium-Transuranic Precipitation Chemistries for Crossflow Filtration," Westinghouse Savannah River Company Document No. BNF-003-98-0171, Rev. 0. (18 April)

Nash, C. A., J. L. Siler (1997), "Filtration of Nonradioactive Hanford Waste Simulants," Westinghouse Savannah River Company Document No. SRTC-BNFL-016, Rev. 0. (30 September)

Restivo, M. L. (2003), "RPP part B2 pilot scale crossflow filter tests test rig assembly with 92" filter and Galigher pumps," As-built drawing: Equipment & Engineered Systems Department (WSRC/SRTC) Document No. EES-22699-M6-005, Rev. B. (10 May)

Steeper, T. J. and M. R. Williams (2003), "Pilot Scale Precipitation Tests of Envelope C Simulants," Westinghouse Savannah River Company Document No. WSRC-TR-2003-00064, Rev. 0 (or SRT-RPP-2003-00019). (May)

Steimke, J. L., C. M. Hart, and S. E. Sponseller (1994), "Results from Tests of Du Pont Crossflow Filter (U)," Westinghouse Savannah River Company Document No. WSRC-TR-94-0322. (October)

Townson, P. S. (2002a), "AN-102 Simulant Pilot Scale Ultrafiltration Test Specification," River Protection Project – Waste Treatment Plant Document No. 24590-WTP-TSP-RT-01-029, Rev. 0. (16 January)

Townson, P. S. (2002b), Test Exception No. 24590-WTP-TEF-RT-03-027 (approved on 5/27/2003 by Reid Peterson) to Test Plan SRT-RPP-2002-00054, Rev. 0. (19 September)

Urie, M.W., J. A. Campbell, O. T. Farmer,. S. K. Fiskum, L. R. Greenwood, E. W. Hoppe, G. M. Mong, C. Z. Soderquist, R. G. Swoboda, M. P. Thomas, and J. J. Wagner (2002), "Chemical Analysis and Physical Properties Testing of 241-AN-102 Tank Waste," Battelle Pacific Northwest Division Document No. PNWD-3173 (or WTP-RPT-020). (July)

Zamecnik, J. R., M. A. Baich, E. K. Hansen, and M. R. Poirier (2003), "AN-102 Simulant SR/TRU Precipitation and Ultrafiltration," Westinghouse Savannah River Company Document No. WSRC-TR-2003-00056, Rev. 0 (or SRT-RPP-2002-00231, Rev. 0). (10 February)

Appendix A: Water

As required by the RPP-WTP Test Specification each time the cross-flow filter experienced a slurry run the filter was to be tested with inhibited water. The water was distilled and filtered (to 0.1 micron absolute) and then made inhibited by adding caustic to a concentration of 0.01 M NaOH. Those tests were noted in the test matrix as runs 1.00 before a slurry test and 1.34 after a slurry. Along with these tests there were other water rinses included that came after using the standard slurry (1.02), after the final slurry concentration test (1.31A) and after cleaning the filter with acid (1.32).

Run 1.02 was generally not done because initial tests with the slurry (during the preconditioning test with AN-107 and slurry AN-102R2 batch 3C) determined that only with considerable number of water rinses and acid cleaning could the baseline slurry be removed from the filter, costing time and money, therefore starting the AN-102R2 batch 3B test the RPP-WTP customer allowed baselining the filter only after each slurry test (run 1.33). Without the initial baseline slurry tests, then the rinse run, 1.02 was no longer necessary. This report deal with the testing of five separate batches of slurry (peconditioning with AN-107, AN-102R2:3C, AN-102R2:3B, AN-102R2:3A, and AN-102R2:4) therefore the water runs were:

Water test runs related to the Simulant Slurry AN-107 (Filter Preconditioning):

1A, 1B, 1C	Pre-Standard Slurry Test and Before Preconditioning the filter with AN-107; pre-test rig modification
3A, 3B, 3C, 3D	Post-Standard Slurry Test Rinse and Before Preconditioning the filter with AN-107; with **INHIBITED** water
3a, 3b, 3c, 3(TMP=5 psid)	Post-Standard Slurry Test Rinse and Before Preconditioning the filter with AN-107; with **NON-INHIBITED** water
5A	After Preconditioning the filter with AN-107, but **BEFORE** acid cleaning
6	After Preconditioning the filter with AN-107. But **AFTER** acid cleaning
8A, 8B, 8C	After Preconditioning the filter with AN-107, and after both acid cleaning and final standard slurry testing

Water test runs related to the Simulant Slurry AN-102R2 Batch 3C:

1.00A, 1.00B, 1.00C	Before standard slurry test
1.02	After initial standard slurry test
1.31A	After batch 3C test and before acid cleaning
~~1.32~~	After acid cleaning, not included do to pump liner change
~~1.34A, 1.34B, 1.34C~~	Not done since 1.00A, 1.00B, 1.00C following tests give the same information

Water test runs related to the Simulant Slurry AN-102R2 Batch 3B:

1.00A, 1.00B, 1.00C	Before standard slurry test
~~1.02~~	Not done since initial standard slurry test was no longer done
1.31A	After batch 3B test and before acid cleaning
1.32	After acid cleaning, but before final standard slurry test
1.34A, 1.34B, 1.34C, 1.34D	After final standard slurry test (extra test,TMP=40 psid was done in error)

Water test runs related to the Simulant Slurry AN-102R2 Batch 3A:

~~1.00A, 1.00B, 1.00C~~	Not done because preceding tests 1.34a, 1.34b, 1.34c give the same information
~~1.02~~	Not done since initial standard slurry test was no longer done
1.31A	After batch 34 test and before acid cleaning
1.32	After acid cleaning, but before final standard slurry test
1.34A, 1.34B, 1.34C	After final standard slurry test

Water test runs related to the Simulant Slurry AN-102R2 Batch 4:

1.00A, 1.00B, 1.00C	Before batch 4 test
1.00r1	Because the preceding tests 1.00A, 1.00B, 1.00C had a low filtrate flux the filter was soaked for 4 days in 2 M nitric acid and this revision 1 (r1) water test at TMP=20 psid was done with NO caustic, to compare to the following repeat test with caustic.

1.00Ar1, 1.00Br1, 1.00Cr1 The preceding tests were repeated after an extra acid cleaning

~~1.02~~	Not done since initial standard slurry test was no longer done
1.31A	After batch 4 test and before acid cleaning
1.32	After acid cleaning, but before final standard slurry test
1.34A, 1.34B, 1.34C	After final standard slurry test

The letter A, B, C indicate different constant transmembrane pressure (TMP), generally, but not always: A=10 psid, B=20 psid, C=30 ; psid.

For each water test this appendix contains a graph of the filtrate flux with time and tables of the data taken and calculated. To better understand the presented information important aspects of the graphs and tables are explained below:

Graphs – Each graph contains time averages of some of the imporant parameters taken during the run at the top of the figures, i.e. Water velocity in the filter tube, V; transmembrane pressure, TMP; water pressure at the entrance of the filter tube, Filter Pres; and the water temperature, T.

Tables – Each table is divided into raw data (the first 17 columns) and calculations (the last 10 columns) which are based on the raw data. The raw data section is divided into three parts:

Individual Entries – Raw Data (Note: Slurry = Water for these tests)

Temperature	Filtrate – from the filtrate loop at the exit of the filter bundle
	Cleaning – from the cleaning loop (this loop was not used)
	Slurry – from the slurry loop in the slurry reservoir
	Hi Amb. – outside ambient temperature at the top of the test rig
	Lo Amb. – inside ambient temperature at the bottom of the test rig
Pressure	BotTMP – differential pressure across the filter tube at the bottom of the vertical tube
	Filter – gauge pressure of the slurry at the entrance of the filter tube bundle
	Filter dP – differential pressure of the slurry along the height of the vertical 90-inch tube
	TopTMP – differential pressure across the filter tube at the top the vertical 90-inch tube
	Filtrate – gauge pressure of the filtrate at the exit of the filter tube housing
	Pulsepot – gauge pressure of the filtrate at the bottom of the pulsepot
Flow	Slurry – rate of slurry just before entering the seven-filter-tube bundle
	Filtrate – rate of slurry filtrate under normal flow (max. is 1.2 gpm)
	Hi Filtrate – rate of any liquid which has a high flowrate (water, acid, etc.) (max. 5 gpm)
	Backpulse – rate of filtrate in opposite direction from normal flow, i.e., backpulse

Individual Entries – Calculated Data

Time – Minutes after start of test, including the backpulse (based on raw data TIME column)
Press. – Internal filter pressure of slurry at the filter bundle entrance (based on raw data P1 column)
Vel. – Slurry velocity in filter tube (based on raw data Q1 column and i.d. of the tubes of 0.488 inches)
TMP – Filter transmembrane pressure (based on average of raw data columns dP2 and dP3) in psi.
TMP – Filter transmembrane pressure (based on average of raw data columns dP2 and dP3) in bar.

Filtrate Flux – Filtrate flow rate (raw data columns Q2/Q3) divided by inside filter surface area (6.707 ft2)[†]
Filtrate Flux @ 25°C – Same as Filtrate flux, but correct for temperature with the following multiplier:

T(corrected) = T x Exp[2500/((1/273+T))-(1/298)] as per Test Spec 24590-WTP-TSP-RT-01-029, Rev. 0

Permiability – Filterate flow rate per TMP (based on calculated columns Filtrate Flux @ 25°C and TMP)
Permiability x 1000 – Same as the above Permiability, but increase by 1000 to facilitate graphing
Permiability – Same as Permiability but in metric units, meter/day/bar

Statistics

At the bottom of the last individual entry there are six rows with some data statistics to better understand the data and their fluctuations. The columns are self explained with titles of Averages, Maximum, Median, and Minimum. The next row 2 x Std Dev, is two times the population stanard deviation based on the number of data points used, which is the last row. The Number of Points used generally do not included the points taken during the backpulse sequence of each test. This is explained below.

Raw Data Table Layout

The raw data is generally made up of three sections:

Zeros – These eight rows include approximately 15 to 20 seconds of data taken with the pressure transducers placed in the "zero" mode to determine if any zero drift occurred from one test to the next.

Data-Per Minute – On most of the tables the first six rows of these data are contained in a box which indicate data taken during the backpulse. This is were the filtrate flow is reversed temporarily to knock the filtrate cake of the filter surface. During these first few minutes the filtrate flow is stopped, then reversed, then stopped again, then it is finally returned to normal operation. The data during the backpulse operation were taken with a separate log, therefore those data are marked with a box to note this fact. Most or all of those data points are not counted in the statistics at the bottom of the table. The tables of some of the later tests do not show the boxed data because separate logs of data were not taken, however since a backpulse for each run still occurred only those data were not included in the statistics at the bottom of the page.

[†] For the water tests during preconditioning it will be noticed that 6.87 ft2 was used. This was based on a tube inside diameter of 0.5 inch, which was based on the manufacturer's specification. After the tubes were measured the i.d. was changed to 0.488 inch and the area to 6.707 ft2. This means that absolute axial velocity and filtrate flux are low by 2.5% % for the preconditioning runs.

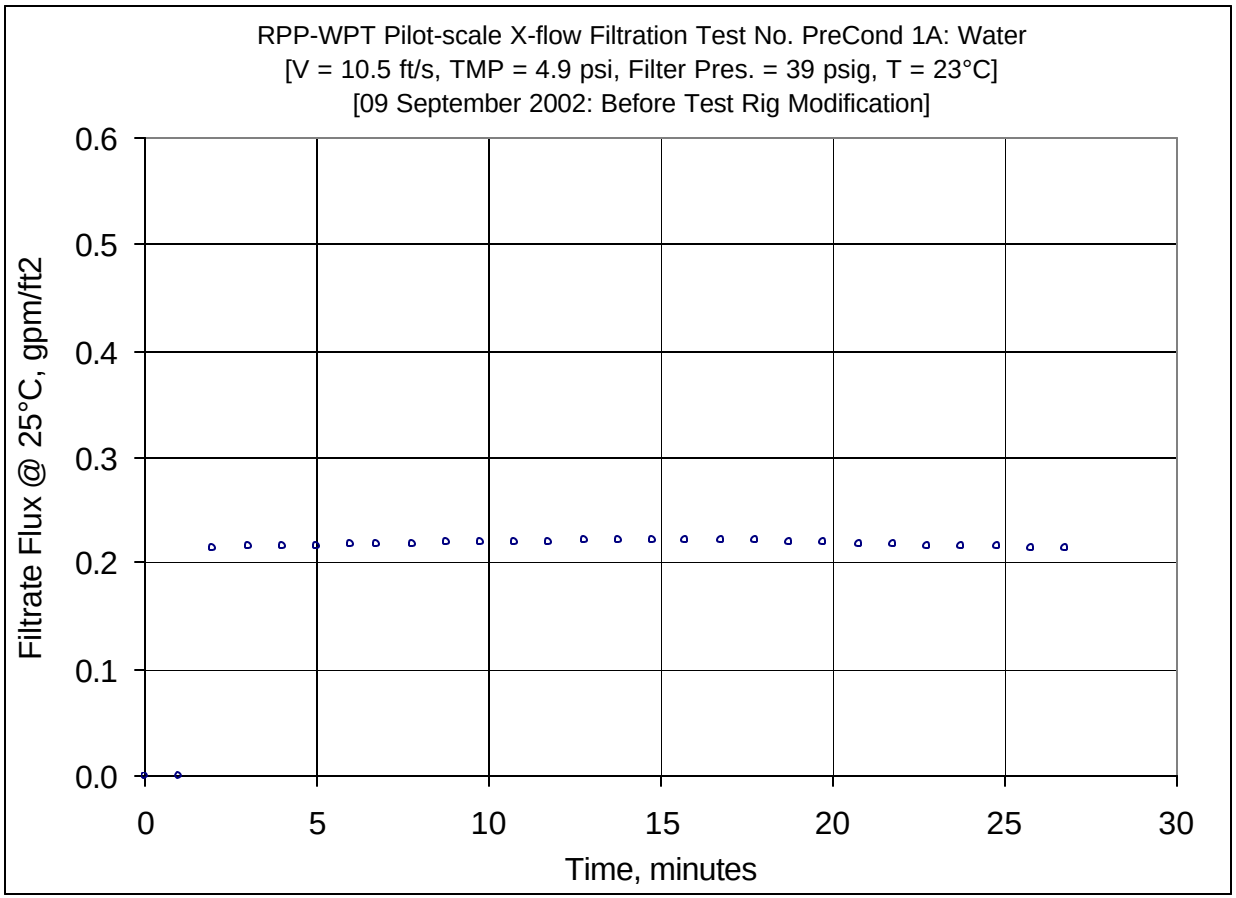


Figure A1: PreConditioning 1A – Inhibited Deionized & Filtered Water – Before Test Rig Modification

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/9/2002	9:43:27 AM	24.5	21.5	24.7	22.0	21.9	-0.125	-0.026	-0.061	0.058	-0.286	0.33	9.497	0.493	0.493	0		Filter Surface	6.87	FT2						
9/9/2002	9:45:35 AM	24.5	21.5	24.7	22.0	21.9	-0.125	-0.026	-0.061	0.058	-0.286	0.33	9.497	0.493	0.493	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/9/2002	9:45:36 AM	24.6	21.5	24.8	22.1	21.9	-0.125	-0.027	-0.061	0.058	-0.307	0.327	9.52	0.494	0.486	0										
9/9/2002	9:45:37 AM	24.6	21.5	24.8	22.0	21.9	-0.127	-0.027	-0.06	0.058	-0.307	0.33	9.516	0.493	0.49	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/9/2002	9:45:38 AM	24.6	21.5	24.8	22.1	21.9	-0.127	-0.027	-0.061	0.058	-0.307	0.33	9.541	0.493	0.489	0										
9/9/2002	9:45:39 AM	24.6	21.5	24.8	22.1	21.9	-0.125	-0.027	-0.061	0.058	-0.307	0.327	9.497	0.491	0.49	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/9/2002	9:45:40 AM	24.6	21.5	24.8	22.0	21.9	-0.125	-0.026	-0.061	0.056	-0.307	0.327	9.486	0.494	0.488	0		VVVV				< Filtrate Flux	<<	PERMIABILITY	>>	
9/9/2002	9:45:41 AM	24.6	21.5	24.8	22.1	21.9	-0.127	-0.026	-0.061	0.056	-0.278	0.327	9.511	0.489	0.489	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/9/2002	10:03:54 AM	25.591	21.841	23.961	23.749	22.145	2.402	41.016	3.876	-1.473	33.552	80.564	44.799	0.002	0.001	0.003	0	39.5	10.5	0.5	0.032	0.000	0.000	0.000	0.323	0.27
9/9/2002	10:04:54 AM	25.452	21.847	23.827	23.695	22.186	2.897	41.576	3.999	-1.082	33.751	45.108	44.701	0.002	0.001	0.002	1	40.1	10.4	0.9	0.063	0.000	0.000	0.000	0.166	0.14
9/9/2002	10:05:54 AM	24.623	21.884	23.653	23.697	22.233	6.341	40.6	3.774	2.883	29.112	26.667	45.59	1.192	1.419	0	2	39.1	10.6	4.6	0.318	0.206	0.215	0.047	46.509	39.58
9/9/2002	10:06:54 AM	24.359	21.932	23.545	23.775	22.256	6.654	40.865	3.862	3.133	28.944	26.403	45.643	1.192	1.419	0	3	39.4	10.7	4.9	0.337	0.206	0.215	0.044	43.968	37.42
9/9/2002	10:07:54 AM	24.176	21.939	23.401	23.686	22.293	6.66	41.111	3.897	2.922	29.048	26.589	45.55	1.192	1.419	0	4	39.6	10.6	4.8	0.330	0.206	0.216	0.045	45.093	38.38
9/9/2002	10:08:54 AM	24.012	21.961	23.232	23.728	22.325	6.662	40.664	3.844	3.203	28.889	26.432	45.531	1.192	1.413	0	5	39.2	10.6	4.9	0.340	0.206	0.216	0.044	43.825	37.30
9/9/2002	10:09:54 AM	23.889	21.988	23.169	23.761	22.347	6.6	40.858	3.881	2.832	28.849	26.357	45.548	1.192	1.414	0	6	39.4	10.6	4.7	0.325	0.206	0.217	0.046	45.952	39.11
9/9/2002	10:10:39 AM	23.8	22.0	23.0	23.9	22.4	6.478	40.515	3.725	3.121	28.976	26.432	45.641	1.192	1.417	0	6.75	39.0	10.7	4.8	0.331	0.206	0.218	0.045	45.415	38.65
9/9/2002	10:11:39 AM	23.7	22.0	23.0	23.8	22.4	6.528	40.614	3.797	3.133	28.91	26.441	45.515	1.192	1.411	0	7.75	39.1	10.6	4.8	0.333	0.205	0.217	0.045	44.994	38.29
9/9/2002	10:12:39 AM	23.6	22.0	22.9	23.9	22.4	6.586	40.48	3.763	3.123	28.78	26.293	45.538	1.192	1.415	0	8.75	39.0	10.6	4.9	0.335	0.206	0.219	0.045	45.069	38.35
9/9/2002	10:13:39 AM	23.5	22.0	22.8	23.9	22.4	6.32	40.494	3.769	2.826	28.991	26.67	45.299	1.192	1.414	0	9.75	39.0	10.6	4.6	0.315	0.206	0.219	0.048	47.870	40.74
9/9/2002	10:14:39 AM	23.4	22.1	22.7	23.9	22.4	6.55	40.592	3.701	3.2	28.895	26.343	45.123	1.192	1.414	0	10.8	39.1	10.5	4.9	0.336	0.206	0.220	0.045	45.077	38.36
9/9/2002	10:15:39 AM	23.3	22.1	22.6	23.9	22.4	6.739	40.836	3.793	3.407	29.002	26.493	45.217	1.192	1.413	0	11.8	39.4	10.6	5.1	0.350	0.206	0.220	0.043	43.335	36.88
9/9/2002	10:16:39 AM	23.2	22.1	22.6	23.8	22.4	6.712	40.699	3.752	3.368	28.993	26.461	45.095	1.192	1.414	0	12.8	39.2	10.5	5.0	0.347	0.206	0.221	0.044	43.762	37.24
9/9/2002	10:17:39 AM	23.1	22.1	22.5	23.8	22.4	6.795	41.057	3.898	3.135	28.973	26.456	45.022	1.192	1.416	0	13.8	39.6	10.5	5.0	0.342	0.206	0.221	0.045	44.594	37.95
9/9/2002	10:18:39 AM	23.1	22.1	22.4	23.8	22.5	6.72	40.871	3.805	3.162	28.846	26.403	45.049	1.192	1.413	0	14.8	39.4	10.5	4.9	0.341	0.206	0.221	0.045	44.747	38.08
9/9/2002	10:19:39 AM	23.0	22.1	22.4	23.8	22.4	6.782	40.687	3.727	3.395	28.754	26.186	44.982	1.192	1.412	0	15.8	39.2	10.5	5.1	0.351	0.205	0.222	0.044	43.532	37.05
9/9/2002	10:20:39 AM	22.9	22.1	22.3	23.7	22.4	6.774	40.887	3.802	3.415	29.063	26.635	45.02	1.192	1.413	0	16.8	39.4	10.5	5.1	0.351	0.206	0.222	0.044	43.518	37.03
9/9/2002	10:21:39 AM	22.9	22.1	22.5	23.5	22.4	6.598	40.749	3.773	2.994	28.988	26.479	44.986	1.192	1.412	0	17.8	39.3	10.5	4.8	0.331	0.205	0.221	0.046	45.988	39.14
9/9/2002	10:22:39 AM	23.0	22.1	22.7	23.3	22.4	6.455	40.389	3.767	2.898	28.924	26.311	44.898	1.192	1.412	0	18.8	38.9	10.5	4.7	0.322	0.205	0.219	0.047	46.873	39.89
9/9/2002	10:23:39 AM	23.1	22.1	22.8	23.3	22.4	6.619	40.558	3.819	2.924	29.098	26.438	44.888	1.192	1.416	0	19.8	39.1	10.5	4.8	0.329	0.206	0.219	0.046	45.899	39.06
9/9/2002	10:24:39 AM	23.3	22.1	23.0	23.3	22.4	6.846	40.964	3.804	3.211	28.982	26.392	44.932	1.192	1.415	0	20.8	39.5	10.5	5.0	0.347	0.206	0.218	0.043	43.350	36.89
9/9/2002	10:25:39 AM	23.4	22.1	23.2	23.1	22.4	6.447	40.552	3.864	2.769	29.074	26.624	44.928	1.192	1.416	0	21.8	39.1	10.5	4.6	0.318	0.206	0.217	0.047	47.089	40.07
9/9/2002	10:26:39 AM	23.5	22.1	23.2	23.2	22.4	6.544	40.78	3.746	2.996	29.15	26.632	44.923	1.192	1.415	0	22.8	39.3	10.5	4.8	0.329	0.206	0.216	0.045	45.387	38.63
9/9/2002	10:27:39 AM	23.7	22.1	23.4	23.2	22.4	6.544	40.652	3.756	3.01	28.979	26.432	44.932	1.192	1.418	0	23.8	39.2	10.5	4.8	0.329	0.206	0.216	0.045	45.231	38.49
9/9/2002	10:28:39 AM	23.8	22.1	23.5	23.2	22.4	6.581	40.792	3.778	2.932	29.043	26.606	44.961	1.192	1.416	0	24.8	39.3	10.5	4.8	0.328	0.206	0.215	0.045	45.193	38.46
9/9/2002	10:29:39 AM	23.9	22.1	23.6	23.3	22.4	6.619	40.881	3.789	3.053	28.979	26.624	44.873	1.192	1.415	0	25.8	39.4	10.5	4.8	0.333	0.206	0.214	0.044	44.343	37.74
9/9/2002	10:30:39 AM	24.0	22.1	23.7	23.3	22.4	6.608	40.96	3.774	2.975	29.04	26.432	45.062	1.192	1.418	0	26.8	39.5	10.5	4.8	0.330	0.206	0.214	0.045	44.678	38.02
	Averages	23.4	22.1	22.9	23.6	22.4	6.6	40.7	3.8	3.1	29.0	26.5	45.1	1.2	1.4	0.0		39.2	10.5	4.9	0.3	0.206	0.219	0.045	45.0	38.3
	Maximum	24.0	22.1	23.7	23.9	22.5	6.8	41.1	3.9	3.4	29.2	26.7	45.6	1.2	1.4	0.0		39.6	10.7	5.1	0.4	0.206	0.222	0.048	47.9	40.7
	Median	23.4	22.1	22.8	23.7	22.4	6.6	40.7	3.8	3.1	29.0	26.4	45.0	1.2	1.4	0.0		39.2	10.5	4.8	0.3	0.206	0.219	0.045	45.1	38.4
	Minimum	22.9	22.0	22.3	23.1	22.4	6.3	40.4	3.7	2.8	28.8	26.2	44.9	1.2	1.4	0.0		38.9	10.5	4.6	0.3	0.205	0.214	0.043	43.3	36.9
	2 x Std Dev	0.632	0.084	0.795	0.580	0.066	0.261	0.359	0.087	0.369	0.190	0.251	0.442	0.000	0.004	0.000		0.359	0.103	0.295	0.020	0.001	0.005	0.002	2.407	2.048
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21
	* Backpulse points in box are not included																									

Figure A2: PreConditioning 1A – Inhibited Deionized & Filtered Water – Before Test Rig Modification – Raw & Calculated Data

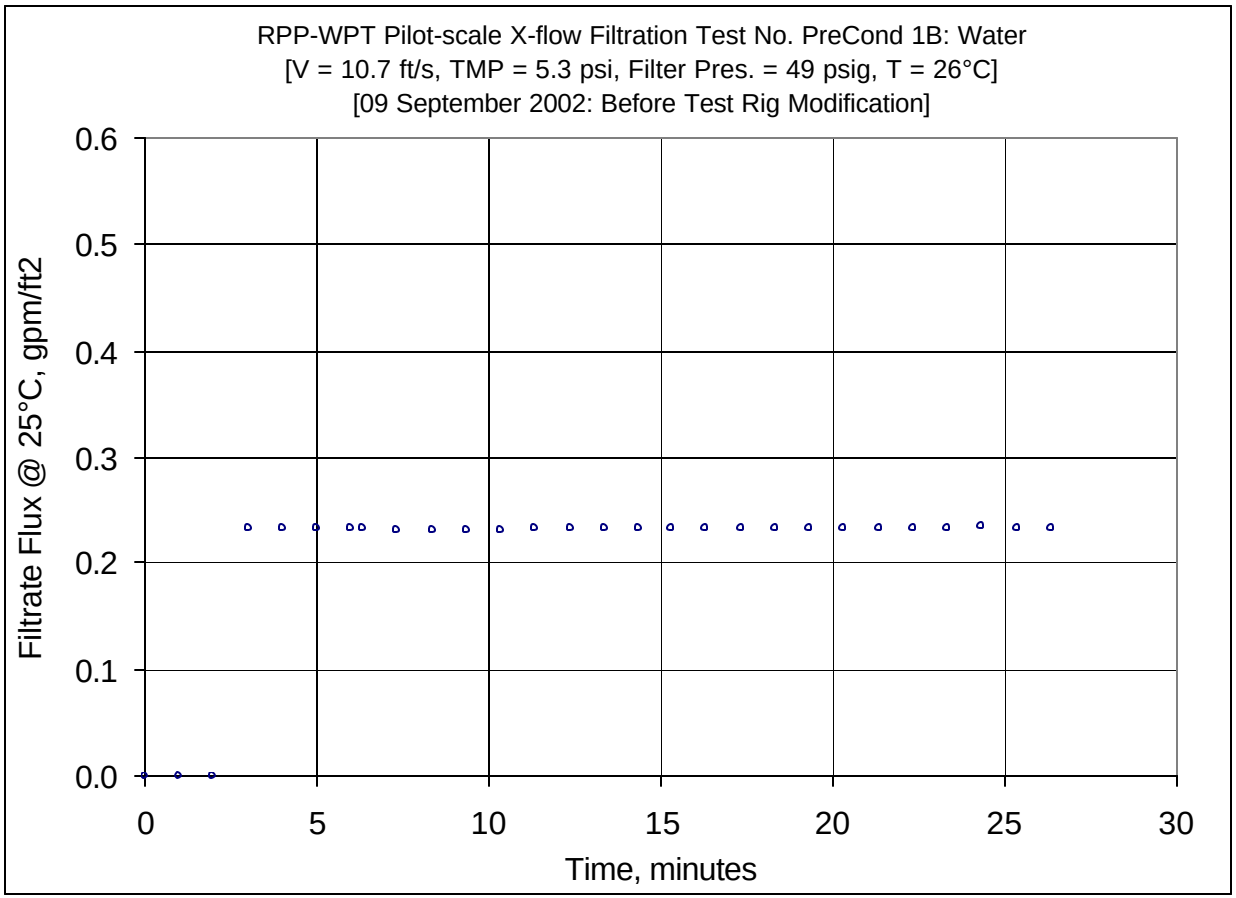


Figure A3: PreConditioning 1B – Inhibited Deionized & Filtered Water – Before Test Rig Modification

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/9/2002	9:43:27 AM	24.5	21.5	24.7	22.0	21.9	-0.125	-0.026	-0.061	0.058	-0.286	0.33	9.497	0.493	0.493	0		Filter Surface	6.87	FT2						
9/9/2002	9:45:35 AM	24.5	21.5	24.7	22.0	21.9	-0.125	-0.026	-0.061	0.058	-0.286	0.33	9.497	0.493	0.493	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/9/2002	9:45:36 AM	24.6	21.5	24.8	22.1	21.9	-0.125	-0.027	-0.061	0.058	-0.307	0.327	9.52	0.494	0.486	0										
9/9/2002	9:45:37 AM	24.6	21.5	24.8	22.0	21.9	-0.127	-0.027	-0.06	0.058	-0.307	0.33	9.516	0.493	0.49	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/9/2002	9:45:38 AM	24.6	21.5	24.8	22.1	21.9	-0.127	-0.027	-0.061	0.058	-0.307	0.33	9.541	0.493	0.489	0										
9/9/2002	9:45:39 AM	24.6	21.5	24.8	22.1	21.9	-0.125	-0.027	-0.061	0.058	-0.307	0.327	9.497	0.491	0.49	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/9/2002	9:45:40 AM	24.6	21.5	24.8	22.0	21.9	-0.125	-0.026	-0.061	0.056	-0.307	0.327	9.486	0.494	0.488	0		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/9/2002	9:45:41 AM	24.6	21.5	24.8	22.1	21.9	-0.127	-0.026	-0.061	0.056	-0.278	0.327	9.511	0.489	0.489	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/9/2002	10:35:59 AM	24.251	22.175	24.645	23.586	22.429	2.694	51.492	3.996	-1.225	43.645	90.42	45.448	0.002	0.001	0	0	50.0	10.6	0.7	0.051	0.000	0.000	0.000	0.200	0.17
9/9/2002	10:36:59 AM	24.075	22.186	24.83	23.596	22.464	2.667	51.326	3.91	-1.242	43.266	52.718	45.416	0.002	0.001	0.003	1	49.9	10.6	0.7	0.049	0.000	0.000	0.000	0.205	0.17
9/9/2002	10:37:59 AM	24.076	22.196	24.976	23.647	22.49	2.791	51.159	3.989	-1.131	43.732	52.955	45.414	0.002	0.001	0.001	2	49.7	10.6	0.8	0.057	0.000	0.000	0.000	0.175	0.15
9/9/2002	10:38:59 AM	25.159	22.212	25.077	23.713	22.515	6.933	50.424	3.961	3.137	38.382	35.139	46.54	1.192	1.606	0	3	49.0	10.9	5.0	0.347	0.234	0.233	0.046	46.313	39.41
9/9/2002	10:39:59 AM	25.461	22.228	25.233	23.689	22.532	6.822	50.244	3.939	3.135	38.33	35.183	46.628	1.192	1.614	0	4	48.8	10.9	5.0	0.343	0.235	0.233	0.047	46.866	39.88
9/9/2002	10:40:59 AM	25.611	22.228	25.303	23.724	22.552	7.056	50.788	3.856	3.452	38.549	35.246	46.377	1.192	1.617	0	5	49.3	10.8	5.3	0.362	0.235	0.233	0.044	44.404	37.79
9/9/2002	10:41:59 AM	25.752	22.244	25.414	23.785	22.583	7.051	50.848	3.854	3.491	38.593	35.191	46.349	1.192	1.618	0	6	49.4	10.8	5.3	0.363	0.235	0.233	0.044	44.150	37.57
9/9/2002	10:42:19 AM	25.804	22.256	25.446	23.802	22.594	6.917	50.683	3.851	3.419	38.376	35.397	46.305	1.192	1.618	0	6.33	49.2	10.8	5.2	0.356	0.235	0.233	0.045	44.990	38.29
9/9/2002	10:43:19 AM	25.909	22.261	25.571	23.807	22.62	6.96	50.65	3.831	3.448	38.477	35.212	46.24	1.192	1.617	0	7.33	49.2	10.8	5.2	0.359	0.235	0.232	0.044	44.495	37.87
9/9/2002	10:44:19 AM	26.025	22.278	25.693	23.824	22.636	6.942	50.526	3.811	3.514	38.514	35.139	46.123	1.192	1.617	0	8.33	49.1	10.8	5.2	0.360	0.235	0.231	0.044	44.139	37.56
9/9/2002	10:45:19 AM	26.132	22.294	25.734	23.895	22.643	6.975	50.76	3.822	3.401	38.457	35.374	46.161	1.192	1.621	0	9.33	49.3	10.8	5.2	0.358	0.236	0.231	0.045	44.538	37.90
9/9/2002	10:46:19 AM	26.177	22.3	25.654	23.981	22.668	6.936	50.629	3.871	3.256	38.587	35.255	46.129	1.192	1.619	0	10.3	49.2	10.8	5.1	0.351	0.236	0.231	0.045	45.388	38.63
9/9/2002	10:47:19 AM	26.169	22.317	25.631	24.008	22.705	7.105	50.919	3.818	3.69	38.708	35.243	46.054	1.192	1.621	0	11.3	49.4	10.8	5.4	0.372	0.236	0.232	0.043	42.933	36.54
9/9/2002	10:48:19 AM	26.165	22.333	25.587	24.074	22.717	6.913	50.664	3.804	3.331	38.743	35.229	46.035	1.192	1.619	0	12.3	49.2	10.7	5.1	0.353	0.236	0.232	0.045	45.243	38.50
9/9/2002	10:49:19 AM	26.146	22.344	25.614	24.06	22.748	6.975	50.546	3.85	3.368	38.581	35.238	45.993	1.192	1.622	0	13.3	49.1	10.7	5.2	0.357	0.236	0.232	0.045	44.859	38.18
9/9/2002	10:50:19 AM	26.133	22.355	25.535	24.097	22.774	7.141	50.88	3.853	3.573	38.488	35.177	46.064	1.192	1.621	0	14.3	49.4	10.8	5.4	0.369	0.236	0.232	0.043	43.374	36.91
9/9/2002	10:51:19 AM	26.119	22.367	25.561	24.098	22.786	6.894	50.851	3.745	3.462	38.783	35.501	45.861	1.192	1.621	0	15.3	49.4	10.7	5.2	0.357	0.236	0.232	0.045	44.841	38.16
9/9/2002	10:52:19 AM	26.114	22.392	25.557	24.159	22.791	6.998	51.018	3.806	3.499	38.734	35.553	45.748	1.192	1.624	0	16.3	49.5	10.7	5.2	0.362	0.236	0.233	0.044	44.326	37.72
9/9/2002	10:53:19 AM	26.096	22.394	25.488	24.18	22.828	7.12	51.159	3.819	3.571	38.769	35.44	45.708	1.192	1.622	0	17.3	49.7	10.7	5.3	0.369	0.236	0.233	0.044	43.552	37.06
9/9/2002	10:54:19 AM	26.072	22.415	25.524	24.181	22.869	7.035	50.807	3.759	3.622	38.725	35.29	45.643	1.192	1.622	0	18.3	49.3	10.7	5.3	0.367	0.236	0.233	0.044	43.647	37.14
9/9/2002	10:55:19 AM	26.069	22.427	25.461	24.233	22.886	7.066	50.873	3.766	3.61	38.783	35.469	45.72	1.192	1.623	0	19.3	49.4	10.7	5.3	0.368	0.236	0.233	0.044	43.673	37.17
9/9/2002	10:56:19 AM	26.07	22.448	25.492	24.27	22.902	7.161	51.026	3.849	3.508	38.436	35.414	45.609	1.192	1.617	0	20.3	49.6	10.6	5.3	0.368	0.235	0.232	0.044	43.502	37.02
9/9/2002	10:57:19 AM	26.042	22.465	25.494	24.311	22.939	6.962	50.739	3.69	3.723	38.688	35.232	45.789	1.192	1.622	0	21.3	49.3	10.7	5.3	0.368	0.236	0.233	0.044	43.569	37.08
9/9/2002	10:58:19 AM	26.032	22.476	25.43	24.332	22.965	7.132	50.981	3.8	3.636	38.76	35.278	45.725	1.192	1.622	0	22.3	49.5	10.7	5.4	0.371	0.236	0.233	0.043	43.311	36.86
9/9/2002	10:59:19 AM	26.025	22.493	25.472	24.365	22.993	7.213	51.066	3.805	3.696	38.633	35.052	45.714	1.192	1.622	0	23.3	49.6	10.7	5.5	0.376	0.236	0.233	0.043	42.701	36.34
9/9/2002	11:00:19 AM	26.016	22.505	25.433	24.386	23.019	7.047	50.714	3.851	3.368	38.804	35.394	45.775	1.192	1.625	0	24.3	49.2	10.7	5.2	0.359	0.236	0.234	0.045	44.858	38.17
9/9/2002	11:01:19 AM	26.018	22.522	25.43	24.423	23.031	7.139	50.83	3.849	3.516	38.442	35.339	45.529	1.192	1.622	0	25.3	49.4	10.6	5.3	0.367	0.236	0.233	0.044	43.770	37.25
9/9/2002	11:02:19 AM	25.995	22.538	25.457	24.435	23.073	7.07	50.906	3.77	3.669	38.682	35.235	45.542	1.192	1.621	0	26.3	49.4	10.6	5.4	0.370	0.236	0.233	0.043	43.368	36.91
	Averages	26.1	22.4	25.5	24.1	22.8	7.0	50.8	3.8	3.5	38.6	35.3	45.9	1.2	1.6	0.0		49.3	10.7	5.3	0.4	0.236	0.232	0.044	44.1	37.5
	Maximum	26.2	22.5	25.7	24.4	23.1	7.2	51.2	3.9	3.7	38.8	35.6	46.3	1.2	1.6	0.0		49.7	10.8	5.5	0.4	0.236	0.234	0.045	45.4	38.6
	Median	26.1	22.4	25.5	24.2	22.8	7.0	50.8	3.8	3.5	38.7	35.3	45.8	1.2	1.6	0.0		49.4	10.7	5.3	0.4	0.236	0.233	0.044	43.8	37.2
	Minimum	25.8	22.3	25.4	23.8	22.6	6.9	50.5	3.7	3.3	38.4	35.1	45.5	1.2	1.6	0.0		49.1	10.6	5.1	0.4	0.235	0.231	0.043	42.7	36.3
	2 x Std Dev	0.176	0.174	0.175	0.394	0.289	0.185	0.338	0.086	0.257	0.271	0.248	0.462	0.000	0.004	0.000		0.338	0.108	0.197	0.014	0.001	0.001	0.002	1.527	1.300
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21

Figure A4: PreConditioning 1B – Inhibited Deionized & Filtered Water – Before Test Rig Modification – Raw & Calculated Data

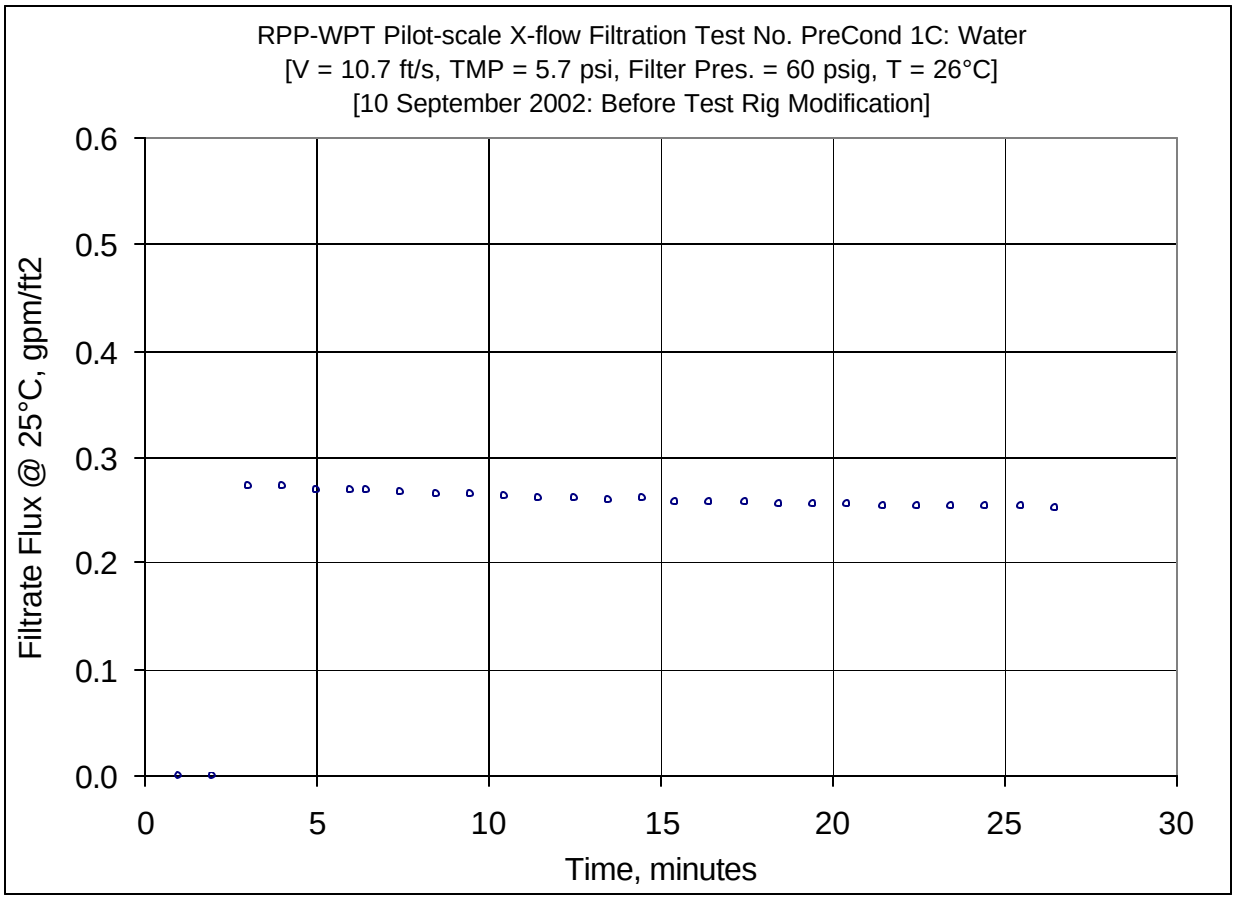


Figure A5: PreConditioning 1C – Inhibited Deionized & Filtered Water – Before Test Rig Modification

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/10/2002	8:48:15 AM	21.896	20.524	21.376	21.274	20.244	-0.108	-0.07	-0.068	0.066	-0.246	0.324	31.724	1.192	1.231	0		Filter Surface	6.87	FT2						
9/10/2002	8:48:36 AM	21.896	20.524	21.376	21.274	20.244	-0.108	-0.07	-0.068	0.066	-0.246	0.324	31.724	1.192	1.231	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/10/2002	8:48:37 AM	21.879	20.528	21.325	21.373	20.258	-0.111	-0.07	-0.069	0.064	-0.246	0.318	31.659	1.192	1.231	0										
9/10/2002	8:48:38 AM	21.885	20.523	21.314	21.368	20.253	-0.109	-0.068	-0.068	0.066	-0.246	0.324	31.67	1.192	1.231	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/10/2002	8:48:39 AM	21.879	20.523	21.32	21.378	20.263	-0.109	-0.072	-0.069	0.066	-0.246	0.321	31.66	1.192	1.23	0										
9/10/2002	8:48:40 AM	21.885	20.528	21.314	21.378	20.258	-0.109	-0.068	-0.069	0.064	-0.246	0.324	31.611	1.192	1.227	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/10/2002	8:48:41 AM	21.89	20.523	21.309	21.388	20.263	-0.109	-0.07	-0.069	0.064	-0.246	0.318	31.662	1.192	1.233	0		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/10/2002	8:48:42 AM	21.879	20.517	21.304	21.383	20.257	-0.109	-0.07	-0.069	0.066	-0.246	0.321	31.62	1.192	1.232	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/10/2002	8:56:11 AM	21.941	20.691	22.799	21.969	20.763	2.393	60.805	3.95	-1.571	53.678	100.314	45.704	0.002	0.001	0	1	59.3	10.7	0.4	0.028	0.000	0.000	0.000	0.377	0.32
9/10/2002	8:57:11 AM	21.908	20.713	23.043	22.007	20.846	2.866	61.486	4.044	-1.172	53.443	59.684	45.445	0.002	0.001	0.002	2	60.0	10.6	0.8	0.058	0.000	0.000	0.000	0.182	0.15
9/10/2002	8:58:11 AM	23.335	20.737	23.277	22.141	20.93	7.636	61.014	4.04	3.843	48.082	44.051	46.857	1.192	1.781	0	3	59.5	10.9	5.7	0.396	0.259	0.272	0.047	47.411	40.35
9/10/2002	8:59:11 AM	23.72	20.756	23.517	22.285	21.005	7.654	61.312	3.928	4.095	48.458	44.327	46.511	1.192	1.788	0	4	59.8	10.9	5.9	0.405	0.260	0.271	0.046	46.187	39.31
9/10/2002	9:00:11 AM	24.005	20.795	23.727	22.455	21.089	7.462	60.919	3.857	4.025	48.495	44.321	46.394	1.192	1.772	0	5	59.4	10.8	5.7	0.396	0.258	0.267	0.047	46.539	39.61
9/10/2002	9:01:11 AM	24.275	20.83	23.977	22.455	21.175	7.582	61.019	3.897	3.985	48.53	44.24	46.337	1.192	1.792	0	6	59.5	10.8	5.8	0.399	0.261	0.268	0.046	46.409	39.49
9/10/2002	9:01:38 AM	24.372	20.842	24.034	22.582	21.212	7.511	60.723	3.846	4.073	48.377	44.173	46.247	1.192	1.795	0	6.45	59.3	10.8	5.8	0.399	0.261	0.268	0.046	46.343	39.44
9/10/2002	9:02:38 AM	24.583	20.867	24.28	22.632	21.282	7.199	60.568	3.846	3.813	48.692	44.59	46.129	1.192	1.794	0	7.45	59.1	10.8	5.5	0.380	0.261	0.266	0.048	48.385	41.18
9/10/2002	9:03:38 AM	24.788	20.907	24.449	22.722	21.327	7.636	61.213	3.861	4.052	48.414	44.28	46.15	1.192	1.795	0	8.45	59.7	10.8	5.8	0.403	0.261	0.265	0.045	45.395	38.63
9/10/2002	9:04:38 AM	24.987	20.911	24.574	22.762	21.371	7.424	61.136	3.801	3.948	48.611	44.315	46.11	1.192	1.796	0	9.45	59.7	10.8	5.7	0.392	0.261	0.264	0.047	46.518	39.59
9/10/2002	9:05:38 AM	25.166	20.939	24.807	22.634	21.4	7.712	61.372	3.863	4.218	48.481	44.416	46.029	1.192	1.792	0	10.5	59.9	10.7	6.0	0.411	0.261	0.262	0.044	43.953	37.40
9/10/2002	9:06:38 AM	25.328	20.972	24.935	22.717	21.422	7.545	61.058	3.872	3.884	48.7	44.39	46.003	1.192	1.793	0	11.5	59.6	10.7	5.7	0.394	0.261	0.261	0.046	45.740	38.93
9/10/2002	9:07:38 AM	25.506	20.995	25.073	22.654	21.46	7.478	61.027	3.883	3.768	48.31	44.353	45.909	1.192	1.791	0	12.5	59.6	10.7	5.6	0.388	0.261	0.260	0.046	46.253	39.36
9/10/2002	9:08:38 AM	25.638	21.006	25.239	22.585	21.482	7.284	60.938	3.857	3.727	48.527	44.61	45.898	1.192	1.795	0	13.5	59.5	10.7	5.5	0.380	0.261	0.259	0.047	47.125	40.10
9/10/2002	9:09:38 AM	25.795	21.039	25.322	22.593	21.534	7.37	61.05	3.769	3.995	48.628	44.636	45.961	1.192	1.801	0	14.5	59.6	10.7	5.7	0.392	0.262	0.260	0.046	45.703	38.89
9/10/2002	9:10:38 AM	25.937	21.071	25.499	22.575	21.577	7.317	60.923	3.741	3.944	48.588	44.434	45.941	1.192	1.796	0	15.5	59.5	10.7	5.6	0.388	0.261	0.258	0.046	45.769	38.95
9/10/2002	9:11:38 AM	26.039	21.078	25.576	22.586	21.599	7.604	61.461	3.784	4.171	48.83	44.451	45.865	1.192	1.798	0	16.5	60.0	10.7	5.9	0.406	0.262	0.257	0.044	43.725	37.21
9/10/2002	9:12:38 AM	26.2	21.119	25.677	22.633	21.63	7.429	61.049	3.836	3.819	48.553	44.408	45.844	1.192	1.8	0	17.5	59.6	10.7	5.6	0.388	0.262	0.257	0.046	45.695	38.89
9/10/2002	9:13:38 AM	26.307	21.131	25.839	22.64	21.702	7.513	61.019	3.866	3.786	48.77	44.173	45.727	1.192	1.798	0	18.5	59.5	10.7	5.6	0.390	0.262	0.256	0.045	45.233	38.49
9/10/2002	9:14:38 AM	26.419	21.164	25.896	22.763	21.725	7.157	60.899	3.804	3.571	48.564	44.77	45.695	1.192	1.799	0	19.5	59.4	10.7	5.4	0.370	0.262	0.255	0.048	47.591	40.50
9/10/2002	9:15:38 AM	26.531	21.191	26.008	22.8	21.762	7.109	60.497	3.732	3.669	48.654	44.442	45.854	1.192	1.802	0	20.5	59.0	10.7	5.4	0.372	0.262	0.255	0.047	47.301	40.25
9/10/2002	9:16:38 AM	26.608	21.213	26.145	22.817	21.784	7.312	60.973	3.772	3.854	48.622	44.373	45.825	1.192	1.802	0	21.5	59.5	10.7	5.6	0.385	0.262	0.254	0.045	45.482	38.71
9/10/2002	9:17:38 AM	26.699	21.219	26.161	22.929	21.78	7.482	61.581	3.736	4.199	48.608	44.717	45.733	1.192	1.802	0	22.5	60.1	10.7	5.8	0.403	0.262	0.254	0.043	43.458	36.98
9/10/2002	9:18:38 AM	26.805	21.23	26.297	22.869	21.786	7.505	61.256	3.772	4.034	48.721	44.411	45.743	1.192	1.803	0	23.5	59.8	10.7	5.8	0.398	0.262	0.253	0.044	43.850	37.32
9/10/2002	9:19:38 AM	26.891	21.266	26.383	22.865	21.822	7.412	61.252	3.789	3.794	48.79	44.364	45.769	1.192	1.803	0	24.5	59.8	10.7	5.6	0.386	0.262	0.252	0.045	45.045	38.33
9/10/2002	9:20:38 AM	26.99	21.276	26.422	22.98	21.812	7.364	61.01	3.743	3.95	48.654	44.486	45.689	1.192	1.804	0	25.5	59.5	10.7	5.7	0.390	0.263	0.252	0.045	44.591	37.95
9/10/2002	9:21:38 AM	27.06	21.302	26.533	22.981	21.797	7.598	61.629	3.784	4.073	48.761	44.622	45.727	1.192	1.804	0	26.5	60.2	10.7	5.8	0.402	0.263	0.251	0.043	43.094	36.67
	Averages	25.9	21.1	25.5	22.7	21.6	7.4	61.1	3.8	3.9	48.6	44.4	45.9	1.2	1.8	0.0		59.6	10.7	5.7	0.4	0.262	0.258	0.046	45.5	38.8
	Maximum	27.1	21.3	26.5	23.0	21.8	7.7	61.6	3.9	4.2	48.8	44.8	46.2	1.2	1.8	0.0		60.2	10.8	6.0	0.4	0.263	0.268	0.048	48.4	41.2
	Median	26.0	21.1	25.6	22.7	21.6	7.4	61.0	3.8	3.9	48.6	44.4	45.9	1.2	1.8	0.0		59.6	10.7	5.7	0.4	0.262	0.257	0.046	45.7	38.9
	Minimum	24.4	20.8	24.0	22.6	21.2	7.1	60.5	3.7	3.6	48.3	44.2	45.7	1.2	1.8	0.0		59.0	10.7	5.4	0.4	0.261	0.251	0.043	43.1	36.7
	2 x Std Dev	1.611	0.280	1.475	0.264	0.383	0.310	0.568	0.098	0.344	0.266	0.314	0.321	0.000	0.008	0.000		0.569	0.075	0.306	0.021	0.001	0.010	0.003	2.775	2.361
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21
	* Backpulse points in box are not included																									

Figure A6: PreConditioning 1C – Inhibited Deionized & Filtered Water – Before Test Rig Modification – Raw & Calculated Data

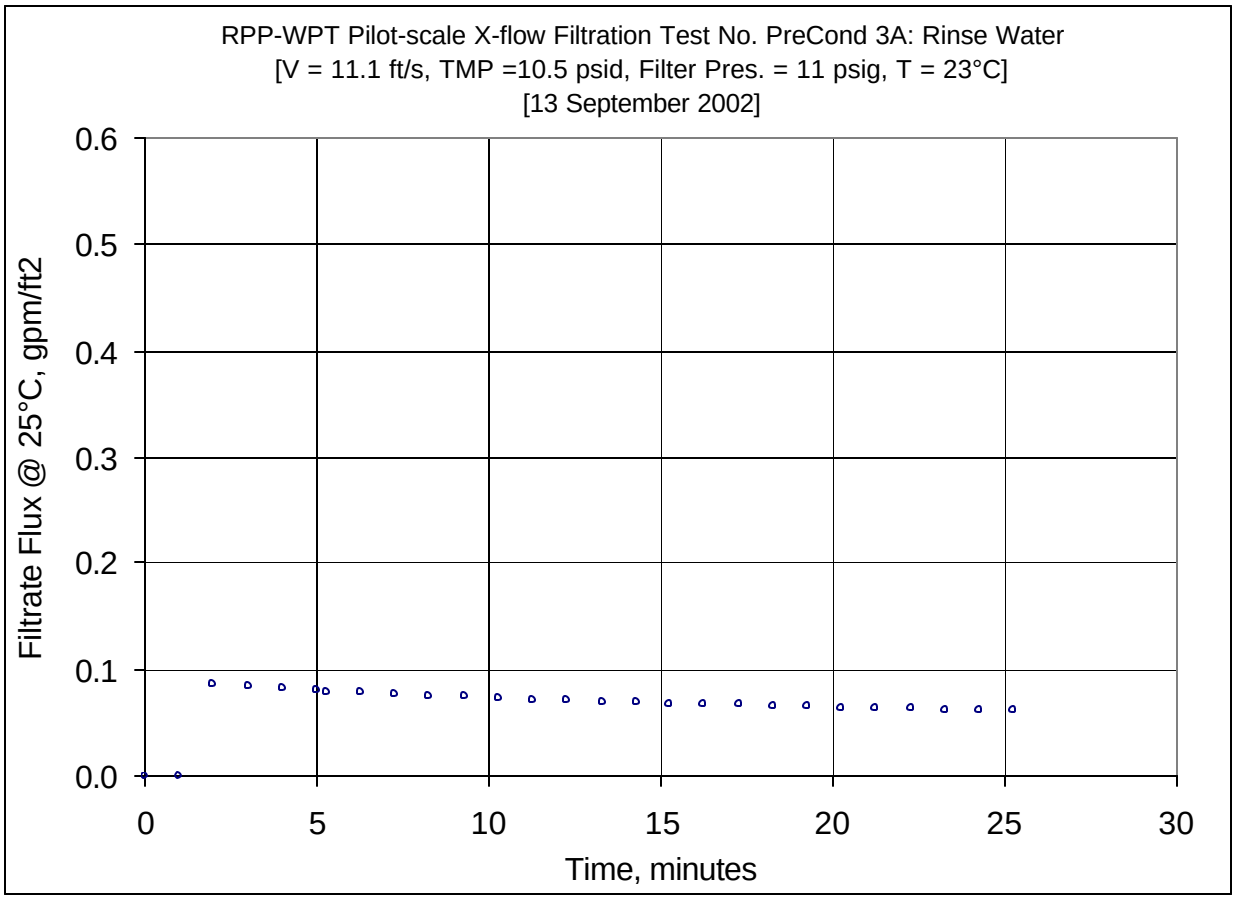


Figure A7: PreConditioning 3A – Inhibited Deionized & Filtered Water – Post Standard Slurry Tests

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/13/2002	12:24:28 PM	22.65	22.529	22.056	24.129	22.39	-0.115	0.031	-0.061	0.058	-0.249	0.338	47.331	0.002	0.001	0		Filter Surface	6.87	FT2						
9/13/2002	12:24:49 PM	22.65	22.529	22.056	24.129	22.39	-0.115	0.031	-0.061	0.058	-0.249	0.338	47.331	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/13/2002	12:24:50 PM	22.614	22.528	22.03	24.158	22.384	-0.113	0.031	-0.06	0.06	-0.249	0.341	47.115	0.002	0.001	0										
9/13/2002	12:24:51 PM	22.614	22.533	22.025	24.158	22.394	-0.113	0.029	-0.06	0.06	-0.249	0.338	47.06	0.003	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/13/2002	12:24:52 PM	22.609	22.528	22.02	24.153	22.384	-0.113	0.031	-0.061	0.06	-0.249	0.338	46.985	0.002	0.001	0										
9/13/2002	12:24:53 PM	22.615	22.534	22.031	24.159	22.4	-0.115	0.029	-0.061	0.06	-0.249	0.341	47.104	0.002	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/13/2002	12:24:54 PM	22.62	22.534	22.031	24.164	22.4	-0.113	0.031	-0.061	0.06	-0.249	0.341	47.709	0.002	0.001	0		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/13/2002	12:24:55 PM	22.615	22.534	22.026	24.159	22.39	-0.113	0.031	-0.061	0.058	-0.249	0.338	47.516	0.002	0.001	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/13/2002	12:30:44 PM	22.518	22.577	22.2	24.057	22.579	2.992	12.556	4.176	-1.011	4.147	55.494	47.086	0.002	0.001	0	0	11.1	11.0	1.0	0.068	0.000	0.000	0.000	0.159	0.14
9/13/2002	12:31:44 PM	22.554	22.598	22.277	24.183	22.61	7.085	12.676	4.285	2.988	0.193	0.648	47.279	0.002	0.001	0	1	11.2	11.0	5.0	0.347	0.000	0.000	0.000	0.031	0.03
9/13/2002	12:32:44 PM	22.49	22.595	22.349	24.1	22.647	12.281	12.37	4.232	8.103	-1.286	0.616	47.356	0.001	0.552	0	2	10.9	11.1	10.2	0.703	0.080	0.087	0.008	8.497	7.23
9/13/2002	12:33:44 PM	22.532	22.611	22.375	24.282	22.658	12.522	12.483	4.225	8.457	-1.281	0.622	47.449	0.002	0.535	0	3	11.0	11.1	10.5	0.723	0.078	0.084	0.008	7.996	6.80
9/13/2002	12:34:44 PM	22.559	22.628	22.457	24.364	22.695	12.503	12.473	4.248	8.433	-1.284	0.619	47.094	0.002	0.522	0.002	4	11.0	11.0	10.5	0.722	0.076	0.082	0.008	7.800	6.64
9/13/2002	12:35:44 PM	22.616	22.64	22.545	24.316	22.732	12.683	12.729	4.342	8.365	-1.278	0.625	47.371	0.002	0.514	0.003	5	11.3	11.1	10.5	0.726	0.075	0.080	0.008	7.620	6.48
9/13/2002	12:36:00 PM	22.637	22.646	22.521	24.417	22.744	12.522	12.514	4.313	8.425	-1.286	0.619	47.654	0.002	0.51	0.002	5.27	11.0	11.1	10.5	0.722	0.074	0.080	0.008	7.602	6.47
9/13/2002	12:37:00 PM	22.668	22.652	22.557	24.528	22.764	12.505	12.518	4.264	8.369	-1.284	0.622	47.193	0.002	0.501	0.003	6.27	11.0	11.0	10.4	0.720	0.073	0.078	0.007	7.487	6.37
9/13/2002	12:38:00 PM	22.716	22.66	22.655	24.435	22.797	12.358	12.374	4.086	8.38	-1.284	0.622	47.354	0.002	0.492	0.002	7.27	10.9	11.1	10.4	0.715	0.072	0.077	0.007	7.380	6.28
9/13/2002	12:39:00 PM	22.752	22.671	22.631	24.552	22.823	12.347	12.423	4.196	8.355	-1.284	0.619	47.476	0.002	0.486	0.001	8.27	10.9	11.1	10.4	0.714	0.071	0.076	0.007	7.307	6.22
9/13/2002	12:40:00 PM	22.796	22.694	22.709	24.56	22.877	12.6	12.543	4.226	8.576	-1.284	0.616	47.255	0.002	0.479	0.002	9.27	11.1	11.0	10.6	0.730	0.070	0.074	0.007	7.025	5.98
9/13/2002	12:41:00 PM	22.842	22.695	22.716	24.596	22.913	12.553	12.489	4.258	8.48	-1.284	0.616	46.977	0.002	0.471	0.002	10.3	11.0	11.0	10.5	0.725	0.069	0.073	0.007	6.953	5.92
9/13/2002	12:42:00 PM	22.88	22.713	22.763	24.619	22.946	12.563	12.458	4.218	8.488	-1.284	0.616	47.967	0.002	0.465	0.001	11.3	11.0	11.2	10.5	0.726	0.068	0.072	0.007	6.850	5.83
9/13/2002	12:43:00 PM	22.921	22.719	22.83	24.585	22.947	12.609	12.62	4.229	8.498	-1.286	0.602	47.407	0.002	0.459	0.002	12.3	11.1	11.1	10.6	0.728	0.067	0.071	0.007	6.730	5.73
9/13/2002	12:44:00 PM	22.947	22.73	22.805	24.595	22.938	12.497	12.465	4.278	8.267	-1.286	0.602	47.977	0.002	0.451	0.003	13.3	11.0	11.2	10.4	0.716	0.066	0.070	0.007	6.727	5.72
9/13/2002	12:45:00 PM	22.99	22.752	22.878	24.503	22.995	12.474	12.374	4.1	8.562	-1.289	0.596	47.342	0.001	0.449	0.002	14.3	10.9	11.1	10.5	0.725	0.065	0.069	0.007	6.597	5.61
9/13/2002	12:46:00 PM	23.009	22.742	22.842	24.577	22.97	12.764	12.715	4.301	8.67	-1.284	0.602	47.421	0.002	0.442	0.001	15.3	11.2	11.1	10.7	0.739	0.064	0.068	0.006	6.380	5.43
9/13/2002	12:47:00 PM	23.03	22.752	22.903	24.598	22.995	12.633	12.429	4.282	8.48	-1.284	0.607	47.486	0.002	0.437	0.001	16.3	11.0	11.1	10.6	0.728	0.064	0.067	0.006	6.393	5.44
9/13/2002	12:48:00 PM	23.054	22.747	22.898	24.552	22.96	12.457	12.43	4.226	8.245	-1.286	0.602	46.775	0.002	0.433	0.002	17.3	11.0	10.9	10.4	0.714	0.063	0.067	0.006	6.461	5.50
9/13/2002	12:49:00 PM	23.074	22.762	22.913	24.622	22.97	12.584	12.5	4.218	8.527	-1.286	0.602	47.312	0.002	0.427	0.002	18.3	11.0	11.0	10.6	0.728	0.062	0.066	0.006	6.245	5.31
9/13/2002	12:50:00 PM	23.105	22.778	22.989	24.588	23	12.497	12.369	4.315	8.331	-1.284	0.607	47.191	0.002	0.424	0.003	19.3	10.9	11.0	10.4	0.718	0.062	0.065	0.006	6.272	5.34
9/13/2002	12:51:00 PM	23.119	22.771	22.932	24.682	22.994	12.695	12.672	4.346	8.306	-1.284	0.605	46.236	0.002	0.418	0.002	20.3	11.2	10.8	10.5	0.724	0.061	0.064	0.006	6.142	5.23
9/13/2002	12:52:00 PM	23.115	22.767	22.968	24.602	23.01	12.48	12.394	4.183	8.32	-1.289	0.605	47.214	0.002	0.415	0.002	21.3	10.9	11.0	10.4	0.717	0.060	0.064	0.006	6.151	5.23
9/13/2002	12:53:00 PM	23.154	22.776	22.957	24.646	22.978	12.609	12.374	4.288	8.474	-1.284	0.605	47.155	0.002	0.41	0.001	22.3	10.9	11.0	10.5	0.727	0.060	0.063	0.006	5.997	5.10
9/13/2002	12:54:00 PM	23.163	22.79	22.991	24.691	22.968	12.776	12.597	4.261	8.656	-1.284	0.607	48.462	0.002	0.407	0.003	23.3	11.1	11.3	10.7	0.739	0.059	0.063	0.006	5.850	4.98
9/13/2002	12:55:00 PM	23.177	22.779	23.016	24.635	22.962	12.658	12.417	4.251	8.638	-1.284	0.607	47.172	0.002	0.403	0.003	24.3	10.9	11.0	10.6	0.734	0.059	0.062	0.006	5.826	4.96
9/13/2002	12:56:00 PM	23.182	22.784	22.98	24.689	22.951	12.679	12.508	4.221	8.672	-1.286	0.605	47.212	0.001	0.399	0.002	25.3	11.0	11.0	10.7	0.736	0.058	0.061	0.006	5.759	4.90
	Averages	23.0	22.7	22.8	24.6	22.9	12.6	12.5	4.2	8.5	-1.3	0.6	47.3	0.0	0.4	0.0		11.0	11.1	10.5	0.7	0.1	0.1	0.0	6.6	5.6
	Maximum	23.2	22.8	23.0	24.7	23.0	12.8	12.7	4.3	8.7	-1.3	0.6	48.5	0.0	0.5	0.0		11.2	11.3	10.7	0.7	0.1	0.1	0.0	7.6	6.5
	Median	23.0	22.7	22.9	24.6	23.0	12.6	12.5	4.3	8.5	-1.3	0.6	47.3	0.0	0.4	0.0		11.0	11.0	10.5	0.7	0.1	0.1	0.0	6.5	5.5
	Minimum	22.6	22.6	22.5	24.4	22.7	12.3	12.4	4.1	8.2	-1.3	0.6	46.2	0.0	0.4	0.0		10.9	10.8	10.4	0.7	0.1	0.1	0.0	5.8	4.9
	2 x Std Dev	0.342	0.091	0.292	0.141	0.156	0.225	0.195	0.126	0.262	0.003	0.015	0.875	0.001	0.066	0.001		0.195	0.204	0.222	0.015	0.010	0.011	0.001	1.093	0.930
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21
	* Backpulse points in box are not included																									

Figure A8: PreConditioning 3A – Inhibited Deionized & Filtered Water – Post Standard Slurry Tests – Raw & Calculated Data

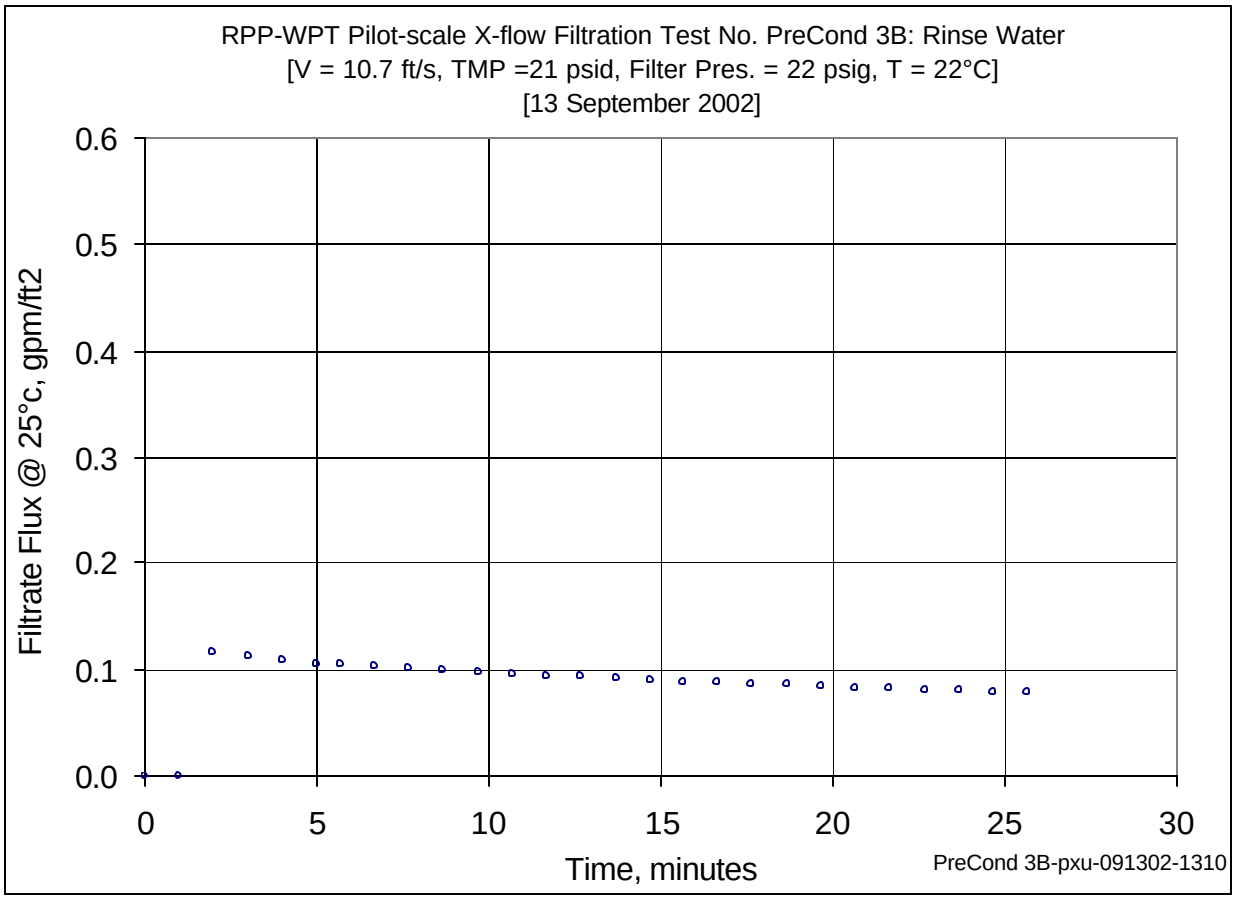


Figure A9: PreConditioning 3B – Inhibited Deionized & Filtered Water – Post Standard Slurry Tests

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/13/02	12:24:28 PM	22.65	22.529	22.056	24.129	22.39	-0.115	0.031	-0.061	0.058	-0.249	0.338	47.331	0.002	0.001	0		Filter Surface	6.87	FT2						
9/13/02	12:24:49 PM	22.65	22.529	22.056	24.129	22.39	-0.115	0.031	-0.061	0.058	-0.249	0.338	47.331	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/13/02	12:24:50 PM	22.614	22.528	22.03	24.158	22.384	-0.113	0.031	-0.06	0.06	-0.249	0.341	47.115	0.002	0.001	0										
9/13/02	12:24:51 PM	22.614	22.533	22.025	24.158	22.394	-0.113	0.029	-0.06	0.06	-0.249	0.338	47.06	0.003	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/13/02	12:24:52 PM	22.609	22.528	22.02	24.153	22.384	-0.113	0.031	-0.061	0.06	-0.249	0.338	46.985	0.002	0.001	0										
9/13/02	12:24:53 PM	22.615	22.534	22.031	24.159	22.4	-0.115	0.029	-0.061	0.06	-0.249	0.341	47.104	0.002	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/13/02	12:24:54 PM	22.62	22.534	22.031	24.164	22.4	-0.113	0.031	-0.061	0.06	-0.249	0.341	47.709	0.002	0.001	0		VVVV				< Filtrate Flux <<		PERMIABILITY >>		
9/13/02	12:24:55 PM	22.615	22.534	22.026	24.159	22.39	-0.113	0.031	-0.061	0.058	-0.249	0.338	47.516	0.002	0.001	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/13/02	1:04:29 PM	23.476	22.787	22.747	24.863	22.779	3.166	23.067	4.049	-0.945	14.908	62.325	45.898	0.002	0.001	0	0	21.6	10.7	1.1	0.077	0.000	0.000	0.000	0.140	0.12
9/13/02	1:05:29 PM	23.251	22.783	22.697	24.839	22.784	14.974	22.846	4.15	10.89	2.925	2.33	46.448	0.063	0.001	0	1	21.4	10.8	12.9	0.892	0.000	0.000	0.000	0.012	0.01
9/13/02	1:06:29 PM	23.166	22.793	22.597	24.894	22.784	22.606	22.871	4.285	18.556	-1.281	0.668	46.576	0.002	0.741	0	2	21.4	10.9	20.6	1.419	0.108	0.115	0.006	5.609	4.77
9/13/02	1:07:29 PM	23.08	22.798	22.552	24.899	22.794	22.426	22.726	3.988	18.71	-1.286	0.66	46.341	0.002	0.716	0	3	21.3	10.8	20.6	1.418	0.104	0.112	0.005	5.430	4.62
9/13/02	1:08:29 PM	22.991	22.804	22.467	25	22.821	22.54	22.928	4.165	18.638	-1.284	0.662	46.255	0.001	0.701	0.002	4	21.5	10.8	20.6	1.420	0.102	0.110	0.005	5.324	4.53
9/13/02	1:09:29 PM	22.932	22.82	22.378	25.061	22.837	22.757	23.131	4.186	18.622	-1.286	0.66	46.402	0.001	0.673	0.002	5	21.7	10.8	20.7	1.426	0.098	0.106	0.005	5.099	4.34
9/13/02	1:10:09 PM	22.887	22.826	22.359	25.142	22.848	22.612	22.918	4.108	18.789	-1.286	0.657	46.595	0.002	0.666	0.002	5.67	21.4	10.9	20.7	1.427	0.097	0.104	0.005	5.046	4.29
9/13/02	1:11:09 PM	22.818	22.832	22.28	25.219	22.864	22.523	22.593	4.164	18.62	-1.286	0.657	47.551	0.002	0.651	0.002	6.67	21.1	11.1	20.6	1.418	0.095	0.102	0.005	4.975	4.23
9/13/02	1:12:09 PM	22.765	22.854	22.281	25.306	22.891	22.386	22.647	3.874	18.877	-1.284	0.66	46.19	0.002	0.642	0.002	7.67	21.2	10.8	20.6	1.422	0.093	0.101	0.005	4.892	4.16
9/13/02	1:13:09 PM	22.711	22.861	22.178	25.352	22.928	23.047	23.615	4.031	18.968	-1.284	0.645	45.756	0.002	0.632	0.003	8.67	22.1	10.7	21.0	1.448	0.092	0.100	0.005	4.743	4.04
9/13/02	1:14:09 PM	22.662	22.872	22.148	25.288	22.944	22.672	22.98	4.079	18.769	-1.284	0.645	45.962	0.002	0.622	0.003	9.67	21.5	10.7	20.7	1.429	0.091	0.098	0.005	4.737	4.03
9/13/02	1:15:09 PM	22.613	22.889	22.11	25.285	22.971	22.799	23.208	4.049	18.933	-1.284	0.645	45.045	0.002	0.606	0.002	10.7	21.7	10.5	20.9	1.439	0.088	0.096	0.005	4.588	3.90
9/13/02	1:16:09 PM	22.56	22.901	22.026	25.312	22.998	22.956	23.108	4.085	18.974	-1.284	0.645	45.915	0.002	0.597	0.002	11.7	21.6	10.7	21.0	1.445	0.087	0.095	0.005	4.509	3.84
9/13/02	1:17:09 PM	22.522	22.918	22.049	25.359	23.051	22.66	22.908	3.934	18.908	-1.284	0.645	45.966	0.002	0.587	0.003	12.7	21.4	10.7	20.8	1.433	0.085	0.093	0.004	4.469	3.80
9/13/02	1:18:09 PM	22.473	22.93	21.955	25.371	23.057	23.058	23.377	3.965	19.356	-1.286	0.642	45.521	0.002	0.578	0.003	13.7	21.9	10.6	21.2	1.462	0.084	0.092	0.004	4.325	3.68
9/13/02	1:19:09 PM	22.429	22.921	21.931	25.322	23.073	23.016	23.257	4.038	19.09	-1.286	0.639	45.661	0.002	0.569	0.003	14.7	21.8	10.7	21.1	1.452	0.083	0.090	0.004	4.292	3.65
9/13/02	1:20:09 PM	22.394	22.931	21.88	25.317	23.053	22.85	22.98	4.001	19.135	-1.286	0.645	45.695	0.002	0.56	0.002	15.7	21.5	10.7	21.0	1.447	0.081	0.089	0.004	4.242	3.61
9/13/02	1:21:09 PM	22.349	22.926	21.811	25.257	23.049	22.9	23.059	3.975	19.211	-1.289	0.639	46.045	0.001	0.553	0.002	16.7	21.6	10.7	21.1	1.452	0.080	0.088	0.004	4.185	3.56
9/13/02	1:22:09 PM	22.325	22.958	21.847	25.264	23.065	23.171	23.359	4.169	19.164	-1.286	0.642	45.829	0.002	0.545	0.003	17.7	21.9	10.7	21.2	1.459	0.079	0.087	0.004	4.098	3.49
9/13/02	1:23:09 PM	22.29	22.952	21.766	25.213	23.064	22.809	22.811	3.883	19.244	-1.284	0.648	45.632	0.002	0.535	0.002	18.7	21.3	10.7	21.0	1.450	0.078	0.085	0.004	4.059	3.45
9/13/02	1:24:09 PM	22.259	22.962	21.771	25.118	23.044	22.799	22.924	4.01	19.008	-1.286	0.642	45.565	0.002	0.532	0.003	19.7	21.5	10.6	20.9	1.441	0.077	0.085	0.004	4.060	3.45
9/13/02	1:25:09 PM	22.223	22.966	21.724	25.162	23.028	23.103	23.251	3.886	19.471	-1.284	0.648	45.693	0.002	0.522	0.003	20.7	21.8	10.7	21.3	1.468	0.076	0.083	0.004	3.917	3.33
9/13/02	1:26:09 PM	22.197	22.96	21.683	25.116	23.007	23.027	23.026	4.051	19.352	-1.284	0.642	45.75	0.002	0.516	0.002	21.7	21.6	10.7	21.2	1.461	0.075	0.083	0.004	3.894	3.31
9/13/02	1:27:09 PM	22.176	22.97	21.698	25.14	23.012	23.091	23.204	3.972	19.438	-1.284	0.645	45.573	0.002	0.51	0.003	22.7	21.7	10.6	21.3	1.466	0.074	0.082	0.004	3.834	3.26
9/13/02	1:28:09 PM	22.145	22.958	21.611	25.089	22.96	23.379	23.491	4.188	19.254	-1.286	0.642	45.662	0.002	0.503	0.003	23.7	22.0	10.7	21.3	1.470	0.073	0.081	0.004	3.782	3.22
9/13/02	1:29:09 PM	22.124	22.968	21.661	25.068	22.96	23.051	22.991	3.944	19.449	-1.284	0.642	45.668	0.002	0.497	0.002	24.7	21.5	10.7	21.3	1.465	0.072	0.080	0.004	3.743	3.19
9/13/02	1:30:09 PM	22.103	22.967	21.595	25.123	22.934	22.966	23.069	3.937	19.33	-1.284	0.642	45.251	0.002	0.496	0.001	25.7	21.6	10.6	21.1	1.458	0.072	0.080	0.004	3.760	3.20
	Averages	22.4	22.9	21.9	25.2	23.0	22.9	23.1	4.0	19.1	-1.3	0.6	45.8	0.0	0.6	0.0		21.6	10.7	21.0	1.448	0.083	0.090	0.0043	4.293	3.7
	Maximum	22.9	23.0	22.4	25.4	23.1	23.4	23.6	4.2	19.5	-1.3	0.7	47.6	0.0	0.7	0.0		22.1	11.1	21.3	1.470	0.097	0.104	0.0050	5.046	4.3
	Median	22.4	22.9	21.9	25.3	23.0	23.0	23.1	4.0	19.1	-1.3	0.6	45.7	0.0	0.6	0.0		21.6	10.7	21.0	1.450	0.081	0.089	0.0042	4.242	3.6
	Minimum	22.1	22.8	21.6	25.1	22.8	22.4	22.6	3.9	18.6	-1.3	0.6	45.0	0.0	0.5	0.0		21.1	10.5	20.6	1.418	0.072	0.080	0.0037	3.743	3.2
	2 x Std Dev	0.473	0.092	0.460	0.191	0.135	0.461	0.502	0.182	0.480	0.003	0.011	0.988	0.000	0.105	0.001		0.502	0.231	0.439	0.030	0.015	0.015	0.0008	0.814	0.693
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21
	* Backpulse points in box are not included																									

Figure A10: PreConditioning 3B – Inhibited Deionized & Filtered Water – Post Standard Slurry Tests – Raw & Calculated Data

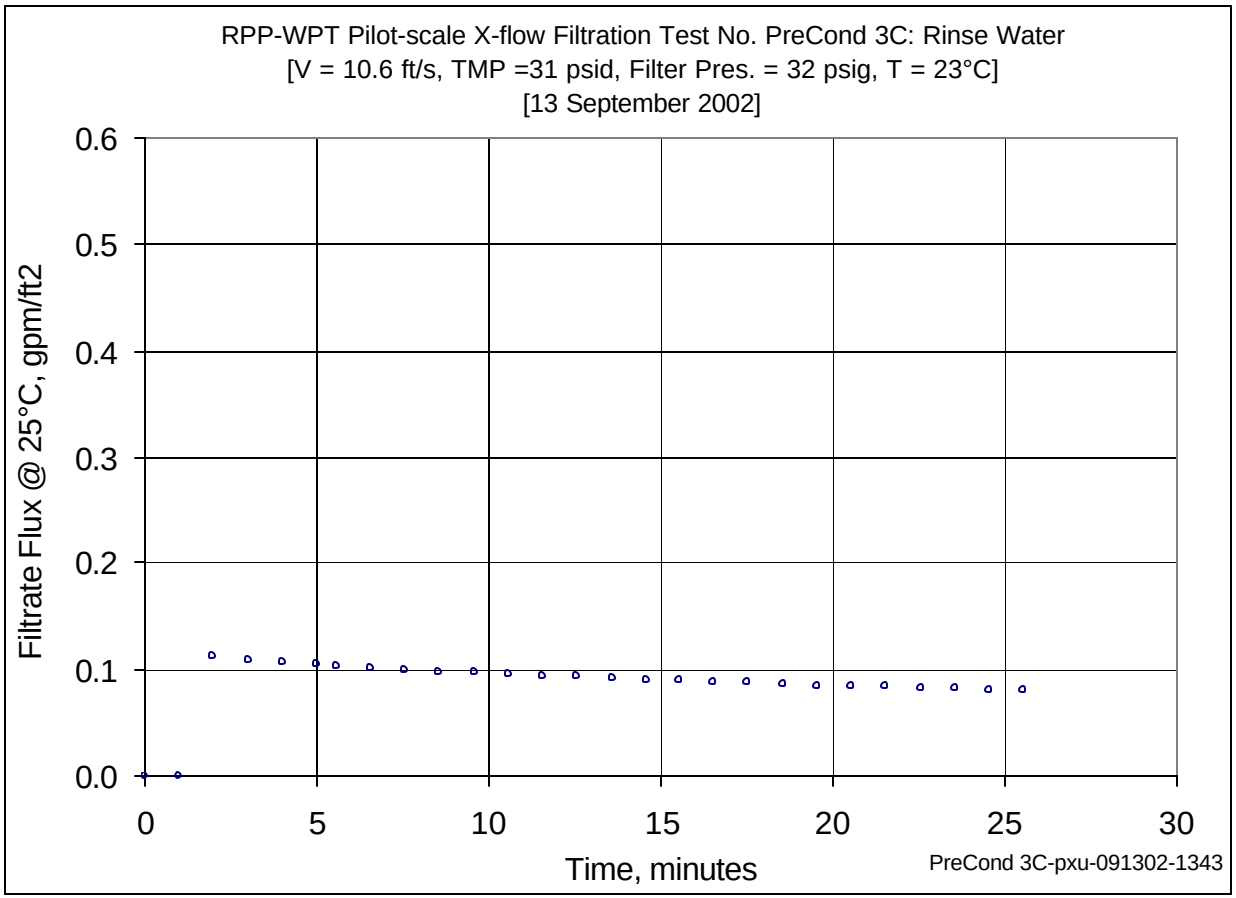


Figure A11: PreConditioning 3C – Inhibited Deionized & Filtered Water – Post Standard Slurry Tests

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/13/02	12:24:28 PM	22.65	22.529	22.056	24.129	22.39	-0.115	0.031	-0.061	0.058	-0.249	0.338	47.331	0.002	0.001	0		Filter Surface	6.87	FT2						
9/13/02	12:24:49 PM	22.65	22.529	22.056	24.129	22.39	-0.115	0.031	-0.061	0.058	-0.249	0.338	47.331	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/13/02	12:24:50 PM	22.614	22.528	22.03	24.158	22.384	-0.113	0.031	-0.06	0.06	-0.249	0.341	47.115	0.002	0.001	0										
9/13/02	12:24:51 PM	22.614	22.533	22.025	24.158	22.394	-0.113	0.029	-0.06	0.06	-0.249	0.338	47.06	0.003	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/13/02	12:24:52 PM	22.609	22.528	22.02	24.153	22.384	-0.113	0.031	-0.061	0.06	-0.249	0.338	46.985	0.002	0.001	0										
9/13/02	12:24:53 PM	22.615	22.534	22.031	24.159	22.4	-0.115	0.029	-0.061	0.06	-0.249	0.341	47.104	0.002	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/13/02	12:24:54 PM	22.62	22.534	22.031	24.164	22.4	-0.113	0.031	-0.061	0.06	-0.249	0.341	47.709	0.002	0.001	0		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/13/02	12:24:55 PM	22.615	22.534	22.026	24.159	22.39	-0.113	0.031	-0.061	0.058	-0.249	0.338	47.516	0.002	0.001	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/13/02	1:37:25 PM	22.415	22.977	22.158	25.178	22.833	2.971	33.264	3.991	-0.986	25.343	74.286	45.49	0.002	0.001	0.003	0	31.8	10.6	1.0	0.068	0.000	0.000	0.000	0.159	0.14
9/13/02	1:38:25 PM	22.545	22.966	22.152	25.172	22.797	27.142	33.127	3.984	23.369	0.722	0.671	45.5	0.002	0.001	0	1	31.7	10.6	25.3	1.741	0.000	0.000	0.000	0.006	0.01
9/13/02	1:39:25 PM	22.504	22.955	22.242	25.191	22.801	32.531	32.825	3.981	28.951	-1.286	0.686	45.508	0.002	0.712	0	2	31.4	10.6	30.7	2.119	0.104	0.112	0.004	3.645	3.10
9/13/02	1:40:25 PM	22.574	22.965	22.281	25.271	22.771	32.854	33.169	4.063	29.115	-1.286	0.674	45.62	0.002	0.696	0	3	31.7	10.6	31.0	2.136	0.101	0.109	0.004	3.531	3.01
9/13/02	1:41:25 PM	22.633	22.959	22.31	25.284	22.739	32.834	33.005	4.001	29.132	-1.286	0.674	45.636	0.002	0.679	0.002	4	31.5	10.7	31.0	2.136	0.099	0.107	0.003	3.442	2.93
9/13/02	1:42:25 PM	22.694	22.97	22.412	25.296	22.771	33.219	33.409	4.004	29.527	-1.284	0.677	45.51	0.002	0.667	0.001	5	31.9	10.6	31.4	2.163	0.097	0.104	0.003	3.330	2.83
9/13/02	1:42:58 PM	22.72	22.97	22.413	25.281	22.756	33.07	33.378	3.973	29.271	-1.284	0.677	45.441	0.002	0.66	0.003	5.55	31.9	10.6	31.2	2.149	0.096	0.103	0.003	3.316	2.82
9/13/02	1:43:58 PM	22.767	22.977	22.469	25.307	22.767	33.001	33.403	3.864	29.408	-1.284	0.674	45.504	0.002	0.651	0.002	6.55	31.9	10.6	31.2	2.151	0.095	0.102	0.003	3.262	2.78
9/13/02	1:44:58 PM	22.802	22.967	22.465	25.368	22.743	32.981	32.964	3.895	29.504	-1.284	0.674	45.488	0.002	0.639	0.003	7.55	31.5	10.6	31.2	2.154	0.093	0.100	0.003	3.198	2.72
9/13/02	1:45:58 PM	22.849	22.974	22.557	25.299	22.764	33.349	33.976	3.988	29.414	-1.281	0.677	45.483	0.002	0.63	0.002	8.55	32.5	10.6	31.4	2.164	0.092	0.098	0.003	3.131	2.66
9/13/02	1:46:58 PM	22.894	22.974	22.567	25.349	22.764	33.223	33.351	3.959	29.506	-1.281	0.677	45.16	0.002	0.623	0.001	9.55	31.9	10.5	31.4	2.162	0.091	0.097	0.003	3.097	2.64
9/13/02	1:47:58 PM	22.924	22.969	22.582	25.309	22.764	33.167	33.281	3.877	29.649	-1.284	0.671	45.456	0.002	0.614	0.002	10.6	31.8	10.6	31.4	2.165	0.089	0.096	0.003	3.047	2.59
9/13/02	1:48:58 PM	22.961	22.975	22.638	25.361	22.776	32.836	33.078	3.943	29.174	-1.284	0.668	44.984	0.002	0.606	0.001	11.6	31.6	10.5	31.0	2.138	0.088	0.094	0.003	3.041	2.59
9/13/02	1:49:58 PM	22.997	22.98	22.629	25.501	22.796	33.128	33.386	3.858	29.543	-1.284	0.671	45.259	0.002	0.6	0.003	12.6	31.9	10.6	31.3	2.160	0.087	0.093	0.003	2.980	2.54
9/13/02	1:50:58 PM	23.023	22.992	22.69	25.473	22.843	33.03	32.993	3.947	29.392	-1.286	0.668	45.066	0.002	0.591	0.002	13.6	31.5	10.5	31.2	2.152	0.086	0.092	0.003	2.942	2.50
9/13/02	1:51:58 PM	23.055	23.009	22.707	25.57	22.88	33.366	33.752	4.071	29.355	-1.286	0.665	45.389	0.002	0.582	0.002	14.6	32.3	10.6	31.4	2.162	0.085	0.090	0.003	2.882	2.45
9/13/02	1:52:58 PM	23.081	22.994	22.713	25.565	22.896	32.995	33.194	3.888	29.428	-1.286	0.657	45.315	0.002	0.575	0.002	15.6	31.7	10.6	31.2	2.152	0.084	0.089	0.003	2.860	2.43
9/13/02	1:53:58 PM	23.092	23.016	22.77	25.627	22.937	33.039	33.169	3.926	29.402	-1.284	0.654	45.305	0.002	0.568	0.001	16.6	31.7	10.6	31.2	2.153	0.083	0.088	0.003	2.820	2.40
9/13/02	1:54:58 PM	23.134	23.028	22.751	25.758	22.964	33.451	33.665	3.85	29.909	-1.286	0.654	45.263	0.002	0.563	0.001	17.6	32.2	10.6	31.7	2.184	0.082	0.087	0.003	2.756	2.35
9/13/02	1:55:58 PM	23.156	23.039	22.803	25.765	23.001	33.596	33.868	4.109	29.523	-1.286	0.654	45.349	0.002	0.558	0.003	18.6	32.4	10.6	31.6	2.176	0.081	0.086	0.003	2.738	2.33
9/13/02	1:56:58 PM	23.179	23.052	22.816	25.908	23.044	33.065	33.09	3.86	29.58	-1.284	0.654	45.435	0.002	0.55	0.002	19.6	31.6	10.6	31.3	2.160	0.080	0.085	0.003	2.718	2.31
9/13/02	1:57:58 PM	23.211	23.075	22.829	25.955	23.086	33.382	33.45	4.033	29.561	-1.284	0.654	45.303	0.002	0.546	0.001	20.6	32.0	10.6	31.5	2.170	0.079	0.084	0.003	2.685	2.28
9/13/02	1:58:58 PM	23.219	23.082	22.891	25.953	23.139	32.939	33.128	3.874	29.582	-1.286	0.66	45.03	0.002	0.541	0.001	21.6	31.7	10.5	31.3	2.155	0.079	0.084	0.003	2.673	2.28
9/13/02	1:59:58 PM	23.242	23.09	22.859	25.996	23.167	33.175	33.278	3.895	29.51	-1.286	0.657	45.267	0.002	0.536	0.002	22.6	31.8	10.6	31.3	2.161	0.078	0.083	0.003	2.644	2.25
9/13/02	2:00:58 PM	23.253	23.102	22.891	26.012	23.189	33.399	33.444	3.926	29.758	-1.286	0.657	45.36	0.002	0.532	0.002	23.6	32.0	10.6	31.6	2.177	0.077	0.082	0.003	2.603	2.21
9/13/02	2:01:58 PM	23.285	23.128	22.937	26.104	23.195	33.326	33.249	3.892	29.778	-1.281	0.657	45.299	0.002	0.526	0.002	24.6	31.8	10.6	31.6	2.175	0.077	0.081	0.003	2.572	2.19
9/13/02	2:02:58 PM	23.296	23.129	22.893	26.075	23.171	33.614	33.905	4.031	29.744	-1.286	0.657	45.269	0.002	0.524	0.002	25.6	32.4	10.6	31.7	2.184	0.076	0.081	0.003	2.555	2.17
	Averages	23.1	23.0	22.7	25.6	22.9	33.2	33.4	3.9	29.5	-1.3		45.3	0.0	0.6	0.0		31.9	10.6	31.4	2.162	0.085	0.090	0.0029	2.882	2.5
	Maximum	23.3	23.1	22.9	26.1	23.2	33.6	34.0	4.1	29.9	-1.3		45.5	0.0	0.7	0.0		32.5	10.6	31.7	2.184	0.096	0.103	0.0033	3.316	2.8
	Median	23.1	23.0	22.7	25.6	22.9	33.2	33.4	3.9	29.5	-1.3		45.3	0.0	0.6	0.0		31.9	10.6	31.3	2.161	0.084	0.089	0.0029	2.860	2.4
	Minimum	22.7	23.0	22.4	25.3	22.7	32.8	33.0	3.9	29.2	-1.3		45.0	0.0	0.5	0.0		31.5	10.5	31.0	2.138	0.076	0.081	0.0026	2.555	2.2
	2 x Std Dev	0.346	0.109	0.306	0.574	0.328	0.427	0.582	0.145	0.344	0.003		0.289	0.000	0.083	0.001		0.582	0.067	0.344	0.024	0.012	0.014	0.0005	0.457	0.389
Number of Points Used*		21	21	21	21	21	21	21	21	21	21		21	21	21	21		21	21	21	21	21	21	21	21	21
	* Backpulse points in box are not included																									

Figure A12: PreConditioning 3C – Inhibited Deionized & Filtered Water – Post Standard Slurry Tests – Raw & Calculated Data

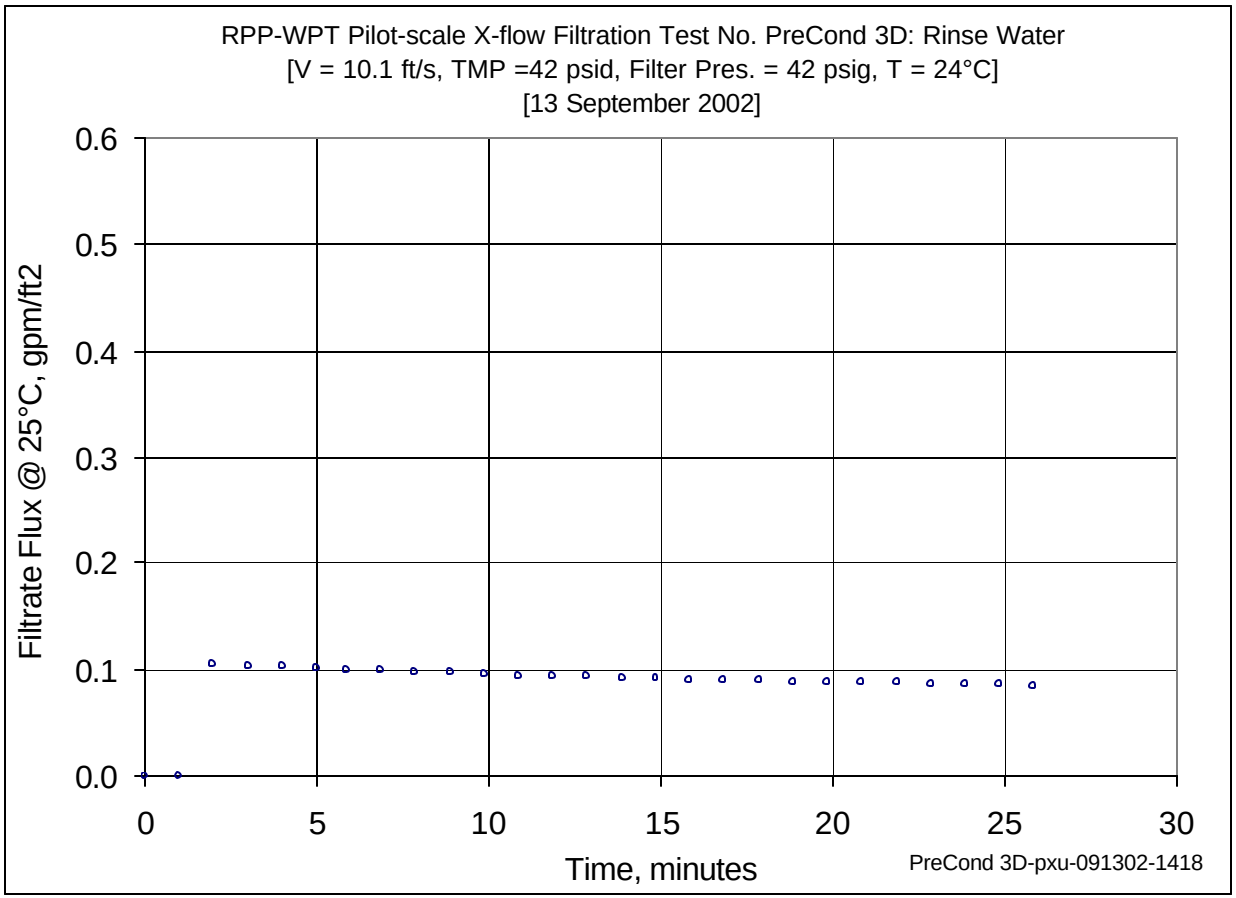


Figure A13: PreConditioning 3D – Inhibited Deionized & Filtered Water – Post Standard Slurry Tests

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/13/02	12:24:28 PM	22.65	22.529	22.056	24.129	22.39	-0.115	0.031	-0.061	0.058	-0.249	0.338	47.331	0.002	0.001	0		Filter Surface	6.87	FT2						
9/13/02	12:24:49 PM	22.65	22.529	22.056	24.129	22.39	-0.115	0.031	-0.061	0.058	-0.249	0.338	47.331	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/13/02	12:24:50 PM	22.614	22.528	22.03	24.158	22.384	-0.113	0.031	-0.06	0.06	-0.249	0.341	47.115	0.002	0.001	0										
9/13/02	12:24:51 PM	22.614	22.533	22.025	24.158	22.394	-0.113	0.029	-0.06	0.06	-0.249	0.338	47.06	0.003	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/13/02	12:24:52 PM	22.609	22.528	22.02	24.153	22.384	-0.113	0.031	-0.061	0.06	-0.249	0.338	46.985	0.002	0.001	0										
9/13/02	12:24:53 PM	22.615	22.534	22.031	24.159	22.4	-0.115	0.029	-0.061	0.06	-0.249	0.341	47.104	0.002	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/13/02	12:24:54 PM	22.62	22.534	22.031	24.164	22.4	-0.113	0.031	-0.061	0.06	-0.249	0.341	47.709	0.002	0.001	0		VVVV				< Filtrate Flux	<< PERMIABILITY >>			
9/13/02	12:24:55 PM	22.615	22.534	22.026	24.159	22.39	-0.113	0.031	-0.061	0.058	-0.249	0.338	47.516	0.002	0.001	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/13/02	2:11:34 PM	23.852	23.204	23.796	26.014	23.145	2.632	43.355	3.766	-1.162	35.925	83.705	43.732	0.001	0.001	0	0	41.9	10.2	0.7	0.051	0.000	0.000	0.000	0.205	0.17
9/13/02	2:12:34 PM	23.921	23.207	23.85	25.927	23.129	37.475	43.831	3.782	33.815	0.786	0.683	44.233	0.002	0.001	0	1	42.4	10.3	35.6	2.458	0.000	0.000	0.000	0.004	0.00
9/13/02	2:13:34 PM	24.218	23.213	23.961	25.863	23.134	43.231	43.424	3.547	40.168	-1.286	0.567	44	0.002	0.703	0	2	42.0	10.3	41.7	2.875	0.102	0.105	0.003	2.526	2.15
9/13/02	2:14:34 PM	24.328	23.223	23.986	25.893	23.139	43.272	43.742	3.683	39.895	-1.286	0.573	43.493	0.002	0.69	0	3	42.3	10.2	41.6	2.867	0.100	0.103	0.002	2.485	2.11
9/13/02	2:15:34 PM	24.403	23.212	24.045	25.902	23.119	43.786	44.079	3.588	40.43	-1.284	0.57	43.023	0.002	0.687	0.001	4	42.6	10.0	42.1	2.903	0.100	0.103	0.002	2.439	2.08
9/13/02	2:16:34 PM	24.479	23.238	24.136	25.958	23.139	43.608	43.806	3.569	40.356	-1.286	0.573	43.136	0.002	0.678	0.004	5	42.3	10.1	42.0	2.895	0.099	0.101	0.002	2.408	2.05
9/13/02	2:17:25 PM	24.534	23.249	24.147	25.939	23.16	43.892	44.046	3.64	40.344	-1.284	0.573	43.336	0.002	0.672	0.002	5.85	42.6	10.1	42.1	2.904	0.098	0.100	0.002	2.378	2.02
9/13/02	2:18:25 PM	24.589	23.249	24.242	25.964	23.165	43.262	43.691	3.572	39.707	-1.284	0.576	43.141	0.002	0.664	0.003	6.85	42.2	10.1	41.5	2.860	0.097	0.099	0.002	2.379	2.02
9/13/02	2:19:25 PM	24.64	23.254	24.207	25.994	23.151	43.602	43.902	3.5	40.464	-1.292	0.57	43.254	0.001	0.656	0	7.85	42.4	10.1	42.0	2.898	0.095	0.098	0.002	2.322	1.98
9/13/02	2:20:25 PM	24.65	23.259	24.117	26.134	23.135	43.643	43.935	3.684	40.039	-1.286	0.573	43.149	0.002	0.648	0.002	8.85	42.5	10.1	41.8	2.885	0.094	0.097	0.002	2.310	1.97
9/13/02	2:21:25 PM	24.604	23.264	23.946	26.264	23.135	43.51	43.688	3.579	40.342	-1.284	0.581	43.461	0.002	0.636	0.001	9.85	42.2	10.1	41.9	2.891	0.093	0.095	0.002	2.274	1.94
9/13/02	2:22:25 PM	24.529	23.264	23.871	26.299	23.155	43.85	44.307	3.763	40.141	-1.286	0.581	43.124	0.002	0.629	0.002	10.9	42.8	10.1	42.0	2.895	0.092	0.094	0.002	2.250	1.91
9/13/02	2:23:25 PM	24.453	23.268	23.725	26.303	23.159	43.784	44.019	3.64	40.368	-1.286	0.579	43.449	0.002	0.621	0.003	11.9	42.5	10.1	42.1	2.901	0.090	0.094	0.002	2.226	1.89
9/13/02	2:24:25 PM	24.393	23.278	23.685	26.348	23.174	43.452	43.378	3.612	40.145	-1.281	0.584	43.426	0.002	0.617	0.002	12.9	41.9	10.1	41.8	2.882	0.090	0.093	0.002	2.229	1.90
9/13/02	2:25:25 PM	24.334	23.294	23.6	26.359	23.185	43.79	44.156	3.614	40.419	-1.284	0.584	43.434	0.002	0.607	0.003	13.9	42.7	10.1	42.1	2.903	0.088	0.092	0.002	2.183	1.86
9/13/02	2:26:25 PM	24.279	23.304	23.505	26.429	23.18	43.773	44.245	3.699	40.078	-1.284	0.581	43.254	0.002	0.601	0.003	14.9	42.8	10.1	41.9	2.891	0.087	0.091	0.002	2.176	1.85
9/13/02	2:27:25 PM	24.208	23.309	23.475	26.339	23.2	43.146	42.977	3.6	39.858	-1.284	0.584	43.18	0.002	0.597	0.003	15.9	41.5	10.1	41.5	2.861	0.087	0.091	0.002	2.185	1.86
9/13/02	2:28:25 PM	24.153	23.318	23.369	26.173	23.19	43.602	43.782	3.709	40.172	-1.286	0.584	43.205	0.002	0.591	0.002	16.9	42.3	10.1	41.9	2.888	0.086	0.090	0.002	2.150	1.83
9/13/02	2:29:25 PM	24.097	23.323	23.318	26.103	23.18	43.722	43.962	3.642	40.252	-1.286	0.587	42.882	0.002	0.589	0.003	17.9	42.5	10.0	42.0	2.895	0.086	0.090	0.002	2.141	1.82
9/13/02	2:30:25 PM	24.033	23.329	23.284	26.124	23.205	43.616	43.736	3.665	40.071	-1.289	0.581	42.838	0.001	0.582	0.003	18.9	42.3	10.0	41.8	2.885	0.085	0.089	0.002	2.125	1.81
9/13/02	2:31:25 PM	23.988	23.334	23.183	26.214	23.195	43.37	43.511	3.52	40.014	-1.286	0.584	42.794	0.002	0.578	0.002	19.9	42.0	10.0	41.7	2.875	0.084	0.089	0.002	2.124	1.81
9/13/02	2:32:25 PM	23.922	23.334	23.183	26.264	23.205	43.541	43.893	3.485	40.221	-1.281	0.59	43.054	0.002	0.576	0.002	20.9	42.4	10.1	41.9	2.888	0.084	0.088	0.002	2.107	1.79
9/13/02	2:33:25 PM	23.877	23.344	23.108	26.324	23.22	43.434	43.784	3.578	39.955	-1.281	0.593	42.874	0.002	0.569	0.002	21.9	42.3	10.0	41.7	2.875	0.083	0.087	0.002	2.095	1.78
9/13/02	2:34:25 PM	23.827	23.344	23.058	26.309	23.195	43.413	43.426	3.534	40.174	-1.284	0.587	42.893	0.002	0.567	0.002	22.9	42.0	10.0	41.8	2.882	0.083	0.087	0.002	2.086	1.78
9/13/02	2:35:25 PM	23.782	23.354	23.053	26.349	23.205	43.914	44.137	3.499	40.649	-1.284	0.587	42.826	0.002	0.562	0.002	23.9	42.7	10.0	42.3	2.915	0.082	0.086	0.002	2.044	1.74
9/13/02	2:36:25 PM	23.73	23.353	22.931	26.407	23.184	43.825	43.804	3.555	40.512	-1.284	0.593	42.954	0.002	0.557	0.003	24.9	42.3	10.0	42.2	2.907	0.081	0.086	0.002	2.038	1.73
9/13/02	2:37:25 PM	23.696	23.364	22.947	26.388	23.2	44.273	44.239	3.619	40.968	-1.286	0.59	42.673	0.002	0.553	0.003	25.9	42.8	10.0	42.6	2.939	0.080	0.085	0.002	2.001	1.70
	Averages	24.2	23.3	23.5	26.2	23.2	43.6	43.8	3.6	40.2	-1.3	0.6	43.1	0.0	0.6	0.0		42.4	10.1	41.9	2.891	0.088	0.092	0.0022	2.182	1.9
	Maximum	24.7	23.4	24.2	26.4	23.2	44.3	44.3	3.8	41.0	-1.3	0.6	43.5	0.0	0.7	0.0		42.8	10.1	42.6	2.939	0.098	0.100	0.0024	2.379	2.0
	Median	24.2	23.3	23.5	26.3	23.2	43.6	43.9	3.6	40.2	-1.3	0.6	43.1	0.0	0.6	0.0		42.4	10.1	41.9	2.891	0.087	0.091	0.0022	2.176	1.9
	Minimum	23.7	23.2	22.9	25.9	23.1	43.1	43.0	3.5	39.7	-1.3	0.6	42.7	0.0	0.6	0.0		41.5	10.0	41.5	2.860	0.080	0.085	0.0020	2.001	1.7
	2 x Std Dev	0.634	0.076	0.845	0.286	0.047	0.498	0.638	0.146	0.548	0.005	0.012	0.474	0.001	0.071	0.002		0.638	0.111	0.500	0.034	0.010	0.009	0.0002	0.212	0.180
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21
	* Backpulse points in box are not included																									

Figure A14: PreConditioning 3D – Inhibited Deionized & Filtered Water – Post Standard Slurry Tests – Raw & Calculated Data

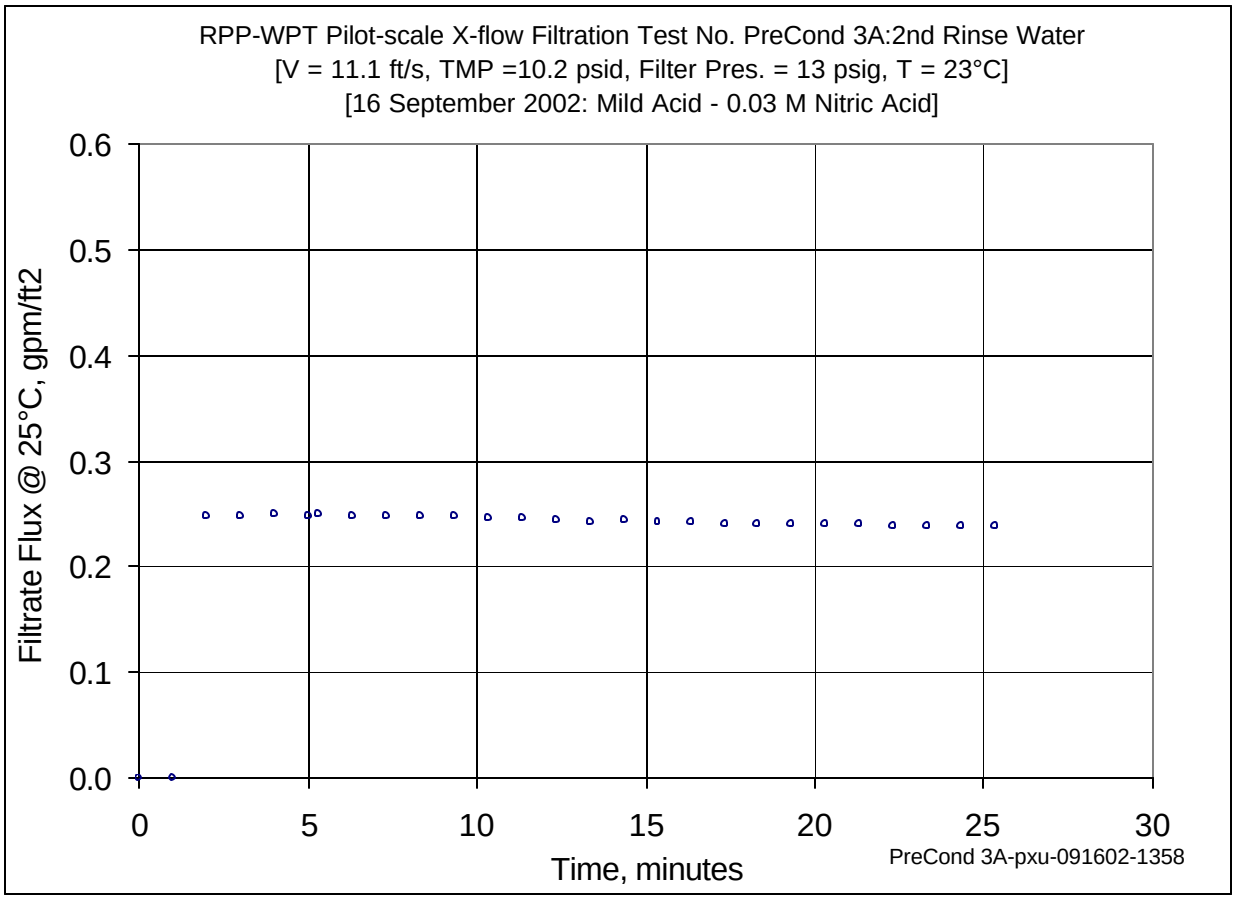


Figure A15: PreConditioning 3A – Deionized & Filtered Water with 0.03 M Nitric Acid – Post Standard Slurry Tests

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/16/02	2:19:17 PM	23.65	22.68	23.513	24.56	22.656	-0.115	0.038	-0.059	0.062	-0.205	0.33	47.558	0.002	1.564	0.001		Filter Surface	6.87	FT2						
9/16/02	2:19:30 PM	23.65	22.68	23.513	24.56	22.656	-0.115	0.038	-0.059	0.062	-0.205	0.33	47.558	0.002	1.564	0.001		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/16/02	2:19:31 PM	23.645	22.669	23.468	24.54	22.666	-0.115	0.038	-0.06	0.058	-0.194	0.327	47.453	0.002	1.562	0.001										
9/16/02	2:19:32 PM	23.65	22.68	23.473	24.55	22.666	-0.115	0.038	-0.06	0.056	-0.211	0.327	47.478	0.001	1.562	0.002		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/16/02	2:19:33 PM	23.66	22.68	23.483	24.555	22.666	-0.115	0.038	-0.06	0.056	-0.22	0.324	47.528	0.001	1.563	0.001										
9/16/02	2:19:34 PM	23.666	22.69	23.489	24.576	22.672	-0.115	0.038	-0.06	0.058	-0.2	0.327	47.428	0.002	1.561	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/16/02	2:19:35 PM	23.665	22.685	23.483	24.57	22.666	-0.115	0.038	-0.059	0.058	-0.203	0.33	47.497	0.002	1.558	0.001		VVVV					< Filtrate Flux	<< PERMIABILITY >>		
9/16/02	2:19:36 PM	23.665	22.685	23.478	24.575	22.666	-0.115	0.038	-0.059	0.058	-0.179	0.33	47.578	0.002	1.562	0							at 25C		x 1000	
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/16/02	1:52:31 PM	23.1	22.661	22.501	24.557	22.819	2.87	14.769	4.19	-1.422	6.57	55.738	46.666	0.002	0.001	0	0	13.3	10.9	0.7	0.050	0.000	0.000	0.000	0.216	0.18
9/16/02	1:53:31 PM	23.038	22.65	22.434	24.551	22.793	7.984	14.525	4.165	3.978	1.141	0.561	46.995	0.002	0.001	0	1	13.1	11.0	6.0	0.412	0.000	0.000	0.000	0.026	0.02
9/16/02	1:54:31 PM	22.791	22.655	22.378	24.611	22.797	11.937	14.264	4.167	8.152	-1.284	0.631	47.478	0.002	1.582	0	2	12.8	11.1	10.0	0.693	0.230	0.248	0.025	24.690	21.01
9/16/02	1:55:31 PM	22.725	22.674	22.428	24.62	22.801	12.113	14.484	4.263	8.136	-1.284	0.634	47.386	0.002	1.584	0	3	13.0	11.1	10.1	0.698	0.230	0.248	0.024	24.491	20.84
9/16/02	1:56:31 PM	22.674	22.673	22.312	24.639	22.781	11.962	14.209	4.208	8.128	-1.286	0.631	47.513	0.002	1.589	0	4	12.7	11.1	10.0	0.693	0.231	0.250	0.025	24.845	21.14
9/16/02	1:57:31 PM	22.629	22.668	22.341	24.629	22.78	12.078	14.364	4.105	8.279	-1.284	0.619	47.453	0.002	1.58	0	5	12.9	11.1	10.2	0.702	0.230	0.248	0.024	24.360	20.73
9/16/02	1:57:51 PM	22.623	22.667	22.28	24.633	22.774	12.142	14.426	4.142	8.378	-1.284	0.622	47.321	0.002	1.581	0	5.33	13.0	11.0	10.3	0.707	0.230	0.249	0.024	24.224	20.62
9/16/02	1:58:51 PM	22.583	22.677	22.305	24.613	22.779	11.892	14.194	4.075	8.095	-1.284	0.622	47.463	0.002	1.575	0	6.33	12.7	11.1	10.0	0.689	0.229	0.247	0.025	24.758	21.07
9/16/02	1:59:51 PM	22.557	22.677	22.214	24.628	22.784	12.064	14.325	4.157	8.265	-1.286	0.622	47.327	0.002	1.574	0.002	7.33	12.9	11.0	10.2	0.701	0.229	0.248	0.024	24.390	20.76
9/16/02	2:00:51 PM	22.526	22.68	22.258	24.636	22.773	11.971	14.231	4.164	8.142	-1.284	0.619	47.36	0.002	1.569	0.001	8.33	12.8	11.1	10.1	0.693	0.228	0.247	0.025	24.542	20.89
9/16/02	2:01:51 PM	22.495	22.675	22.172	24.636	22.787	12.074	14.296	4.129	8.326	-1.286	0.622	47.465	0.002	1.563	0	9.33	12.8	11.1	10.2	0.703	0.227	0.246	0.024	24.164	20.56
9/16/02	2:02:51 PM	22.5	22.685	22.278	24.631	22.807	12.147	14.407	4.144	8.288	-1.284	0.622	47.698	0.002	1.564	0	10.3	12.9	11.1	10.2	0.704	0.228	0.246	0.024	24.065	20.48
9/16/02	2:03:51 PM	22.565	22.694	22.443	24.615	22.812	12.147	14.356	4.002	8.509	-1.284	0.622	47.497	0.002	1.566	0.001	11.3	12.9	11.1	10.3	0.712	0.228	0.245	0.024	23.725	20.19
9/16/02	2:04:51 PM	22.685	22.694	22.593	24.569	22.806	11.993	14.26	4.167	8.079	-1.284	0.622	47.44	0.002	1.565	0.001	12.3	12.8	11.1	10.0	0.692	0.228	0.244	0.024	24.295	20.68
9/16/02	2:05:51 PM	22.769	22.698	22.638	24.534	22.775	12.244	14.548	4.195	8.212	-1.284	0.622	47.503	0.002	1.556	0.002	13.3	13.1	11.1	10.2	0.705	0.226	0.242	0.024	23.672	20.14
9/16/02	2:06:51 PM	22.859	22.682	22.788	24.448	22.769	12.087	14.345	4.11	8.206	-1.289	0.619	47.505	0.001	1.567	0	14.3	12.9	11.1	10.1	0.700	0.228	0.243	0.024	23.928	20.36
9/16/02	2:07:51 PM	22.963	22.691	22.806	24.421	22.727	12.006	14.202	4.13	8.296	-1.281	0.622	47.4	0.002	1.565	0	15.3	12.7	11.1	10.2	0.700	0.228	0.242	0.024	23.874	20.32
9/16/02	2:08:51 PM	23.043	22.685	22.951	24.44	22.737	12.101	14.432	4.024	8.451	-1.286	0.622	47.333	0.002	1.567	0	16.3	13.0	11.0	10.3	0.708	0.228	0.242	0.024	23.516	20.01
9/16/02	2:09:51 PM	23.143	22.694	22.976	24.45	22.726	12.169	14.399	4.215	8.257	-1.284	0.622	47.415	0.002	1.556	0.001	17.3	12.9	11.1	10.2	0.704	0.226	0.240	0.023	23.479	19.98
9/16/02	2:10:51 PM	23.212	22.694	23.101	24.364	22.736	12.084	14.351	4.11	8.284	-1.284	0.622	47.446	0.002	1.563	0.003	18.3	12.9	11.1	10.2	0.702	0.227	0.240	0.024	23.567	20.06
9/16/02	2:11:51 PM	23.281	22.677	23.094	24.333	22.694	12.004	14.204	4.119	8.21	-1.284	0.622	47.725	0.002	1.558	0	19.3	12.7	11.1	10.1	0.697	0.227	0.239	0.024	23.676	20.15
9/16/02	2:12:51 PM	23.32	22.676	23.199	24.407	22.688	11.958	14.293	4.165	8.009	-1.284	0.619	47.532	0.002	1.567	0	20.3	12.8	11.1	10.0	0.688	0.228	0.240	0.024	24.035	20.45
9/16/02	2:13:51 PM	23.409	22.685	23.222	24.506	22.677	12.111	14.407	4.075	8.298	-1.286	0.619	47.434	0.002	1.564	0.001	21.3	12.9	11.1	10.2	0.704	0.228	0.239	0.023	23.454	19.96
9/16/02	2:14:51 PM	23.438	22.684	23.296	24.494	22.665	12.116	14.308	4.075	8.404	-1.286	0.619	47.493	0.001	1.561	0.001	22.3	12.8	11.1	10.3	0.707	0.227	0.238	0.023	23.233	19.77
9/16/02	2:15:51 PM	23.517	22.687	23.325	24.523	22.648	12.221	14.459	4.212	8.347	-1.284	0.622	47.503	0.002	1.564	0	23.3	13.0	11.1	10.3	0.709	0.228	0.239	0.023	23.204	19.75
9/16/02	2:16:51 PM	23.537	22.687	23.385	24.523	22.659	12.002	14.204	4.195	8.171	-1.286	0.622	47.516	0.002	1.565	0	24.3	12.7	11.1	10.1	0.695	0.228	0.238	0.024	23.634	20.11
9/16/02	2:17:51 PM	23.595	22.675	23.388	24.511	22.647	12.026	14.234	4.138	8.224	-1.286	0.619	47.348	0.002	1.561	0	25.3	12.8	11.1	10.1	0.698	0.227	0.238	0.023	23.481	19.98
	Averages	23.0	22.7	22.8	24.5	22.7	12.1	14.3	4.1	8.3	-1.3	0.6	47.5	0.0	1.6	0.0		12.9	11.1	10.2	0.701	0.228	0.242	0.0239	23.853	20.3
	Maximum	23.6	22.7	23.4	24.6	22.8	12.2	14.5	4.2	8.5	-1.3	0.6	47.7	0.0	1.6	0.0		13.1	11.1	10.3	0.712	0.230	0.249	0.0248	24.758	21.1
	Median	23.0	22.7	22.8	24.5	22.7	12.1	14.3	4.1	8.3	-1.3	0.6	47.5	0.0	1.6	0.0		12.9	11.1	10.2	0.702	0.228	0.242	0.0237	23.725	20.2
	Minimum	22.5	22.7	22.2	24.3	22.6	11.9	14.2	4.0	8.0	-1.3	0.6	47.3	0.0	1.6	0.0		12.7	11.0	10.0	0.688	0.226	0.238	0.0232	23.204	19.7
	2 x Std Dev	0.770	0.016	0.850	0.187	0.109	0.174	0.193	0.111	0.240	0.003	0.003	0.207	0.001	0.012	0.002		0.193	0.048	0.188	0.013	0.002	0.007	0.0008	0.835	0.711
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21
	* Backpulse points in box are not included																									

Figure A16: PreConditioning 3A – Deionized & Filtered Water with 0.03 M Nitric Acid – Post Standard Slurry Tests – Raw & Calculated Data

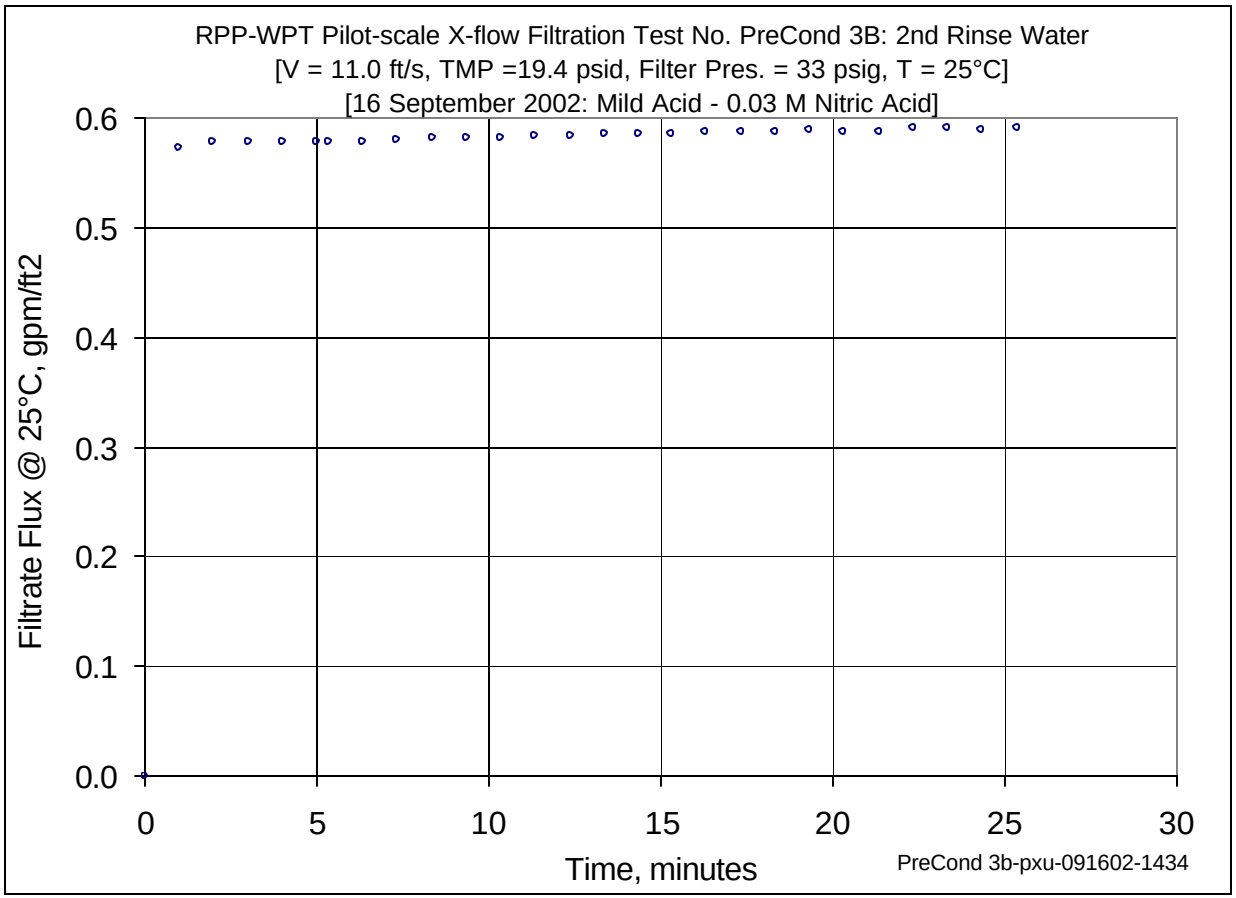


Figure A17: PreConditioning 3B – Deionized & Filtered Water with 0.03 M Nitric Acid – Post Standard Slurry Tests

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/16/02	2:19:17 PM	23.65	22.68	23.513	24.56	22.656	-0.115	0.038	-0.059	0.062	-0.205	0.33	47.558	0.002	1.564	0.001		Filter Surface	6.87	FT2						
9/16/02	2:19:30 PM	23.65	22.68	23.513	24.56	22.656	-0.115	0.038	-0.059	0.062	-0.205	0.33	47.558	0.002	1.564	0.001		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/16/02	2:19:31 PM	23.645	22.669	23.468	24.54	22.666	-0.115	0.038	-0.06	0.058	-0.194	0.327	47.453	0.002	1.562	0.001										
9/16/02	2:19:32 PM	23.65	22.68	23.473	24.55	22.666	-0.115	0.038	-0.06	0.056	-0.211	0.327	47.478	0.001	1.562	0.002		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/16/02	2:19:33 PM	23.66	22.68	23.483	24.555	22.666	-0.115	0.038	-0.06	0.056	-0.22	0.324	47.528	0.001	1.563	0.001										
9/16/02	2:19:34 PM	23.666	22.69	23.489	24.576	22.672	-0.115	0.038	-0.06	0.058	-0.2	0.327	47.428	0.002	1.561	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/16/02	2:19:35 PM	23.665	22.685	23.483	24.57	22.666	-0.115	0.038	-0.059	0.058	-0.203	0.33	47.497	0.002	1.558	0.001		VVVV				< Filtrate Flux <<		PERMIABILITY >>		
9/16/02	2:19:36 PM	23.665	22.685	23.478	24.575	22.666	-0.115	0.038	-0.059	0.058	-0.179	0.33	47.578	0.002	1.562	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/16/02	2:28:40 PM	24.506	22.773	24.564	25.159	22.845	2.58	36.084	3.732	-1.006	28.548	76.342	44.099	0.002	0.001	0	0	34.6	10.3	0.8	0.054	0.000	0.000	0.000	0.187	0.16
9/16/02	2:29:40 PM	24.829	22.815	24.707	25.152	22.872	21.069	34.785	3.796	18.808	7.471	1.137	47.163	0.002	3.901	0	1	33.3	11.0	19.9	1.375	0.568	0.572	0.029	28.706	24.43
9/16/02	2:30:40 PM	24.987	22.823	24.769	25.184	22.91	20.837	34.929	3.809	18.46	7.801	1.14	47.193	0.002	3.943	0	2	33.5	11.0	19.6	1.355	0.574	0.578	0.029	29.392	25.01
9/16/02	2:31:40 PM	25.115	22.851	24.807	25.333	22.933	20.817	34.975	3.792	18.495	7.847	1.143	47.113	0.002	3.954	0	3	33.5	11.0	19.7	1.355	0.575	0.578	0.029	29.431	25.05
9/16/02	2:32:40 PM	25.177	22.864	24.92	25.285	22.966	20.653	34.851	3.783	18.276	7.847	1.14	47.117	0.002	3.961	0	4	33.4	11.0	19.5	1.342	0.576	0.578	0.030	29.679	25.26
9/16/02	2:33:40 PM	25.215	22.876	24.932	25.388	23.004	20.481	34.745	3.722	18.278	7.94	1.146	47.109	0.002	3.972	0	5	33.3	11.0	19.4	1.336	0.578	0.579	0.030	29.881	25.43
9/16/02	2:34:00 PM	25.241	22.888	25.009	25.389	23.01	20.576	34.758	3.694	18.439	7.934	1.146	47.04	0.003	3.974	0	5.33	33.3	11.0	19.5	1.345	0.578	0.578	0.030	29.636	25.22
9/16/02	2:35:00 PM	25.288	22.889	24.966	25.381	23.002	20.529	34.878	3.795	18.165	7.856	1.143	46.995	0.003	3.97	0.003	6.33	33.4	11.0	19.3	1.334	0.578	0.578	0.030	29.888	25.43
9/16/02	2:36:00 PM	25.311	22.913	24.934	25.469	23.01	20.469	34.65	3.765	18.206	7.928	1.146	47.048	0.002	3.981	0.001	7.33	33.2	11.0	19.3	1.333	0.579	0.580	0.030	30.012	25.54
9/16/02	2:37:00 PM	25.207	22.913	24.844	25.47	23.005	20.481	34.739	3.72	18.325	7.888	1.146	47.086	0.002	3.979	0.002	8.33	33.3	11.0	19.4	1.338	0.579	0.582	0.030	29.972	25.51
9/16/02	2:38:00 PM	25.188	22.93	24.775	25.481	23.012	20.535	34.842	3.762	18.2	7.954	1.146	47.094	0.002	3.975	0.002	9.33	33.4	11.0	19.4	1.335	0.578	0.582	0.030	30.055	25.58
9/16/02	2:39:00 PM	25.123	22.935	24.791	25.471	22.992	20.574	34.849	3.776	18.353	7.96	1.152	47.067	0.002	3.978	0.001	10.3	33.4	11.0	19.5	1.342	0.579	0.582	0.030	29.916	25.46
9/16/02	2:40:00 PM	25.075	22.952	24.672	25.413	22.983	20.759	35.043	3.775	18.452	7.879	1.149	46.897	0.002	3.976	0.002	11.3	33.6	10.9	19.6	1.352	0.579	0.584	0.030	29.784	25.35
9/16/02	2:41:00 PM	25.055	22.947	24.652	25.352	22.978	20.553	34.749	3.817	18.216	7.974	1.146	46.889	0.002	3.976	0.001	12.3	33.3	10.9	19.4	1.336	0.579	0.584	0.030	30.141	25.65
9/16/02	2:42:00 PM	24.995	22.957	24.662	25.362	22.973	20.489	34.739	3.678	18.511	7.957	1.149	47.006	0.002	3.982	0.001	13.3	33.3	11.0	19.5	1.344	0.579	0.585	0.030	29.999	25.53
9/16/02	2:43:00 PM	24.969	22.951	24.536	25.312	22.968	20.429	34.787	3.67	18.175	8.006	1.149	46.796	0.002	3.975	0.002	14.3	33.3	10.9	19.3	1.331	0.578	0.586	0.030	30.361	25.84
9/16/02	2:44:00 PM	24.958	22.975	24.601	25.326	22.972	20.56	34.797	3.812	18.208	7.957	1.152	46.912	0.002	3.98	0.001	15.3	33.3	11.0	19.4	1.336	0.579	0.586	0.030	30.215	25.71
9/16/02	2:45:00 PM	24.928	22.99	24.585	25.391	22.961	20.564	34.931	3.797	18.28	8.05	1.158	46.912	0.002	3.987	0.001	16.3	33.5	11.0	19.4	1.339	0.580	0.587	0.030	30.223	25.72
9/16/02	2:46:00 PM	24.922	22.979	24.514	25.405	22.951	20.533	34.962	3.76	18.237	8.058	1.155	46.891	0.003	3.985	0	17.3	33.5	10.9	19.4	1.337	0.580	0.588	0.030	30.326	25.81
9/16/02	2:47:00 PM	24.891	22.984	24.549	25.374	22.945	20.549	34.82	3.751	18.292	8.032	1.155	46.865	0.002	3.985	0.001	18.3	33.3	10.9	19.4	1.339	0.580	0.587	0.030	30.241	25.74
9/16/02	2:48:00 PM	24.85	22.972	24.442	25.413	22.934	20.614	34.884	3.747	18.407	8.026	1.152	47.002	0.002	3.982	0.001	19.3	33.4	11.0	19.5	1.345	0.579	0.589	0.030	30.170	25.67
9/16/02	2:49:00 PM	24.854	22.977	24.452	25.418	22.943	20.688	34.991	3.724	18.484	8.012	1.152	46.836	0.002	3.979	0.003	20.3	33.5	10.9	19.6	1.350	0.579	0.588	0.030	30.022	25.55
9/16/02	2:50:00 PM	24.819	22.992	24.502	25.453	22.958	20.605	34.96	3.721	18.37	7.989	1.155	46.737	0.002	3.984	0.001	21.3	33.5	10.9	19.5	1.344	0.580	0.588	0.030	30.169	25.67
9/16/02	2:51:00 PM	24.819	22.996	24.396	25.447	22.948	20.502	34.824	3.7	18.321	8.064	1.152	46.775	0.002	3.995	0.001	22.3	33.4	10.9	19.4	1.338	0.581	0.591	0.030	30.462	25.92
9/16/02	2:52:00 PM	24.833	23.011	24.48	25.446	22.932	20.547	35.02	3.77	18.151	8.171	1.161	46.811	0.003	3.998	0.001	23.3	33.5	10.9	19.3	1.334	0.582	0.590	0.031	30.511	25.97
9/16/02	2:53:00 PM	24.782	22.999	24.434	25.41	22.921	20.643	35.062	3.738	18.37	8.024	1.158	46.679	0.002	3.984	0.002	24.3	33.6	10.9	19.5	1.345	0.580	0.589	0.030	30.198	25.70
9/16/02	2:54:00 PM	24.797	23.009	24.389	25.46	22.916	20.663	35.128	3.703	18.454	8.024	1.158	46.844	0.002	3.992	0.002	25.3	33.7	10.9	19.6	1.348	0.581	0.591	0.030	30.216	25.71
	Averages	25.0	23.0	24.6	25.4	23.0	20.6	34.9	3.7	18.3	8.0	1.2	46.9	0.0	4.0	0.0		33.4	11.0	19.4	1.340	0.579	0.586	0.0301	30.120	25.6
	Maximum	25.3	23.0	25.0	25.5	23.0	20.8	35.1	3.8	18.5	8.2	1.2	47.1	0.0	4.0	0.0		33.7	11.0	19.6	1.352	0.582	0.591	0.0305	30.511	26.0
	Median	25.0	23.0	24.6	25.4	23.0	20.6	34.8	3.8	18.3	8.0	1.2	46.9	0.0	4.0	0.0		33.4	10.9	19.4	1.339	0.579	0.586	0.0302	30.169	25.7
	Minimum	24.8	22.9	24.4	25.3	22.9	20.4	34.7	3.7	18.2	7.9	1.1	46.7	0.0	4.0	0.0		33.2	10.9	19.3	1.331	0.578	0.578	0.0296	29.636	25.2
	2 x Std Dev	0.336	0.073	0.374	0.096	0.059	0.152	0.246	0.083	0.222	0.141	0.010	0.234	0.001	0.014	0.002		0.246	0.055	0.167	0.012	0.002	0.008	0.0004	0.421	0.358
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21
	* Backpulse points in box are not included																									

Figure A18: PreConditioning 3B – Deionized & Filtered Water with 0.03 M Nitric Acid – Post Standard Slurry Tests – Raw & Calculated Data

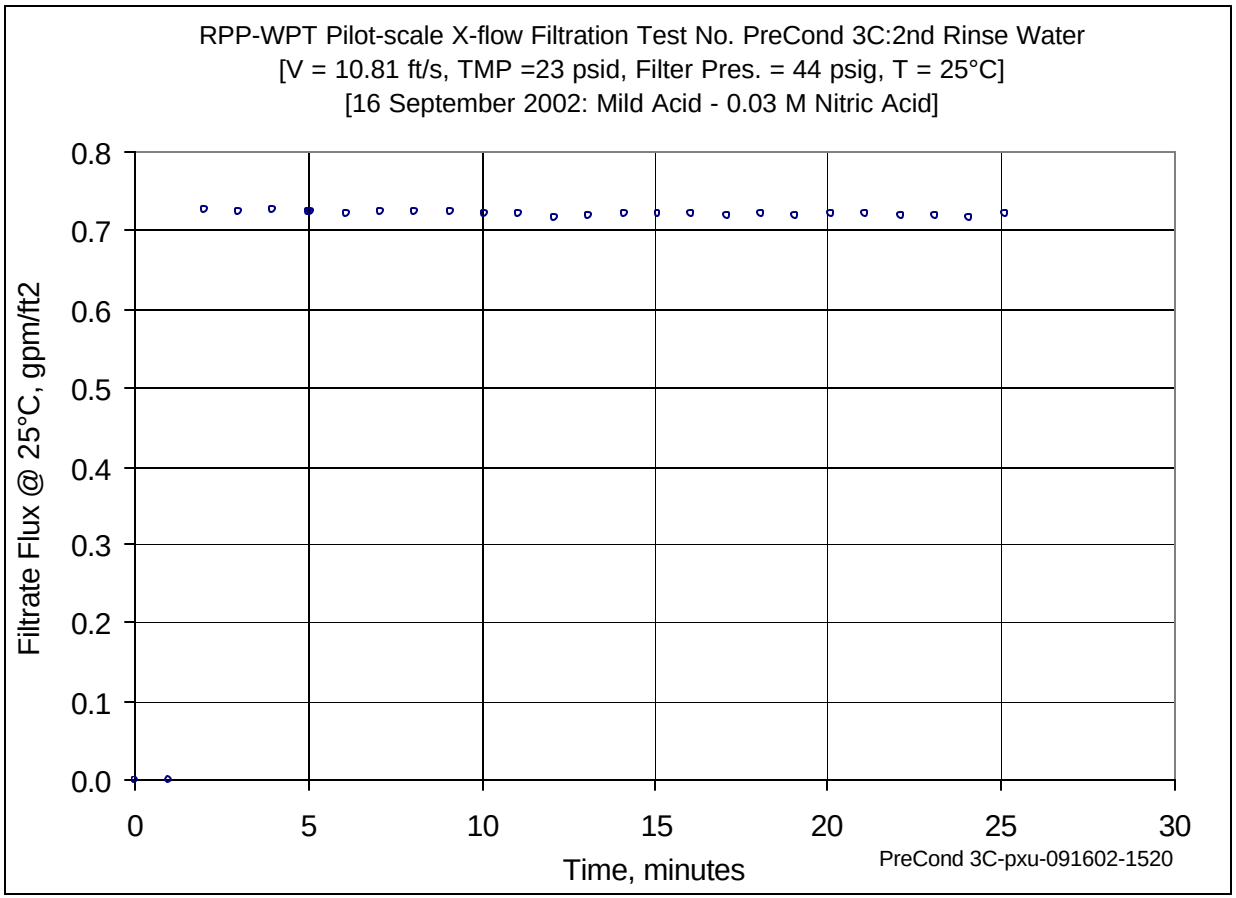


Figure A19: PreConditioning 3C – Deionized & Filtered Water with 0.03 M Nitric Acid – Post Standard Slurry Tests

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/16/02	2:19:17 PM	23.65	22.68	23.513	24.56	22.656	-0.115	0.038	-0.059	0.062	-0.205	0.33	47.558	0.002	1.564	0.001		Filter Surface	6.87	FT2						
9/16/02	2:19:30 PM	23.65	22.68	23.513	24.56	22.656	-0.115	0.038	-0.059	0.062	-0.205	0.33	47.558	0.002	1.564	0.001		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/16/02	2:19:31 PM	23.645	22.669	23.468	24.54	22.666	-0.115	0.038	-0.06	0.058	-0.194	0.327	47.453	0.002	1.562	0.001										
9/16/02	2:19:32 PM	23.65	22.68	23.473	24.55	22.666	-0.115	0.038	-0.06	0.056	-0.211	0.327	47.478	0.001	1.562	0.002		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/16/02	2:19:33 PM	23.66	22.68	23.483	24.555	22.666	-0.115	0.038	-0.06	0.056	-0.22	0.324	47.528	0.001	1.563	0.001										
9/16/02	2:19:34 PM	23.666	22.69	23.489	24.576	22.672	-0.115	0.038	-0.06	0.058	-0.2	0.327	47.428	0.002	1.561	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/16/02	2:19:35 PM	23.665	22.685	23.483	24.57	22.666	-0.115	0.038	-0.059	0.058	-0.203	0.33	47.497	0.002	1.558	0.001		VVVV					< Filtrate Flux		<< PERMIABILITY >>	
9/16/02	2:19:36 PM	23.665	22.685	23.478	24.575	22.666	-0.115	0.038	-0.059	0.058	-0.179	0.33	47.578	0.002	1.562	0							at 25C		x 1000	
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/16/02	3:14:48 PM	24.916	23.295	24.639	26.365	23.472	2.501	46.916	3.569	-1.084	39.202	86.337	42.637	0.002	0.001	0	0	45.4	10.0	0.7	0.049	0.000	0.000	0.000	0.207	0.18
9/16/02	3:15:48 PM	24.95	23.319	24.692	26.393	23.481	19.398	44.855	3.585	17.174	19.392	1.068	45.701	0.005	0.001	0	1	43.4	10.7	18.3	1.261	0.000	0.000	0.000	0.008	0.01
9/16/02	3:16:48 PM	25.052	23.321	24.69	26.396	23.489	23.124	44.822	3.603	21.659	14.937	-0.878	46.796	0.002	4.948	0	2	43.3	10.9	22.4	1.544	0.720	0.726	0.032	32.437	27.60
9/16/02	3:17:48 PM	25.111	23.344	24.728	26.429	23.512	23.134	44.768	3.529	21.856	14.908	-0.889	46.45	0.002	4.943	0	3	43.3	10.8	22.5	1.551	0.719	0.725	0.032	32.221	27.42
9/16/02	3:18:48 PM	25.155	23.368	24.782	26.463	23.511	23.304	45.141	3.615	21.817	14.9	-0.892	46.559	0.002	4.953	0	4	43.7	10.9	22.6	1.555	0.721	0.725	0.032	32.143	27.35
9/16/02	3:19:34 PM	25.172	23.375	24.804	26.495	23.533	23.352	45.143	3.612	21.889	14.92	-0.884	46.528	0.002	4.951	0	5	43.7	10.9	22.6	1.560	0.720	0.724	0.032	32.025	27.25
9/16/02	3:19:39 PM	25.177	23.381	24.81	26.485	23.528	23.205	44.857	3.589	21.745	14.989	-0.884	45.947	0.002	4.956	0	5.08	43.4	10.7	22.5	1.550	0.721	0.725	0.032	32.260	27.45
9/16/02	3:20:39 PM	25.205	23.394	24.823	26.478	23.541	23.232	44.731	3.566	21.836	14.868	-0.889	46.471	0.002	4.936	0.002	6.08	43.3	10.8	22.5	1.554	0.718	0.722	0.032	32.033	27.26
9/16/02	3:21:39 PM	25.242	23.406	24.86	26.475	23.538	23.428	45.101	3.615	22.05	14.911	-0.892	46.484	0.002	4.956	0.002	7.08	43.6	10.9	22.7	1.568	0.721	0.724	0.032	31.840	27.10
9/16/02	3:22:39 PM	25.262	23.411	24.865	26.44	23.538	23.474	45.081	3.582	22.087	14.897	-0.892	46.463	0.002	4.949	0.002	8.08	43.6	10.8	22.8	1.571	0.720	0.723	0.032	31.733	27.01
9/16/02	3:23:39 PM	25.271	23.415	24.879	26.384	23.532	23.362	45.172	3.546	22.118	15.151	-0.892	46.087	0.002	4.964	0.003	9.08	43.7	10.8	22.7	1.568	0.722	0.725	0.032	31.873	27.12
9/16/02	3:24:39 PM	25.317	23.436	24.91	26.37	23.523	23.364	45.027	3.477	22.075	14.877	-0.887	46.048	0.002	4.949	0.003	10.1	43.6	10.7	22.7	1.566	0.720	0.722	0.032	31.778	27.04
9/16/02	3:25:39 PM	25.321	23.435	24.919	26.319	23.512	23.486	45.155	3.53	22.046	14.851	-0.892	46.048	0.002	4.948	0.002	11.1	43.7	10.7	22.8	1.570	0.720	0.722	0.032	31.698	26.98
9/16/02	3:26:39 PM	25.346	23.45	24.939	26.394	23.502	23.256	44.679	3.413	22.163	14.602	-0.889	45.75	0.002	4.917	0.002	12.1	43.2	10.7	22.7	1.566	0.715	0.717	0.032	31.560	26.86
9/16/02	3:27:39 PM	25.366	23.465	24.973	26.394	23.507	23.316	44.764	3.495	22.022	14.729	-0.895	45.766	0.002	4.927	0.001	13.1	43.3	10.7	22.7	1.563	0.717	0.717	0.032	31.651	26.94
9/16/02	3:28:39 PM	25.38	23.469	24.973	26.398	23.501	23.594	45.163	3.526	22.308	14.897	-0.889	45.972	0.002	4.945	0.003	14.1	43.7	10.7	23.0	1.582	0.720	0.720	0.031	31.376	26.70
9/16/02	3:29:39 PM	25.389	23.473	24.976	26.437	23.55	23.486	45.337	3.525	22.167	15.024	-0.889	46.876	0.002	4.961	0.001	15.1	43.9	10.9	22.8	1.574	0.722	0.722	0.032	31.646	26.93
9/16/02	3:30:39 PM	25.403	23.477	24.981	26.426	23.534	23.283	44.953	3.497	21.944	14.946	-0.887	46.026	0.002	4.951	0.003	16.1	43.5	10.7	22.6	1.559	0.720	0.721	0.032	31.876	27.13
9/16/02	3:31:39 PM	25.421	23.505	25.019	26.359	23.517	23.631	45.445	3.539	22.368	14.828	-0.878	45.976	0.002	4.944	0.001	17.1	44.0	10.7	23.0	1.586	0.719	0.719	0.031	31.263	26.61
9/16/02	3:32:39 PM	25.43	23.504	25.018	26.338	23.531	23.472	45.153	3.538	22.077	14.946	-0.878	46.012	0.002	4.953	0.001	18.1	43.7	10.7	22.8	1.570	0.721	0.720	0.032	31.630	26.92
9/16/02	3:33:39 PM	25.439	23.508	25.026	26.357	23.524	23.399	44.979	3.456	22.235	14.9	-0.884	46.047	0.002	4.949	0.002	19.1	43.5	10.7	22.8	1.573	0.720	0.720	0.032	31.539	26.84
9/16/02	3:34:39 PM	25.443	23.522	25.02	26.335	23.543	23.611	45.271	3.516	22.442	14.9	-0.878	45.94	0.002	4.955	0.002	20.1	43.8	10.7	23.0	1.588	0.721	0.721	0.031	31.295	26.63
9/16/02	3:35:39 PM	25.441	23.525	25.023	26.268	23.531	23.356	45.06	3.484	22.022	15.059	-0.878	46.165	0.002	4.961	0.001	21.1	43.6	10.8	22.7	1.564	0.722	0.721	0.032	31.796	27.06
9/16/02	3:36:39 PM	25.454	23.538	25.032	26.262	23.515	23.383	45.056	3.503	21.962	14.943	-0.875	45.92	0.002	4.947	0.002	22.1	43.6	10.7	22.7	1.563	0.720	0.719	0.032	31.721	27.00
9/16/02	3:37:39 PM	25.453	23.547	25.026	26.231	23.524	23.008	44.388	3.425	21.809	14.758	-0.878	45.838	0.001	4.936	0.001	23.1	42.9	10.7	22.4	1.545	0.718	0.718	0.032	32.029	27.26
9/16/02	3:38:39 PM	25.461	23.565	25.059	26.244	23.507	23.306	45.128	3.473	21.932	15.007	-0.872	45.886	0.002	4.93	0.001	24.1	43.7	10.7	22.6	1.560	0.717	0.716	0.032	31.663	26.95
9/16/02	3:39:39 PM	25.45	23.559	25.037	26.238	23.515	23.667	45.503	3.535	22.292	14.906	-0.866	46.02	0.002	4.96	0.001	25.1	44.0	10.7	23.0	1.584	0.722	0.721	0.031	31.376	26.70
	Averages	25.4	23.5	25.0	26.4	23.5	23.4	45.0	3.5	22.1	14.9	-0.9	46.1	0.0	4.9	0.0		43.6	10.8	22.7	1.568	0.720	0.721	0.0317	31.697	27.0
	Maximum	25.5	23.6	25.1	26.5	23.6	23.7	45.5	3.6	22.4	15.2	-0.9	46.9	0.0	5.0	0.0		44.0	10.9	23.0	1.588	0.722	0.725	0.0323	32.260	27.5
	Median	25.4	23.5	25.0	26.4	23.5	23.4	45.1	3.5	22.1	14.9	-0.9	46.0	0.0	4.9	0.0		43.6	10.7	22.7	1.568	0.720	0.721	0.0317	31.698	27.0
	Minimum	25.2	23.4	24.8	26.2	23.5	23.0	44.4	3.4	21.7	14.6	-0.9	45.8	0.0	4.9	0.0		42.9	10.7	22.4	1.545	0.715	0.716	0.0313	31.263	26.6
	2 x Std Dev	0.174	0.110	0.149	0.157	0.027	0.311	0.510	0.100	0.354	0.229	0.015	0.536	0.000	0.024	0.002		0.510	0.125	0.319	0.022	0.003	0.005	0.0005	0.488	0.416
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21
	* Backpulse points in box are not included																									

Figure A20: PreConditioning 3C – Deionized & Filtered Water with 0.03 M Nitric Acid – Post Standard Slurry Tests – Raw & Calculated Data

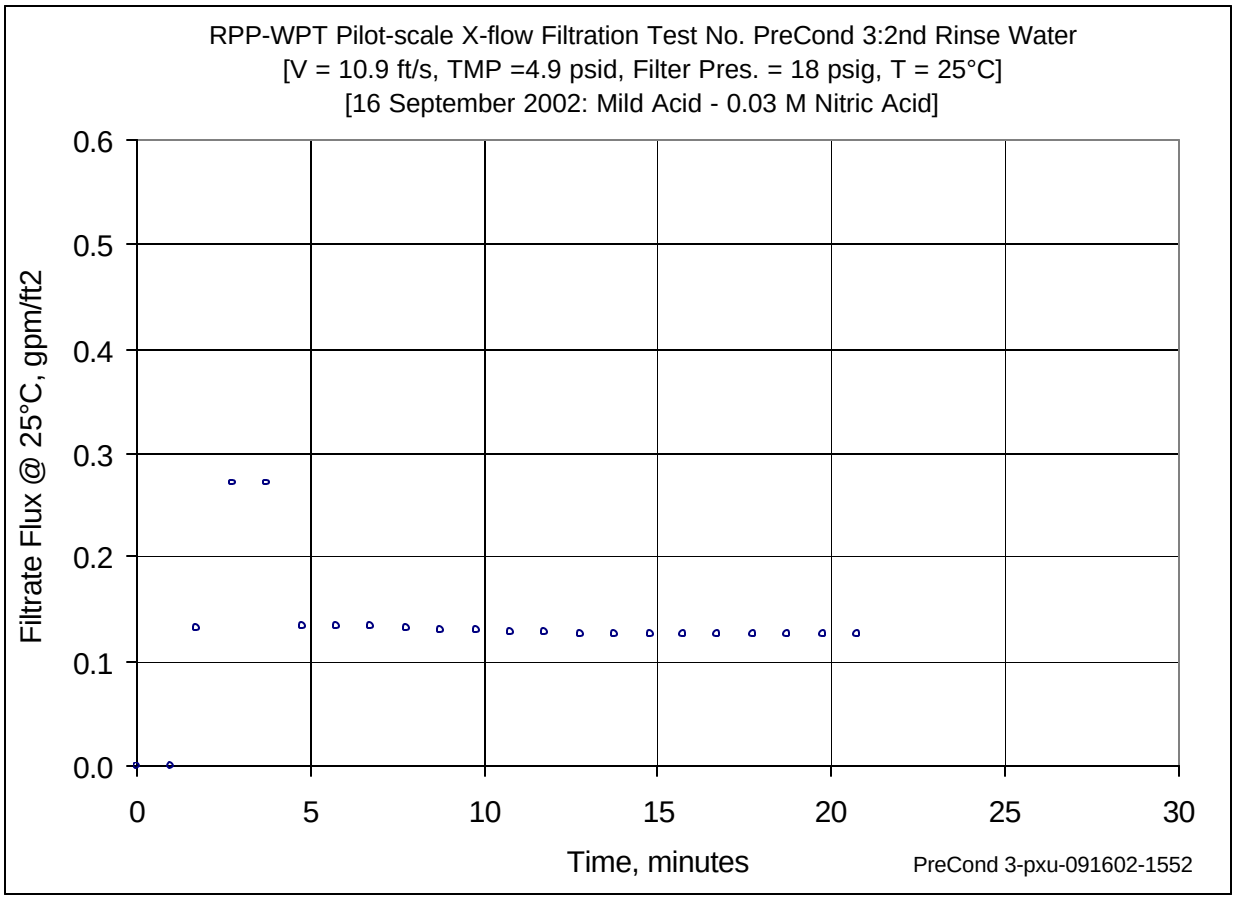


Figure A21: PreConditioning 3 – Deionized & Filtered Water with 0.03 M Nitric Acid – Post Standard Slurry Tests

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/16/02	2:19:17 PM	23.65	22.68	23.513	24.56	22.656	-0.115	0.038	-0.059	0.062	-0.205	0.33	47.558	0.002	1.564	0.001		Filter Surface	6.87	FT2						
9/16/02	2:19:30 PM	23.65	22.68	23.513	24.56	22.656	-0.115	0.038	-0.059	0.062	-0.205	0.33	47.558	0.002	1.564	0.001		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/16/02	2:19:31 PM	23.645	22.669	23.468	24.54	22.666	-0.115	0.038	-0.06	0.058	-0.194	0.327	47.453	0.002	1.562	0.001										
9/16/02	2:19:32 PM	23.65	22.68	23.473	24.55	22.666	-0.115	0.038	-0.06	0.056	-0.211	0.327	47.478	0.001	1.562	0.002		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/16/02	2:19:33 PM	23.66	22.68	23.483	24.555	22.666	-0.115	0.038	-0.06	0.056	-0.22	0.324	47.528	0.001	1.563	0.001										
9/16/02	2:19:34 PM	23.666	22.69	23.489	24.576	22.672	-0.115	0.038	-0.06	0.058	-0.2	0.327	47.428	0.002	1.561	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/16/02	2:19:35 PM	23.665	22.685	23.483	24.57	22.666	-0.115	0.038	-0.059	0.058	-0.203	0.33	47.497	0.002	1.558	0.001		VVVV					< Filtrate Flux		<< PERMIABILITY >>	
9/16/02	2:19:36 PM	23.665	22.685	23.478	24.575	22.666	-0.115	0.038	-0.059	0.058	-0.179	0.33	47.578	0.002	1.562	0							at 25C		x 1000	
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/16/02	3:51:32 PM	23.63	23.609	22.801	25.832	23.786	2.574	20.026	4.179	-1.58	12.163	59.982	46.064	0.002	0.001	0	0.00	18.6	10.8	0.5	0.034	0.000	0.000	0.001	0.611	0.52
9/16/02	3:52:32 PM	23.499	23.608	23.041	25.882	23.786	10.225	19.401	3.997	6.66	3.694	0.689	47.191	0.002	0.001	0	1.00	17.9	11.0	8.4	0.582	0.000	0.000	0.000	0.036	0.03
9/16/02	3:53:17 PM	23.353	23.598	23.262	25.912	23.766	6.853	19.631	4.135	2.726	7.454	6.821	46.67	0.865	0.001	0	1.75	18.2	10.9	4.8	0.330	0.126	0.131	0.027	27.437	23.35
9/16/02	3:54:17 PM	23.463	23.597	23.622	25.931	23.714	7.24	20.047	4.276	3.031	7.466	6.795	46.656	0.866	0.001	0	2.75	18.6	10.9	5.1	0.354	0.126	0.272	0.053	52.903	45.02
9/16/02	3:55:17 PM	23.693	23.597	24.003	25.926	23.709	7.025	19.842	4.229	3.022	7.497	6.853	46.756	0.867	0.001	0	3.75	18.4	10.9	5.0	0.346	0.126	0.272	0.054	54.145	46.08
9/16/02	3:56:17 PM	24.005	23.587	24.389	25.891	23.729	6.896	19.703	4.143	2.986	7.558	6.882	46.656	0.869	0.001	0	4.75	18.2	10.9	4.9	0.341	0.126	0.135	0.027	27.239	23.18
9/16/02	3:57:17 PM	24.356	23.587	24.805	25.916	23.744	6.805	19.747	4.039	3.045	7.604	6.905	46.832	0.871	0.001	0	5.75	18.3	10.9	4.9	0.340	0.127	0.134	0.027	27.203	23.15
9/16/02	3:58:17 PM	24.687	23.583	24.981	25.921	23.74	6.724	19.527	3.983	3.102	7.578	6.931	46.87	0.871	0.001	0	6.75	18.1	10.9	4.9	0.339	0.127	0.133	0.027	27.099	23.06
9/16/02	3:59:17 PM	24.943	23.588	25.307	25.962	23.745	6.695	19.608	3.998	2.94	7.619	6.972	46.939	0.872	0.001	0	7.75	18.1	11.0	4.8	0.332	0.127	0.132	0.027	27.386	23.31
9/16/02	4:00:17 PM	25.184	23.579	25.408	25.952	23.736	6.931	20.047	4.123	2.865	7.625	6.946	46.826	0.874	0.001	0	8.75	18.6	10.9	4.9	0.338	0.127	0.131	0.027	26.707	22.73
9/16/02	4:01:17 PM	25.305	23.575	25.283	26.018	23.742	6.739	19.639	4.027	2.951	7.584	6.946	46.928	0.873	0.001	0	9.75	18.2	11.0	4.8	0.334	0.127	0.129	0.027	26.675	22.70
9/16/02	4:02:17 PM	25.352	23.607	25.375	26.175	23.794	6.579	19.453	3.982	2.904	7.613	6.911	46.92	0.872	0.001	0	10.75	18.0	11.0	4.7	0.327	0.127	0.128	0.027	26.908	22.90
9/16/02	4:03:17 PM	25.388	23.608	25.251	26.186	23.82	6.855	19.867	4.134	2.83	7.567	6.891	46.786	0.874	0.001	0	11.75	18.4	10.9	4.8	0.334	0.127	0.127	0.026	26.277	22.36
9/16/02	4:04:17 PM	25.4	23.599	25.237	26.213	23.831	6.641	19.53	4.022	2.941	7.576	6.917	46.888	0.871	0.001	0	12.75	18.1	10.9	4.8	0.330	0.127	0.126	0.026	26.227	22.32
9/16/02	4:05:17 PM	25.407	23.617	25.27	26.165	23.864	6.917	19.836	4.048	2.971	7.561	6.899	46.865	0.872	0.001	0	13.75	18.4	10.9	4.9	0.341	0.127	0.125	0.025	25.372	21.59
9/16/02	4:06:17 PM	25.415	23.629	25.193	26.173	23.887	6.72	19.647	4.007	2.846	7.567	6.928	46.863	0.871	0.001	0	14.75	18.2	10.9	4.8	0.330	0.127	0.126	0.026	26.288	22.37
9/16/02	4:07:17 PM	25.417	23.637	25.23	26.175	23.909	6.975	19.854	4.15	2.985	7.503	6.868	46.809	0.871	0.001	0	15.75	18.4	10.9	5.0	0.343	0.127	0.125	0.025	25.183	21.43
9/16/02	4:08:17 PM	25.41	23.649	25.208	26.263	23.927	6.815	19.701	4.159	2.768	7.555	6.914	46.891	0.87	0.001	0	16.75	18.2	10.9	4.8	0.330	0.127	0.126	0.026	26.235	22.33
9/16/02	4:09:17 PM	25.423	23.662	25.17	26.365	23.955	6.849	19.571	4.079	3.174	7.5	6.891	46.767	0.87	0.001	0	17.75	18.1	10.9	5.0	0.346	0.127	0.126	0.025	25.093	21.35
9/16/02	4:10:17 PM	25.41	23.675	25.243	26.378	23.972	6.677	19.503	4.052	2.904	7.564	6.876	46.855	0.871	0.001	0	18.75	18.0	10.9	4.8	0.330	0.127	0.126	0.026	26.257	22.34
9/16/02	4:11:17 PM	25.403	23.682	25.165	26.311	23.96	6.952	19.904	4.137	2.969	7.549	6.885	46.79	0.871	0.001	0	19.75	18.4	10.9	5.0	0.342	0.127	0.126	0.025	25.412	21.63
9/16/02	4:12:17 PM	25.404	23.684	25.167	26.347	23.941	6.871	19.72	4.141	2.875	7.492	6.856	46.786	0.869	0.001	0	20.75	18.2	10.9	4.9	0.336	0.126	0.126	0.026	25.782	21.94
	Averages	25.3	23.6	25.2	26.2	23.9	6.8	19.7	4.1	2.9	7.6	6.9	46.9	0.9	0.0	0.0		18.2	10.9	4.9	0.335	0.127	0.127	0.0262	26.193	22.3
	Maximum	25.4	23.7	25.4	26.4	24.0	7.0	20.0	4.2	3.2	7.6	7.0	46.9	0.9	0.0	0.0		18.6	11.0	5.0	0.346	0.127	0.133	0.0274	27.386	23.3
	Median	25.4	23.6	25.2	26.2	23.9	6.8	19.6	4.1	2.9	7.6	6.9	46.9	0.9	0.0	0.0		18.2	10.9	4.8	0.334	0.127	0.126	0.0263	26.257	22.3
	Minimum	24.7	23.6	25.0	25.9	23.7	6.6	19.5	4.0	2.8	7.5	6.9	46.8	0.9	0.0	0.0		18.0	10.9	4.7	0.327	0.126	0.125	0.0251	25.093	21.4
	2 x Std Dev	0.412	0.074	0.193	0.292	0.171	0.237	0.336	0.127	0.198	0.079	0.062	0.108	0.003	0.000	0.000		0.336	0.025	0.159	0.011	0.000	0.005	0.0014	1.362	1.159
Number of Points Used*		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		15	15	15	15	15	15	15	15	15
	* Backpulse points in box are not included																									

Figure A22: PreConditioning 3 – Deionized & Filtered Water with 0.03 M Nitric Acid – Post Standard Slurry Tests – Raw & Calculated Data

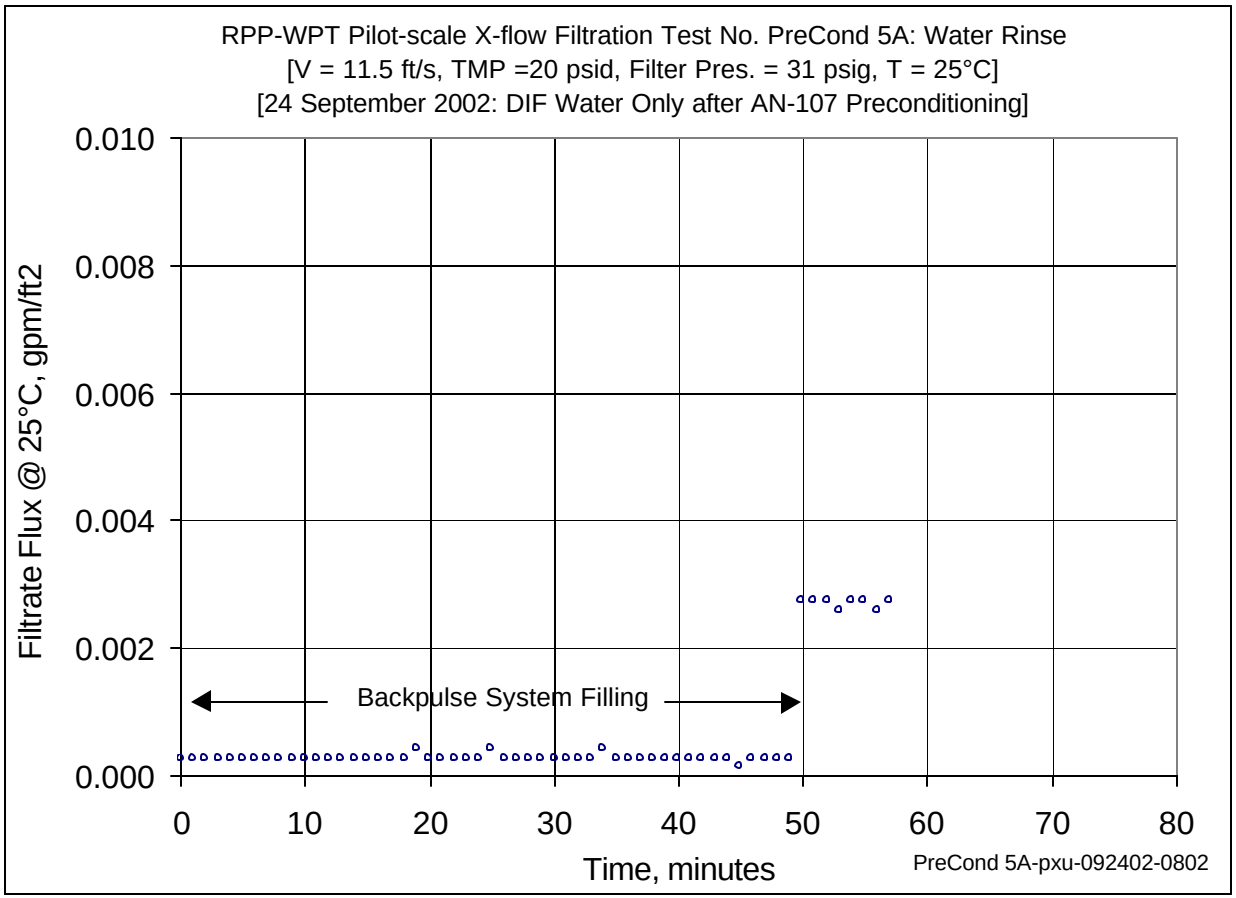


Figure A23: PreConditioning 5A – Deionized & Filtered Water – Post AN-107 Preconditioning Slurry Test

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>													
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse														
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm														
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp														
Zeros																														
9/24/02	7:33:13 AM	21.83	21.149	22.146	21.953	20.713	-0.109	-0.012	-0.049	0.072	-0.324	0.356	34.338	0.031	0.001	0		Filter Surface	6.87	FT2										
9/24/02	7:33:28 AM	21.83	21.149	22.146	21.953	20.713	-0.109	-0.012	-0.049	0.072	-0.324	0.356	34.338	0.031	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg										
9/24/02	7:33:29 AM	21.8	21.149	22.186	21.928	20.723	-0.109	-0.012	-0.05	0.072	-0.321	0.356	34.269	0.031	0.001	0														
9/24/02	7:33:30 AM	21.799	21.144	22.186	21.918	20.717	-0.109	-0.012	-0.049	0.072	-0.35	0.358	34.313	0.031	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig												
9/24/02	7:33:31 AM	21.8	21.149	22.201	21.923	20.723	-0.109	-0.012	-0.049	0.072	-0.31	0.356	34.399	0.029	0.001	0														
9/24/02	7:33:32 AM	21.799	21.144	22.191	21.923	20.717	-0.109	-0.012	-0.049	0.072	-0.341	0.358	34.524	0.031	0.001	0		Pressure P1is corrected for 40.86 inches of water tubing												
9/24/02	7:33:33 AM	21.794	21.149	22.191	21.918	20.717	-0.111	-0.012	-0.049	0.072	-0.321	0.358	34.671	0.031	0.001	0		VVVV				< Filtrate Flux << PERMIABILITY >>								
9/24/02	7:33:34 AM	21.805	21.154	22.196	21.928	20.723	-0.111	-0.012	-0.049	0.072	-0.364	0.356	34.546	0.03	0.001	0							at 25C		x 1000					
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter				
Data - Per Minute																	Min.	psig	ft/s	psi	bar	ft2	ft2	ft2/psi	ft2/psi	day/bar				
9/24/02	8:02:14 AM	24.044	21.444	25.259	22.58	21.643	25.033	33.123	15.516	9.631	2.986	73.811	47.308	0.002	0.001	0	0	31.7	11.0	17.3	1.195	0.000	0.000	0.0000	0.017	0.01				
9/24/02	8:03:14 AM	23.169	21.458	25.318	22.498	21.706	13.002	31.859	17.637	-4.374	13.946	31.624	51.471	0.002	0.001	0.002	1	30.4	12.0	4.3	0.297	0.000	0.000	0.0001	0.067	0.06				
9/24/02	8:04:14 AM	24.343	21.483	25.323	22.503	21.797	26.96	32.074	17.941	9.19	0.063	0.645	51.15	0.002	0.001	0	2	30.6	11.9	18.1	1.246	0.000	0.000	0.0000	0.016	0.01				
9/24/02	8:05:14 AM	24.172	21.508	25.352	22.653	21.847	26.951	32.197	16.967	10.175	0.066	0.648	50.76	0.002	0.001	0	3	30.7	11.8	18.6	1.280	0.000	0.000	0.0000	0.016	0.01				
9/24/02	8:06:14 AM	24.262	21.532	25.417	22.642	21.886	26.991	32.244	17.175	9.925	0.069	0.651	50.578	0.002	0.001	0	4	30.8	11.8	18.5	1.273	0.000	0.000	0.0000	0.016	0.01				
9/24/02	8:07:14 AM	24.31	21.54	25.389	22.635	21.909	27.051	32.151	17.053	10.329	0.063	0.654	50.456	0.002	0.001	0	5	30.7	11.8	18.7	1.289	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:08:08 AM	24.387	21.562	25.442	22.607	21.937	26.771	31.895	16.794	10.361	0.072	0.662	50.766	0.002	0.001	0	5.90	30.4	11.9	18.6	1.280	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:09:08 AM	24.499	21.564	25.439	22.624	21.959	26.641	31.816	16.878	10.015	0.063	0.651	50.815	0.002	0.001	0	6.9	30.3	11.9	18.3	1.264	0.000	0.000	0.0000	0.016	0.01				
9/24/02	8:10:08 AM	24.596	21.581	25.435	22.636	21.985	26.719	31.894	16.856	10.21	0.066	0.662	50.939	0.002	0.001	0	7.9	30.4	11.9	18.5	1.273	0.000	0.000	0.0000	0.016	0.01				
9/24/02	8:11:08 AM	24.717	21.601	25.506	22.626	21.998	26.779	31.955	16.693	10.402	0.069	0.662	50.572	0.002	0.001	0	8.9	30.5	11.8	18.6	1.282	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:12:08 AM	24.799	21.623	25.527	22.673	22.028	26.945	32.186	16.773	10.46	0.069	0.668	50.672	0.002	0.001	0	9.9	30.7	11.8	18.7	1.289	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:13:08 AM	24.844	21.619	25.553	22.629	22.059	27.196	32.466	16.848	10.476	0.072	0.671	50.609	0.002	0.001	0	10.9	31.0	11.8	18.8	1.299	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:14:08 AM	24.906	21.635	25.634	22.569	22.07	26.79	32.151	16.79	10.251	0.066	0.671	50.857	0.002	0.001	0	11.9	30.7	11.9	18.5	1.277	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:15:08 AM	24.956	21.641	25.63	22.656	22.076	26.699	31.843	16.434	10.484	0.069	0.677	51.176	0.002	0.001	0	12.9	30.4	11.9	18.6	1.282	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:16:08 AM	25.002	21.636	25.665	22.556	22.076	26.842	32.066	16.475	10.748	0.063	0.677	50.796	0.002	0.001	0	13.9	30.6	11.9	18.8	1.296	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:17:08 AM	25.048	21.657	25.731	22.606	22.087	26.817	32.135	16.553	10.406	0.078	0.677	50.821	0.002	0.001	0	14.9	30.7	11.9	18.6	1.283	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:18:08 AM	25.068	21.672	25.756	22.606	22.082	26.226	31.535	16.269	10.216	0.075	0.686	51.157	0.002	0.001	0	15.9	30.1	11.9	18.2	1.256	0.000	0.000	0.0000	0.016	0.01				
9/24/02	8:19:08 AM	25.218	21.682	25.81	22.495	22.101	26.552	33.93	13.572	15.234	0.075	0.691	45.867	0.002	0.001	0	16.9	32.5	10.7	21.9	1.509	0.000	0.000	0.0000	0.013	0.01				
9/24/02	8:20:08 AM	25.197	21.671	25.775	22.495	22.111	27.219	32.55	16	11.522	0.072	0.689	49.779	0.002	0.001	0	17.9	31.1	11.6	19.4	1.336	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:21:08 AM	25.196	21.696	25.844	22.519	22.11	27.14	32.308	16.044	11.504	0.095	0.703	49.8	0.003	0.001	0	18.9	30.8	11.6	19.3	1.332	0.000	0.000	0.0000	0.022	0.02				
9/24/02	8:22:08 AM	25.21	21.699	25.907	22.492	22.106	27.014	32.304	15.814	11.54	0.119	0.703	49.407	0.002	0.001	0	19.9	30.8	11.5	19.3	1.329	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:23:08 AM	25.22	21.704	25.887	22.512	22.113	26.647	31.859	15.621	11.297	0.089	0.7	49.818	0.002	0.001	0	20.9	30.4	11.6	19.0	1.308	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:24:08 AM	25.258	21.708	25.956	22.521	22.122	27.078	32.267	15.742	11.626	0.13	0.709	49.81	0.002	0.001	0	21.9	30.8	11.6	19.4	1.334	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:25:08 AM	25.252	21.711	25.98	22.445	22.131	26.958	32.308	15.714	11.541	0.13	0.709	49.793	0.002	0.001	0	22.9	30.8	11.6	19.2	1.327	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:26:08 AM	25.281	21.73	25.999	22.438	22.115	27.2	32.395	15.736	11.829	0.133	0.718	49.651	0.002	0.001	0	23.9	30.9	11.6	19.5	1.345	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:27:08 AM	25.336	21.74	26.079	22.408	22.11	27.059	32.424	15.643	11.624	0.133	0.718	49.607	0.003	0.001	0	24.9	31.0	11.6	19.3	1.334	0.000	0.000	0.0000	0.022	0.02				
9/24/02	8:28:08 AM	25.341	21.735	26.069	22.433	22.11	26.976	32.327	15.614	11.676	0.133	0.723	49.512	0.002	0.001	0	25.9	30.9	11.6	19.3	1.332	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:29:08 AM	25.391	21.756	26.119	22.393	22.12	27.221	32.666	15.485	11.987	0.136	0.732	48.705	0.002	0.001	0	26.9	31.2	11.4	19.6	1.352	0.000	0.000	0.0000	0.014	0.01				
9/24/02	8:30:08 AM	25.406	21.76	26.163	22.382	22.129	27.188	32.527	15.604	11.845	0.13	0.729	49.569	0.002	0.001	0	27.9	31.1	11.6	19.5	1.346	0.000	0.000	0.0000	0.014	0.01				
9/24/02	8:31:08 AM	25.436	21.786	26.184	22.418	22.16	27.219	32.703	15.465	11.893	0.138	0.735	49.365	0.002	0.001	0	28.9	31.2	11.5	19.6	1.348	0.000	0.000	0.0000	0.014	0.01				
9/24/02	8:32:08 AM	25.45	21.775	26.143	22.533	22.149	27.573	32.939	15.41	12.378	0.133	0.738	48.596	0.002	0.001	0	29.9	31.5	11.3	20.0	1.377	0.000	0.000	0.0000	0.014	0.01				
9/24/02	8:33:08 AM	25.5	21.789	26.072	22.587	22.168	27.142	32.447	15.638	11.712	0.147	0.738	49.269	0.002	0.001	0	30.9	31.0	11.5	19.4	1.339	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:34:08 AM	25.499	21.804	26.031	22.587	22.148	27.221	32.507	15.725	11.753	0.133	0.741	49.061	0.002	0.001	0	31.9	31.0	11.5	19.5	1.344	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:35:08 AM	25.534	21.809	26.031	22.562	22.158	26.999	32.354	15.538	11.514	0.133	0.744	48.952	0.002	0.001	0	32.9	30.9	11.4	19.3	1.328	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:36:08 AM	25.52	21.799	25.952	22.537	22.163	27.208	32.654	15.408	12.044	0.136	0.746	49.072	0.003	0.001	0	33.9	31.2	11.5	19.6	1.353	0.000	0.000	0.0000	0.022	0.02				
9/24/02	8:37:08 AM	25.54	21.829	25.962	22.547	22.163	27.287	32.505	15.611	11.975	0.164	0.749	48.894	0.002	0.001	0	34.9	31.0	11.4	19.6	1.353	0.000	0.000	0.0000	0.014	0.01				
9/24/02	8:38:08 AM	25.54	21.84	25.888	22.543	22.169	27.428	32.857	15.796	11.717	0.141	0.752	49.011	0.002	0.001	0	35.9	31.4	11.4	19.6	1.349	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:39:08 AM	25.55	21.849	25.812	22.577	22.173	27.04	32.422	15.441	11.882	0.289	0.888	48.871	0.002	0.001	0	36.9	30.9	11.4	19.5	1.342	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:40:08 AM	25.515	21.849	25.727	22.537	22.173	26.417	32.492	15.644	11.021	0.867	1.482	48.822	0.002	0.001	0	37.9	31.0	11.4	18.7	1.291	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:41:08 AM	25.464	21.859	25.682	22.517	22.178	26.117	32.662	15.608	10.855	1.532	2.093	48.85	0.002	0.001	0	38.9	31.2	11.4	18.5	1.275	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:42:08 AM	25.549	21.864	25.601	22.552	22.193	26.44	32.718	15.545	11.012	1.101	1.696	48.877	0.002	0.001	0	39.9	31.2	11.4	18.7	1.291	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:43:08 AM	25.474	21.879	25.561	22.567	22.195	27.042	32.269	15.562	11.926	0.193	0.775	49.063	0.002	0.001	0	40.9	30.8	11.5	19.5	1.343	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:44:08 AM	25.47	21.89	25.617	22.577	22.224	27.127	32.426	15.264	12.206	0.185	0.773	48.791	0.002	0.001	0	41.9	31.0	11.4	19.7	1.356	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:45:08 AM	25.439	21.9	25.432	22.663	22.224	27.132	32.542	15.601	11.846	0.188	0.781	48.682	0.002	0.001	0	42.9	31.1	11.4	19.5	1.344	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:46:08 AM	25.424	21.894	25.416	22.642	22.238	27.144	32.37	15.514	11.983	0.191	0.784	48.879	0.002	0.001	0	43.9	30.9	11.4	19.6	1.349	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:47:08 AM	25.393	21.904	25.356	22.737	22.243	27.272	32.546	15.634	12.095	0.188	0.787	48.912	0.001	0.001	0	44.9	31.1	11.4	19.7	1.357	0.000	0.000	0.0000	0.007	0.01				
9/24/02	8:48:08 AM	25.362	21.897	25.294	22.726	22.231	27.173	32.496	15.454	12.159	0.188	0.79	48.885	0.002	0.001	0	45.9	31.0	11.4	19.7	1.356	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:49:08 AM	25.327	21.923	25.299	22.691	22.261	26.837	32.178	15.766	11.553	0.188	0.796	48.78	0.002	0.001	0	46.9	30.7	11.4	19.2	1.323	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:50:08 AM	25.302	21.928	25.234	22.796	22.317	27.138	32.488	15.936	11.434	0.191	0.796	48.818	0.002	0.001	0	47.9	31.0	11.4	19.3	1.330	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:51:08 AM	25.278	21.949	25.231	22.817	22.363	27.225	32.776	15.787	11.633	0.283	0.888	48.575	0.002	0.001	0	48.9	31.3	11.3	19.4	1.340	0.000	0.000	0.0000	0.015	0.01				
9/24/02	8:52:08 AM	24.915	21.971	25.213	22.9	22.416	31.458	33.065	15.817	15.993	-1.284	-4.781	48.803	0.019	0.001	0	49.9	31.6	11.4	23.7	1.636	0.003	0.003	0.0001	0.116	0.10				
9/24/02	8:53:08 AM	24.877	21.968	25.135	22.962	22.453	31.164	32.536	15.704	15.817	-1.289	-4.769	48.845	0.019	0.001	0	50.9	31.1	11.4	23.5	1.620	0.003	0.003	0.0001	0.117	0.10				
9/24/02	8:54:08 AM	24.87	21.996	25.173	22.975	22.511	31.125	32.697	15.796	15.776	-1.284	-4.764	48.86	0.019	0.001	0	51.9	31.2	11.4	23.5	1.617	0.003	0.003	0.0001	0.117	0.10				
9/24/02	8:55:08 AM	24.858	22.015	25.136	23.089	22.575	30.909	32.42	15.743	15.588	-1.284	-4.52	48.881	0.018	0.001	0	52.9	30.9	11.4	23.2	1.603	0.003	0.003	0.0001	0.112	0.10				
9/24/02	8:56:08 AM	24.832	22.029	25.13	23.023	22.619	30.94	32.449	15.838	15.563	-1.286	-4.483	48.734	0.019	0.001	0	53.9	31.0	11.4	23.3	1.603	0.003	0.003	0.0001	0.118	0.10				
9/24/02	8:57:08 AM	24.82	22.052	25.143	23.132	22.663	31.046	32.565	15.914	15.61	-1.284	-4.474	48.72	0.019	0.001	0	54.9	31.1	11.4	23.3	1.608	0.003	0.003	0.0001	0.118	0.10				
9/24/02	8:58:08 AM	24.799	22.072	25.138	23.176	22.717	31.013	32.594	15.674	15.629	-1.284	-4.465	49.026	0.018	0.001	0	55.9	31.1	11.4	23.3	1.608	0.003	0.003	0.0001	0.112	0.10				
9/24/02	8:59:08 AM	24.784	22.097	25.158	23.231	22.782	30.855	32.401	15.629	15.573	-1.286	-4.46	48.946	0.019	0.001	0	56.9	30.9	11.4	23.2	1.601	0.003	0.003	0.0001	0.119	0.10				
	Averages	25.2	21.8	25.6	22.6	22.2	27.6	32.4	15.8	12.1	0.0	0.0	49.4	0.0	0.0	0.0		30.9	11.5	19.9	1.370	0.001	0.001	0.0000	0.031	0.0				
	Maximum	25.6	22.1	26.2	23.2	22.8	31.5	33.9	16.9	16.0	1.5	2.1	51.2	0.0	0.0	0.0		32.5	11.9	23.7	1.636	0.003	0.003	0.0001	0.119	0.1				
	Median	25.3	21.8	25.6	22.6	22.2	27.1	32.4	15.7	11.7	0.1	0.7	49.0	0.0	0.0	0.0		31.0	11.4	19.4	1.339	0.000	0.000	0.0000	0.015	0.0				
	Minimum	24.4	21.6	25.1	22.4	21.9	26.1	31.5	13.6	10.0	-1.3	-4.8	45.9	0.0	0.0	0.0		30.1	10.7	18.2	1.256	0.000	0.000	0.0000	0.007	0.0				
	2 x Std Dev	0.615	0.280	0.658	0.408	0.376	3.004	0.730	1.092	3.457	1.187	3.922	1.866	0.012	0.000	0.000		0.730	0.436	3.190	0.220	0.002	0.002	0.0001	0.073	0.062				
Number of Points Used*		52	52	52	52	52	52	52	52	52	52	52	52	52	52	52		52	52	52	52	52	52	52	52	52				
	* Backpulse points in box are not included																													

Figure B24: PreConditioning 5A – Deionized & Filtered Water – Post AN-107 Preconditioning Slurry Test – Raw & Calculated Data

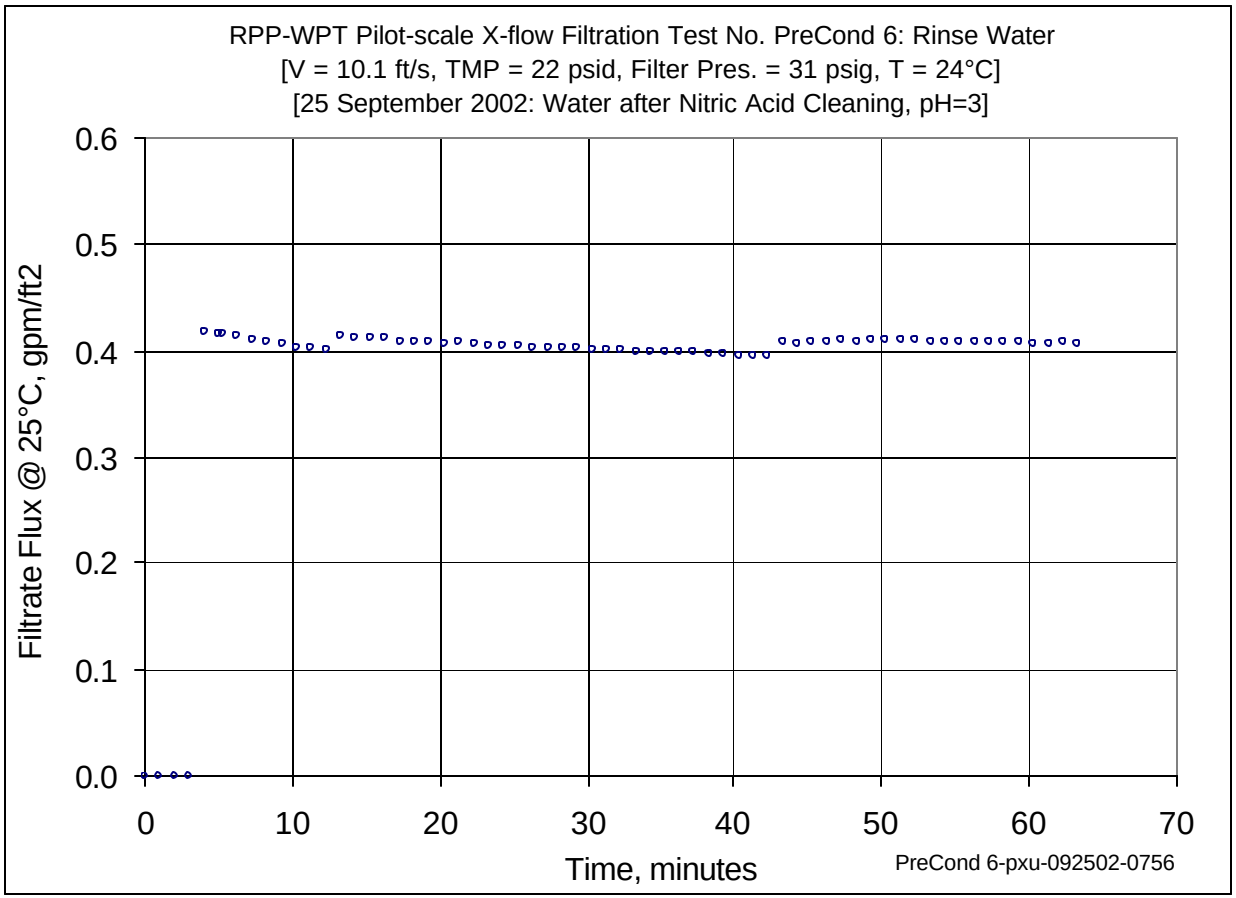


Figure A25: PreConditioning 6 – Deionized & Filtered Water – Post Nitric Acid Cleaning

DATE	TIME	Filtrate T2 deg C	Cleaning T3 deg C	Slurry T1 deg C	Hi Amb. T4 deg C	Lo Amb T5 deg C	BotTMP dP2 psid	Filter P1 psig	Filter dP dP1 psid	TopTMP dP3 psid	Filtrate P2 psig	Pulsepot P3 psig	Slurry Q1 gpm	Filtrate Q2 gpm	Hi Filtate Q3 gpm	Backpulse Qbp gpm
Zeros																
9/25/02	7:37:47 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001
9/25/02	7:38:00 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001
9/25/02	7:38:01 AM	20.881	21.177	20.528	20.516	20.65	-0.119	-0.039	-0.049	0.064	-0.307	0.353	-0.216	0.002	0.001	0.001
9/25/02	7:38:02 AM	20.881	21.177	20.528	20.521	20.65	-0.121	-0.039	-0.049	0.064	-0.347	0.353	-0.212	0.001	0.001	0
9/25/02	7:38:03 AM	20.882	21.178	20.534	20.521	20.666	-0.119	-0.039	-0.049	0.064	-0.37	0.356	-0.216	0.002	0.001	0.001
9/25/02	7:38:04 AM	20.881	21.177	20.533	20.526	20.65	-0.119	-0.041	-0.048	0.064	-0.327	0.356	-0.212	0.002	0.001	0.002
9/25/02	7:38:05 AM	20.882	21.183	20.544	20.531	20.666	-0.121	-0.039	-0.048	0.064	-0.33	0.356	-0.216	0.002	0.001	0.001
9/25/02	7:38:06 AM	20.887	21.183	20.544	20.531	20.671	-0.121	-0.039	-0.048	0.064	-0.324	0.358	-0.212	0.001	0.001	0.001
Data - Per Minute																
9/25/02	7:56:16 AM	22.839	21.299	22.803	21.579	20.792	8.05	32.266	10.178	-1.676	19.273	72.135	43.669	0.002	0.001	0
9/25/02	7:56:46 AM	22.823	21.298	22.781	21.593	20.796	8.361	32.89	10.468	-2.124	19.452	71.793	43.633	0.002	0.001	0
9/25/02	7:57:16 AM	22.345	21.302	22.821	21.593	20.8	8.563	32.755	10.297	-1.463	19.155	38.026	43.753	0.001	0.001	0.001
9/25/02	7:57:46 AM	22.354	21.306	22.885	21.551	20.789	8.646	32.852	10.559	-1.749	19.068	38.342	43.642	0.002	0.001	0.001
9/25/02	7:58:16 AM	23.168	21.31	22.885	21.53	20.798	25.765	32.614	10.902	15.579	1.208	38.368	45.425	0.002	2.71	0.001
9/25/02	7:58:46 AM	23.277	21.314	22.909	21.559	20.792	25.323	32.099	10.65	15.311	1.17	38.371	45.582	0.002	2.7	0.001
9/25/02	7:59:03 AM	23.342	21.329	22.964	21.575	20.802	25.698	32.292	10.787	15.627	1.104	38.376	45.498	0.002	2.695	0.001
9/25/02	8:00:03 AM	23.43	21.306	22.986	21.597	20.784	25.497	32.081	10.778	15.385	1.081	38.379	45.37	0.002	2.694	0.001
9/25/02	8:01:03 AM	23.499	21.32	23.105	21.555	20.813	25.939	32.523	10.735	15.862	0.991	38.379	45.534	0.002	2.675	0.002
9/25/02	8:02:03 AM	23.556	21.307	23.103	21.789	20.821	25.918	32.674	10.876	15.457	0.985	38.382	45.435	0.001	2.667	0.002
9/25/02	8:03:03 AM	23.629	21.32	23.195	21.832	20.813	25.802	32.298	10.748	15.831	0.942	38.388	45.525	0.002	2.656	0.002
9/25/02	8:04:03 AM	23.677	21.312	23.243	21.89	20.831	26.021	32.405	10.715	16.145	0.867	38.382	45.36	0.002	2.641	0.002
9/25/02	8:05:03 AM	23.749	21.32	23.26	21.917	20.838	25.736	31.971	10.712	15.739	0.821	38.379	45.475	0.002	2.634	0.002
9/25/02	8:06:03 AM	23.792	21.317	23.358	21.819	20.856	26.098	32.548	10.765	15.819	0.809	38.379	45.24	0.001	2.633	0.001
9/25/02	8:07:03 AM	23.851	21.336	23.382	21.863	20.885	26.313	33.293	9.998	16.986	1.191	38.379	43.795	0.001	2.717	0.001
9/25/02	8:08:03 AM	23.911	21.331	23.418	21.984	20.92	25.847	32.631	9.952	16.621	1.179	38.376	43.839	0.001	2.715	0.003
9/25/02	8:09:03 AM	23.958	21.353	23.609	21.99	20.977	26.204	32.838	10.032	17.072	1.205	38.382	43.893	0.001	2.721	0.002
9/25/02	8:10:03 AM	23.989	21.354	23.505	22.087	21.018	26.019	32.879	9.997	16.748	1.196	38.382	43.755	0.001	2.713	0.001
9/25/02	8:11:03 AM	24.045	21.38	23.607	22.093	21.07	26.181	32.979	10.008	17.023	1.173	38.385	43.969	0.002	2.701	0.002
9/25/02	8:12:03 AM	24.047	21.367	23.589	22.131	21.122	26.28	32.772	9.932	17.217	1.095	38.382	43.801	0.001	2.703	0.002
9/25/02	8:13:03 AM	24.106	21.395	23.637	22.335	21.16	26.623	32.387	9.932	16.71	1.173	38.385	43.772	0.002	2.702	0.001
9/25/02	8:14:03 AM	24.15	21.419	23.726	22.334	21.25	25.963	32.679	9.914	16.804	1.147	38.382	43.96	0.001	2.701	0.002
9/25/02	8:15:03 AM	24.189	21.433	23.72	22.378	21.299	26.139	32.776	10.03	16.832	1.147	38.385	43.671	0.002	2.704	0.002
9/25/02	8:16:03 AM	24.224	21.454	23.76	22.308	21.36	26.168	32.927	9.978	16.779	1.089	38.382	43.698	0.002	2.695	0.001
9/25/02	8:17:03 AM	24.239	21.463	23.815	22.312	21.425	26.276	32.743	9.967	17.105	1.046	38.388	43.768	0.001	2.692	0.001
9/25/02	8:18:03 AM	24.278	21.483	23.8	22.413	21.48	26.104	32.821	9.806	16.951	1.098	38.385	43.331	0.001	2.693	0.002
9/25/02	8:19:03 AM	24.309	21.503	23.875	22.428	21.551	26.052	32.405	10.02	16.945	1.165	38.385	43.866	0.001	2.695	0.001
9/25/02	8:20:03 AM	24.334	21.529	23.89	22.493	21.606	26.289	32.974	9.87	17.141	1.046	38.385	43.847	0.002	2.688	0.001
9/25/02	8:21:03 AM	24.375	21.55	23.901	22.529	21.662	26.407	32.947	9.981	17.078	1.003	38.388	43.866	0.002	2.686	0.001
9/25/02	8:22:03 AM	24.389	21.559	23.961	22.603	21.697	26.21	32.805	9.875	17.072	1.043	38.385	43.726	0.002	2.688	0.001
9/25/02	8:23:03 AM	24.417	21.578	23.944	22.647	21.72	26.452	33.016	10.083	16.947	1.026	38.385	43.833	0.001	2.683	0.001
9/25/02	8:24:03 AM	24.444	21.584	23.966	22.579	21.727	26.173	32.65	9.882	17.146	1.046	38.388	43.713	0.002	2.682	0.001
9/25/02	8:25:03 AM	24.465	21.601	23.997	22.475	21.738	26.164	32.852	9.815	16.951	0.991	38.394	43.625	0.002	2.681	0.001
9/25/02	8:26:03 AM	24.491	21.601	23.977	22.6	21.754	26.26	33.088	9.898	16.904	1.037	38.391	43.74	0.002	2.68	0.002
9/25/02	8:27:03 AM	24.516	21.611	24.037	22.485	21.769	26.125	32.608	9.844	16.933	1.049	38.394	43.881	0.002	2.677	0.002
9/25/02	8:28:03 AM	24.531	21.626	24.043	22.465	21.794	26.175	32.66	9.943	17.064	0.962	38.397	43.776	0.002	2.676	0.001
9/25/02	8:29:03 AM	24.566	21.636	24.047	22.475	21.794	26.392	32.927	9.907	17.154	0.974	38.399	43.761	0.002	2.674	0.003
9/25/02	8:30:03 AM	24.58	21.635	24.102	22.404	21.803	26.158	32.604	9.85	17.107	0.98	38.399	43.675	0.002	2.675	0.002
9/25/02	8:31:03 AM	24.584	21.639	24.066	22.392	21.802	26.353	32.873	10.051	17.088	0.977	0.923	43.793	0.002	2.673	0.002
9/25/02	8:32:03 AM	24.614	21.649	24.095	22.362	21.832	25.941	32.501	9.813	16.701	0.904	0.935	43.694	0.002	2.665	0.002
9/25/02	8:33:03 AM	24.628	21.658	24.145	22.381	21.841	26.394	32.933	9.88	17.086	0.961	0.936	43.682	0.002	2.67	0.001
9/25/02	8:34:03 AM	24.647	21.657	24.124	22.471	21.841	26.197	32.708	9.855	16.945	0.907	0.938	43.549	0.002	2.657	0.003
9/25/02	8:35:03 AM	24.661	21.666	24.158	22.405	21.849	26.222	32.697	9.791	17.101	0.907	0.935	43.545	0.002	2.66	0.002
9/25/02	8:36:03 AM	24.681	21.671	24.168	22.41	21.855	26.237	32.538	9.678	17.379	0.902	0.935	43.438	0.002	2.653	0.003
9/25/02	8:37:03 AM	24.707	21.692	24.164	22.385	21.87	26.504	33.214	9.297	18.038	1.286	0.943	41.979	0.002	2.738	0.003
9/25/02	8:38:03 AM	24.701	21.676	24.213	22.304	21.875	26.309	33.212	9.061	18.142	1.321	0.943	41.955	0.002	2.741	0
9/25/02	8:39:03 AM	24.711	21.676	24.173	22.314	21.875	26.361	33.206	9.226	17.872	1.274	0.943	41.836	0.003	2.738	0
9/25/02	8:40:03 AM	24.717	21.672	24.169	22.269	21.88	26.03	32.919	8.935	17.887	1.292	0.938	41.683	0.002	2.747	0.002
9/25/02	8:41:03 AM	24.733	21.693	24.234	22.24	21.876	26.206	33.08	9.01	17.868	1.373	0.943	41.697	0.002	2.76	0.001
9/25/02	8:42:03 AM	24.726	21.671	24.173	22.203	21.849	26.523	33.436	9.088	18.295	1.303	0.943	41.542	0.002	2.75	0.001
9/25/02	8:43:03 AM	24.745	21.675	24.227	22.237	21.843	26.63	33.669	9.172	18.124	1.329	0.943	41.513	0.002	2.756	0.001
9/25/02	8:44:03 AM	24.749	21.674	24.215	22.281	21.847	26.39	33.504	8.994	18.085	1.396	0.943	41.591	0.002	2.761	0.001
9/25/02	8:45:03 AM	24.762	21.682	24.199	22.33	21.85	26.523	33.607	9.073	18.132	1.367	0.943	41.616	0.002	2.753	0.002
9/25/02	8:46:03 AM	24.762	21.682	24.243	22.289	21.88	26.332	33.345	8.899	18.194	1.324	0.938	41.521	0.002	2.756	0.001
9/25/02	8:47:03 AM	24.792	21.708	24.254	22.37	21.931	26.222	33.188	8.844	18.089	1.329	0.946	41.446	0.002	2.754	0.001
9/25/02	8:48:03 AM	24.804	21.729	24.276	22.432	21.988	26.51	33.471	9.022	18.237	1.329	0.943	41.419	0.002	2.754	0.002
9/25/02	8:49:03 AM	24.791	21.731	24.298	22.5	22.03	26.137	33.154	8.905	17.852	1.352	0.946	41.519	0.002	2.755	0.001
9/25/02	8:50:03 AM	24.798	21.739	24.27	22.577	22.058	26.392	33.227	9.045	18.044	1.329	0.946	41.513	0.002	2.755	0.001
9/25/02	8:51:03 AM	24.801	21.747	24.298	22.54	22.101	26.469	33.291	8.875	18.402	1.324	0.94	41.536	0.002	2.749	0.002
9/25/02	8:52:03 AM	24.815	21.776	24.312	22.71	22.16	26.73	33.649	8.986	18.468	1.37	0.943	41.567	0.002	2.752	0.002
9/25/02	8:53:03 AM	24.83	21.801	24.307	22.78	22.205	26.326	33.21	9.048	18.12	1.393	0.94	41.486	0.002	2.757	0.003
9/25/02	8:54:03 AM	24.829	21.815	24.376	22.809	22.265	26.38	33.256	8.926	18.229	1.329	0.943	41.488	0.002	2.753	0.002
9/25/02	8:55:03 AM	24.844	21.845	24.346	22.91	22.33	26.34	33.198	8.967	18.142	1.326	0.943	41.578	0.002	2.749	0.001
9/25/02	8:56:03 AM	24.853	21.849	24.355	22.899	22.379	26.556	33.537	8.927	18.484	1.338	0.943	41.404	0.002	2.754	0.001
9/25/02	8:57:03 AM	24.859	21.88	24.386	22.929	22.44	26.599	33.545	8.844	18.554	1.332	0.94	41.526	0.002	2.75	0.002
	Averages	24.4	21.6	23.9	22.3	21.6	26.2	32.9	9.7	17.2	1.1	21.2	43.2	0.0	2.7	0.0
	Maximum	24.9	21.9	24.4	22.9	22.4	26.7	33.7	10.9	18.6	1.4	38.4	45.5	0.0	2.8	0.0
	Median	24.5	21.6	24.0	22.4	21.8	26.2	32.9	9.9	17.1	1.1	38.4	43.7	0.0	2.7	0.0
	Minimum	23.3	21.3	23.0	21.6	20.8	25.5	32.0	8.8	15.4	0.8	0.9	41.4	0.0	2.6	0.0
	2 x Std Dev	0.840	0.332	0.783	0.621	0.929	0.484	0.785	1.197	1.639	0.337	37.310	2.656	0.001	0.075	0.001
Number of Points Used*		59	59	59	59	59	59	59	59	59	59	59	59	59	59	59

* Backpulse points in box are not included

Time Min.	Press. psig	Vel. ft/s	TMP psi	TMP bar	gpm /ft2	gpm ft2	gpm ft2/psi	gpm ft2/psi	meter day/bar
0	30.8	10.2	3.2	0.220	0.000	0.000	0.000	0.049	0.04
1	31.4	10.2	3.1	0.212	0.000	0.000	0.000	0.051	0.04
2	31.3	10.2	3.6	0.245	0.000	0.000	0.000	0.044	0.04
3	31.4	10.2	3.4	0.238	0.000	0.000	0.000	0.045	0.04
4	31.1	10.6	20.7	1.425	0.394	0.419	0.020	20.255	17.24
5	30.6	10.6	20.3	1.401	0.393	0.417	0.021	20.519	17.46
5.28	30.8	10.6	20.7	1.425	0.392	0.415	0.020	20.107	17.11
6.28	30.6	10.6	20.4	1.409	0.392	0.415	0.020	20.304	17.28
7.28	31.0	10.6	20.9	1.441	0.389	0.411	0.020	19.651	16.72
8.28	31.2	10.6	20.7	1.426	0.388	0.410	0.020	19.795	16.85
9.28	30.8	10.6	20.8	1.435	0.386	0.407	0.020	19.540	16.63
10.3	30.9	10.6	21.1	1.454	0.384	0.404	0.019	19.158	16.30
11.3	30.5	10.6	20.7	1.430	0.383	0.403	0.019	19.416	16.52
12.3	31.1	10.6	21.0	1.445	0.383	0.401	0.019	19.150	16.30
13.3	31.8	10.2	21.6	1.493	0.395	0.414	0.019	19.118	16.27
14.3	31.2	10.2	21.2	1.464	0.395	0.413	0.019	19.457	16.56
15.3	31.4	10.2	21.6	1.492	0.396	0.413	0.019	19.087	16.24
16.3	31.4	10.2	21.4	1.474	0.395	0.412	0.019	19.259	16.39
17.3	31.5	10.3	21.6	1.489	0.393	0.409	0.019	18.925	16.11
18.3	31.3	10.2	21.7	1.499	0.393	0.409	0.019	18.821	16.02
19.3	30.9	10.2	21.3	1.466	0.393	0.409	0.019	19.215	16.35
20.3	31.2	10.3	21.4	1.474	0.393	0.407	0.019	19.059	16.22
21.3	31.3	10.2	21.5	1.481	0.393	0.408	0.019	18.988	16.16
22.3	31.5	10.2	21.5	1.481	0.392	0.406	0.019	18.914	16.10
23.3	31.3	10.2	21.7	1.495	0.392	0.405	0.019	18.675	15.89
24.3	31.3	10.1	21.5	1.484	0.392	0.405	0.019	18.831	16.03
25.3	30.9	10.2	21.5	1.482	0.392	0.405	0.019	18.830	16.02
26.3	31.5	10.2	21.7	1.497	0.391	0.404	0.019	18.586	15.82
27.3	31.5	10.2	21.7	1.499	0.391	0.403	0.019	18.543	15.78
28.3	31.3	10.2	21.6	1.492	0.391	0.403	0.019	18.612	15.84
29.3	31.5	10.2	21.7	1.496	0.390	0.402	0.019	18.537	15.77
30.3	31.2	10.2	21.7	1.493	0.390	0.402	0.019	18.562	15.79
31.3	31.4	10.2	21.6	1.486	0.390	0.401	0.019	18.617	15.84
32.3	31.6	10.2	21.6	1.488	0.390	0.401	0.019	18.599	15.83
33.3	31.1	10.2	21.5	1.484	0.390	0.400	0.019	18.593	15.82
34.3	31.2	10.2	21.6	1.491	0.389	0.400	0.019	18.505	15.75
35.3	31.5	10.2	21.8	1.501	0.389	0.400	0.018	18.358	15.62
36.3	31.1	10.2	21.6	1.491	0.389	0.399	0.018	18.456	15.71
37.3	31.4	10.2	21.7	1.498	0.389	0.399	0.018	18.386	15.65
38.3	31.0	10.2	21.3	1.470	0.388	0.398	0.019	18.659	15.88
39.3	31.5	10.2	21.7	1.499	0.389	0.398	0.018	18.312	15.58
40.3	31.2	10.2	21.6	1.487	0.387	0.396	0.018	18.372	15.64
41.3	31.2	10.2	21.7	1.493	0.387	0.396	0.018	18.299	15.57
42.3	31.1	10.1	21.8	1.504	0.386	0.395	0.018	18.123	15.42
43.3	31.7	9.8	22.3	1.536	0.398	0.408	0.018	18.317	15.59
44.3	31.7	9.8	22.2	1.532	0.399	0.408	0.018	18.349	15.62
45.3	31.7	9.8	22.1	1.525	0.398	0.408	0.018	18.440	15.69
46.3	31.4	9.7	22.0	1.514	0.400	0.409	0.019	18.636	15.86
47.3	31.6	9.7	22.0	1.519	0.402	0.410	0.019	18.623	15.85
48.3	32.0	9.7	22.4	1.543	0.400	0.410	0.018	18.303	15.58
49.3	32.2	9.7	22.4	1.543	0.401	0.410	0.018	18.317	15.59
50.3	32.0	9.7	22.2	1.533	0.402	0.411	0.018	18.472	15.72
51.3	32.1	9.7	22.3	1.539	0.401	0.410	0.018	18.352	15.62
52.3	31.9	9.7	22.3	1.535	0.401	0.410	0.018	18.402	15.66
53.3	31.7	9.7	22.2	1.528	0.401	0.409	0.018	18.473	15.72
54.3	32.0	9.7	22.4	1.543	0.401	0.409	0.018	18.281	15.56
55.3	31.7	9.7	22.0	1.516	0.401	0.409	0.019	18.591	15.82
56.3	31.8	9.7	22.2	1.532	0.401	0.409	0.018	18.419	15.67
57.3	31.8	9.7	22.4	1.547	0.400	0.408	0.018	18.186	15.48
58.3	32.2	9.7	22.6	1.558	0.400	0.408	0.018	18.071	15.38
59.3	31.7	9.7	22.2	1.532	0.401	0.409	0.018	18.409	15.67
60.3	31.8	9.7	22.3	1.538	0.401	0.408	0.018	18.279	15.56
61.3	31.7	9.7	22.2	1.533	0.400	0.407	0.018	18.320	15.59
62.3	32.1	9.7	22.5	1.553	0.401	0.408	0.018	18.122	15.42
63.3	32.1	9.7	22.6	1.557	0.400	0.407	0.018	18.034	15.35
	31.4	10.1	21.7	1.5	0.394	0.406	0.0187	18.7	15.9
	32.2	10.6	22.6	1.6	0.402	0.415	0.0203	20.3	17.3
	31.4	10.2	21.7	1.5	0.393	0.408	0.0186	18.6	15.8
	30.5	9.7	20.4	1.4	0.383	0.395	0.0180	18.0	15.3
	0.785	0.620	1.028	0.071	0.011	0.010	0.0010	0.987	0.840
	59	59	59	59	59	59	59	59	59

Figure A26: PreConditioning 6 – Deionized & Filtered Water – Post Nitric Acid Cleaning – Raw & Calculated Data

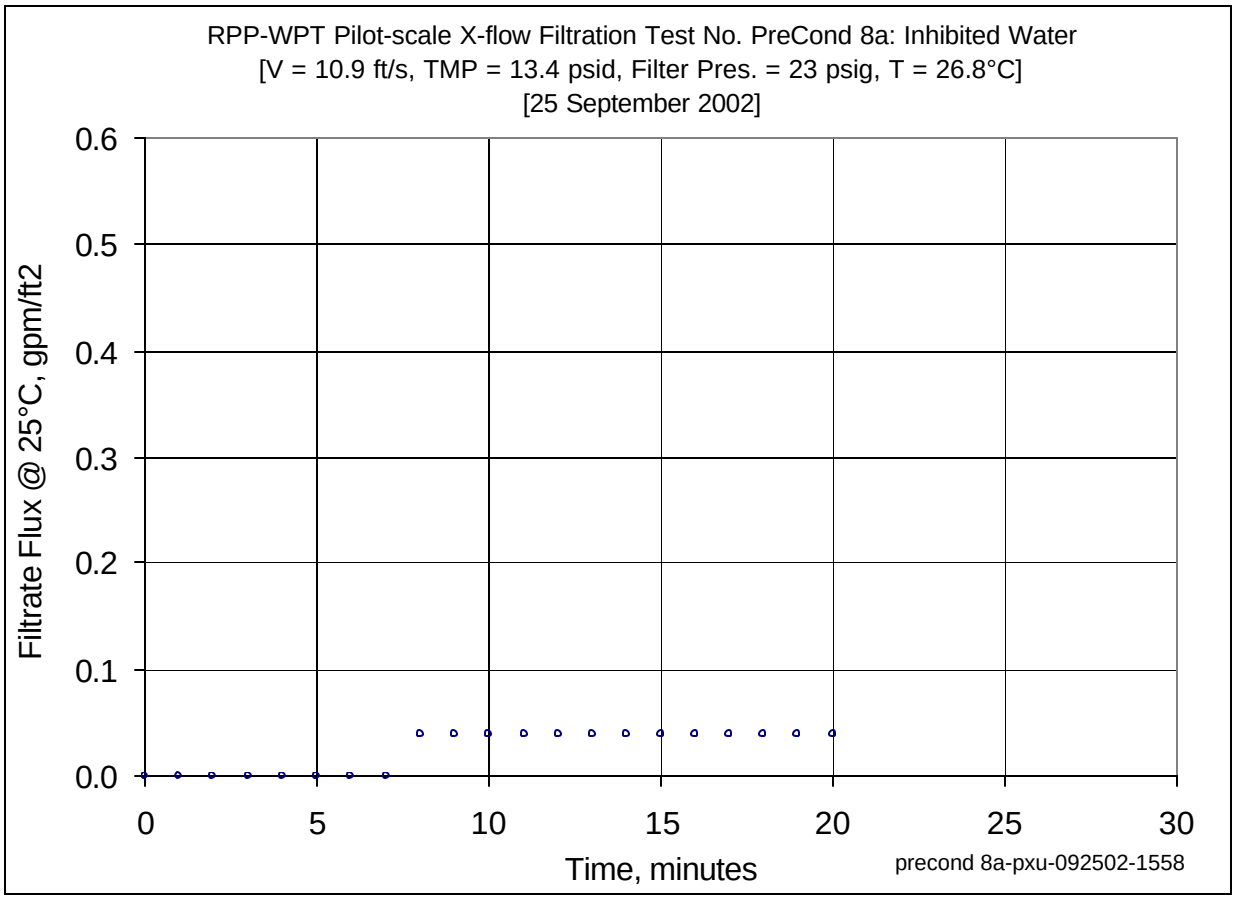


Figure A27: PreConditioning 8A – Deionized & Filtered Water – Post Standard Slurry Tests

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																		Filter Surface	6.87	FT2						
9/25/02	7:37:47 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/25/02	7:38:00 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001										
9/25/02	7:38:01 AM	20.881	21.177	20.528	20.516	20.65	-0.119	-0.039	-0.049	0.064	-0.307	0.353	-0.216	0.002	0.001	0.001										
9/25/02	7:38:02 AM	20.881	21.177	20.528	20.521	20.65	-0.121	-0.039	-0.049	0.064	-0.347	0.353	-0.212	0.001	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/25/02	7:38:03 AM	20.882	21.178	20.534	20.521	20.666	-0.119	-0.039	-0.049	0.064	-0.37	0.356	-0.216	0.002	0.001	0.001										
9/25/02	7:38:04 AM	20.881	21.177	20.533	20.526	20.65	-0.119	-0.041	-0.048	0.064	-0.327	0.356	-0.212	0.002	0.001	0.002		Pressure P1is corrected for 40.88 inches of water tubing								
9/25/02	7:38:05 AM	20.882	21.183	20.544	20.531	20.666	-0.121	-0.039	-0.048	0.064	-0.33	0.356	-0.216	0.002	0.001	0.001		VVVV				< Filtrate Flux	<< PERMIABILITY >>			
9/25/02	7:38:06 AM	20.887	21.183	20.544	20.531	20.671	-0.121	-0.039	-0.048	0.064	-0.324	0.358	-0.212	0.001	0.001	0.001						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/25/02	3:58:23 PM	26.38	22.614	26.641	23.592	23.017	15.869	24.464	19.034	-2.808	3.353	64.172	46.647	0.002	0.001	0	0	23.0	10.9	6.5	0.450	0.000	0.000	0.000	0.043	0.04
9/25/02	3:59:23 PM	25.933	22.613	26.685	23.475	23.021	19.118	24.478	18.922	0.3	0.068	0.558	46.631	0.003	0.001	0	1	23.0	10.9	9.7	0.669	0.000	0.000	0.000	0.043	0.04
9/25/02	4:00:23 PM	26.367	22.611	26.704	23.524	22.965	19.151	24.567	19.012	0.361	0.052	0.57	46.844	0.002	0.001	0	2	23.1	10.9	9.8	0.673	0.000	0.000	0.000	0.028	0.02
9/25/02	4:01:23 PM	26.681	22.606	26.758	23.413	22.979	18.979	24.356	18.729	0.41	0.066	0.587	46.704	0.001	0.001	0	3	22.9	10.9	9.7	0.668	0.000	0.000	0.000	0.014	0.01
9/25/02	4:02:23 PM	26.765	22.61	26.782	23.472	22.968	18.857	24.294	18.785	0.359	0.092	0.631	46.842	0.002	0.001	0	4	22.8	10.9	9.6	0.662	0.000	0.000	0.000	0.029	0.02
9/25/02	4:03:23 PM	26.851	22.621	26.848	23.524	23.04	18.901	24.435	18.694	0.466	0.133	0.657	46.874	0.002	0.001	0	5	23.0	10.9	9.7	0.668	0.000	0.000	0.000	0.029	0.02
9/25/02	4:04:23 PM	26.867	22.637	26.894	23.49	23.061	18.638	24.13	18.597	0.273	0.185	0.697	46.888	0.002	0.001	0	6.00	22.7	10.9	9.5	0.652	0.000	0.000	0.000	0.029	0.02
9/25/02	4:05:23 PM	26.914	22.643	26.93	23.651	23.102	19.075	24.555	19.014	0.265	0.188	0.741	46.788	0.002	0.001	0	7	23.1	10.9	9.7	0.667	0.000	0.000	0.000	0.029	0.02
9/25/02	4:06:23 PM	26.867	22.646	26.903	23.81	23.16	22.871	24.583	19.024	3.763	-1.284	-3.327	46.662	0.289	0.001	0	8	23.1	10.9	13.3	0.918	0.042	0.040	0.003	2.994	2.55
9/25/02	4:07:23 PM	27.04	22.67	26.862	23.999	23.204	22.565	24.573	18.801	3.87	-1.289	-2.98	46.748	0.282	0.001	0	9	23.1	10.9	13.2	0.911	0.041	0.039	0.003	2.947	2.51
9/25/02	4:08:23 PM	27.078	22.688	26.86	23.972	23.222	22.451	24.246	18.649	4.017	-1.284	-3.021	46.652	0.284	0.001	0	10	22.8	10.9	13.2	0.912	0.041	0.039	0.003	2.964	2.52
9/25/02	4:09:23 PM	27.082	22.702	26.829	24.011	23.272	22.521	24.362	18.856	3.892	-1.284	-3.023	46.742	0.284	0.001	0	11	22.9	10.9	13.2	0.911	0.041	0.039	0.003	2.973	2.53
9/25/02	4:10:23 PM	27.092	22.717	26.799	24.167	23.327	22.445	24.29	18.739	3.968	-1.286	-3.035	46.773	0.282	0.001	0	12	22.8	10.9	13.2	0.911	0.041	0.039	0.003	2.955	2.51
9/25/02	4:11:23 PM	27.106	22.747	26.808	24.146	23.376	22.77	24.755	18.806	4.044	-1.286	-3.047	46.847	0.285	0.001	0	13	23.3	10.9	13.4	0.924	0.041	0.039	0.003	2.941	2.50
9/25/02	4:12:23 PM	27.091	22.767	26.774	24.166	23.427	22.635	24.284	18.767	4.245	-1.284	-3.093	46.511	0.287	0.001	0	14	22.8	10.9	13.4	0.927	0.042	0.040	0.003	2.957	2.52
9/25/02	4:13:23 PM	27.071	22.777	26.759	24.196	23.472	22.525	24.252	18.567	4.185	-1.284	-3.128	46.601	0.288	0.001	0	15	22.8	10.9	13.4	0.921	0.042	0.040	0.003	2.987	2.54
9/25/02	4:14:23 PM	27.071	22.791	26.748	24.226	23.481	22.931	24.654	19.071	4.019	-1.284	-3.168	46.53	0.285	0.001	0	16	23.2	10.9	13.5	0.929	0.041	0.039	0.003	2.931	2.49
9/25/02	4:15:23 PM	27.069	22.799	26.706	24.184	23.479	22.819	24.455	18.646	4.601	-1.284	-3.162	46.324	0.287	0.001	0	17	23.0	10.8	13.7	0.945	0.042	0.040	0.003	2.904	2.47
9/25/02	4:16:23 PM	27.051	22.807	26.708	24.156	23.451	22.896	24.561	19	4.177	-1.286	-3.197	46.398	0.288	0.001	0	18	23.1	10.8	13.5	0.933	0.042	0.040	0.003	2.951	2.51
9/25/02	4:17:23 PM	27.033	22.809	26.665	24.052	23.448	22.83	24.575	18.965	3.89	-1.286	-3.206	46.402	0.289	0.001	0	19	23.1	10.8	13.4	0.921	0.042	0.040	0.003	3.004	2.56
9/25/02	4:18:23 PM	27.018	22.824	26.675	24.092	23.428	22.664	24.252	18.685	4.22	-1.284	-3.223	46.414	0.288	0.001	0	20	22.8	10.8	13.4	0.927	0.042	0.040	0.003	2.975	2.53
	Averages	27.1	22.7	26.8	24.1	23.4	22.7	24.4	18.8	4.1	-1.3	-3.1	46.6	0.3	0.0	0.0		23.0	10.9	13.4	0.922	0.042	0.040	0.0030	2.960	2.519
	Maximum	27.1	22.8	26.9	24.2	23.5	22.9	24.8	19.1	4.6	-1.3	-3.0	46.8	0.3	0.0	0.0		23.3	10.9	13.7	0.945	0.042	0.040	0.0030	3.004	2.557
	Median	27.1	22.8	26.8	24.1	23.4	22.7	24.5	18.8	4.0	-1.3	-3.1	46.6	0.3	0.0	0.0		23.0	10.9	13.4	0.921	0.042	0.040	0.0030	2.957	2.516
	Minimum	26.9	22.6	26.7	23.8	23.2	22.4	24.2	18.6	3.8	-1.3	-3.3	46.3	0.3	0.0	0.0		22.8	10.8	13.2	0.911	0.041	0.039	0.0029	2.904	2.471
	2 x Std Dev	0.117	0.113	0.145	0.226	0.221	0.337	0.340	0.309	0.420	0.003	0.194	0.324	0.005	0.000	0.000		0.340	0.076	0.285	0.020	0.001	0.001	0.0001	0.052	0.045
Number of Points Used*		13	13	13	13	13	13	13	13	13	13	13	13	13	13	13		13	13	13	13	13	13	13	13	13
	* Backpulse points in box are not included																									

Figure A28: PreConditioning 8A – Deionized & Filtered Water – Post Standard Slurry Tests - Raw & Calculated Data

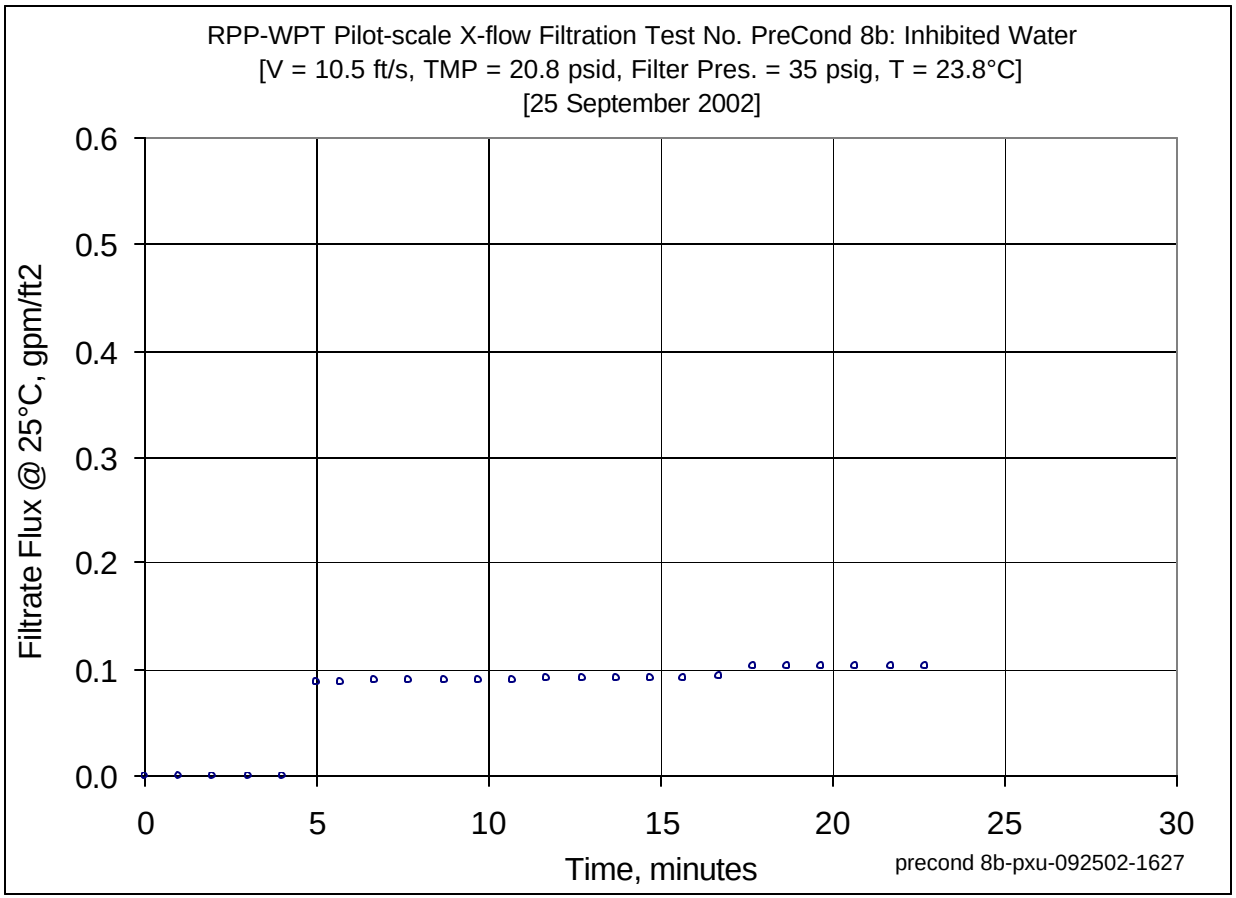


Figure A29: PreConditioning 8B – Deionized & Filtered Water – Post Standard Slurry Tests

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/25/02	7:37:47 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001		Filter Surface	6.87	FT2						
9/25/02	7:38:00 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/25/02	7:38:01 AM	20.881	21.177	20.528	20.516	20.65	-0.119	-0.039	-0.049	0.064	-0.307	0.353	-0.216	0.002	0.001	0.001										
9/25/02	7:38:02 AM	20.881	21.177	20.528	20.521	20.65	-0.121	-0.039	-0.049	0.064	-0.347	0.353	-0.212	0.001	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/25/02	7:38:03 AM	20.882	21.178	20.534	20.521	20.666	-0.119	-0.039	-0.049	0.064	-0.37	0.356	-0.216	0.002	0.001	0.001										
9/25/02	7:38:04 AM	20.881	21.177	20.533	20.526	20.65	-0.119	-0.041	-0.048	0.064	-0.327	0.356	-0.212	0.002	0.001	0.002		Pressure P1is corrected for 40.88 inches of water tubing								
9/25/02	7:38:05 AM	20.882	21.183	20.544	20.531	20.666	-0.121	-0.039	-0.048	0.064	-0.33	0.356	-0.216	0.002	0.001	0.001		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/25/02	7:38:06 AM	20.887	21.183	20.544	20.531	20.671	-0.121	-0.039	-0.048	0.064	-0.324	0.358	-0.212	0.001	0.001	0.001						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/25/02	4:27:41 PM	27.094	22.88	25.492	23.973	23.339	16.25	35.8	18.783	-2.022	14.645	76.747	46.221	0.002	0.001	0	0	34.3	10.8	7.1	0.490	0.000	0.000	0.000	0.040	0.03
9/25/02	4:28:11 PM	26.719	22.889	25.376	23.987	23.328	11.202	35.887	18.261	-6.759	27.016	36.682	45.295	0.002	0.001	1.712	1	34.4	10.6	2.2	0.153	0.000	0.000	0.000	0.130	0.11
9/25/02	4:28:41 PM	26.698	22.889	25.255	24.037	23.307	29.998	35.987	18.512	11.782	0.722	0.622	46.524	0.002	0.001	0	2	34.5	10.9	20.9	1.440	0.000	0.000	0.000	0.014	0.01
9/25/02	4:29:11 PM	26.743	22.889	25.135	24.007	23.332	29.874	35.763	18.582	11.686	0.719	0.668	46.591	0.002	0.001	0	3	34.3	10.9	20.8	1.433	0.000	0.000	0.000	0.014	0.01
9/25/02	4:29:41 PM	26.682	22.893	25.034	24.001	23.331	29.7	35.819	18.69	11.15	0.812	0.738	46.475	0.002	0.001	0	4	34.3	10.8	20.4	1.408	0.000	0.000	0.000	0.014	0.01
9/25/02	4:30:11 PM	26.547	22.893	24.939	24.096	23.321	29.331	35.734	18.488	11.248	1.173	1.117	46.572	0.61	0.001	0	5	34.3	10.9	20.3	1.399	0.089	0.089	0.004	4.382	3.73
9/25/02	4:30:52 PM	26.362	22.903	24.773	24.076	23.321	29.71	35.964	18.871	11.149	1.162	1.082	46.589	0.606	0.001	0	5.68	34.5	10.9	20.4	1.409	0.088	0.089	0.004	4.344	3.70
9/25/02	4:31:52 PM	26.096	22.897	24.577	24	23.305	29.677	36.067	18.835	11.28	1.141	1.068	46.444	0.609	0.001	0	6.68	34.6	10.8	20.5	1.412	0.089	0.090	0.004	4.379	3.73
9/25/02	4:32:52 PM	25.911	22.901	24.441	24.05	23.3	29.244	35.587	18.623	10.98	1.098	1.059	46.456	0.605	0.001	0	7.68	34.1	10.8	20.1	1.387	0.088	0.089	0.004	4.447	3.78
9/25/02	4:33:52 PM	25.705	22.901	24.255	24.059	23.264	29.822	36.239	18.82	11.457	1.061	1.033	46.381	0.605	0.001	0	8.68	34.8	10.8	20.6	1.423	0.088	0.090	0.004	4.356	3.71
9/25/02	4:34:52 PM	25.529	22.895	24.139	24.018	23.248	29.489	35.709	18.657	11.285	1.046	0.993	46.247	0.602	0.001	0	9.68	34.2	10.8	20.4	1.406	0.088	0.090	0.004	4.403	3.75
9/25/02	4:35:52 PM	25.328	22.905	23.988	23.962	23.248	29.669	35.978	18.908	11.137	1.049	1.01	46.391	0.602	0.001	0	10.7	34.5	10.8	20.4	1.407	0.088	0.090	0.004	4.418	3.76
9/25/02	4:36:52 PM	25.182	22.909	23.862	23.897	23.232	29.598	36.061	18.458	11.426	1.211	1.137	46.047	0.608	0.001	0	11.7	34.6	10.7	20.5	1.414	0.088	0.091	0.004	4.454	3.79
9/25/02	4:37:52 PM	24.996	22.878	23.696	23.926	23.216	29.575	36.135	18.33	11.671	1.205	1.14	45.964	0.611	0.001	0	12.7	34.7	10.7	20.6	1.422	0.089	0.092	0.004	4.473	3.81
9/25/02	4:38:52 PM	24.851	22.898	23.59	24.011	23.196	29.486	35.848	18.572	11.123	1.167	1.117	45.808	0.608	0.001	0	13.7	34.4	10.7	20.3	1.400	0.088	0.092	0.005	4.535	3.86
9/25/02	4:39:52 PM	24.74	22.902	23.504	24.005	23.18	29.458	35.786	18.438	11.442	1.17	1.085	45.806	0.606	0.001	0	14.7	34.3	10.7	20.5	1.410	0.088	0.092	0.004	4.498	3.83
9/25/02	4:40:52 PM	24.594	22.897	23.373	24.005	23.174	29.575	35.771	18.483	11.362	1.17	1.077	45.852	0.605	0.001	0	15.7	34.3	10.7	20.5	1.411	0.088	0.092	0.005	4.504	3.83
9/25/02	4:41:52 PM	24.479	22.902	23.373	23.864	23.184	30.274	37.13	16.136	14.298	1.523	1.45	43.801	0.611	0.001	0	16.7	35.7	10.2	22.3	1.537	0.089	0.093	0.004	4.177	3.56
9/25/02	4:42:52 PM	24.368	22.912	23.383	23.779	23.184	29.037	36.967	15.978	13.426	2.627	2.437	42.635	0.675	0.001	0	17.7	35.5	10.0	21.2	1.464	0.098	0.103	0.005	4.843	4.12
9/25/02	4:43:52 PM	24.272	22.896	23.358	23.718	23.159	28.919	36.899	15.873	13.465	2.679	2.472	42.49	0.679	0.001	0	18.7	35.4	9.9	21.2	1.461	0.099	0.104	0.005	4.884	4.16
9/25/02	4:44:52 PM	24.217	22.901	23.313	23.723	23.159	28.851	36.752	16.083	13.238	2.746	2.579	42.522	0.679	0.001	0	19.7	35.3	9.9	21.0	1.451	0.099	0.104	0.005	4.925	4.19
9/25/02	4:45:52 PM	24.161	22.885	23.307	23.692	23.133	29.134	37.16	15.88	13.496	2.74	2.556	42.549	0.679	0.001	0	20.7	35.7	9.9	21.3	1.470	0.099	0.104	0.005	4.863	4.14
9/25/02	4:46:52 PM	24.131	22.89	23.307	23.727	23.123	28.902	37.033	16.036	13.076	2.743	2.565	42.624	0.678	0.001	0	21.7	35.6	10.0	21.0	1.447	0.099	0.104	0.005	4.931	4.20
9/25/02	4:47:52 PM	24.101	22.88	23.407	23.652	23.153	29.037	37.168	15.989	13.352	2.789	2.594	42.44	0.683	0.001	0	22.7	35.7	9.9	21.2	1.461	0.099	0.104	0.005	4.905	4.17
	Averages	24.9	22.9	23.8	23.9	23.2	29.4	36.3	17.6	12.1	1.7	1.6	44.8	0.6	0.0	0.0		34.9	10.5	20.8	1.433	0.092	0.095	0.0046	4.574	3.893
	Maximum	26.4	22.9	24.8	24.1	23.3	30.3	37.2	18.9	14.3	2.8	2.6	46.6	0.7	0.0	0.0		35.7	10.9	22.3	1.537	0.099	0.104	0.0049	4.931	4.197
	Median	24.8	22.9	23.5	23.9	23.2	29.5	36.1	18.4	11.4	1.2	1.1	45.8	0.6	0.0	0.0		34.6	10.7	20.6	1.418	0.089	0.092	0.0045	4.486	3.817
	Minimum	24.1	22.9	23.3	23.7	23.1	28.9	35.6	15.9	11.0	1.0	1.0	42.4	0.6	0.0	0.0		34.1	9.9	20.1	1.387	0.088	0.089	0.0042	4.177	3.555
	2 x Std Dev	1.421	0.018	0.948	0.282	0.117	0.737	1.121	2.593	2.190	1.479	1.362	3.444	0.068	0.000	0.000		1.120	0.804	1.024	0.071	0.010	0.012	0.0005	0.475	0.404
Number of Points Used*		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18		18	18	18	18	18	18	18	18	18
	* Backpulse points in box are not included																									

Figure A30: PreConditioning 8B – Deionized & Filtered Water – Post Standard Slurry Tests - Raw & Calculated Data

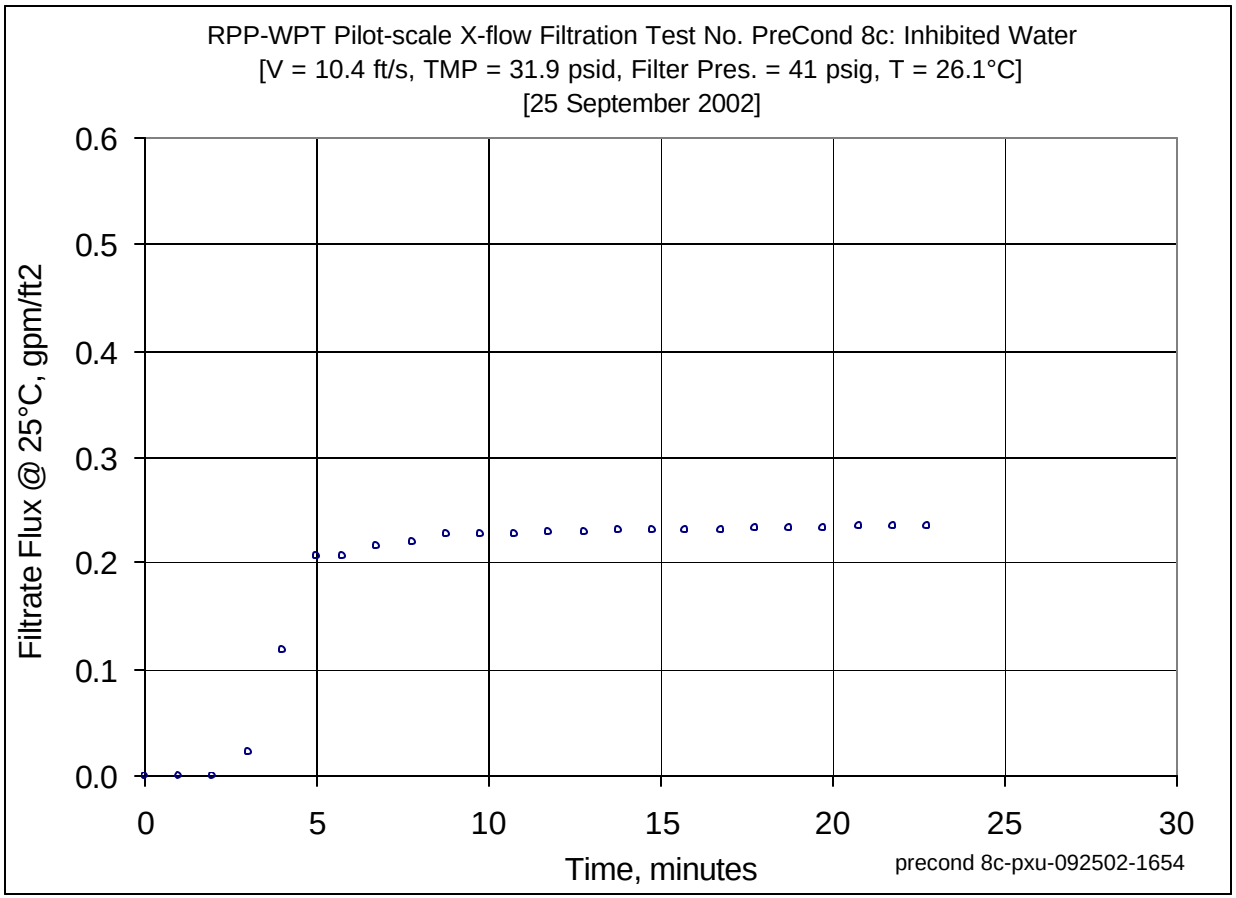


Figure A31: PreConditioning 8C – Deionized & Filtered Water – Post Standard Slurry Tests

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
9/25/02	7:37:47 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001		Filter Surface		6.87	FT2						
9/25/02	7:38:00 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001		Conversion		851	m3/m2/day/barg / gpm/ft2/barg						
9/25/02	7:38:01 AM	20.881	21.177	20.528	20.516	20.65	-0.119	-0.039	-0.049	0.064	-0.307	0.353	-0.216	0.002	0.001	0.001											
9/25/02	7:38:02 AM	20.881	21.177	20.528	20.521	20.65	-0.121	-0.039	-0.049	0.064	-0.347	0.353	-0.212	0.001	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig									
9/25/02	7:38:03 AM	20.882	21.178	20.534	20.521	20.666	-0.119	-0.039	-0.049	0.064	-0.37	0.356	-0.216	0.002	0.001	0.001											
9/25/02	7:38:04 AM	20.881	21.177	20.533	20.526	20.65	-0.119	-0.041	-0.048	0.064	-0.327	0.356	-0.212	0.002	0.001	0.002		Pressure P1is corrected for 40.88 inches of water tubing									
9/25/02	7:38:05 AM	20.882	21.183	20.544	20.531	20.666	-0.121	-0.039	-0.048	0.064	-0.33	0.356	-0.216	0.002	0.001	0.001		VVVV				< Filtrate Flux		<< PERMIABILITY >>			
9/25/02	7:38:06 AM	20.887	21.183	20.544	20.531	20.671	-0.121	-0.039	-0.048	0.064	-0.324	0.358	-0.212	0.001	0.001	0.001							at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/25/02	4:54:48 PM	25.373	22.859	25.196	23.571	23.037	15.181	41.736	18.677	-3.14	21.556	82.269	46.01	0.002	0.001	0	0	40.3	10.7	6.0	0.415	0.000	0.000	0.000	0.048	0.04
9/25/02	4:55:18 PM	24.396	22.869	25.251	23.666	23.037	16.237	42.04	18.833	-2.3	21.027	38.759	45.949	0.002	0.001	0.139	1	40.6	10.7	7.0	0.480	0.000	0.000	0.000	0.041	0.04
9/25/02	4:55:48 PM	25.198	22.87	25.301	23.717	23.062	34.923	42.261	19.002	16.106	1.907	0.691	46.798	0.003	0.001	0	2	40.8	10.9	25.5	1.759	0.000	0.000	0.000	0.017	0.01
9/25/02	4:56:18 PM	25.584	22.875	25.396	23.727	23.082	32.525	41.918	18.969	13.841	3.769	3.929	46.695	0.162	0.002	0	3	40.4	10.9	23.2	1.598	0.024	0.023	0.001	1.006	0.86
9/25/02	4:56:48 PM	25.695	22.876	25.438	23.708	23.094	30.087	41.7	18.831	11.704	6.457	5.947	46.666	0.827	0.001	0	4	40.2	10.9	20.9	1.441	0.120	0.119	0.006	5.689	4.84
9/25/02	4:57:18 PM	25.826	22.882	25.473	23.829	23.109	40.066	41.738	19.075	21.432	-1.286	-4.251	46.964	0.002	1.44	0	5	40.3	11.0	30.7	2.120	0.210	0.207	0.007	6.724	5.72
9/25/02	4:58:03 PM	25.983	22.894	25.605	23.791	23.156	40.188	41.969	19.142	21.379	-1.286	-4.24	47.197	0.002	1.441	0	5.75	40.5	11.0	30.8	2.122	0.210	0.206	0.007	6.697	5.70
9/25/02	4:59:03 PM	26.14	22.9	25.692	23.928	23.193	40.188	42.154	18.087	22.56	-1.284	-4.231	45.876	0.002	1.517	0	6.75	40.7	10.7	31.4	2.163	0.221	0.216	0.007	6.900	5.87
9/25/02	5:00:03 PM	26.288	22.908	25.82	24.057	23.242	39.965	41.794	17.761	22.732	-1.286	-4.231	45.498	0.002	1.546	0	7.75	40.3	10.6	31.3	2.161	0.225	0.220	0.007	7.013	5.97
9/25/02	5:01:03 PM	26.401	22.922	25.943	24.11	23.285	40.431	42.462	17.354	23.434	-1.284	-4.225	44.462	0.002	1.599	0	8.75	41.0	10.4	31.9	2.202	0.233	0.227	0.007	7.096	6.04
9/25/02	5:02:03 PM	26.545	22.962	26.038	24.165	23.335	40.499	42.609	17.233	23.737	-1.284	-4.219	44.462	0.002	1.604	0	9.75	41.1	10.4	32.1	2.214	0.233	0.227	0.007	7.058	6.01
9/25/02	5:03:03 PM	26.63	22.966	26.138	24.125	23.4	40.634	42.681	17.138	23.919	-1.286	-4.219	44.489	0.002	1.616	0	10.8	41.2	10.4	32.3	2.225	0.235	0.228	0.007	7.057	6.01
9/25/02	5:04:03 PM	26.736	22.983	26.224	24.191	23.471	40.313	42.54	17.072	23.596	-1.286	-4.211	44.332	0.002	1.623	0	11.8	41.1	10.3	32.0	2.203	0.236	0.228	0.007	7.141	6.08
9/25/02	5:05:03 PM	26.816	22.993	26.299	24.201	23.501	40.462	42.571	17.175	23.647	-1.284	-4.202	44.514	0.002	1.63	0	12.8	41.1	10.4	32.1	2.210	0.237	0.229	0.007	7.135	6.07
9/25/02	5:06:03 PM	26.871	23.003	26.274	24.301	23.526	40.493	42.706	16.985	23.891	-1.286	-4.202	44.481	0.002	1.636	0	13.8	41.2	10.4	32.2	2.220	0.238	0.230	0.007	7.136	6.07
9/25/02	5:07:03 PM	26.905	23.016	26.227	24.415	23.53	40.551	42.975	17.11	23.803	-1.284	-4.196	44.414	0.002	1.635	0	14.8	41.5	10.4	32.2	2.218	0.238	0.230	0.007	7.144	6.08
9/25/02	5:08:03 PM	26.897	23.019	26.22	24.362	23.518	40.354	42.743	16.902	23.928	-1.284	-4.193	44.428	0.002	1.639	0	15.8	41.3	10.4	32.1	2.216	0.238	0.230	0.007	7.171	6.10
9/25/02	5:09:03 PM	26.904	23.041	26.212	24.304	23.519	39.981	42.381	16.976	23.348	-1.284	-4.187	44.239	0.002	1.646	0	16.8	40.9	10.3	31.7	2.183	0.240	0.232	0.007	7.311	6.22
9/25/02	5:10:03 PM	26.896	23.043	26.164	24.261	23.516	40.325	42.737	17.085	23.563	-1.286	-4.187	44.47	0.002	1.647	0	17.8	41.3	10.4	31.9	2.202	0.240	0.232	0.007	7.262	6.18
9/25/02	5:11:03 PM	26.892	23.054	26.19	24.202	23.518	40.578	42.847	17.236	23.762	-1.284	-4.185	44.479	0.002	1.654	0	18.8	41.4	10.4	32.2	2.218	0.241	0.233	0.007	7.236	6.16
9/25/02	5:12:03 PM	26.883	23.045	26.151	24.147	23.503	40.348	42.956	17.102	23.498	-1.286	-4.182	44.495	0.002	1.655	0	19.8	41.5	10.4	31.9	2.201	0.241	0.233	0.007	7.304	6.22
9/25/02	5:13:03 PM	26.883	23.06	26.146	24.128	23.514	40.437	42.753	17.013	23.872	-1.286	-4.179	44.487	0.002	1.659	0	20.8	41.3	10.4	32.2	2.217	0.241	0.234	0.007	7.270	6.19
9/25/02	5:14:03 PM	26.873	23.05	26.161	24.097	23.528	40.389	42.7	17.161	23.653	-1.286	-4.179	44.391	0.002	1.659	0	21.8	41.2	10.4	32.0	2.208	0.241	0.234	0.007	7.297	6.21
9/25/02	5:15:03 PM	26.867	23.049	26.115	24.046	23.503	40.097	42.383	16.969	23.659	-1.284	-4.173	44.258	0.002	1.658	0	22.8	40.9	10.3	31.9	2.198	0.241	0.234	0.007	7.335	6.24
	Averages	26.7	23.0	26.1	24.2	23.4	40.3	42.6	17.3	23.4	-1.3	-4.2	44.7	0.0	1.6	0.0		41.1	10.4	31.9	2.199	0.235	0.228	0.0071	7.142	6.078
	Maximum	26.9	23.1	26.3	24.4	23.5	40.6	43.0	19.1	23.9	-1.3	-4.2	47.2	0.0	1.7	0.0		41.5	11.0	32.3	2.225	0.241	0.234	0.0073	7.335	6.242
	Median	26.9	23.0	26.2	24.2	23.5	40.4	42.6	17.1	23.7	-1.3	-4.2	44.5	0.0	1.6	0.0		41.2	10.4	32.0	2.205	0.238	0.230	0.0071	7.143	6.079
	Minimum	26.0	22.9	25.6	23.8	23.2	40.0	41.8	16.9	21.4	-1.3	-4.2	44.2	0.0	1.4	0.0		40.3	10.3	30.8	2.122	0.210	0.206	0.0067	6.697	5.699
	2 x Std Dev	0.574	0.111	0.385	0.292	0.250	0.379	0.623	1.057	1.238	0.002	0.041	1.451	0.000	0.113	0.000		0.623	0.339	0.742	0.051	0.016	0.014	0.0003	0.315	0.268
Number of Points Used*		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18		18	18	18	18	18	18	18	18	18
	* Backpulse points in box are not included																									

Figure A32: PreConditioning 8C – Deionized & Filtered Water – Post Standard Slurry Tests - Raw & Calculated Data

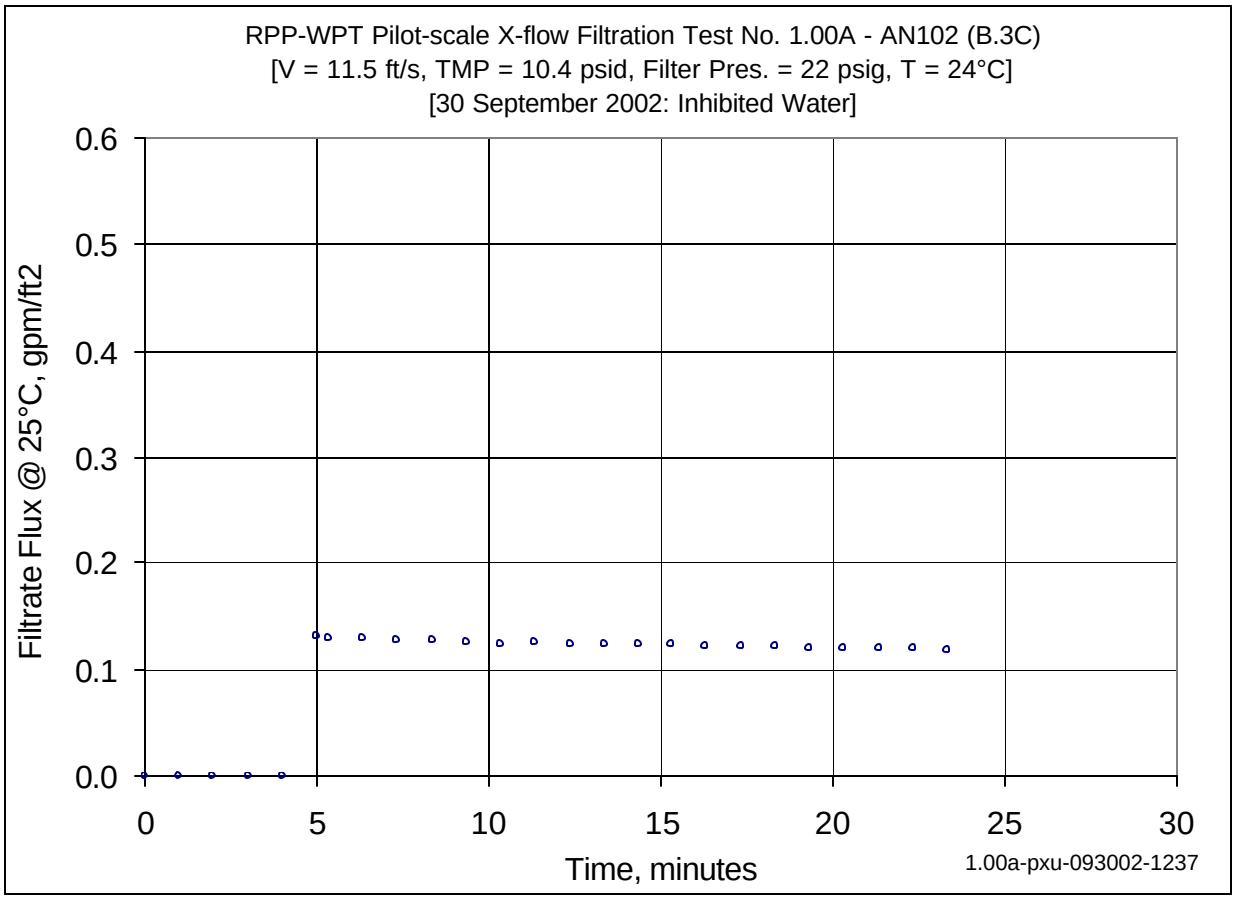


Figure A33: AN-102R2, Batch 3C Slurry Test 1.00A – Inhibited Deionized & Filtered Water

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/30/02	12:25:13 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0		Filter Surface	6.707	FT2						
9/30/02	12:25:25 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/30/02	12:25:26 PM	23.313	22.362	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.246	0.344	47.052	0.002	0.001	0										
9/30/02	12:25:27 PM	23.303	22.362	22.226	23.129	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.214	0.002	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/30/02	12:25:28 PM	23.308	22.357	22.231	23.119	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.153	0.002	0.001	0										
9/30/02	12:25:29 PM	23.308	22.367	22.237	23.135	22.223	-0.119	0.011	-0.084	0.058	-0.266	0.341	47.233	0.002	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/30/02	12:25:30 PM	23.308	22.357	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.249	0.341	47.207	0.002	0.001	0		VVVV				< Filtrate Flux << PERMIABILITY >>				
9/30/02	12:25:31 PM	23.308	22.357	22.231	23.119	22.223	-0.121	0.013	-0.084	0.058	-0.249	0.344	47.075	0.002	0.001	0							at 25C		x 1000	
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/30/02	12:37:04 PM	22.37	22.434	22.303	23.232	22.401	2.94	24.062	4.272	-1.377	16.053	64.329	46.337	0.001	0.001	0	0	22.6	11.4	0.8	0.054	0.000	0.000	0.000	0.206	0.18
9/30/02	12:37:46 PM	22.37	22.434	22.303	23.232	22.401	2.94	24.062	4.272	-1.377	16.053	64.329	46.337	0.001	0.001	0	1	22.6	11.4	0.8	0.054	0.000	0.000	0.000	0.206	0.18
9/30/02	12:38:04 PM	22.426	22.455	22.701	23.217	22.411	-7.498	24.49	4.127	-14.915	30.54	34.001	45.171	0.002	0.001	1.652	2	23.0	11.1	-11.2	-0.773	0.000	0.000	0.000	-0.028	-0.02
9/30/02	12:38:34 PM	22.651	22.449	22.886	23.161	22.421	15.761	23.46	4.111	11.878	2.445	0.639	47.283	0.002	0.001	0	3	22.0	11.6	13.8	0.953	0.000	0.000	0.000	0.011	0.01
9/30/02	12:39:04 PM	22.828	22.475	23.119	23.162	22.427	11.811	24.019	4.136	7.809	6.838	6.265	47.102	0.837	0.001	0	4	22.5	11.5	9.8	0.676	0.000	0.000	0.000	0.016	0.01
9/30/02	12:39:34 PM	22.984	22.46	23.274	23.082	22.427	11.587	23.682	4.142	7.614	6.723	6.17	47.1	0.834	0.001	0	5	22.2	11.5	9.6	0.662	0.124	0.131	0.014	13.600	11.57
9/30/02	12:39:54 PM	23.105	22.465	23.349	23.072	22.427	11.287	23.305	4.047	7.33	6.627	6.126	46.901	0.833	0.001	0	5.33	21.8	11.5	9.3	0.642	0.124	0.130	0.014	13.980	11.90
9/30/02	12:40:54 PM	23.326	22.465	23.38	23.223	22.432	11.956	23.857	4.215	7.676	6.503	5.982	47.203	0.829	0.001	0	6.33	22.4	11.6	9.8	0.677	0.124	0.129	0.013	13.182	11.22
9/30/02	12:41:54 PM	23.497	22.481	23.661	23.248	22.432	12.176	23.872	4.179	8.048	6.448	5.909	46.972	0.824	0.001	0	7.33	22.4	11.5	10.1	0.697	0.123	0.128	0.013	12.618	10.74
9/30/02	12:42:54 PM	23.743	22.496	23.767	23.233	22.438	11.875	23.502	4.094	7.933	6.379	5.866	47.117	0.823	0.001	0	8.33	22.0	11.5	9.9	0.683	0.123	0.127	0.013	12.829	10.92
9/30/02	12:43:54 PM	23.859	22.496	23.872	23.269	22.458	12.35	23.762	4.214	8.32	6.269	5.753	47.06	0.819	0.001	0	9.33	22.3	11.5	10.3	0.713	0.122	0.126	0.012	12.197	10.38
9/30/02	12:44:54 PM	24.008	22.501	24.157	23.208	22.462	12.281	23.775	4.145	8.189	6.217	5.724	46.991	0.816	0.001	0	10.3	22.3	11.5	10.2	0.706	0.122	0.125	0.012	12.173	10.36
9/30/02	12:45:54 PM	24.143	22.495	24.066	23.383	22.467	12.217	23.88	4.091	8.126	6.179	5.689	46.93	0.817	0.001	0	11.3	22.4	11.5	10.2	0.701	0.122	0.125	0.012	12.295	10.46
9/30/02	12:46:54 PM	24.243	22.509	24.306	23.392	22.481	12.294	23.537	4.163	8.202	6.226	5.73	47.046	0.818	0.001	0	12.3	22.1	11.5	10.2	0.707	0.122	0.124	0.012	12.136	10.33
9/30/02	12:47:54 PM	24.373	22.509	24.225	23.477	22.485	12.544	24.075	4.089	8.505	6.151	5.62	46.551	0.815	0.001	0	13.3	22.6	11.4	10.5	0.726	0.122	0.124	0.012	11.801	10.04
9/30/02	12:48:54 PM	24.428	22.524	24.421	23.492	22.485	12.36	23.537	4.02	8.609	6.142	5.646	46.838	0.815	0.001	0	14.3	22.1	11.5	10.5	0.723	0.122	0.124	0.012	11.780	10.03
9/30/02	12:49:54 PM	24.568	22.523	24.41	23.552	22.49	12.377	23.7	4.074	8.275	6.064	5.567	46.824	0.812	0.001	0	15.3	22.2	11.5	10.3	0.712	0.121	0.123	0.012	11.921	10.14
9/30/02	12:50:54 PM	24.608	22.534	24.521	23.587	22.511	12.606	24.019	4.169	8.449	5.96	5.475	46.989	0.808	0.001	0	16.3	22.5	11.5	10.5	0.726	0.120	0.122	0.012	11.599	9.87
9/30/02	12:51:54 PM	24.709	22.545	24.572	23.583	22.501	12.631	23.588	4.121	8.697	5.974	5.498	46.863	0.807	0.001	0	17.3	22.1	11.5	10.7	0.735	0.120	0.122	0.011	11.419	9.72
9/30/02	12:52:54 PM	24.739	22.544	24.611	23.592	22.526	12.832	23.936	4.142	8.744	5.818	5.385	46.828	0.805	0.001	0	18.3	22.5	11.5	10.8	0.744	0.120	0.121	0.011	11.248	9.57
9/30/02	12:53:54 PM	24.809	22.534	24.711	23.527	22.531	12.544	23.711	4.019	8.67	5.818	5.365	46.972	0.804	0.001	0	19.3	22.2	11.5	10.6	0.731	0.120	0.121	0.011	11.393	9.70
9/30/02	12:54:54 PM	24.865	22.555	24.692	23.693	22.556	12.751	23.677	4.086	8.785	5.818	5.35	46.939	0.803	0.001	0	20.3	22.2	11.5	10.8	0.742	0.120	0.121	0.011	11.215	9.54
9/30/02	12:55:54 PM	24.936	22.576	24.864	23.589	22.573	12.911	24.11	4.115	8.744	5.766	5.298	47.023	0.803	0.001	0	21.3	22.6	11.5	10.8	0.747	0.120	0.120	0.011	11.099	9.45
9/30/02	12:56:54 PM	24.972	22.577	24.764	23.65	22.578	12.648	23.452	4.083	8.648	5.7	5.229	46.964	0.8	0.001	0	22.3	22.0	11.5	10.6	0.734	0.119	0.120	0.011	11.276	9.60
9/30/02	12:57:54 PM	25.028	22.594	24.966	23.647	22.615	12.958	23.665	4.258	8.73	5.607	5.203	46.899	0.797	0.001	0	23.3	22.2	11.5	10.8	0.748	0.119	0.119	0.011	10.968	9.33
	Averages	24.3	22.5	24.3	23.4	22.5	12.4	23.7	4.1	8.4	6.1	5.6	46.9	0.8	0.0	0.0		22.3	11.5	10.4	0.715	0.121	0.124	0.0120	11.954	10.2
	Maximum	25.0	22.6	25.0	23.7	22.6	13.0	24.1	4.3	8.8	6.6	6.1	47.2	0.8	0.0	0.0		22.6	11.6	10.8	0.748	0.124	0.130	0.0140	13.980	11.9
	Median	24.4	22.5	24.4	23.5	22.5	12.4	23.7	4.1	8.4	6.1	5.6	47.0	0.8	0.0	0.0		22.2	11.5	10.5	0.723	0.122	0.124	0.0118	11.801	10.0
	Minimum	23.1	22.5	23.3	23.1	22.4	11.3	23.3	4.0	7.3	5.6	5.2	46.6	0.8	0.0	0.0		21.8	11.4	9.3	0.642	0.119	0.119	0.0110	10.968	9.3
	2 x Std Dev	1.138	0.072	0.945	0.359	0.106	0.782	0.426	0.128	0.784	0.561	0.509	0.267	0.019	0.000	0.000		0.426	0.065	0.773	0.053	0.003	0.006	0.0015	1.526	1.299
Number of Points Used*		19	19	19	19	19	19	19	19	19	19	19	19	19	19	19		19	19	19	19	19	19	19	19	19
	* Backpulse points in box are not included																									

Figure A34: AN-102R2, Batch 3C Slurry Test 1.00A – Inhibited Deionized & Filtered Water - Raw & Calculated Data

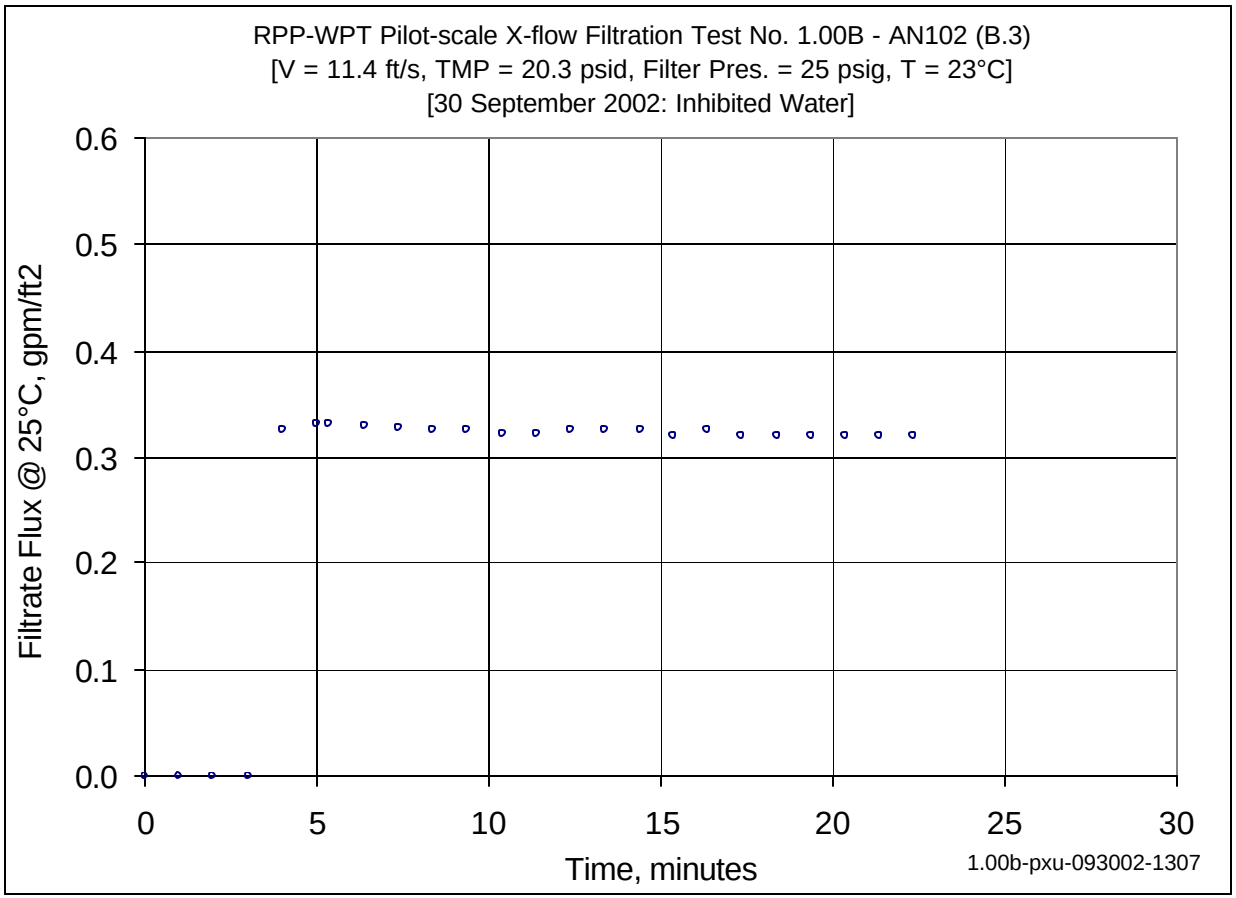


Figure A35: AN-102R2, Batch 3C Slurry Test 1.00B – Inhibited Deionized & Filtered Water

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/30/02	12:25:13 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0		Filter Surface	6.707	FT2						
9/30/02	12:25:25 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/30/02	12:25:26 PM	23.313	22.362	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.246	0.344	47.052	0.002	0.001	0										
9/30/02	12:25:27 PM	23.303	22.362	22.226	23.129	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.214	0.002	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/30/02	12:25:28 PM	23.308	22.357	22.231	23.119	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.153	0.002	0.001	0										
9/30/02	12:25:29 PM	23.308	22.367	22.237	23.135	22.223	-0.119	0.011	-0.084	0.058	-0.266	0.341	47.233	0.002	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/30/02	12:25:30 PM	23.308	22.357	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.249	0.341	47.207	0.002	0.001	0		VVVV				< Filtrate Flux	<< PERMIABILITY >>			
9/30/02	12:25:31 PM	23.308	22.357	22.231	23.119	22.223	-0.121	0.013	-0.084	0.058	-0.249	0.344	47.075	0.002	0.001	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/30/02	1:06:51 PM	25.007	22.683	23.882	24.137	22.745	2.663	26.96	3.947	-1.154	19.16	66.497	45.716	0.002	0.001	0	0	25.5	11.2	0.8	0.052	0.000	0.000	0.000	0.204	0.17
9/30/02	1:07:40 PM	25.007	22.683	23.882	24.137	22.745	2.663	26.96	3.947	-1.154	19.16	66.497	45.716	0.002	0.001	0	1	25.5	11.2	0.8	0.052	0.000	0.000	0.000	0.204	0.17
9/30/02	1:07:51 PM	24.969	22.684	23.663	24.169	22.761	2.779	27.103	4.032	-1.287	19.062	66.492	45.456	0.002	0.001	0	2	25.6	11.1	0.7	0.051	0.000	0.000	0.000	0.208	0.18
9/30/02	1:08:51 PM	24.379	22.681	23.605	24.181	22.788	14.412	26.669	3.975	10.668	6.353	6.037	46.58	0.277	0.001	0	3	25.2	11.4	12.5	0.865	0.000	0.000	0.000	0.012	0.01
9/30/02	1:09:21 PM	24.244	22.692	23.53	24.257	22.794	22.585	26.793	4.051	18.806	-1.278	-4.031	46.991	0.003	2.096	0	4	25.3	11.5	20.7	1.427	0.312	0.326	0.016	15.741	13.40
9/30/02	1:09:51 PM	24.079	22.682	23.571	24.237	22.81	22.476	26.805	4.004	18.753	-1.289	-4.025	47.004	0.002	2.133	0	5	25.3	11.5	20.6	1.421	0.318	0.331	0.016	16.063	13.67
9/30/02	1:10:13 PM	24.056	22.694	23.602	24.218	22.811	22.14	26.346	3.992	18.531	-1.284	-4.017	46.897	0.002	2.139	0	5.37	24.9	11.5	20.3	1.402	0.319	0.332	0.016	16.315	13.88
9/30/02	1:11:13 PM	23.931	22.694	23.443	24.279	22.807	22.231	26.385	4.046	18.476	-1.284	-4.002	46.933	0.002	2.117	0	6.37	24.9	11.5	20.4	1.403	0.316	0.330	0.016	16.206	13.79
9/30/02	1:12:13 PM	23.897	22.711	23.404	24.205	22.808	22.498	26.677	4.048	18.787	-1.284	-3.996	47	0.002	2.099	0	7.37	25.2	11.5	20.6	1.423	0.313	0.327	0.016	15.861	13.50
9/30/02	1:13:13 PM	23.807	22.721	23.434	24.216	22.839	22.262	26.17	4.007	18.697	-1.284	-3.993	46.979	0.002	2.092	0	8.37	24.7	11.5	20.5	1.412	0.312	0.326	0.016	15.920	13.55
9/30/02	1:14:13 PM	23.783	22.728	23.27	24.237	22.865	22.463	26.51	3.964	18.898	-1.286	-3.988	46.962	0.002	2.082	0	9.37	25.0	11.5	20.7	1.426	0.310	0.326	0.016	15.763	13.41
9/30/02	1:15:13 PM	23.745	22.75	23.392	24.249	22.882	22.434	26.379	4.01	18.839	-1.286	-3.985	47.037	0.002	2.067	0	10.4	24.9	11.5	20.6	1.423	0.308	0.323	0.016	15.629	13.30
9/30/02	1:16:13 PM	23.692	22.767	23.259	24.347	22.92	22.884	26.607	4.08	19.195	-1.284	-3.976	47.06	0.002	2.055	0	11.4	25.1	11.5	21.0	1.451	0.306	0.322	0.015	15.298	13.02
9/30/02	1:17:13 PM	23.69	22.79	23.247	24.395	22.973	22.772	26.793	3.836	19.315	-1.286	-3.976	45.974	0.001	2.088	0	12.4	25.3	11.3	21.0	1.451	0.311	0.327	0.016	15.546	13.23
9/30/02	1:18:13 PM	23.633	22.803	23.291	24.463	23.001	22.434	26.33	3.798	19.125	-1.289	-3.97	46.194	0.002	2.079	0	13.4	24.9	11.3	20.8	1.433	0.310	0.325	0.016	15.656	13.32
9/30/02	1:19:13 PM	23.626	22.817	23.158	24.547	23.029	22.969	26.901	3.986	19.395	-1.284	-3.965	46.228	0.002	2.074	0	14.4	25.4	11.3	21.2	1.460	0.309	0.326	0.015	15.380	13.09
9/30/02	1:20:13 PM	23.595	22.83	23.277	24.565	23.063	23.114	27.008	4.006	19.395	-1.284	-3.962	47.054	0.002	2.044	0	15.4	25.5	11.5	21.3	1.465	0.305	0.320	0.015	15.055	12.81
9/30/02	1:21:13 PM	23.557	22.848	23.154	24.618	23.086	22.778	26.503	3.901	19.307	-1.286	-3.956	45.804	0.002	2.079	0	16.4	25.0	11.2	21.0	1.451	0.310	0.327	0.016	15.521	13.21
9/30/02	1:22:13 PM	23.58	22.866	23.168	24.651	23.114	22.637	26.524	3.958	19.082	-1.284	-3.953	46.729	0.002	2.041	0	17.4	25.1	11.5	20.9	1.438	0.304	0.321	0.015	15.365	13.08
9/30/02	1:23:13 PM	23.523	22.879	23.2	24.644	23.127	22.534	26.294	3.929	19.117	-1.284	-3.947	46.719	0.002	2.045	0	18.4	24.8	11.4	20.8	1.436	0.305	0.321	0.015	15.406	13.11
9/30/02	1:24:13 PM	23.536	22.892	23.078	24.667	23.155	22.952	26.658	3.92	19.379	-1.289	-3.947	46.519	0.002	2.04	0	19.4	25.2	11.4	21.2	1.459	0.304	0.321	0.015	15.174	12.91
9/30/02	1:25:13 PM	23.508	22.904	23.201	24.649	23.177	22.726	26.669	3.962	19.066	-1.289	-3.944	46.717	0.001	2.044	0	20.4	25.2	11.4	20.9	1.441	0.305	0.321	0.015	15.346	13.06
9/30/02	1:26:13 PM	23.5	22.931	23.087	24.736	23.189	22.736	26.518	3.935	19.24	-1.286	-3.938	46.618	0.002	2.034	0	21.4	25.0	11.4	21.0	1.447	0.303	0.320	0.015	15.254	12.98
9/30/02	1:27:13 PM	23.497	22.928	23.114	24.718	23.196	22.705	26.677	3.93	19.088	-1.286	-3.936	46.662	0.002	2.035	0	22.4	25.2	11.4	20.9	1.441	0.303	0.320	0.015	15.316	13.03
	Averages	23.7	22.8	23.3	24.5	23.0	22.6	26.6	4.0	19.1	-1.3	-4.0	46.7	0.0	2.1	0.0		25.1	11.4	20.8	1.437	0.309	0.324	0.0156	15.556	13.2
	Maximum	24.1	22.9	23.6	24.7	23.2	23.1	27.0	4.1	19.4	-1.3	-3.9	47.1	0.0	2.1	0.0		25.5	11.5	21.3	1.465	0.319	0.332	0.0163	16.315	13.9
	Median	23.6	22.8	23.3	24.5	23.0	22.7	26.5	4.0	19.1	-1.3	-4.0	46.7	0.0	2.1	0.0		25.0	11.5	20.9	1.439	0.309	0.324	0.0155	15.464	13.2
	Minimum	23.5	22.7	23.1	24.2	22.8	22.1	26.2	3.8	18.5	-1.3	-4.0	45.8	0.0	2.0	0.0		24.7	11.2	20.3	1.402	0.303	0.320	0.0151	15.055	12.8
	2 x Std Dev	0.320	0.157	0.275	0.383	0.277	0.527	0.426	0.139	0.560	0.004	0.046	0.750	0.001	0.059	0.000		0.426	0.184	0.533	0.037	0.009	0.007	0.0007	0.672	0.572
Number of Points Used*		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18		18	18	18	18	18	18	18	18	18
	* Backpulse points in box are not included																									

Figure A36: AN-102R2, Batch 3C Slurry Test 1.00B – Inhibited Deionized & Filtered Water - Raw & Calculated Data

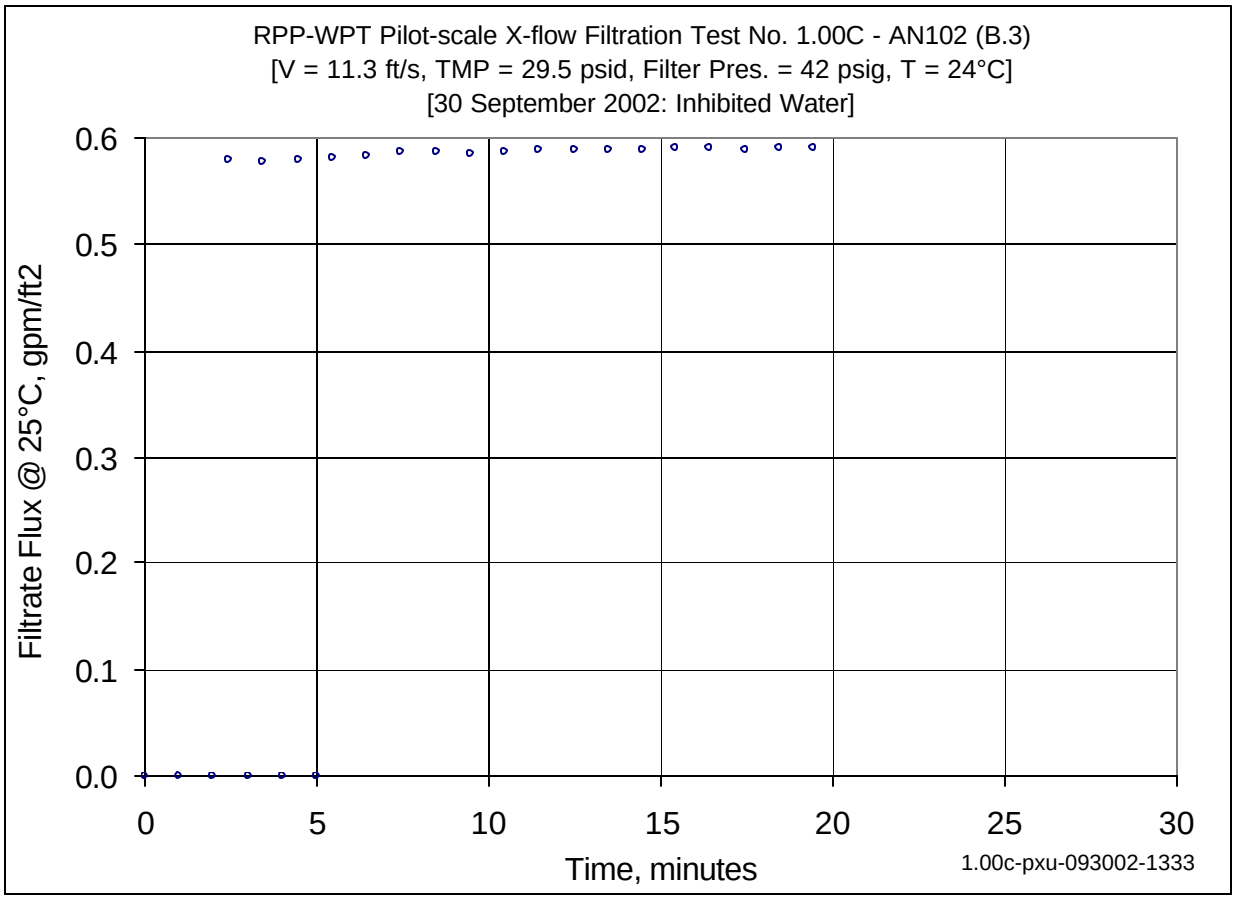


Figure A37: AN-102R2, Batch 3C Slurry Test 1.00C – Inhibited Deionized & Filtered Water

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/30/02	12:25:13 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0		Filter Surface	6.707	FT2						
9/30/02	12:25:25 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/30/02	12:25:26 PM	23.313	22.362	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.246	0.344	47.052	0.002	0.001	0										
9/30/02	12:25:27 PM	23.303	22.362	22.226	23.129	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.214	0.002	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/30/02	12:25:28 PM	23.308	22.357	22.231	23.119	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.153	0.002	0.001	0										
9/30/02	12:25:29 PM	23.308	22.367	22.237	23.135	22.223	-0.119	0.011	-0.084	0.058	-0.266	0.341	47.233	0.002	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/30/02	12:25:30 PM	23.308	22.357	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.249	0.341	47.207	0.002	0.001	0		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/30/02	12:25:31 PM	23.308	22.357	22.231	23.119	22.223	-0.121	0.013	-0.084	0.058	-0.249	0.344	47.075	0.002	0.001	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/30/02	12:37:04 PM	22.37	22.434	22.303	23.232	22.401	2.94	24.062	4.272	-1.377	16.053	64.329	46.337	0.001	0.001	0	0	22.6	11.4	0.8	0.054	0.000	0.000	0.000	0.206	0.18
9/30/02	12:37:46 PM	22.37	22.434	22.303	23.232	22.401	2.94	24.062	4.272	-1.377	16.053	64.329	46.337	0.001	0.001	0	1	22.6	11.4	0.8	0.054	0.000	0.000	0.000	0.206	0.18
9/30/02	12:38:04 PM	22.426	22.455	22.701	23.217	22.411	-7.498	24.49	4.127	-14.915	30.54	34.001	45.171	0.002	0.001	1.652	2	23.0	11.1	-11.2	-0.773	0.000	0.000	0.000	-0.014	-0.01
9/30/02	12:38:34 PM	22.651	22.449	22.886	23.161	22.421	15.761	23.46	4.111	11.878	2.445	0.639	47.283	0.002	0.001	0	3	22.0	11.6	13.8	0.953	0.000	0.000	0.000	0.011	0.01
9/30/02	12:39:04 PM	22.828	22.475	23.119	23.162	22.427	11.811	24.019	4.136	7.809	6.838	6.265	47.102	0.837	0.001	0	4	22.5	11.5	9.8	0.676	0.000	0.000	0.000	0.016	0.01
9/30/02	12:39:34 PM	22.984	22.46	23.274	23.082	22.427	11.587	23.682	4.142	7.614	6.723	6.17	47.1	0.834	0.001	0	5	22.2	11.5	9.6	0.662	0.000	0.000	0.000	0.016	0.01
9/30/02	1:37:01 PM	24.978	23.021	24.476	24.695	22.957	30.394	43.573	3.741	28.022	7.032	-1.474	46.716	0.002	3.832	0	2.45	42.1	11.4	29.2	2.014	0.571	0.580	0.020	19.852	16.89
9/30/02	1:38:01 PM	25.033	23.03	24.66	24.725	22.931	30.226	43.558	3.713	27.901	7.041	-1.466	46.706	0.002	3.836	0	3.45	42.1	11.4	29.1	2.004	0.572	0.577	0.020	19.868	16.91
9/30/02	1:39:01 PM	25.132	23.049	24.499	24.788	22.9	30.611	44.022	3.757	28.165	7.006	-1.443	46.656	0.002	3.829	0	4.45	42.5	11.4	29.4	2.026	0.571	0.579	0.020	19.702	16.77
9/30/02	1:40:01 PM	24.919	23.037	24.116	24.882	22.923	30.611	43.583	3.737	28.21	6.873	-1.44	46.419	0.002	3.806	0	5.45	42.1	11.4	29.4	2.028	0.567	0.582	0.020	19.781	16.83
9/30/02	1:41:01 PM	24.718	23.046	24.049	24.921	22.937	30.238	43.32	3.676	27.905	6.841	-1.44	46.349	0.002	3.808	0	6.45	41.8	11.4	29.1	2.004	0.568	0.583	0.020	20.061	17.07
9/30/02	1:42:01 PM	24.517	23.05	23.788	25.045	22.936	30.576	43.618	3.742	28.13	6.836	-1.437	46.421	0.002	3.798	0	7.45	42.1	11.4	29.4	2.024	0.566	0.586	0.020	19.963	16.99
9/30/02	1:43:01 PM	24.411	23.055	23.688	25.035	22.957	30.576	43.552	3.713	28.259	6.821	-1.44	46.36	0.002	3.791	0	8.45	42.1	11.4	29.4	2.028	0.565	0.587	0.020	19.939	16.97
9/30/02	1:44:01 PM	24.233	23.072	23.66	25.092	22.994	30.514	43.428	3.695	28.034	6.61	-1.437	46.201	0.002	3.775	0	9.45	42.0	11.3	29.3	2.018	0.563	0.585	0.020	19.968	16.99
9/30/02	1:45:01 PM	24.149	23.089	23.426	25.084	23.016	30.843	43.581	3.711	28.585	6.593	-1.437	46.255	0.002	3.767	0	10.5	42.1	11.3	29.7	2.049	0.562	0.587	0.020	19.762	16.82
9/30/02	1:46:01 PM	24.056	23.096	23.417	25.086	23.043	30.943	43.701	3.705	28.571	6.567	-1.445	46.247	0.001	3.77	0	11.5	42.2	11.3	29.8	2.052	0.562	0.588	0.020	19.754	16.81
9/30/02	1:47:01 PM	23.917	23.107	23.343	25.182	23.059	30.872	43.577	3.771	28.444	6.607	-1.445	46.192	0.002	3.764	0	12.5	42.1	11.3	29.7	2.045	0.561	0.588	0.020	19.830	16.88
9/30/02	1:48:01 PM	23.889	23.119	23.18	25.209	23.106	30.692	43.459	3.664	28.304	6.567	-1.445	46.217	0.001	3.754	0	13.5	42.0	11.3	29.5	2.034	0.560	0.589	0.020	19.978	17.00
9/30/02	1:49:01 PM	23.815	23.136	23.247	25.191	23.128	30.698	43.357	3.688	28.264	6.575	-1.448	46.138	0.002	3.762	0	14.5	41.9	11.3	29.5	2.033	0.561	0.589	0.020	19.993	17.01
9/30/02	1:50:01 PM	23.711	23.148	23.093	25.218	23.134	30.634	43.254	3.666	28.349	6.593	-1.448	46.131	0.002	3.754	0	15.5	41.8	11.3	29.5	2.033	0.560	0.591	0.020	20.032	17.05
9/30/02	1:51:01 PM	23.717	23.174	23.059	25.164	23.131	30.953	43.732	3.699	28.433	6.601	-1.445	46.096	0.002	3.751	0	16.5	42.3	11.3	29.7	2.047	0.559	0.591	0.020	19.899	16.93
9/30/02	1:52:01 PM	23.63	23.187	23.122	25.131	23.148	30.717	43.237	3.661	28.401	6.599	-1.448	45.989	0.002	3.742	0	17.5	41.8	11.3	29.6	2.038	0.558	0.588	0.020	19.905	16.94
9/30/02	1:53:01 PM	23.591	23.199	22.938	25.138	23.175	30.945	43.573	3.672	28.63	6.44	-1.454	46.006	0.001	3.732	0	18.5	42.1	11.3	29.8	2.054	0.556	0.590	0.020	19.804	16.85
9/30/02	1:54:01 PM	23.583	23.211	22.985	25.175	23.197	30.988	43.676	3.706	28.542	6.532	-1.451	45.936	0.002	3.741	0	19.5	42.2	11.3	29.8	2.052	0.558	0.591	0.020	19.840	16.88
	Averages	24.2	23.1	23.6	25.0	23.0	30.7	43.5	3.7	28.3	6.7	-1.4	46.3	0.0	3.8	0.0		42.1	11.3	29.5	2.032	0.563	0.586	0.0199	19.885	16.9
	Maximum	25.1	23.2	24.7	25.2	23.2	31.0	44.0	3.8	28.6	7.0	-1.4	46.7	0.0	3.8	0.0		42.5	11.4	29.8	2.054	0.572	0.591	0.0201	20.061	17.1
	Median	24.1	23.1	23.4	25.1	23.0	30.7	43.6	3.7	28.3	6.6	-1.4	46.2	0.0	3.8	0.0		42.1	11.3	29.5	2.033	0.562	0.588	0.0199	19.883	16.9
	Minimum	23.6	23.0	22.9	24.7	22.9	30.2	43.2	3.7	27.9	6.4	-1.5	45.9	0.0	3.7	0.0		41.8	11.3	29.1	2.004	0.556	0.577	0.0197	19.702	16.8
	2 x Std Dev	1.053	0.120	1.079	0.327	0.193	0.451	0.366	0.064	0.445	0.368	0.019	0.456	0.001	0.064	0.000		0.366	0.112	0.442	0.031	0.010	0.008	0.0002	0.199	0.170
Number of Points Used*		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18		18	18	18	18	18	18	18	18	18
	* Backpulse points in box are not included																									

Figure A38: AN-102R2, Batch 3C Slurry Test 1.00C – Inhibited Deionized & Filtered Water - Raw & Calculated Data

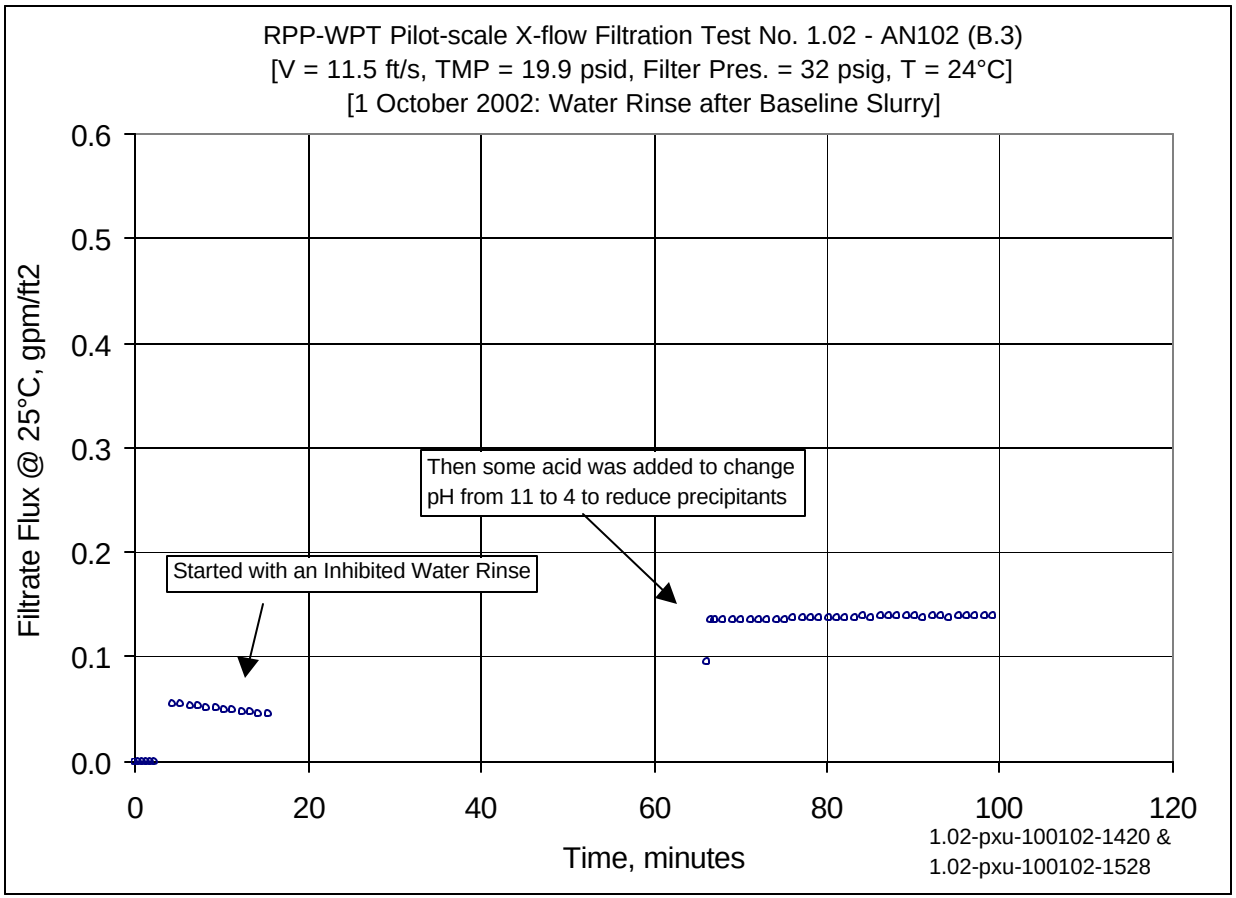


Figure A39: AN-102R2, Batch 3C Slurry Test 1.02 – Inhibited Deionized & Filtered Water, Then a Mild Acid was Added

		<<<<<<<<< Temperature Measurements >>>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>															
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse																
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm																
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp																
Zeros																																
10/1/02	4:12:57 PM	25.324	25.639	23.56	26.332	26.171	-0.131	0.104	-0.084	0.05	-0.249	0.306	53.604	0.003	0.001	0		Filter Surface	6.707	FT2												
10/1/02	4:13:15 PM	25.324	25.639	23.56	26.332	26.171	-0.131	0.104	-0.084	0.05	-0.249	0.306	53.604	0.003	0.001	0		Conversion		851	m3/m2/day/barg / gpm/ft2/barg											
10/1/02	4:13:17 PM	25.34	25.65	23.601	26.298	26.161	-0.131	0.108	-0.084	0.048	-0.249	0.303	73.076	0.004	0.001	0																
10/1/02	4:13:18 PM	25.34	25.645	23.601	26.288	26.161	-0.131	0.106	-0.084	0.048	-0.252	0.303	75.289	0.004	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig														
10/1/02	4:13:19 PM	25.345	25.65	23.601	26.283	26.161	-0.131	0.108	-0.084	0.048	-0.249	0.303	72.42	0.002	0.001	0																
10/1/02	4:13:20 PM	25.34	25.64	23.601	26.273	26.161	-0.129	0.108	-0.084	0.046	-0.266	0.303	72.69	0.002	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing														
10/1/02	4:13:21 PM	25.34	25.64	23.596	26.268	26.161	-0.131	0.108	-0.085	0.048	-0.252	0.303	67.59	0.004	0.001	0			VVVV					< Filtrate Flux << PERMIABILITY >>								
10/1/02	4:13:22 PM	25.34	25.64	23.596	26.258	26.171	-0.131	0.106	-0.085	0.046	-0.258	0.303	67.118	0.003	0.001	0									at 25C		x 1000					
																		Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter					
Data - Per Minute																		Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar					
10/1/02	2:20:38 PM	24.472	25.172	22.147	26.157	25.62	2.675	26.696	4.269	-1.533	19.033	66.593	46.681	0.002	0.001	0		0	25.2	11.4	0.6	0.039	0.000	0.000	0.001	0.566	0.48					
10/1/02	2:21:11 PM	24.472	25.172	22.147	26.157	25.62	2.675	26.696	4.269	-1.533	19.033	66.593	46.681	0.002	0.001	0		0.55	25.2	11.4	0.6	0.039	0.000	0.000	0.001	0.566	0.48					
10/1/02	2:21:31 PM	24.719	25.179	21.872	26.188	25.606	-7.461	27.445	4.224	-18.538	37.448	39.526	45.521	0.002	0.001	1.27		0.88	26.0	11.2	-13.0	-0.896	0.000	0.000	0.000	-0.025	-0.02					
10/1/02	2:22:01 PM	24.364	25.185	21.933	26.159	25.612	21.314	26.882	4.257	17.086	0.185	0.497	46.899	0.002	0.001	0		1.38	25.4	11.5	19.2	1.324	0.000	0.000	0.000	0.008	0.01					
10/1/02	2:22:31 PM	23.748	25.185	21.818	26.175	25.603	21.107	26.656	4.161	16.99	0.185	0.538	46.851	0.002	0.001	0		1.88	25.2	11.5	19.0	1.313	0.000	0.000	0.000	0.009	0.01					
10/1/02	2:23:01 PM	23.528	25.192	21.674	26.196	25.594	21.086	26.669	4.236	16.89	0.191	0.581	46.855	0.002	0.001	0		2.38	25.2	11.5	19.0	1.309	0.000	0.000	0.000	0.017	0.01					
10/1/02	2:24:59 PM	23.226	25.196	21.543	26.231	25.624	24.228	27.2	4.158	20.032	-1.289	-2.41	46.748	0.336	0.001	0		4.35	25.7	11.5	22.1	1.526	0.050	0.055	0.002	2.498	2.13					
10/1/02	2:25:59 PM	23.017	25.198	21.413	26.227	25.62	24.118	27.004	4.141	20.069	-1.286	-2.424	46.681	0.335	0.001	0		5.35	25.5	11.4	22.1	1.523	0.050	0.055	0.003	2.504	2.13					
10/1/02	2:26:59 PM	22.893	25.199	21.46	26.144	25.612	24.412	26.983	4.101	20.499	-1.286	-2.569	46.61	0.326	0.001	0		6.35	25.5	11.4	22.5	1.548	0.049	0.054	0.002	2.394	2.04					
10/1/02	2:27:59 PM	22.858	25.195	21.285	26.149	25.577	24.52	26.872	4.187	20.519	-1.289	-2.757	46.654	0.318	0.001	0		7.35	25.4	11.4	22.5	1.553	0.047	0.053	0.002	2.341	1.99					
10/1/02	2:28:59 PM	22.794	25.191	21.25	26.035	25.568	24.648	26.975	4.147	20.511	-1.286	-2.905	46.48	0.312	0.001	0		8.35	25.5	11.4	22.6	1.557	0.047	0.052	0.002	2.293	1.95					
10/1/02	2:29:59 PM	22.679	25.187	21.236	25.971	25.549	24.768	26.855	4.224	20.577	-1.289	-3.009	46.672	0.306	0.001	0		9.35	25.4	11.4	22.7	1.563	0.046	0.051	0.002	2.240	1.91					
10/1/02	2:30:59 PM	22.553	25.166	21.492	25.76	25.543	24.926	26.888	4.195	20.965	-1.289	-3.105	46.584	0.302	0.001	0		10.35	25.4	11.4	22.9	1.582	0.045	0.050	0.002	2.169	1.85					
10/1/02	2:31:59 PM	22.527	25.186	21.623	25.65	25.523	24.953	27.01	4.284	20.605	-1.286	-3.174	46.677	0.298	0.001	0		11.35	25.5	11.4	22.8	1.571	0.044	0.049	0.002	2.147	1.83					
10/1/02	2:32:59 PM	22.51	25.174	21.832	25.507	25.486	24.609	26.431	4.104	20.753	-1.286	-3.229	46.538	0.294	0.001	0		12.35	25.0	11.4	22.7	1.564	0.044	0.048	0.002	2.115	1.80					
10/1/02	2:33:59 PM	22.553	25.171	21.875	25.485	25.468	25.1	26.932	4.154	21.058	-1.286	-3.296	46.48	0.291	0.001	0		13.35	25.5	11.4	23.1	1.591	0.043	0.047	0.002	2.055	1.75					
10/1/02	2:34:59 PM	22.593	25.161	22.085	25.429	25.453	24.897	26.632	4.229	20.742	-1.286	-3.339	46.574	0.287	0.001	0		14.35	25.2	11.4	22.8	1.573	0.043	0.046	0.002	2.037	1.73					
10/1/02	2:35:59 PM	22.661	25.154	22.053	25.483	25.446	25.278	26.867	4.22	21.187	-1.289	-3.397	46.479	0.284	0.001	0		15.35	25.4	11.4	23.2	1.602	0.042	0.046	0.002	1.982	1.69					
10/1/02	3:26:52 PM	26.138	25.396	25.571	26.085	25.823	23.267	35.173	4.126	19.299	6.275	5.86	47.398	0.646	0.001	0		66.23	33.7	11.6	21.3	1.467	0.096	0.095	0.004	4.453	3.79					
10/1/02	3:27:22 PM	26.177	25.4	25.546	26.074	25.827	20.382	34.857	4.07	16.556	9.206	8.396	47.149	0.927	0.001	0		66.73	33.4	11.6	18.5	1.273	0.138	0.136	0.007	7.369	6.27					
10/1/02	3:27:45 PM	26.18	25.394	25.624	26.028	25.806	20.626	35.056	4.143	16.687	9.203	8.393	47.249	0.928	0.001	0		67.12	33.6	11.6	18.7	1.286	0.138	0.136	0.007	7.287	6.20					
10/1/02	3:28:45 PM	26.244	25.392	25.547	26.051	25.794	20.56	35.155	4.154	16.511	9.168	8.362	47.117	0.926	0.001	0		68.12	33.7	11.5	18.5	1.278	0.138	0.136	0.007	7.335	6.24					
10/1/02	3:29:51 PM	26.299	25.412	25.658	26.146	25.774	20.51	34.927	4.042	16.697	9.269	8.402	47.201	0.927	0.001	0		69.22	33.5	11.6	18.6	1.283	0.138	0.136	0.007	7.293	6.21					
10/1/02	3:30:51 PM	26.313	25.407	25.697	26.085	25.779	20.585	35.089	4.132	16.57	9.194	8.373	47.142	0.928	0.001	0		70.22	33.6	11.6	18.6	1.281	0.138	0.136	0.007	7.303	6.22					
10/1/02	3:31:51 PM	26.357	25.411	25.606	26.195	25.783	20.431	34.96	4.054	16.693	9.081	8.312	47.228	0.926	0.001	0		71.22	33.5	11.6	18.6	1.280	0.138	0.136	0.007	7.312	6.22					
10/1/02	3:32:51 PM	26.382	25.405	25.685	26.169	25.782	20.458	34.801	4.091	16.556	9.197	8.359	47.029	0.926	0.001	0		72.22	33.3	11.5	18.5	1.276	0.138	0.135	0.007	7.318	6.23					
10/1/02	3:33:51 PM	26.392	25.41	25.715	26.204	25.777	20.591	35.25	4.141	16.521	9.032	8.228	47.193	0.922	0.001	0		73.22	33.8	11.6	18.6	1.279	0.137	0.135	0.007	7.261	6.18					
10/1/02	3:34:51 PM	26.442	25.415	25.575	26.294	25.777	20.065	34.555	4.074	16.155	9.07	8.309	47.207	0.923	0.001	0		74.22	33.1	11.6	18.1	1.249	0.138	0.135	0.007	7.477	6.36					
10/1/02	3:35:51 PM	26.342	25.416	25.276	26.48	25.793	20.777	35.186	4.08	16.841	8.931	8.179	46.924	0.919	0.001	0		75.22	33.7	11.5	18.8	1.297	0.137	0.136	0.007	7.228	6.15					
10/1/02	3:36:51 PM	26.217	25.421	25.136	26.56	25.783	20.781	35.296	4.09	16.767	8.94	8.153	47.05	0.918	0.001	0		76.22	33.8	11.5	18.8	1.294	0.137	0.136	0.007	7.262	6.18					
10/1/02	3:37:51 PM	26.073	25.422	25.036	26.58	25.794	20.686	34.938	4.056	16.826	8.856	8.078	47.044	0.917	0.001	0		77.22	33.5	11.5	18.8	1.293	0.137	0.137	0.007	7.282	6.20					
10/1/02	3:38:51 PM	25.963	25.427	24.766	26.64	25.794	20.957	35.329	4.154	16.779	8.83	8.026	47.061	0.913	0.001	0		78.22	33.9	11.5	18.9	1.301	0.136	0.137	0.007	7.262	6.18					
10/1/02	3:39:51 PM	25.853	25.432	24.731	26.615	25.809	20.823	34.903	4.049	17.008	8.833	8.005	46.954	0.912	0.001	0		79.22	33.4	11.5	18.9	1.304	0.136	0.137	0.007	7.243	6.16					
10/1/02	3:40:51 PM	25.73	25.439	24.628	26.623	25.811	20.786	34.733	4.08	16.875	8.752	7.977	46.993	0.911	0.001	0		80.22	33.3	11.5	18.8	1.298	0.136	0.137	0.007	7.289	6.20					
10/1/02	3:41:51 PM	25.641	25.445	24.438	26.613	25.817	21.16	35.393	4.096	17.152	8.709	7.91	47.063	0.91	0.001	0		81.22	33.9	11.5	19.2	1.321	0.136	0.138	0.007	7.196	6.12					
10/1/02	3:42:51 PM	25.541	25.44	24.453	26.568	25.817	20.705	34.816	4.083	16.648	8.645	7.895	46.878	0.909	0.001	0		82.22	33.3	11.5	18.7	1.288	0.136	0.138	0.007	7.369	6.27					
10/1/02	3:43:51 PM	25.467	25.461	24.38	26.64	25.823	21.297	35.296	4.064	17.504	8.642	7.901	46.951	0.908	0.001	0		83.22	33.8	11.5	19.4	1.338	0.135	0.138	0.007	7.101	6.04					
10/1/02	3:44:51 PM	25.402	25.461	24.249	26.59	25.823	21.071	35.151	4.199	16.937	8.645	7.89	46.857	0.908	0.001	0		84.22	33.7	11.5	19.0	1.310	0.135	0.138	0.007	7.276	6.19					
10/1/02	3:45:51 PM	25.339	25.473	24.306	26.591	25.85	21.214	35.205	3.999	17.404	8.642	7.869	46.779	0.905	0.001	0		85.22	33.7	11.5	19.3	1.331	0.135	0.138	0.007	7.126	6.06					
10/1/02	3:46:51 PM	25.264	25.459	24.156	26.607	25.85	21.098	35.027	4.116	17.031	8.584	7.78	46.773	0.905	0.001	0		86.22	33.6	11.5	19.1	1.314	0.135	0.138	0.007	7.248	6.17					
10/1/02	3:47:51 PM	25.231	25.475	24.108	26.619	25.872	21.309	35.211	4.094	17.473	8.593	7.806	46.668	0.907	0.001	0		87.22	33.7	11.4	19.4	1.337	0.135	0.139	0.007	7.152	6.09					
10/1/02	3:48:51 PM	25.176	25.481	24.174	26.61	25.878	21.055	35.045	4.123	16.961	8.555	7.797	46.844	0.905	0.001	0		88.22	33.6	11.5	19.0	1.311	0.135	0.138	0.007	7.266	6.18					
10/1/02	3:49:51 PM	25.149	25.488	24.036	26.627	25.9	20.949	34.816	4.019	17.15	8.526	7.762	46.836	0.902	0.001	0		89.22	33.3	11.5	19.0	1.313	0.134	0.138	0.007	7.254	6.17					
10/1/02	3:50:51 PM	25.13	25.525	24.052	26.693	25.887	20.982	34.787	4.02	17.203	8.532	7.788	46.754	0.903	0.001	0		90.22	33.3	11.5	19.1	1.316	0.135	0.138	0.007	7.243	6.16					
10/1/02	3:51:51 PM	25.072	25.511	24.089	26.64	25.878	21.119	35.242	4.113	17.076	8.529	7.745	46.838	0.901	0.001	0		91.22	33.8	11.5	19.1	1.317	0.134	0.138	0.007	7.217	6.14					
10/1/02	3:52:51 PM	25.048	25.513	23.935	26.706	25.89	21.179	35.223	4.162	17.068	8.472	7.69	46.759	0.901	0.001	0		92.22	33.8	11.5	19.1	1.318	0.134	0.138	0.007	7.239	6.16					
10/1/02	3:53:51 PM	25.025	25.525	23.977	26.664	25.907	20.883	34.615	4.105	16.912	8.472	7.707	46.807	0.9	0.001	0		93.22	33.1	11.5	18.9	1.303	0.134	0.138	0.007	7.309	6.22					
10/1/02	3:54:51 PM	24.986	25.526	23.998	26.639	25.898	21.252	35.196	4.18	17.17	8.472	7.704	46.767	0.899	0.001	0		94.22	33.7	11.5	19.2	1.325	0.134	0.138	0.007	7.177	6.11					
10/1/02	3:55:51 PM	24.977	25.532	23.859	26.695	25.904	21.365	35.114	4.115	17.346	8.367	7.617	46.729	0.897	0.001	0		95.22	33.6	11.5	19.4	1.334	0.134	0.138	0.007	7.136	6.07					
10/1/02	3:56:51 PM	24.948	25.538	23.935	26.707	25.92	21.334	35.056	4.118	17.444	8.472	7.69	46.817	0.9	0.001	0		96.22	33.6	11.5	19.4	1.337	0.134	0.138	0.007	7.132	6.07					
10/1/02	3:57:51 PM	24.92	25.545	23.917	26.723	25.932	21.388	35.062	4.119	17.434	8.405	7.646	46.651	0.899	0.001	0		97.22	33.6	11.4	19.4	1.338	0.134	0.138	0.007	7.120	6.06					
10/1/02	3:58:51 PM	24.921	25.556	23.812	26.784	25.932	21.341	35.234	4.048	17.479	8.37	7.635	46.721	0.897	0.001	0		98.22	33.8	11.4	19.4	1.338	0.134	0.138	0.007	7.125	6.06					
10/1/02	3:59:51 PM	24.892	25.557	23.899	26.711	25.939	21.235	34.886	4.017	17.406	8.382	7.638	46.647	0.898	0.001	0		99.22	33.4	11.4	19.3	1.332	0.134	0.138	0.007	7.149	6.08					
	Averages	24.9	25.4	23.9	26.3	25.8	21.9	33.0	4.1	18.0	6.1	5.1	46.9	0.8	0.0	0.0			31.5	11.5	19.9	1.375	0.112	0.114	0.0059	5.906	5.0					
	Maximum	26.4	25.6	25.7	26.8	25.9	25.3	35.4	4.3	21.2	9.3	8.4	47.4	0.9	0.0	0.0			33.9	11.6	23.2	1.602	0.138	0.139	0.0075	7.477	6.4					
	Median	25.2	25.4	24.1	26.6	25.8	21.2	34.9	4.1	17.2	8.5	7.8	46.8	0.9	0.0	0.0			33.5	11.5	19.1	1.318	0.135	0.136	0.0072	7.217	6.1					
	Minimum	22.5	25.2	21.2	25.4	25.4	20.1	26.4	4.0	16.2	-1.3	-3.4	46.5	0.3	0.0	0.0			25.0	11.4	18.1	1.249	0.042	0.046	0.0020	1.982	1.7					
	2 x Std Dev	2.709	0.260	2.953	0.767	0.285	3.386	7.126	0.122	3.275	8.736	9.523	0.461	0.526	0.000	0.000			7.127	0.113	3.328	0.229	0.078	0.076	0.0044	4.383	3.730					
Number of Points Used*		47	47	47	47	47	47	47	47	47	47	47	47	47	47	47			47	47	47	47	47	47	47	47	47	47					

Figure A40: AN-102R2, Batch 3C Slurry Test 1.02 – Inhibited Deionized & Filtered Water, Then a Mild Acid was Added - Raw & Calculated Data

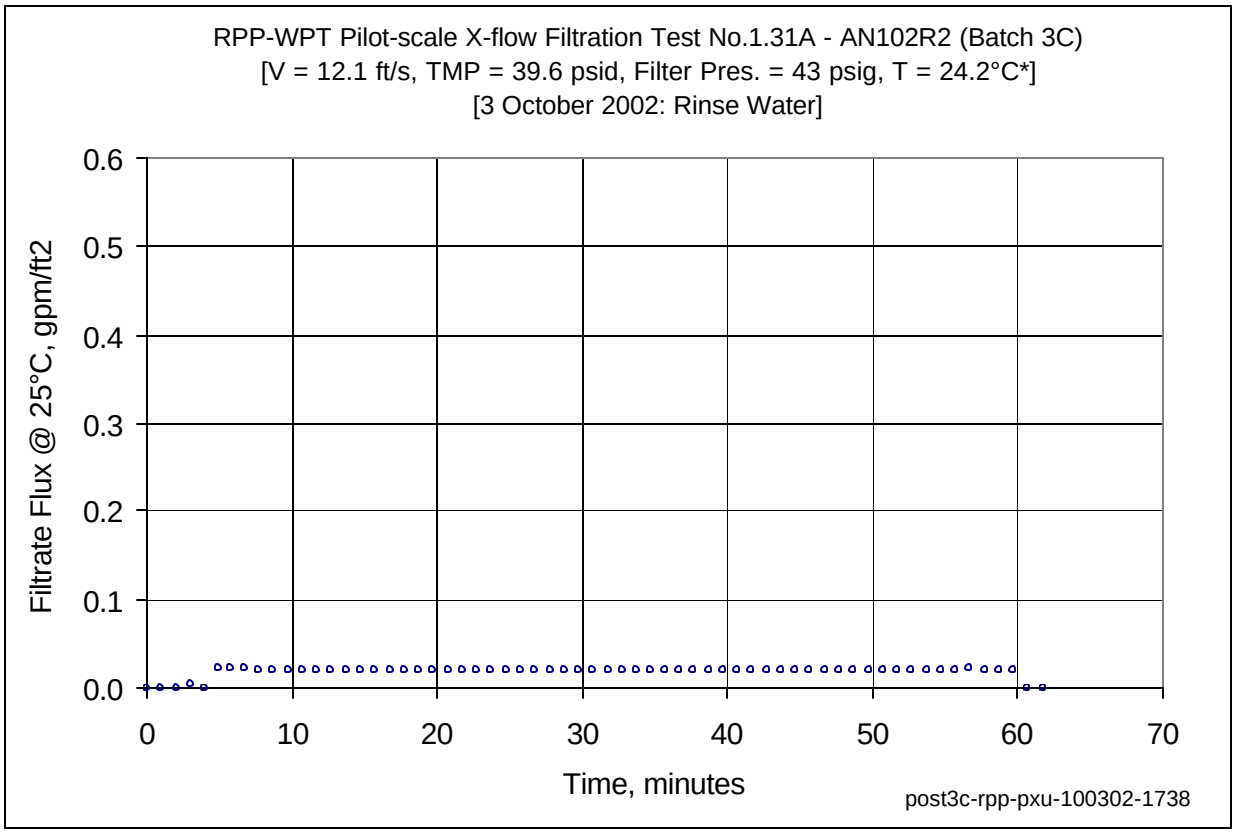
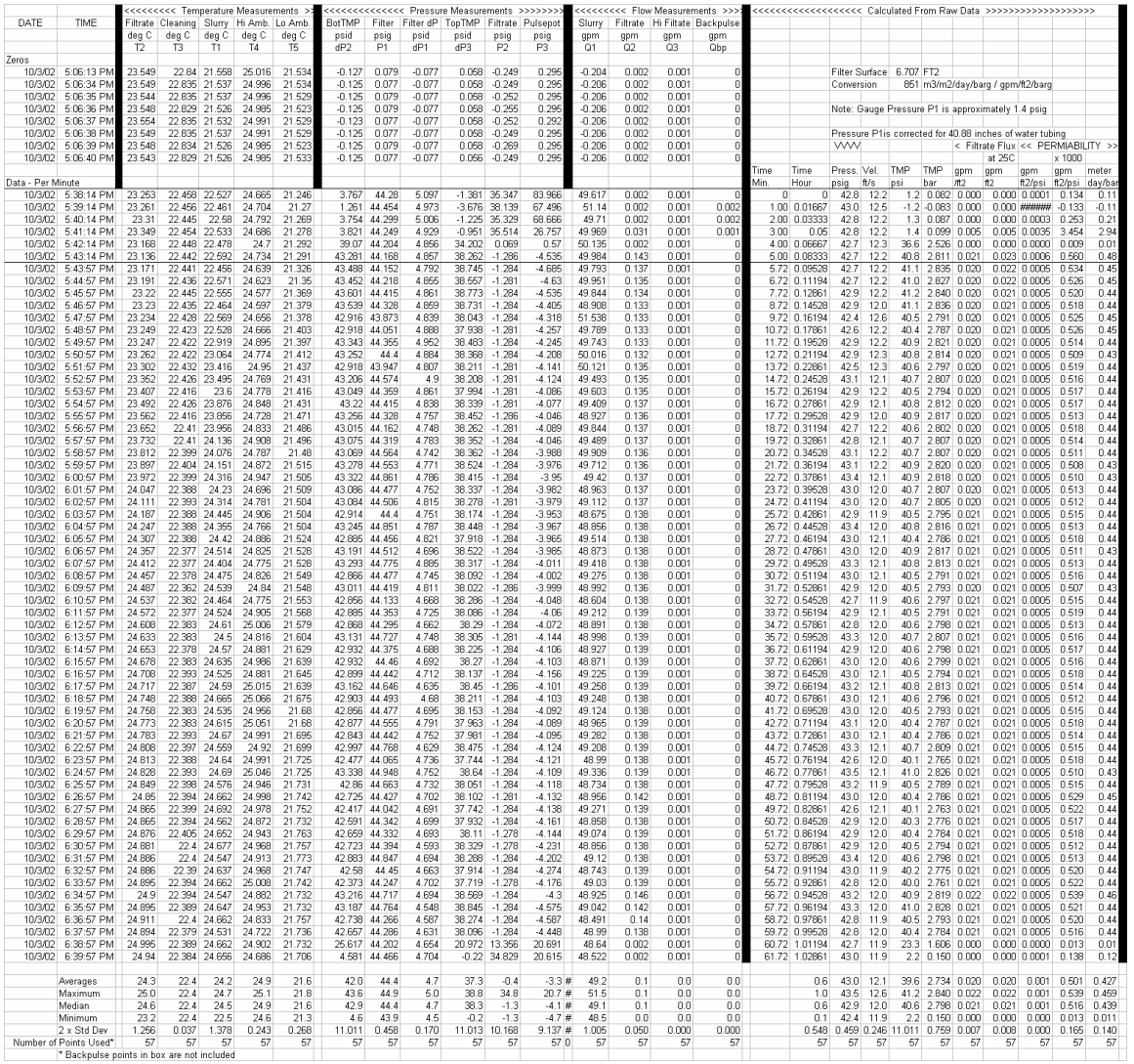


Figure A41: AN-102R2, Batch 3C Slurry Test 1.31A – Deionized & Filtered Water Rinse after Dewatering Slurry



		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
10/3/02	5:06:13 PM	23.549	22.84	21.558	25.016	21.534	-0.127	0.079	-0.077	0.058	-0.249	0.295	-0.204	0.002	0.001	0										
10/3/02	5:06:34 PM	23.549	22.835	21.537	24.996	21.534	-0.125	0.077	-0.077	0.058	-0.249	0.295	-0.206	0.002	0.001	0										
10/3/02	5:06:35 PM	23.544	22.835	21.537	24.996	21.529	-0.125	0.079	-0.077	0.058	-0.252	0.295	-0.206	0.002	0.001	0										
10/3/02	5:06:36 PM	23.548	22.829	21.526	24.985	21.523	-0.125	0.079	-0.077	0.058	-0.255	0.295	-0.206	0.002	0.001	0										
10/3/02	5:06:37 PM	23.554	22.835	21.532	24.991	21.529	-0.123	0.077	-0.077	0.058	-0.252	0.292	-0.206	0.002	0.001	0										
10/3/02	5:06:38 PM	23.549	22.835	21.537	24.991	21.529	-0.125	0.077	-0.077	0.058	-0.249	0.295	-0.206	0.002	0.001	0										
10/3/02	5:06:39 PM	23.548	22.834	21.526	24.985	21.523	-0.125	0.079	-0.077	0.058	-0.269	0.295	-0.206	0.002	0.001	0										
10/3/02	5:06:40 PM	23.543	22.829	21.526	24.985	21.533	-0.125	0.077	-0.077	0.056	-0.249	0.295	-0.206	0.002	0.001	0										
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
10/3/02	5:38:14 PM	23.253	22.458	22.527	24.665	21.246	3.767	44.28	5.097	-1.381	35.347	83.966	49.617	0.002	0.001	0	0	0	42.8	12.2	1.2	0.082	0.000	0.000	0.0001	0.134	0.11
10/3/02	5:39:14 PM	23.261	22.456	22.461	24.704	21.27	1.261	44.454	4.973	-3.676	38.139	67.496	51.14	0.002	0.001	0.002	1.00	0.01667	43.0	12.5	-1.2	-0.083	0.000	0.000	#######	-0.133	-0.11
10/3/02	5:40:14 PM	23.31	22.445	22.58	24.792	21.269	3.754	44.299	5.006	-1.226	36.329	68.666	49.71	0.002	0.001	0.002	2.00	0.03333	42.8	12.2	1.3	0.087	0.000	0.000	0.0003	0.253	0.21
10/3/02	5:41:14 PM	23.349	22.454	22.533	24.686	21.278	3.821	44.249	4.929	-0.951	35.514	26.757	49.969	0.031	0.001	0.001	3.00	0.05	42.8	12.2	1.4	0.099	0.005	0.005	0.0035	3.454	2.94
10/3/02	5:42:14 PM	23.168	22.448	22.478	24.7	21.292	39.07	44.204	4.856	34.202	0.069	0.57	50.135	0.002	0.001	0	4.00	0.06667	42.7	12.3	36.6	2.526	0.000	0.000	0.0000	0.009	0.01
10/3/02	5:43:14 PM	23.136	22.442	22.592	24.734	21.291	43.281	44.168	4.857	38.262	-1.286	-4.535	49.984	0.143	0.001	0	5.00	0.08333	42.7	12.2	40.8	2.811	0.021	0.023	0.0006	0.560	0.48
10/3/02	5:43:57 PM	23.171	22.441	22.456	24.639	21.326	43.488	44.152	4.792	38.745	-1.284	-4.685	49.793	0.137	0.001	0	5.72	0.09528	42.7	12.2	41.1	2.835	0.020	0.022	0.0005	0.534	0.45
10/3/02	5:44:57 PM	23.191	22.436	22.571	24.623	21.35	43.452	44.218	4.855	38.557	-1.281	-4.63	49.951	0.135	0.001	0	6.72	0.11194	42.7	12.2	41.0	2.827	0.020	0.022	0.0005	0.526	0.45
10/3/02	5:45:57 PM	23.22	22.445	22.555	24.577	21.369	43.601	44.415	4.861	38.773	-1.284	-4.535	49.844	0.134	0.001	0	7.72	0.12861	42.9	12.2	41.2	2.840	0.020	0.021	0.0005	0.520	0.44
10/3/02	5:46:57 PM	23.23	22.435	22.464	24.597	21.379	43.639	44.328	4.859	38.731	-1.284	-4.405	48.908	0.133	0.001	0	8.72	0.14528	42.9	12.0	41.1	2.836	0.020	0.021	0.0005	0.518	0.44
10/3/02	5:47:57 PM	23.234	22.428	22.569	24.656	21.378	42.916	43.873	4.839	38.043	-1.284	-4.318	51.538	0.133	0.001	0	9.72	0.16194	42.4	12.6	40.5	2.791	0.020	0.021	0.0005	0.525	0.45
10/3/02	5:48:57 PM	23.249	22.423	22.528	24.666	21.403	42.918	44.051	4.888	37.938	-1.281	-4.257	49.789	0.133	0.001	0	10.72	0.17861	42.6	12.2	40.4	2.787	0.020	0.021	0.0005	0.526	0.45
10/3/02	5:49:57 PM	23.247	22.422	22.919	24.895	21.397	43.343	44.355	4.812	38.483	-1.284	-4.245	49.743	0.133	0.001	0	11.72	0.19528	42.9	12.2	40.9	2.821	0.020	0.021	0.0005	0.514	0.44
10/3/02	5:50:57 PM	23.262	22.422	23.064	24.774	21.412	43.252	44.4	4.884	38.368	-1.284	-4.208	50.016	0.132	0.001	0	12.72	0.21194	42.9	12.3	40.8	2.814	0.020	0.021	0.0005	0.509	0.43
10/3/02	5:51:57 PM	23.302	22.432	23.416	24.95	21.437	42.918	43.947	4.807	38.211	-1.281	-4.141	50.121	0.135	0.001	0	13.72	0.22861	42.5	12.3	40.6	2.797	0.020	0.021	0.0005	0.519	0.44
10/3/02	5:52:57 PM	23.352	22.426	23.495	24.769	21.431	43.206	44.574	4.9	38.208	-1.281	-4.124	49.493	0.135	0.001	0	14.72	0.24528	43.1	12.1	40.7	2.807	0.020	0.021	0.0005	0.516	0.44
10/3/02	5:53:57 PM	23.407	22.416	23.6	24.778	21.416	43.049	44.359	4.861	37.994	-1.281	-4.086	49.603	0.135	0.001	0	15.72	0.26194	42.9	12.2	40.5	2.794	0.020	0.021	0.0005	0.517	0.44
10/3/02	5:54:57 PM	23.492	22.426	23.876	24.848	21.431	43.22	44.415	4.838	38.339	-1.281	-4.077	49.409	0.137	0.001	0	16.72	0.27861	42.9	12.1	40.8	2.812	0.020	0.021	0.0005	0.517	0.44
10/3/02	5:55:57 PM	23.562	22.416	23.856	24.728	21.471	43.256	44.328	4.757	38.452	-1.286	-4.046	48.927	0.136	0.001	0	17.72	0.29528	42.9	12.0	40.9	2.817	0.020	0.021	0.0005	0.513	0.44
10/3/02	5:56:57 PM	23.652	22.41	23.956	24.833	21.486	43.015	44.162	4.748	38.262	-1.281	-4.089	49.844	0.137	0.001	0	18.72	0.31194	42.7	12.2	40.6	2.802	0.020	0.021	0.0005	0.518	0.44
10/3/02	5:57:57 PM	23.732	22.41	24.136	24.908	21.496	43.075	44.319	4.783	38.352	-1.284	-4.046	49.489	0.137	0.001	0	19.72	0.32861	42.8	12.1	40.7	2.807	0.020	0.021	0.0005	0.514	0.44
10/3/02	5:58:57 PM	23.812	22.399	24.076	24.787	21.48	43.069	44.564	4.742	38.362	-1.284	-3.988	49.909	0.136	0.001	0	20.72	0.34528	43.1	12.2	40.7	2.807	0.020	0.021	0.0005	0.511	0.44
10/3/02	5:59:57 PM	23.897	22.404	24.151	24.872	21.515	43.278	44.553	4.771	38.524	-1.284	-3.976	49.712	0.136	0.001	0	21.72	0.36194	43.1	12.2	40.9	2.820	0.020	0.021	0.0005	0.508	0.43
10/3/02	6:00:57 PM	23.972	22.399	24.316	24.947	21.505	43.322	44.861	4.786	38.415	-1.284	-3.95	49.42	0.137	0.001	0	22.72	0.37861	43.4	12.1	40.9	2.818	0.020	0.021	0.0005	0.510	0.43
10/3/02	6:01:57 PM	24.047	22.388	24.23	24.696	21.509	43.086	44.477	4.752	38.337	-1.284	-3.982	48.963	0.137	0.001	0	23.72	0.39528	43.0	12.0	40.7	2.807	0.020	0.021	0.0005	0.513	0.44
10/3/02	6:02:57 PM	24.111	22.393	24.314	24.781	21.504	43.084	44.506	4.815	38.278	-1.281	-3.979	49.112	0.137	0.001	0	24.72	0.41194	43.0	12.0	40.7	2.805	0.020	0.021	0.0005	0.512	0.44
10/3/02	6:03:57 PM	24.187	22.388	24.445	24.906	21.504	42.914	44.4	4.751	38.174	-1.284	-3.953	48.675	0.138	0.001	0	25.72	0.42861	42.9	11.9	40.5	2.795	0.021	0.021	0.0005	0.515	0.44
10/3/02	6:04:57 PM	24.247	22.388	24.355	24.766	21.504	43.245	44.851	4.787	38.448	-1.284	-3.967	48.856	0.138	0.001	0	26.72	0.44528	43.4	12.0	40.8	2.816	0.021	0.021	0.0005	0.513	0.44
10/3/02	6:05:57 PM	24.307	22.388	24.42	24.886	21.524	42.885	44.456	4.821	37.918	-1.284	-3.965	49.514	0.138	0.001	0	27.72	0.46194	43.0	12.1	40.4	2.786	0.021	0.021	0.0005	0.518	0.44
10/3/02	6:06:57 PM	24.357	22.377	24.514	24.825	21.526	43.191	44.512	4.696	38.522	-1.284	-3.985	48.873	0.138	0.001	0	28.72	0.47861	43.0	12.0	40.9	2.817	0.021	0.021	0.0005	0.511	0.43
10/3/02	6:07:57 PM	24.412	22.377	24.404	24.775	21.528	43.293	44.775	4.885	38.317	-1.284	-4.011	49.418	0.138	0.001	0	29.72	0.49528	43.3	12.1	40.8	2.813	0.021	0.021	0.0005	0.513	0.44
10/3/02	6:08:57 PM	24.457	22.378	24.475	24.826	21.549	42.866	44.477	4.745	38.092	-1.284	-4.002	49.275	0.138	0.001	0	30.72	0.51194	43.0	12.1	40.5	2.791	0.021	0.021	0.0005	0.516	0.44
10/3/02	6:09:57 PM	24.487	22.362	24.539	24.84	21.548	43.011	44.419	4.811	38.022	-1.286	-3.999	48.992	0.136	0.001	0	31.72	0.52861	42.9	12.0	40.5	2.793	0.020	0.021	0.0005	0.507	0.43
10/3/02	6:10:57 PM	24.537	22.382	24.464	24.775	21.553	42.856	44.133	4.668	38.286	-1.284	-4.048	48.604	0.138	0.001	0	32.72	0.54528	42.7	11.9	40.6	2.797	0.021	0.021	0.0005	0.515	0.44
10/3/02	6:11:57 PM	24.572	22.377	24.524	24.905	21.568	42.885	44.353	4.725	38.086	-1.284	-4.06	49.212	0.139	0.001	0	33.72	0.56194	42.9	12.1	40.5	2.791	0.021	0.021	0.0005	0.519	0.44
10/3/02	6:12:57 PM	24.608	22.383	24.61	25.006	21.579	42.868	44.295	4.662	38.29	-1.284	-4.072	48.891	0.138	0.001	0	34.72	0.57861	42.8	12.0	40.6	2.798	0.021	0.021	0.0005	0.513	0.44
10/3/02	6:13:57 PM	24.633	22.383	24.5	24.816	21.604	43.131	44.727	4.748	38.305	-1.281	-4.144	48.998	0.139	0.001	0	35.72	0.59528	43.3	12.0	40.7	2.807	0.021	0.021	0.0005	0.516	0.44
10/3/02	6:14:57 PM	24.653	22.378	24.57	24.881	21.629	42.932	44.375	4.688	38.225	-1.284	-4.106	48.927	0.139	0.001	0	36.72	0.61194	42.9	12.0	40.6	2.798	0.021	0.021	0.0005	0.517	0.44
10/3/02	6:15:57 PM	24.678	22.383	24.635	24.986	21.639	42.932	44.46	4.692	38.27	-1.284	-4.103	48.871	0.139	0.001	0	37.72	0.62861	43.0	12.0	40.6	2.799	0.021	0.021	0.0005	0.516	0.44
10/3/02	6:16:57 PM	24.708	22.393	24.525	24.881	21.645	42.899	44.442	4.712	38.137	-1.284	-4.156	49.225	0.139	0.001	0	38.72	0.64528	43.0	12.1	40.5	2.794	0.021	0.021	0.0005	0.518	0.44
10/3/02	6:17:57 PM	24.717	22.387	24.59	25.015	21.639	43.162	44.646	4.636	38.45	-1.286	-4.101	49.258	0.139	0.001	0	39.72	0.66194	43.2	12.1	40.8	2.813	0.021	0.021	0.0005	0.514	0.44
10/3/02	6:18:57 PM	24.748	22.388	24.686	25.096	21.675	42.903	44.493	4.7	38.211	-1.284	-4.103	49.248	0.138	0.001	0	40.72	0.67861	43.0	12.1	40.6	2.796	0.021	0.021	0.0005	0.512	0.44
10/3/02	6:19:57 PM	24.758	22.383	24.535	24.956	21.68	42.856	44.477	4.695	38.153	-1.284	-4.092	49.124	0.138	0.001	0	41.72	0.69528	43.0	12.0	40.5	2.793	0.021	0.021	0.0005	0.515	0.44
10/3/02	6:20:57 PM	24.773	22.383	24.615	25.051	21.68	42.877	44.555	4.791	37.963	-1.284	-4.089	48.965	0.139	0.001	0	42.72	0.71194	43.1	12.0	40.4	2.787	0.021	0.021	0.0005	0.518	0.44
10/3/02	6:21:57 PM	24.783	22.393	24.67	24.991	21.695	42.843	44.442	4.752	37.981	-1.284	-4.095	49.282	0.138	0.001	0	43.72	0.72861	43.0	12.1	40.4	2.786	0.021	0.021	0.0005	0.514	0.44
10/3/02	6:22:57 PM	24.808	22.397	24.559	24.92	21.699	42.997	44.768	4.629	38.475	-1.284	-4.124	49.208	0.139	0.001	0	44.72	0.74528	43.3	12.1	40.7	2.809	0.021	0.021	0.0005	0.515	0.44
10/3/02	6:23:57 PM	24.813	22.388	24.64	24.991	21.725	42.477	44.065	4.736	37.744	-1.284	-4.121	48.99	0.138	0.001	0	45.72	0.76194	42.6	12.0	40.1	2.765	0.021	0.021	0.0005	0.518	0.44
10/3/02	6:24:57 PM	24.828	22.393	24.69	25.046	21.725	43.338	44.948	4.752	38.64	-1.284	-4.109	49.336	0.139	0.001	0	46.72	0.77861	43.5	12.1	41.0	2.826	0.021	0.021	0.0005	0.510	0.43
10/3/02	6:25:57 PM	24.849	22.398	24.576	24.946	21.731	42.86	44.663	4.732	38.051	-1.284	-4.118	48.734	0.138	0.001	0	47.72	0.79528	43.2	11.9	40.5	2.789	0.021	0.021	0.0005	0.515	0.44
10/3/02	6:26:57 PM	24.86	22.394	24.662	24.998	21.742	42.725	44.427	4.702	38.102	-1.281	-4.132	48.956	0.142	0.001	0	48.72	0.81194	43.0	12.0	40.4	2.786	0.021	0.021	0.0005	0.529	0.45
10/3/02	6:27:57 PM	24.865	22.399	24.692	24.978	21.752	42.417	44.042	4.691	37.742	-1.284	-4.136	49.271	0.139	0.001	0	49.72	0.82861	42.6	12.1	40.1	2.763	0.021	0.021	0.0005	0.522	0.44
10/3/02	6:28:57 PM	24.865	22.394	24.662	24.872	21.732	42.691	44.342	4.699	37.932	-1.284	-4.161	48.868	0.138	0.001	0	50.72	0.84528	42.9	12.0	40.3	2.776	0.021	0.021	0.0005	0.517	0.44
10/3/02	6:29:57 PM	24.876	22.405	24.652	24.943	21.763	42.659	44.332	4.693	38.11	-1.278	-4.144	49.074	0.139	0.001	0	51.72	0.86194	42.9	12.0	40.4	2.784	0.021	0.021	0.0005	0.518	0.44
10/3/02	6:30:57 PM	24.881	22.4	24.677	24.968	21.757	42.723	44.394	4.593	38.329	-1.278	-4.231	48.856	0.138	0.001	0	52.72	0.87861	42.9	12.0	40.5	2.794	0.021	0.021	0.0005	0.512	0.44
10/3/02	6:31:57 PM	24.886	22.4	24.547	24.913	21.773	42.883	44.847	4.694	38.288	-1.284	-4.202	49.12	0.138	0.001	0	53.72	0.89528	43.4	12.0	40.6	2.798	0.021	0.021	0.0005	0.513	0.44
10/3/02	6:32:57 PM	24.886	22.39	24.637	24.968	21.747	42.58	44.45	4.663	37.914	-1.284	-4.274	48.743	0.139	0.001	0	54.72	0.91194	43.0	11.9	40.2	2.775	0.021	0.021	0.0005	0.520	0.44
10/3/02	6:33:57 PM	24.895	22.394	24.662	25.008	21.742	42.373	44.247	4.702	37.719	-1.278	-4.176	49.03	0.139	0.001	0	55.72	0.92861	42.8	12.0	40.0	2.761	0.021	0.021	0.0005	0.522	0.44
10/3/02	6:34:57 PM	24.9	22.394	24.547	24.882	21.732	43.216	44.717	4.694	38.569	-1.284	-4.3	48.925	0.146	0.001	0	56.72	0.94528	43.2	12.0	40.9	2.819	0.022	0.022	0.0005	0.539	0.46
10/3/02	6:35:57 PM	24.895	22.389	24.647	24.953	21.732	43.187	44.764	4.548	38.845	-1.284	-4.575	49.042	0.142	0.001	0	57.72	0.96194	43.3	12.0	41.0	2.828	0.021	0.021	0.0005	0.521	0.44
10/3/02	6:36:57 PM	24.911	22.4	24.662	24.833	21.757	42.738	44.266	4.587	38.274	-1.284	-4.587	48.491	0.14	0.001	0	58.72	0.97861	42.8	11.9	40.5	2.793	0.021	0.021	0.0005	0.520	0.44
10/3/02	6:37:57 PM	24.894	22.379	24.631	24.722	21.736	42.657	44.286	4.631	38.096	-1.284	-4.448	48.99	0.138	0.001	0	59.72	0.99528	42.8	12.0	40.4	2.784	0.021	0.021	0.0005	0.516	0.44
10/3/02	6:38:57 PM	24.995	22.389	24.691	24.902	21.732	26.617	44.202	4.654	20.972	13.356	20.691	48.64	0.002	0.001	0	60.72	1.01194	42.7	11.9	23.3	1.606	0.000	0.000	0.0000	0.013	0.01
10/3/02	6:39:57 PM	24.94	22.384	24.656	24.686	21.706	4.581	44.466	4.704	-0.22	34.829	20.615	48.522	0.002	0.001	0	61.72	1.02861	43.0	11.9	2.2	0.150	0.000	0.000	0.0001	0.138	0.12
	Averages	24.3	22.4	24.2	24.9	21.6	42.0	44.4	4.7	37.3	-0.4	-3.3 #	49.2	0.1	0.0	0.0		0.6	43.0	12.1	39.6	2.734	0.020	0.020	0.001	0.501	0.427
	Maximum	25.0	22.4	24.7	25.1	21.8	43.6	44.9	5.0	38.8	34.8	20.7 #	51.5	0.1	0.0	0.0		1.0	43.5	12.6	41.2	2.840	0.022	0.022	0.001	0.539	0.459
	Median	24.6	22.4	24.5	24.9	21.6	42.9	44.4	4.7	38.3	-1.3	-4.1 #	49.1	0.1	0.0	0.0		0.6	42.9	12.0	40.6	2.798	0.021	0.021	0.001	0.516	0.439
	Minimum	23.2	22.4	22.5	24.6	21.3	4.6	43.9	4.5	-0.2	-1.3	-4.7 #	48.5	0.0	0.0	0.0		0.1	42.4	11.9	2.2	0.150	0.000	0.000	0.000	0.013	0.011
	2 x Std Dev	1.266	0.037	1.378	0.243	0.268	11.011	0.458	0.170	11.013	10.168	9.137 #	1.005	0.050	0.000	0.000		0.548	0.459	0.246	11.011	0.759	0.007	0.008	0.000	0.165	0.140
Number of Points Used*		57	57	57	57	57	57	57	57	57	57	57 0	57	57	57	57		57	57	57	57	57	57	57	57	57	57
	* Backpulse points in box are not included																										

Filter Surface 6.707 FT2
Conversion 851 m3/m2/day/barg / gpm/ft2/barg

Note: Gauge Pressure P1 is approximately 1.4 psig

Pressure P1is corrected for 40.88 inches of water tubing

< Filtrate Flux << PERMIABILITY >>
at 25C x 1000

Figure A42: AN-102R2, Batch 3C Slurry Test 1.31A – Deionized & Filtered Water Rinse after Dewatering Slurry - Raw & Calculated Data

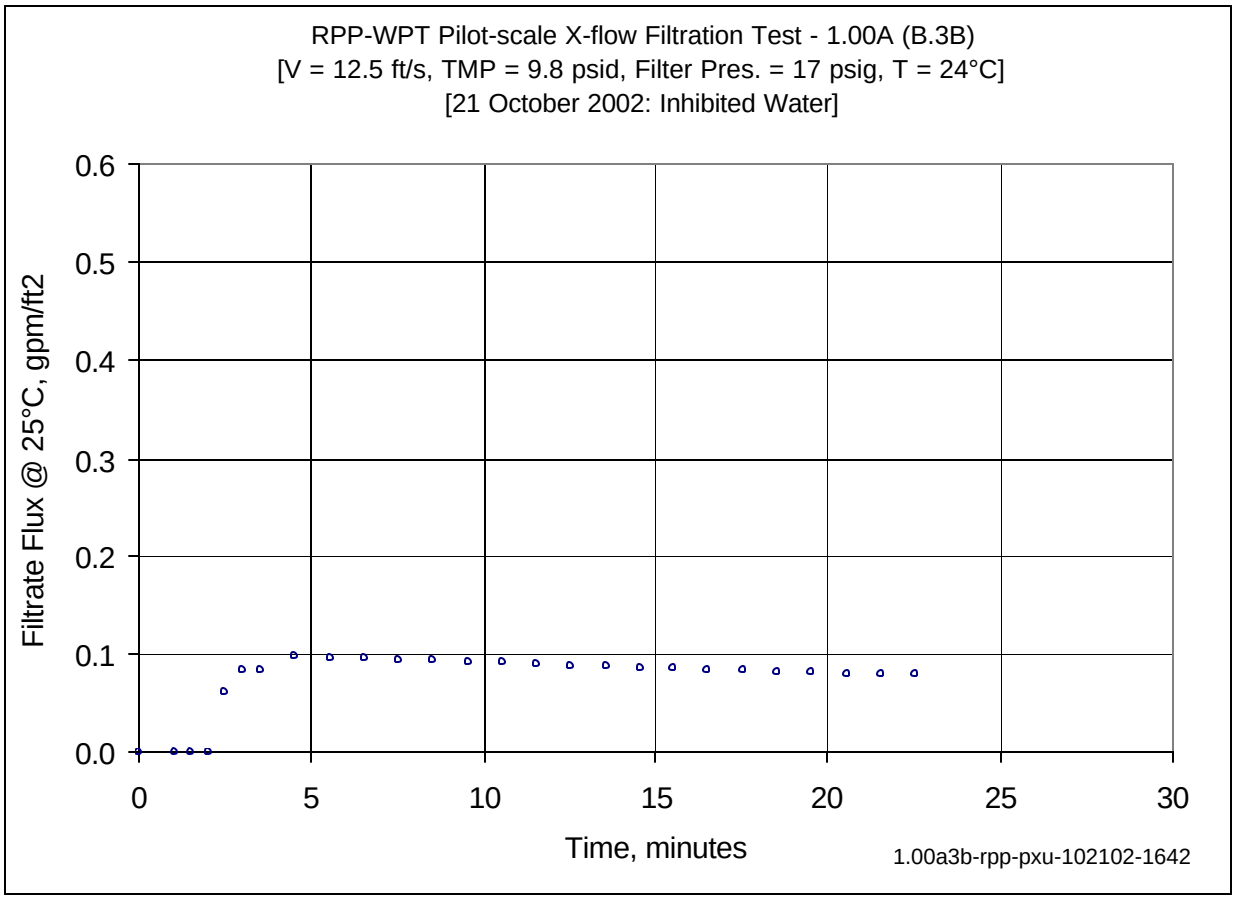


Figure A43: AN-102R2, Batch 3B Slurry Test 1.00A – Inhibited Deionized & Filtered Water

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
10/21/02	9:08:07 AM	25.307	22.682	24.964	23.022	22.397	-0.125	0.079	-0.061	0.056	-0.182	0.356	49.984	1.014	0.001	0		Filter Surface	6.707	FT2						
10/21/02	9:08:23 AM	25.307	22.682	24.964	23.022	22.397	-0.125	0.079	-0.061	0.056	-0.182	0.356	49.984	1.014	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
10/21/02	9:08:24 AM	25.324	22.704	24.921	23.104	22.419	-0.127	0.077	-0.061	0.056	-0.179	0.356	49.913	1.008	0.001	0										
10/21/02	9:08:25 AM	25.319	22.699	24.921	23.104	22.419	-0.125	0.077	-0.061	0.056	-0.182	0.356	49.766	1.012	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
10/21/02	9:08:26 AM	25.324	22.699	24.921	23.104	22.419	-0.127	0.077	-0.061	0.056	-0.182	0.358	49.804	1.011	0.001	0										
10/21/02	9:08:27 AM	25.319	22.704	24.921	23.114	22.419	-0.125	0.079	-0.061	0.056	-0.179	0.358	49.584	1.009	0.001	0		Pressure P1 is corrected for 40.88 inches of water tubing								
10/21/02	9:08:28 AM	25.314	22.705	24.926	23.125	22.43	-0.125	0.079	-0.061	0.058	-0.179	0.356	49.741	1.014	0.001	0		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
10/21/02	9:08:29 AM	25.314	22.694	24.926	23.129	22.419	-0.125	0.077	-0.061	0.058	-0.179	0.358	49.928	1.012	0.001	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
10/21/02	4:41:58 PM	25.024	27.433	23.742	28.005	27.959	3.056	18.63	4.875	-1.731	10.18	60.46	50.624	0.002	0.001	0.003	0	17.2	12.4	0.7	0.046	0.000	0.000	0.000	0.466	0.40
10/21/02	4:42:59 PM	25.102	27.426	23.519	27.963	27.966	2.857	18.408	4.922	-2.079	10.2	60.411	50.467	0.002	0.014	0.001	1.02	16.9	12.4	0.4	0.027	0.000	0.000	0.001	0.799	0.68
10/21/02	4:43:28 PM	25.67	27.438	23.591	28.005	27.973	3.539	18.706	4.92	-1.377	9.717	34.496	50.834	0.002	0.001	0	1.50	17.2	12.5	1.1	0.075	0.000	0.000	0.000	0.287	0.24
10/21/02	4:43:58 PM	25.645	27.443	23.616	27.995	27.978	3.437	18.597	4.894	-1.356	9.654	0.477	50.787	0.002	0.011	0	2.00	17.1	12.4	1.0	0.072	0.000	0.000	0.000	0.298	0.25
10/21/02	4:44:28 PM	25.651	27.449	23.477	28.006	27.984	7.959	18.456	4.926	3.151	5.13	0.442	50.882	0.393	0.001	0	2.50	17.0	12.5	5.6	0.383	0.059	0.061	0.011	11.012	9.37
10/21/02	4:44:58 PM	24.721	27.46	23.484	28.033	27.996	10.096	18.274	4.788	5.51	2.665	0.503	51.045	0.542	0.001	0	3.00	16.8	12.5	7.8	0.538	0.081	0.084	0.011	10.810	9.20
10/21/02	4:45:30 PM	24.426	27.446	23.54	28.009	28.022	10.256	18.448	4.629	5.786	2.662	0.579	50.915	0.538	0.001	0	3.53	17.0	12.5	8.0	0.553	0.080	0.084	0.010	10.422	8.87
10/21/02	4:46:30 PM	24.158	27.459	23.397	28.026	28.005	11.357	18.508	4.895	6.588	1.63	-1.344	50.853	0.625	0.001	0	4.53	17.0	12.5	9.0	0.619	0.093	0.098	0.011	10.867	9.25
10/21/02	4:47:30 PM	24.075	27.466	23.509	27.998	28.007	11.364	18.605	4.933	6.529	1.598	-1.382	50.804	0.62	0.001	0	5.53	17.1	12.5	8.9	0.617	0.092	0.096	0.011	10.777	9.17
10/21/02	4:48:30 PM	24.018	27.469	23.392	27.996	27.995	11.409	18.4	4.82	6.838	1.387	-1.451	50.836	0.614	0.001	0	6.53	16.9	12.5	9.1	0.629	0.092	0.096	0.011	10.501	8.94
10/21/02	4:49:30 PM	23.97	27.476	23.429	27.948	27.997	11.492	18.313	4.761	6.981	1.202	-1.526	51.003	0.606	0.001	0	7.53	16.8	12.5	9.2	0.637	0.090	0.094	0.010	10.226	8.70
10/21/02	4:50:30 PM	23.926	27.483	23.396	27.975	27.979	11.913	18.555	4.833	7.291	1.156	-1.584	50.876	0.599	0.001	0	8.53	17.1	12.5	9.6	0.662	0.089	0.093	0.010	9.733	8.28
10/21/02	4:51:30 PM	23.913	27.48	23.353	27.922	27.976	11.786	18.373	4.802	7.154	0.942	-1.657	51.016	0.592	0.001	0	9.53	16.9	12.5	9.5	0.653	0.088	0.092	0.010	9.765	8.31
10/21/02	4:52:30 PM	23.865	27.497	23.39	27.949	27.983	12.232	18.669	4.899	7.612	0.821	-1.718	51.146	0.586	0.001	0	10.53	17.2	12.5	9.9	0.684	0.087	0.091	0.009	9.216	7.84
10/21/02	4:53:30 PM	23.87	27.487	23.6	27.894	27.992	12.022	18.35	4.868	7.285	0.731	-1.781	51.004	0.581	0.001	0	11.53	16.9	12.5	9.7	0.666	0.087	0.090	0.009	9.336	7.94
10/21/02	4:54:30 PM	23.934	27.491	23.93	27.839	28.011	12.202	18.357	4.734	7.6	0.639	-1.825	50.798	0.575	0.001	0	12.53	16.9	12.4	9.9	0.683	0.086	0.088	0.009	8.924	7.59
10/21/02	4:55:30 PM	24.117	27.483	24.278	27.781	27.994	12.122	18.404	4.786	7.44	0.584	-1.854	50.953	0.574	0.001	0	13.53	16.9	12.5	9.8	0.674	0.086	0.087	0.009	8.930	7.60
10/21/02	4:56:30 PM	24.35	27.48	24.651	27.708	28.001	12.366	18.429	4.892	7.68	0.52	-1.886	51.157	0.57	0.001	0	14.53	17.0	12.5	10.0	0.691	0.085	0.086	0.009	8.563	7.29
10/21/02	4:57:30 PM	24.62	27.494	24.675	27.742	28.03	12.49	18.493	4.963	7.661	0.373	-1.949	51.102	0.565	0.001	0	15.53	17.0	12.5	10.1	0.695	0.084	0.085	0.008	8.437	7.18
10/21/02	4:58:30 PM	24.769	27.503	24.915	27.766	28.029	12.621	18.594	4.908	7.837	0.286	-1.996	51.159	0.56	0.001	0	16.53	17.1	12.5	10.2	0.705	0.083	0.084	0.008	8.182	6.96
10/21/02	4:59:30 PM	24.924	27.498	25.19	27.731	28.039	12.495	18.294	4.782	7.905	0.243	-2.042	51.228	0.556	0.001	0	17.53	16.8	12.6	10.2	0.703	0.083	0.082	0.008	8.084	6.88
10/21/02	5:00:30 PM	25.14	27.513	25.155	27.816	28.014	12.675	18.377	4.894	7.966	0.121	-2.077	51.257	0.551	0.001	0	18.53	16.9	12.6	10.3	0.712	0.082	0.082	0.008	7.925	6.74
10/21/02	5:01:30 PM	25.231	27.504	25.346	27.787	28.03	12.708	18.28	4.87	7.987	0.058	-2.137	51.196	0.547	0.001	0	19.53	16.8	12.5	10.3	0.713	0.082	0.081	0.008	7.805	6.64
10/21/02	5:02:30 PM	25.371	27.514	25.411	27.787	28.005	12.766	18.373	4.818	8.128	-0.044	-2.166	51.125	0.544	0.001	0	20.53	16.9	12.5	10.4	0.720	0.081	0.080	0.008	7.674	6.53
10/21/02	5:03:30 PM	25.488	27.521	25.513	27.829	28.007	12.944	18.468	4.857	8.226	-0.11	-2.213	51.134	0.539	0.001	0	21.53	17.0	12.5	10.6	0.730	0.080	0.079	0.007	7.483	6.37
10/21/02	5:04:30 PM	25.583	27.521	25.698	27.814	28.022	12.828	18.265	4.848	8.155	-0.162	-2.25	51.155	0.536	0.001	0	22.53	16.8	12.5	10.5	0.723	0.080	0.078	0.007	7.469	6.36
	Averages	24.5	27.5	24.3	27.9	28.0	12.1	18.4	4.8	7.4	0.7	-1.7	51.0	0.6	0.0	0.0		17.0	12.5	9.8	0.673	0.086	0.087	0.0090	9.016	7.7
	Maximum	25.6	27.5	25.7	28.0	28.0	12.9	18.7	5.0	8.2	2.7	0.6	51.3	0.6	0.0	0.0		17.2	12.6	10.6	0.730	0.093	0.098	0.0109	10.867	9.2
	Median	24.3	27.5	24.1	27.8	28.0	12.2	18.4	4.9	7.6	0.6	-1.8	51.1	0.6	0.0	0.0		16.9	12.5	9.9	0.683	0.085	0.087	0.0089	8.927	7.6
	Minimum	23.9	27.4	23.4	27.7	28.0	10.3	18.3	4.6	5.8	-0.2	-2.3	50.8	0.5	0.0	0.0		16.8	12.4	8.0	0.553	0.080	0.078	0.0075	7.469	6.4
	2 x Std Dev	1.174	0.040	1.714	0.203	0.035	1.307	0.222	0.150	1.241	1.396	1.182	0.291	0.055	0.000	0.000		0.222	0.071	1.271	0.088	0.008	0.012	0.0022	2.223	1.892
Number of Points Used*		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		20	20	20	20	20	20	20	20	20

Figure A44: AN-102R2, Batch 3B Slurry Test 1.00A – Inhibited Deionized & Filtered Water - Raw & Calculated Data

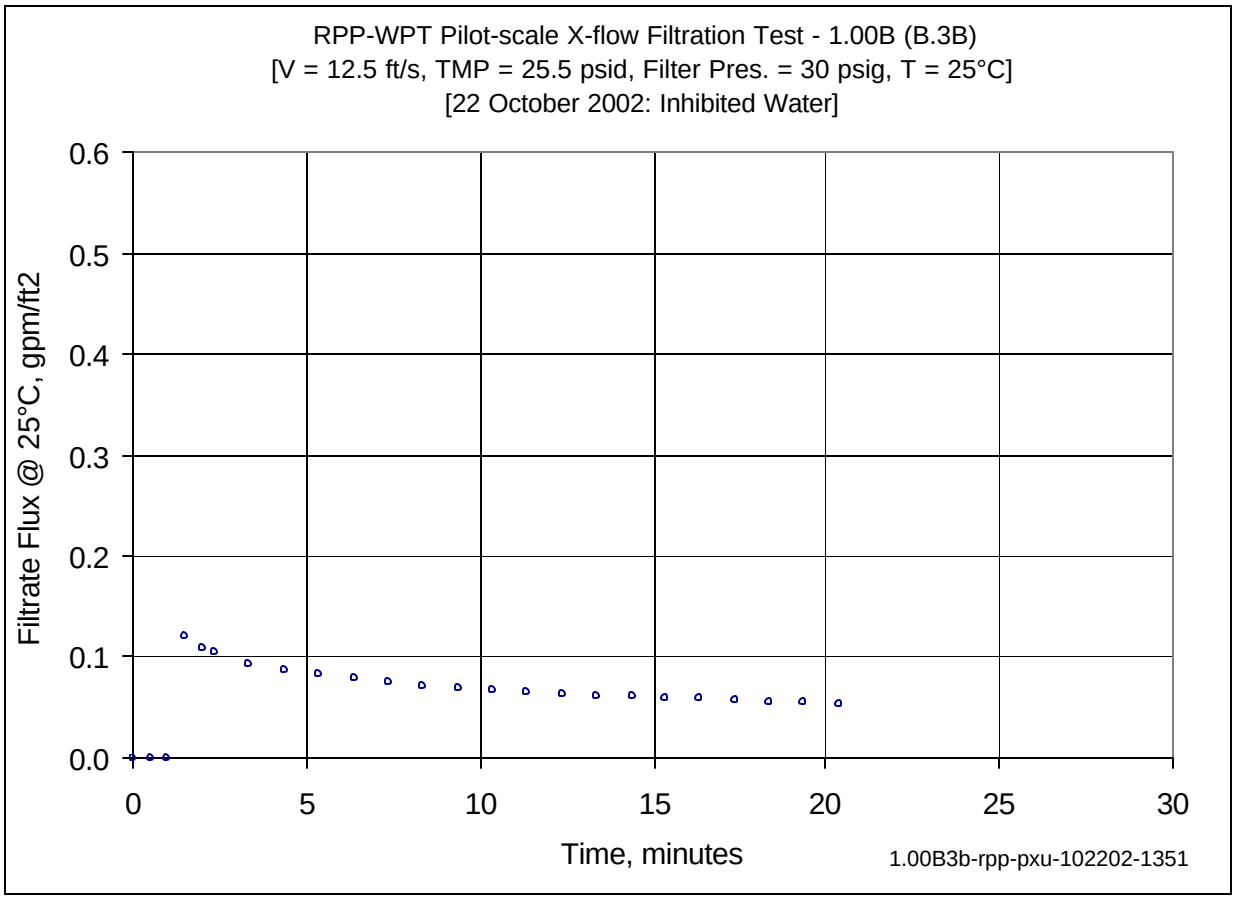


Figure A43: AN-102R2, Batch 3B Slurry Test 1.00B – Inhibited Deionized & Filtered Water

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
10/22/02	1:31:17 PM	22.729	22.28	22.185	22.183	21.21	-0.131	0.062	-0.061	0.056	-0.304	0.35	-0.214	0.002	0.001	0		Filter Surface	6.707	FT2						
10/22/02	1:31:51 PM	22.729	22.28	22.185	22.183	21.21	-0.131	0.062	-0.061	0.056	-0.304	0.35	-0.214	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
10/22/02	1:31:52 PM	22.724	22.256	22.406	22.164	21.15	-0.133	0.062	-0.061	0.058	-0.307	0.353	-0.21	0.002	0.001	0										
10/22/02	1:31:53 PM	22.724	22.251	22.416	22.164	21.15	-0.133	0.062	-0.061	0.058	-0.304	0.353	-0.214	0.002	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
10/22/02	1:31:54 PM	22.724	22.256	22.421	22.169	21.15	-0.131	0.062	-0.061	0.058	-0.307	0.356	-0.21	0.002	0.001	0										
10/22/02	1:31:55 PM	22.729	22.25	22.426	22.168	21.144	-0.133	0.062	-0.061	0.058	-0.304	0.353	-0.214	0.002	0.001	0		Pressure P1 is corrected for 40.88 inches of water tubing								
10/22/02	1:31:56 PM	22.724	22.255	22.431	22.168	21.154	-0.131	0.062	-0.061	0.058	-0.304	0.35	-0.212	0.002	0.001	0		VVVV					< Filtrate Flux <<	PERMIABILITY >>		
10/22/02	1:31:57 PM	22.734	22.266	22.441	22.169	21.16	-0.133	0.063	-0.061	0.058	-0.307	0.35	-0.212	0.002	0.001	0							at 25C		x 1000	
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
10/22/02	1:51:53 PM	25.135	22.088	25.683	22.574	21.299	3.413	31.768	4.749	-1.307	23.273	72.184	50.481	0.001	0.001	0	0	30.3	12.4	1.1	0.073	0.000	0.000	0.000	0.139	0.12
10/22/02	1:52:23 PM	25.115	22.107	25.702	22.784	21.344	3.497	31.762	4.763	-1.256	23.25	71.599	50.731	0.002	0.001	0	0.50	30.3	12.4	1.1	0.077	0.000	0.000	0.000	0.261	0.22
10/22/02	1:52:53 PM	24.637	22.11	25.646	22.873	21.377	3.649	31.861	4.917	-1.258	23.1	0.631	50.779	0.002	0.001	0.001	1.00	30.4	12.4	1.2	0.082	0.000	0.000	0.000	0.245	0.21
10/22/02	1:53:23 PM	25.518	22.119	25.475	23.018	21.426	18.346	31.588	4.764	13.594	7.943	0.581	51.358	0.818	0.001	0	1.50	30.1	12.6	16.0	1.101	0.122	0.120	0.008	7.535	6.41
10/22/02	1:53:53 PM	25.612	22.118	25.474	23.092	21.471	21.403	31.638	4.871	16.499	4.83	0.689	51.178	0.737	0.001	0	2.00	30.2	12.5	19.0	1.307	0.110	0.108	0.006	5.721	4.87
10/22/02	1:54:15 PM	25.671	22.142	25.508	23.116	21.515	22.852	31.768	4.798	18.057	3.471	-0.351	51.224	0.708	0.001	0	2.37	30.3	12.6	20.5	1.410	0.106	0.104	0.005	5.087	4.33
10/22/02	1:55:15 PM	25.625	22.147	25.257	23.211	21.605	24.706	31.806	4.839	20.016	1.772	-1.228	51.165	0.631	0.001	0	3.37	30.3	12.5	22.4	1.542	0.094	0.093	0.004	4.177	3.55
10/22/02	1:56:15 PM	25.589	22.186	25.176	23.281	21.7	25.489	31.686	4.918	20.548	0.887	-1.715	51.119	0.585	0.001	0	4.37	30.2	12.5	23.0	1.587	0.087	0.087	0.004	3.770	3.21
10/22/02	1:57:15 PM	25.502	22.205	25.204	23.384	21.759	26.083	31.787	4.819	21.264	0.205	-2.053	50.934	0.553	0.001	0	5.37	30.3	12.5	23.7	1.632	0.082	0.082	0.003	3.463	2.95
10/22/02	1:58:15 PM	25.435	22.222	25.012	23.392	21.842	26.595	31.599	4.705	22.143	-0.249	-2.34	51.079	0.525	0.001	0	6.37	30.1	12.5	24.4	1.680	0.078	0.078	0.003	3.211	2.73
10/22/02	1:59:15 PM	25.382	22.24	25.034	23.379	21.925	27.001	31.555	4.821	22.294	-0.717	-2.543	51.111	0.503	0.001	0	7.37	30.1	12.5	24.6	1.699	0.075	0.075	0.003	3.040	2.59
10/22/02	2:00:15 PM	25.311	22.259	24.998	23.579	21.999	27.587	31.928	4.907	22.802	-1.096	-2.754	51.115	0.482	0.001	0	8.37	30.5	12.5	25.2	1.737	0.072	0.072	0.003	2.852	2.43
10/22/02	2:01:15 PM	25.279	22.277	24.866	23.556	22.077	27.722	31.892	4.734	23.021	-1.284	-2.916	50.92	0.465	0.001	0	9.37	30.4	12.5	25.4	1.749	0.069	0.070	0.003	2.743	2.33
10/22/02	2:02:15 PM	25.247	22.32	25.014	23.53	22.151	28.02	31.727	4.781	23.43	-1.284	-3.026	50.941	0.452	0.001	0	10.37	30.3	12.5	25.7	1.774	0.067	0.067	0.003	2.619	2.23
10/22/02	2:03:15 PM	25.22	22.338	24.862	23.598	22.234	28.246	31.775	4.805	23.612	-1.286	-3.162	51.037	0.437	0.001	0	11.37	30.3	12.5	25.9	1.788	0.065	0.065	0.003	2.523	2.15
10/22/02	2:04:15 PM	25.206	22.37	24.873	23.624	22.296	28.138	31.551	4.779	23.498	-1.286	-3.244	51.008	0.426	0.001	0	12.37	30.1	12.5	25.8	1.780	0.064	0.064	0.002	2.469	2.10
10/22/02	2:05:15 PM	25.177	22.391	24.914	23.685	22.352	28.341	31.377	4.753	23.77	-1.286	-3.345	50.941	0.414	0.001	0	13.37	29.9	12.5	26.1	1.796	0.062	0.062	0.002	2.375	2.02
10/22/02	2:06:15 PM	25.164	22.423	24.796	23.677	22.424	28.54	31.652	4.887	23.788	-1.286	-3.423	50.916	0.405	0.001	0	14.37	30.2	12.5	26.2	1.804	0.060	0.061	0.002	2.321	1.98
10/22/02	2:07:15 PM	25.145	22.444	24.942	23.683	22.486	28.817	31.758	4.732	24.245	-1.284	-3.478	50.957	0.398	0.001	0	15.37	30.3	12.5	26.5	1.829	0.059	0.059	0.002	2.240	1.91
10/22/02	2:08:15 PM	25.131	22.465	24.828	23.754	22.542	28.95	31.65	4.823	24.358	-1.284	-3.548	50.874	0.389	0.001	0	16.37	30.2	12.5	26.7	1.838	0.058	0.058	0.002	2.186	1.86
10/22/02	2:09:15 PM	25.116	22.491	24.834	23.66	22.608	28.973	31.64	4.881	24.122	-1.284	-3.603	50.939	0.382	0.001	0	17.37	30.2	12.5	26.5	1.830	0.057	0.057	0.002	2.155	1.83
10/22/02	2:10:15 PM	25.097	22.511	24.879	23.705	22.659	29.255	31.75	4.778	24.73	-1.286	-3.634	50.928	0.375	0.001	0	18.37	30.3	12.5	27.0	1.861	0.056	0.056	0.002	2.078	1.77
10/22/02	2:11:15 PM	25.107	22.546	24.804	23.675	22.714	29.435	31.994	4.892	24.699	-1.281	-3.704	50.748	0.368	0.001	0	19.37	30.5	12.4	27.1	1.866	0.055	0.055	0.002	2.038	1.73
10/22/02	2:12:15 PM	25.082	22.556	24.939	23.655	22.759	29.431	31.874	4.796	24.831	-1.286	-3.75	50.773	0.362	0.001	0	20.37	30.4	12.4	27.1	1.871	0.054	0.054	0.002	1.993	1.70
	Averages	25.3	22.4	25.0	23.6	22.2	27.9	31.7	4.8	23.2	-0.8	-3.0	51.0	0.5	0.0	0.0		30.2	12.5	25.5	1.759	0.068	0.068	0.0027	2.681	2.3
	Maximum	25.6	22.6	25.3	23.8	22.8	29.4	32.0	4.9	24.8	1.8	-1.2	51.2	0.6	0.0	0.0		30.5	12.5	27.1	1.871	0.094	0.093	0.0042	4.177	3.6
	Median	25.2	22.4	24.9	23.6	22.3	28.2	31.7	4.8	23.6	-1.3	-3.2	50.9	0.4	0.0	0.0		30.3	12.5	25.9	1.784	0.064	0.065	0.0025	2.496	2.1
	Minimum	25.1	22.1	24.8	23.2	21.6	24.7	31.4	4.7	20.0	-1.3	-3.8	50.7	0.4	0.0	0.0		29.9	12.4	22.4	1.542	0.054	0.054	0.0020	1.993	1.7
	2 x Std Dev	0.334	0.253	0.269	0.310	0.712	2.681	0.296	0.124	2.771	1.744	1.424	0.225	0.154	0.000	0.000		0.296	0.055	2.724	0.188	0.023	0.022	0.0012	1.224	1.042
Number of Points Used*		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18		18	18	18	18	18	18	18	18	18
	* Backpulse points in box are not included																									

Figure A46: AN-102R2, Batch 3B Slurry Test 1.00B – Inhibited Deionized & Filtered Water - Raw & Calculated Data

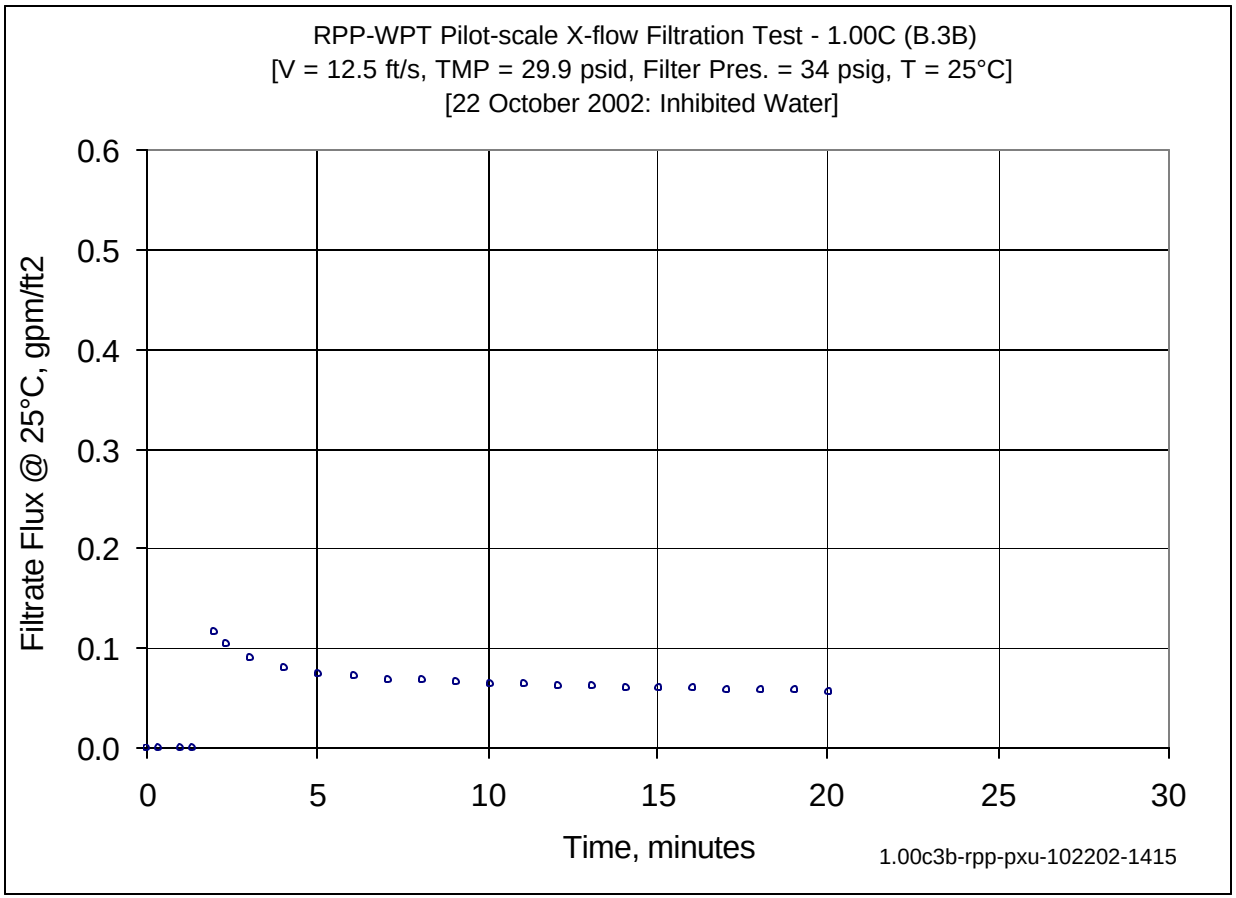


Figure A45: AN-102R2, Batch 3B Slurry Test 1.00C – Inhibited Deionized & Filtered Water

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																		Filter Surface	6.707	FT2						
10/22/02	1:31:17 PM	22.729	22.28	22.185	22.183	21.21	-0.131	0.062	-0.061	0.056	-0.304	0.35	-0.214	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
10/22/02	1:31:51 PM	22.729	22.28	22.185	22.183	21.21	-0.131	0.062	-0.061	0.056	-0.304	0.35	-0.214	0.002	0.001	0										
10/22/02	1:31:52 PM	22.724	22.256	22.406	22.164	21.15	-0.133	0.062	-0.061	0.058	-0.307	0.353	-0.21	0.002	0.001	0										
10/22/02	1:31:53 PM	22.724	22.251	22.416	22.164	21.15	-0.133	0.062	-0.061	0.058	-0.304	0.353	-0.214	0.002	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
10/22/02	1:31:54 PM	22.724	22.256	22.421	22.169	21.15	-0.131	0.062	-0.061	0.058	-0.307	0.356	-0.21	0.002	0.001	0										
10/22/02	1:31:55 PM	22.729	22.25	22.426	22.168	21.144	-0.133	0.062	-0.061	0.058	-0.304	0.353	-0.214	0.002	0.001	0		Pressure P1 is corrected for 40.88 inches of water tubing								
10/22/02	1:31:56 PM	22.724	22.255	22.431	22.168	21.154	-0.131	0.062	-0.061	0.058	-0.304	0.35	-0.212	0.002	0.001	0		VVVV				< Filtrate Flux	<< PERMIABILITY >>			
10/22/02	1:31:57 PM	22.734	22.266	22.441	22.169	21.16	-0.133	0.063	-0.061	0.058	-0.307	0.35	-0.212	0.002	0.001	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
10/22/02	2:15:11 PM	25.045	22.656	24.973	23.799	22.969	3.323	36.303	4.744	-1.44	27.782	76.278	50.444	0.002	0.001	0	0	34.8	12.4	0.9	0.065	0.000	0.000	0.000	0.317	0.27
10/22/02	2:15:31 PM	25.038	22.673	25.056	23.857	22.987	3.122	35.945	4.814	-1.623	27.661	75.091	50.767	0.002	0.001	0	0.33	34.5	12.4	0.7	0.052	0.000	0.000	0.000	0.397	0.34
10/22/02	2:16:11 PM	24.805	22.666	25.099	23.78	23.025	3.468	35.846	4.867	-1.377	27.424	36.972	50.471	0.001	0.001	0.002	1.00	34.4	12.4	1.0	0.072	0.000	0.000	0.000	0.142	0.12
10/22/02	2:16:31 PM	24.802	22.673	25.016	23.832	23.037	3.448	35.815	4.856	-1.483	27.323	0.454	50.683	0.002	0.001	0	1.33	34.3	12.4	1.0	0.068	0.000	0.000	0.000	0.303	0.26
10/22/02	2:17:11 PM	25.167	22.693	25.105	23.917	23.082	22.513	35.933	4.876	17.659	8.203	0.555	51.383	0.776	0.001	0	2.00	34.5	12.6	20.1	1.385	0.116	0.115	0.006	5.743	4.89
10/22/02	2:17:31 PM	25.229	22.699	25.182	23.903	23.083	26.351	36.173	4.902	21.469	4.465	0.625	51.228	0.707	0.001	0	2.33	34.7	12.6	23.9	1.649	0.105	0.105	0.004	4.386	3.73
10/22/02	2:18:15 PM	25.338	22.714	25.066	23.953	23.133	29.178	35.635	4.804	24.613	1.272	-1.506	51.201	0.607	0.001	0	3.07	34.2	12.5	26.9	1.854	0.090	0.090	0.003	3.359	2.86
10/22/02	2:19:15 PM	25.349	22.739	25.246	23.983	23.153	30.814	35.958	4.938	26.004	-0.096	-2.227	51.241	0.534	0.001	0	4.07	34.5	12.6	28.4	1.959	0.080	0.079	0.003	2.783	2.37
10/22/02	2:20:15 PM	25.394	22.76	25.142	24.039	23.229	31.193	35.771	4.844	26.499	-0.775	-2.583	51.161	0.499	0.001	0	5.07	34.3	12.5	28.8	1.989	0.074	0.074	0.003	2.569	2.19
10/22/02	2:21:15 PM	25.42	22.78	25.197	24.019	23.264	31.759	35.922	4.788	27.091	-1.148	-2.751	51.121	0.48	0.001	0	6.07	34.4	12.5	29.4	2.029	0.072	0.071	0.002	2.419	2.06
10/22/02	2:22:15 PM	25.425	22.801	25.268	24.11	23.295	31.883	35.85	4.814	27.234	-1.284	-2.893	51.077	0.465	0.001	0	7.07	34.4	12.5	29.6	2.038	0.069	0.069	0.002	2.328	1.98
10/22/02	2:23:15 PM	25.451	22.822	25.169	24.081	23.346	31.98	35.724	4.846	27.228	-1.286	-3.003	51.134	0.454	0.001	0	8.07	34.3	12.5	29.6	2.041	0.068	0.067	0.002	2.276	1.94
10/22/02	2:24:15 PM	25.457	22.842	25.329	24.056	23.392	32.27	36.024	4.815	27.506	-1.289	-3.078	51.062	0.445	0.001	0	9.07	34.6	12.5	29.9	2.061	0.066	0.066	0.002	2.199	1.87
10/22/02	2:25:15 PM	25.477	22.863	25.255	24.116	23.437	32.434	35.906	4.814	27.725	-1.284	-3.168	51.085	0.436	0.001	0	10.07	34.4	12.5	30.1	2.074	0.065	0.065	0.002	2.146	1.83
10/22/02	2:26:15 PM	25.508	22.904	25.266	24.197	23.473	32.703	36.272	4.92	27.805	-1.286	-3.212	51.029	0.43	0.001	0	11.07	34.8	12.5	30.3	2.086	0.064	0.064	0.002	2.103	1.79
10/22/02	2:27:15 PM	25.498	22.909	25.371	24.168	23.524	32.535	35.887	4.849	27.805	-1.289	-3.284	51.064	0.421	0.001	0	12.07	34.4	12.5	30.2	2.080	0.063	0.062	0.002	2.059	1.75
10/22/02	2:28:15 PM	25.548	22.949	25.281	24.233	23.569	32.566	35.838	4.87	27.844	-1.286	-3.336	50.997	0.415	0.001	0	13.07	34.4	12.5	30.2	2.083	0.062	0.061	0.002	2.032	1.73
10/22/02	2:29:15 PM	25.538	22.944	25.366	24.173	23.589	32.865	35.968	4.799	28.225	-1.284	-3.377	51.035	0.41	0.001	0	14.07	34.5	12.5	30.5	2.106	0.061	0.061	0.002	1.981	1.69
10/22/02	2:30:15 PM	25.558	22.98	25.351	24.268	23.634	32.976	35.956	4.855	28.182	-1.286	-3.432	51.003	0.403	0.001	0	15.07	34.5	12.5	30.6	2.108	0.060	0.059	0.002	1.946	1.66
10/22/02	2:31:15 PM	25.568	22.989	25.286	24.253	23.674	33.053	35.999	4.907	28.229	-1.286	-3.469	51.003	0.399	0.001	0	16.07	34.5	12.5	30.6	2.113	0.059	0.059	0.002	1.926	1.64
10/22/02	2:32:15 PM	25.579	23.021	25.457	24.304	23.725	33.076	35.98	4.847	28.378	-1.286	-3.495	51.098	0.395	0.001	0	17.07	34.5	12.5	30.7	2.119	0.059	0.058	0.002	1.892	1.61
10/22/02	2:33:15 PM	25.578	23.04	25.326	24.368	23.74	33.123	35.864	4.861	28.454	-1.286	-3.539	51.176	0.39	0.001	0	18.07	34.4	12.5	30.8	2.123	0.058	0.058	0.002	1.871	1.59
10/22/02	2:34:15 PM	25.608	23.059	25.381	24.393	23.779	33.111	35.778	4.764	28.556	-1.286	-3.559	50.916	0.387	0.001	0	19.07	34.3	12.5	30.8	2.126	0.058	0.057	0.002	1.851	1.58
10/22/02	2:35:15 PM	25.613	23.09	25.436	24.474	23.84	33.281	35.852	4.746	28.655	-1.286	-3.594	50.718	0.384	0.001	0	20.07	34.4	12.4	31.0	2.135	0.057	0.057	0.002	1.826	1.55
	Averages	25.5	22.9	25.3	24.2	23.5	32.3	35.9	4.8	27.6	-1.0	-3.1	51.1	0.4	0.0	0.0		34.4	12.5	29.9	2.062	0.066	0.065	0.0022	2.198	1.9
	Maximum	25.6	23.1	25.5	24.5	23.8	33.3	36.3	4.9	28.7	1.3	-1.5	51.2	0.6	0.0	0.0		34.8	12.6	31.0	2.135	0.090	0.090	0.0034	3.359	2.9
	Median	25.5	22.9	25.3	24.2	23.5	32.6	35.9	4.8	27.8	-1.3	-3.2	51.1	0.4	0.0	0.0		34.4	12.5	30.2	2.081	0.063	0.063	0.0021	2.081	1.8
	Minimum	25.3	22.7	25.1	24.0	23.1	29.2	35.6	4.7	24.6	-1.3	-3.6	50.7	0.4	0.0	0.0		34.2	12.4	26.9	1.854	0.057	0.057	0.0018	1.826	1.6
	2 x Std Dev	0.167	0.226	0.198	0.286	0.429	2.015	0.269	0.099	1.991	1.262	1.051	0.230	0.114	0.000	0.000		0.269	0.056	2.001	0.138	0.017	0.017	0.0008	0.760	0.647
Number of Points Used*		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18		18	18	18	18	18	18	18	18	18
	* Backpulse points in box are not included																									

Figure A48: AN-102R2, Batch 3B Slurry Test 1.00C – Inhibited Deionized & Filtered Water - Raw & Calculated Data

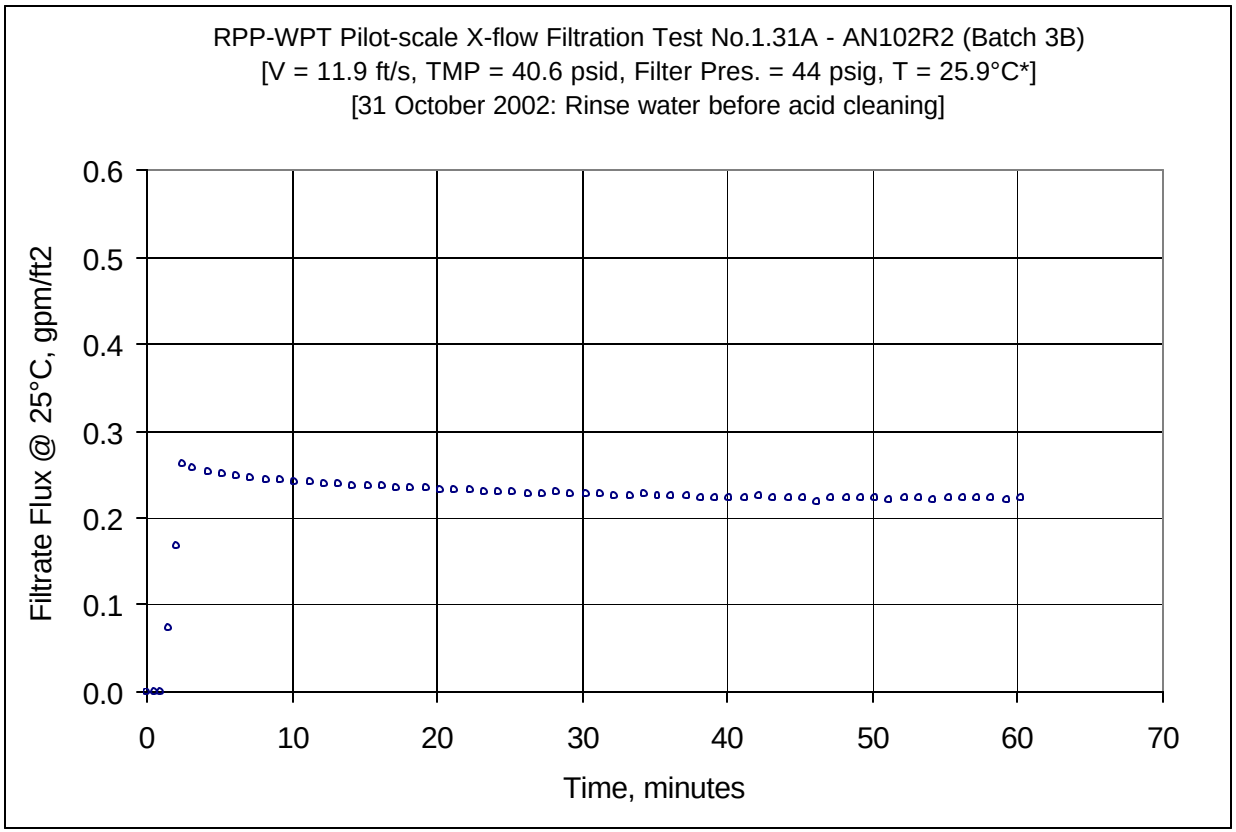


Figure A49: AN-102R2, Batch 3B Slurry Test 1.31A – Deionized & Filtered Water Rinse after Dewatering Slurry

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>													
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse														
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm														
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp														
Zeros																														
10/31/2002	7:40:03 AM	20.304	19.817	17.419	19.7	19.142	-0.122	-0.013	-0.041	0.065	-0.369	0.375	-0.22	0.001	0.001	0.001														
10/31/2002	7:40:29 AM	20.304	19.817	17.419	19.7	19.142	-0.122	-0.013	-0.041	0.065	-0.369	0.375	-0.22	0.001	0.001	0.001														
10/31/2002	7:40:30 AM	20.305	19.817	17.42	19.736	19.147	-0.122	-0.014	-0.042	0.065	-0.375	0.372	-0.216	0.001	0.001	0.001														
10/31/2002	7:40:31 AM	20.305	19.827	17.42	19.731	19.147	-0.122	-0.013	-0.042	0.065	-0.375	0.369	-0.218	0.001	0.001	0.001														
10/31/2002	7:40:32 AM	20.294	19.807	17.399	19.705	19.142	-0.12	-0.014	-0.042	0.063	-0.375	0.369	-0.216	0.001	0.001	0														
10/31/2002	7:40:33 AM	20.289	19.807	17.394	19.7	19.142	-0.122	-0.014	-0.042	0.063	-0.375	0.369	-0.22	0.001	0.001	0.001														
10/31/2002	7:40:34 AM	20.295	19.812	17.399	19.706	19.147	-0.122	-0.013	-0.042	0.063	-0.372	0.372	-0.216	0.001	0.001	0														
10/31/2002	7:40:35 AM	20.295	19.817	17.404	19.706	19.147	-0.12	-0.014	-0.042	0.061	-0.375	0.369	-0.22	0.001	0.001	0														
Data - Per Minute																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter			
																	Min.	Hour	psig	ft/s	psi	bar	ft2	ft2	ft2/psi	ft2/psi	day/bar			
10/31/2002	3:48:20 PM	25.272	24.658	25.828	25.669	25.336	3.059	44.976	4.312	-0.997	36.998	84.787	47.869	0.001	0.001	0	0	0	43.5	11.7	1.0	0.071	0.000	0.000	0.0001	0.141	0.12			
10/31/2002	3:48:57 PM	25.272	24.658	25.828	25.669	25.336	3.059	44.976	4.312	-0.997	36.998	84.787	47.869	0.001	0.001	0	0.62	0.01028	43.5	11.7	1.0	0.071	0.000	0.000	0.0001	0.141	0.12			
10/31/2002	3:49:20 PM	25.224	24.669	26.06	25.675	25.377	2.28	45.17	4.297	-1.863	39.409	43.804	47.665	0.001	0.001	0.323	1.00	0.01667	43.7	11.7	0.2	0.014	0.000	0.000	0.0007	0.694	0.59			
10/31/2002	3:49:50 PM	25.274	24.665	26.25	25.626	25.363	12.686	45.179	4.331	8.485	27.868	0.459	48.349	0.512	0.001	0	1.50	0.025	43.7	11.8	10.6	0.730	0.076	0.074	0.0070	6.963	5.93			
10/31/2002	3:50:20 PM	26.161	24.671	26.391	25.597	25.369	27.613	44.715	4.352	23.452	11.748	0.632	49.062	1.158	0.001	0	2.00	0.03333	43.2	12.0	25.5	1.760	0.173	0.166	0.0065	6.503	5.53			
10/31/2002	3:50:50 PM	26.482	24.672	26.387	25.618	25.385	41.657	44.624	4.33	37.851	-1.268	0.815	49.477	0.002	1.816	0	2.50	0.04167	43.2	12.1	39.8	2.741	0.271	0.260	0.0066	6.551	5.58			
10/31/2002	3:51:33 PM	26.734	24.689	26.694	25.7	25.412	41.394	44.363	4.269	37.497	-1.291	0.812	49.19	0.002	1.794	0	3.22	0.05361	42.9	12.1	39.4	2.720	0.267	0.256	0.0065	6.485	5.52			
10/31/2002	3:52:33 PM	27.031	24.691	26.776	25.717	25.429	41.564	44.544	4.28	37.684	-1.294	0.806	49.341	0.001	1.779	0	4.22	0.07028	43.1	12.1	39.6	2.732	0.265	0.252	0.0064	6.369	5.42			
10/31/2002	3:53:33 PM	27.151	24.702	26.612	25.973	25.425	41.715	44.525	4.309	37.878	-1.291	0.803	49.427	0.001	1.75	0	5.22	0.08694	43.1	12.1	39.8	2.744	0.261	0.249	0.0063	6.267	5.33			
10/31/2002	3:54:33 PM	27.124	24.704	26.619	26.141	25.412	41.879	44.711	4.322	37.943	-1.291	0.803	49.438	0.001	1.739	0	6.22	0.10361	43.2	12.1	39.9	2.752	0.259	0.248	0.0062	6.208	5.28			
10/31/2002	3:55:33 PM	27.096	24.722	26.492	26.258	25.43	41.989	44.763	4.346	37.993	-1.291	0.797	49.371	0.001	1.72	0	7.22	0.12028	43.3	12.1	40.0	2.757	0.256	0.246	0.0061	6.150	5.23			
10/31/2002	3:56:33 PM	27.067	24.728	26.443	26.319	25.486	41.96	44.868	4.39	37.925	-1.291	0.797	49.194	0.001	1.702	0	8.22	0.13694	43.4	12.1	39.9	2.754	0.254	0.244	0.0061	6.101	5.19			
10/31/2002	3:57:33 PM	27.007	24.723	26.458	26.279	25.441	42.121	44.943	4.304	38.163	-1.291	0.794	49.318	0.001	1.699	0	9.22	0.15361	43.5	12.1	40.1	2.768	0.253	0.243	0.0061	6.058	5.16			
10/31/2002	3:58:33 PM	26.986	24.727	26.327	26.263	25.4	41.951	44.558	4.29	38.074	-1.291	0.797	49.094	0.001	1.679	0	10.22	0.17028	43.1	12.0	40.0	2.759	0.250	0.241	0.0060	6.028	5.13			
10/31/2002	3:59:33 PM	26.961	24.732	26.317	26.203	25.43	42.212	44.875	4.379	38.095	-1.294	0.792	49.091	0.001	1.669	0	11.22	0.18694	43.4	12.0	40.2	2.768	0.249	0.240	0.0060	5.972	5.08			
10/31/2002	4:00:33 PM	26.895	24.715	26.31	26.122	25.403	42.293	44.815	4.398	38.291	-1.294	0.789	49.339	0.001	1.658	0	12.22	0.20361	43.3	12.1	40.3	2.778	0.247	0.238	0.0059	5.914	5.03			
10/31/2002	4:01:33 PM	26.898	24.733	26.228	26.084	25.331	42.09	44.728	4.347	38.074	-1.285	0.792	49.349	0.001	1.648	0	13.22	0.22028	43.3	12.1	40.1	2.764	0.246	0.237	0.0059	5.923	5.04			
10/31/2002	4:02:33 PM	26.865	24.716	26.241	25.977	25.283	42.131	44.568	4.299	38.267	-1.288	0.789	49.069	0.001	1.645	0	14.22	0.23694	43.1	12.0	40.2	2.772	0.245	0.237	0.0059	5.891	5.01			
10/31/2002	4:03:33 PM	26.823	24.718	26.238	25.899	25.276	42.455	44.961	4.353	38.429	-1.291	0.786	48.959	0.001	1.633	0	15.22	0.25361	43.5	12.0	40.4	2.788	0.243	0.235	0.0058	5.815	4.95			
10/31/2002	4:04:33 PM	26.805	24.705	26.12	25.836	25.273	42.521	44.984	4.246	38.682	-1.294	0.783	49.5	0.001	1.63	0	16.22	0.27028	43.5	12.1	40.6	2.799	0.243	0.236	0.0058	5.800	4.94			
10/31/2002	4:05:33 PM	26.809	24.729	26.219	25.815	25.252	42.359	44.812	4.234	38.482	-1.288	0.792	48.523	0.001	1.628	0	17.22	0.28694	43.3	11.9	40.4	2.787	0.243	0.235	0.0058	5.803	4.94			
10/31/2002	4:06:33 PM	26.764	24.709	26.16	25.795	25.287	42.438	44.939	4.315	38.451	-1.291	0.786	48.601	0.001	1.619	0	18.22	0.30361	43.5	11.9	40.4	2.789	0.241	0.234	0.0058	5.777	4.92			
10/31/2002	4:07:33 PM	26.765	24.72	26.105	25.826	25.273	42.774	45.268	4.339	38.699	-1.291	0.786	48.508	0.001	1.614	0	19.22	0.32028	43.8	11.9	40.7	2.809	0.241	0.233	0.0057	5.727	4.87			
10/31/2002	4:08:33 PM	26.751	24.731	26.176	25.842	25.279	42.738	45.092	4.319	38.777	-1.291	0.786	48.374	0.001	1.608	0	20.22	0.33694	43.6	11.9	40.8	2.810	0.240	0.232	0.0057	5.692	4.84			
10/31/2002	4:09:33 PM	26.721	24.721	26.121	25.882	25.309	42.701	44.846	4.339	38.787	-1.291	0.783	47.99	0.001	1.6	0	21.22	0.35361	43.4	11.8	40.7	2.809	0.239	0.231	0.0057	5.674	4.83			
10/31/2002	4:10:33 PM	26.728	24.738	26.088	26.014	25.296	42.668	44.98	4.312	38.553	-1.288	0.783	48.62	0.001	1.598	0	22.22	0.37028	43.5	11.9	40.6	2.796	0.238	0.231	0.0057	5.698	4.85			
10/31/2002	4:11:33 PM	26.705	24.736	26.171	26.072	25.323	42.484	44.835	4.239	38.674	-1.291	0.783	48.603	0.001	1.591	0	23.22	0.38694	43.4	11.9	40.6	2.798	0.237	0.230	0.0057	5.657	4.81			
10/31/2002	4:12:33 PM	26.693	24.738	26.093	26.034	25.341	42.372	44.481	4.236	38.474	-1.291	0.783	48.609	0.001	1.583	0	24.22	0.40361	43.0	11.9	40.4	2.787	0.236	0.229	0.0057	5.662	4.82			
10/31/2002	4:13:33 PM	26.704	24.745	26.08	26.086	25.342	42.707	45.09	4.284	38.807	-1.291	0.777	48.466	0.001	1.586	0	25.22	0.42028	43.6	11.9	40.8	2.810	0.236	0.229	0.0056	5.629	4.79			
10/31/2002	4:14:33 PM	26.682	24.752	26.157	26.168	25.36	42.78	45.201	4.347	38.793	-1.291	0.777	48.58	0.001	1.577	0	26.22	0.43694	43.7	11.9	40.8	2.812	0.235	0.228	0.0056	5.581	4.75			
10/31/2002	4:15:33 PM	26.675	24.76	26.06	26.226	25.383	42.782	45.036	4.285	38.864	-1.291	0.78	48.609	0.001	1.573	0	27.22	0.45361	43.6	11.9	40.8	2.814	0.235	0.228	0.0056	5.577	4.75			
10/31/2002	4:16:33 PM	26.692	24.773	26.093	26.234	25.41	42.846	45.129	4.331	38.85	-1.291	0.78	48.458	0.001	1.586	0	28.22	0.47028	43.7	11.9	40.8	2.816	0.236	0.229	0.0056	5.614	4.78			
10/31/2002	4:17:33 PM	26.67	24.785	26.145	26.311	25.453	42.788	45.268	4.319	38.799	-1.291	0.777	48.263	0.001	1.578	0	29.22	0.48694	43.8	11.8	40.8	2.813	0.235	0.228	0.0056	5.585	4.75			
10/31/2002	4:18:33 PM	26.661	24.776	26.037	26.333	25.469	42.755	44.953	4.336	38.754	-1.291	0.777	48.412	0.001	1.564	0	30.22	0.50361	43.5	11.9	40.8	2.810	0.233	0.226	0.0056	5.557	4.73			
10/31/2002	4:19:33 PM	26.668	24.793	26.088	26.329	25.501	42.678	44.912	4.403	38.547	-1.291	0.777	48.487	0.001	1.569	0	31.22	0.52028	43.4	11.9	40.6	2.800	0.234	0.227	0.0056	5.587	4.75			
10/31/2002	4:20:33 PM	26.661	24.816	26.112	26.392	25.524	42.792	45.114	4.318	38.828	-1.291	0.777	48.422	0.001	1.56	0	32.22	0.53694	43.6	11.9	40.8	2.814	0.233	0.225	0.0055	5.524	4.70			
10/31/2002	4:21:33 PM	26.657	24.817	26.022	26.428	25.565	42.651	44.637	4.322	38.697	-1.288	0.774	48.555	0.001	1.556	0	33.22	0.55361	43.2	11.9	40.7	2.804	0.232	0.225	0.0055	5.542	4.72			
10/31/2002	4:22:33 PM	26.649	24.825	26.09	26.446	25.608	42.562	44.959	4.33	38.449	-1.294	0.774	48.638	0.001	1.562	0	34.22	0.57028	43.5	11.9	40.5	2.793	0.233	0.226	0.0056	5.576	4.75			
10/31/2002	4:23:33 PM	26.641	24.836	26.071	26.467	25.634	42.774	45.114	4.331	38.725	-1.294	0.774	48.33	0.001	1.555	0	35.22	0.58694	43.6	11.8	40.7	2.810	0.232	0.225	0.0055	5.521	4.70			
10/31/2002	4:24:33 PM	26.657	24.853	26.028	26.494	25.631	42.736	44.829	4.306	38.697	-1.291	0.774	47.961	0.001	1.55	0	36.22	0.60361	43.4	11.8	40.7	2.807	0.231	0.225	0.0055	5.514	4.69			
10/31/2002	4:25:33 PM	26.652	24.863	26.113	26.524	25.641	42.722	44.988	4.392	38.558	-1.285	0.78	48.357	0.002	1.547	0	37.22	0.62028	43.5	11.9	40.6	2.802	0.231	0.224	0.0055	5.501	4.68			
10/31/2002	4:26:33 PM	26.631	24.851	26.036	26.487	25.669	42.546	44.8	4.264	38.59	-1.291	0.771	48.454	0.001	1.538	0	38.22	0.63694	43.3	11.9	40.6	2.797	0.229	0.223	0.0055	5.490	4.67			
10/31/2002	4:27:33 PM	26.638	24.858	25.993	26.404	25.606	42.769	45.052	4.312	38.795	-1.291	0.771	48.311	0.001	1.536	0	39.22	0.65361	43.6	11.8	40.8	2.812	0.229	0.223	0.0055	5.461	4.65			
10/31/2002	4:28:33 PM	26.639	24.859	26.084	26.305	25.447	43.177	45.21	4.32	39.19	-1.291	0.771	48.429	0.001	1.532	0	40.22	0.67028	43.7	11.9	41.2	2.839	0.228	0.222	0.0054	5.380	4.58			
10/31/2002	4:29:33 PM	26.628	24.853	26.004	26.239	25.366	42.732	44.905	4.332	38.695	-1.285	0.777	48.364	0.002	1.536	0	41.22	0.68694	43.4	11.9	40.7	2.807	0.229	0.223	0.0055	5.469	4.65			
10/31/2002	4:30:33 PM	26.658	24.863	26.023	26.169	25.27	42.788	44.922	4.311	38.814	-1.288	0.774	48.269	0.001	1.545	0	42.22	0.70361	43.4	11.8	40.8	2.813	0.230	0.224	0.0055	5.486	4.67			
10/31/2002	4:31:33 PM	26.621	24.837	26.062	26.048	25.229	42.869	45.158	4.369	38.752	-1.291	0.771	48.531	0.001	1.53	0	43.22	0.72028	43.7	11.9	40.8	2.814	0.228	0.221	0.0054	5.425	4.62			
10/31/2002	4:32:33 PM	26.629	24.82	25.96	25.98	25.137	42.832	45.079	4.332	38.83	-1.291	0.771	48.357	0.001	1.535	0	44.22	0.73694	43.6	11.9	40.8	2.815	0.229	0.223	0.0055	5.456	4.64			
10/31/2002	4:33:33 PM	26.624	24.814	25.979	25.92	25.141	42.716	45.05	4.321	38.721	-1.291	0.771	48.207	0.001	1.528	0	45.22	0.75361	43.6	11.8	40.7	2.807	0.228	0.222	0.0054	5.443	4.63			
10/31/2002	4:34:33 PM	26.629	24.824	26.059	25.92	25.187	42.778	44.841	4.329	38.758	-1.288	0.771	48.42	0.001	1.511	0	46.22	0.77028	43.4	11.9	40.8	2.811	0.225	0.219	0.0054	5.364	4.56			
10/31/2002	4:35:33 PM	26.635	24.815	25.94	25.956	25.193	42.786	45.025	4.367	38.596	-1.291	0.774	48.553	0.001	1.524	0	47.22	0.78694	43.6	11.9	40.7	2.806	0.227	0.221	0.0054	5.439	4.63			
10/31/2002	4:36:33 PM	26.549	24.829	25.694	26.125	25.211	42.981	45.224	4.348	38.965	-1.288	0.771	48.194	0.001	1.514	0	48.22	0.80361	43.8	11.8	41.0	2.825	0.226	0.221	0.0054	5.403	4.60			
10/31/2002	4:37:33 PM	26.384	24.814	25.584	26.195	25.281	42.597	44.591	4.238	38.732	-1.294	0.765	48.255	0.001	1.51	0	49.22	0.82028	43.1	11.8	40.7	2.804	0.225	0.221	0.0054	5.446	4.63			
10/31/2002	4:38:33 PM	26.244	24.819	25.359	26.295	25.306	42.997	45.22	4.328	38.985	-1.291	0.771	48.079	0.001	1.509	0	50.22	0.83694	43.7	11.8	41.0	2.826	0.225	0.223	0.0054	5.433	4.62			
10/31/2002	4:39:33 PM	26.115	24.825	25.325	26.326	25.323	42.871	44.935	4.313	38.869	-1.291	0.768	48.091	0.001	1.493	0	51.22	0.85361	43.5	11.8	40.9	2.818	0.223	0.221	0.0054	5.397	4.59			
10/31/2002	4:40:33 PM	26.977	24.832	26.167	26.393	25.376	42.956	45.026	4.284	38.977	-1.291	0.765	48.114	0.001	1.491	0	52.22	0.87028	43.6	11.8	41.0	2.824	0.222	0.221	0.0054	5.402	4.60			
10/31/2002	4:41:33 PM	25.863	24.834	25.063	26.465	25.406	43.074	45.23	4.342	38.977	-1.288	0.768	47.898	0.001	1.493	0	53.22	0.88694	43.8	11.7	41.0	2.829	0.223	0.222	0.0054	5.416	4.61			
10/31/2002	4:42:33 PM	25.751	24.836	25.03	26.482	25.444	43.175	45.268	4.363	39.159	-1.291	0.763	48.183	0.001	1.477	0	54.22	0.90361	43.8	11.8	41.2	2.838	0.220	0.220	0.0053	5.345	4.55			
10/31/2002	4:43:33 PM	25.657	24.843	24.837	26.543	25.48	43.022	44.866	4.314	39.074	-1.291	0.765	48.169	0.001	1.484	0	55.22	0.92028	43.4	11.8	41.0	2.830	0.221	0.222	0.0054	5.415	4.61			
10/31/2002	4:44:33 PM	25.57	24.856	24.865	26.591	25.518	42.937	44.897	4.296	38.99	-1.291	0.763	47.865	0.001	1.481	0	56.22	0.93694	43.4	11.7	41.0	2.824	0.221	0.222	0.0054	5.412	4.61			
10/31/2002	4:45:33 PM	25.478	24.869	24.733	26.61	25.557	43.122	45.065	4.338	39.1	-1.291	0.763	48.02	0.001	1.473	0	57.22	0.95361	43.6	11.8	41.1	2.834	0.220	0.221	0.0054	5.382	4.58			
10/31/2002	4:46:33 PM	25.42	24.876	24.675	26.602	25.599	42.972	44.916	4.307	38.987	-1.291	0.763	48.102	0.001	1.47	0	58.22	0.97028	43.4	11.8	41.0	2.825	0.219	0.221	0.0054	5.397	4.59			
10/31/2002	4:47:33 PM	25.338	24.879	24.683	26.63	25.637	42.902	44.726	4.285	38.94	-1.291	0.763	47.955	0.001	1.464	0	59.22	0.98694	43.3	11.8	40.9	2.821	0.218	0.220	0.0054	5.382	4.58			
10/31/2002	4:48:33 PM	25.265	24.891	24.525	26.637	25.674	42.989	44.889	4.3	39.03	-1.288	0.76	48.062	0.001	1.472	0	60.22	1.00361	43.4	11.8	41.0	2.827	0.219	0.222	0.0054	5.424	4.62			
	Averages	26.6	24.8	25.9	26.2	25.4	42.6	44.9	4.3	38.6	-1.3	0.8	48.6	0.0	1.6	0.0			0.5	43.5	11.9	40.6	2.800	0.235	0.229	0.0056	5.649	4.807			
	Maximum	27.2	24.9	26.8	26.6	25.7	43.2	45.3	4.4	39.2	-1.3	0.8	49.5	0.0	1.8	0.0			1.0	43.8	12.1	41.2	2.839	0.267	0.256	0.0065	6.485	5.519			
	Median	26.7	24.8	26.1	26.2	25.4	42.7	44.9	4.3	38.7	-1.3	0.8	48.5	0.0	1.6	0.0			0.5	43.5	11.9	40.7	2.808	0.233	0.226	0.0056	5.567	4.737			
	Minimum	25.3	24.7	24.5	25.7	25.1	41.4	44.4	4.2	37.5	-1.3	0.8	47.9	0.0	1.5	0.0			0.1	42.9	11.7	39.4	2.720	0.218	0.219	0.0053	5.345	4.548			
	2 x Std Dev	0.914	0.120	1.064	0.506	0.267	0.795	0.426	0.077	0.750	0.004	0.024	0.905	0.000	0.161	0.000			0.558	0.426	0.222	0.769	0.053	0.024	0.018	0.0006	0.553	0.471			
Number of Points Used*		58	58	58	58	58	58	58	58	58	58	58	58	58	58	58			58	58	58	58	58	58	58	58	58	58			
* Backpulse points in box are not included																														

Figure A50: AN-102R2, Batch 3B Slurry Test 1.31A – Deionized & Filtered Water Rinse after Dewatering Slurry - Raw & Calculated Data

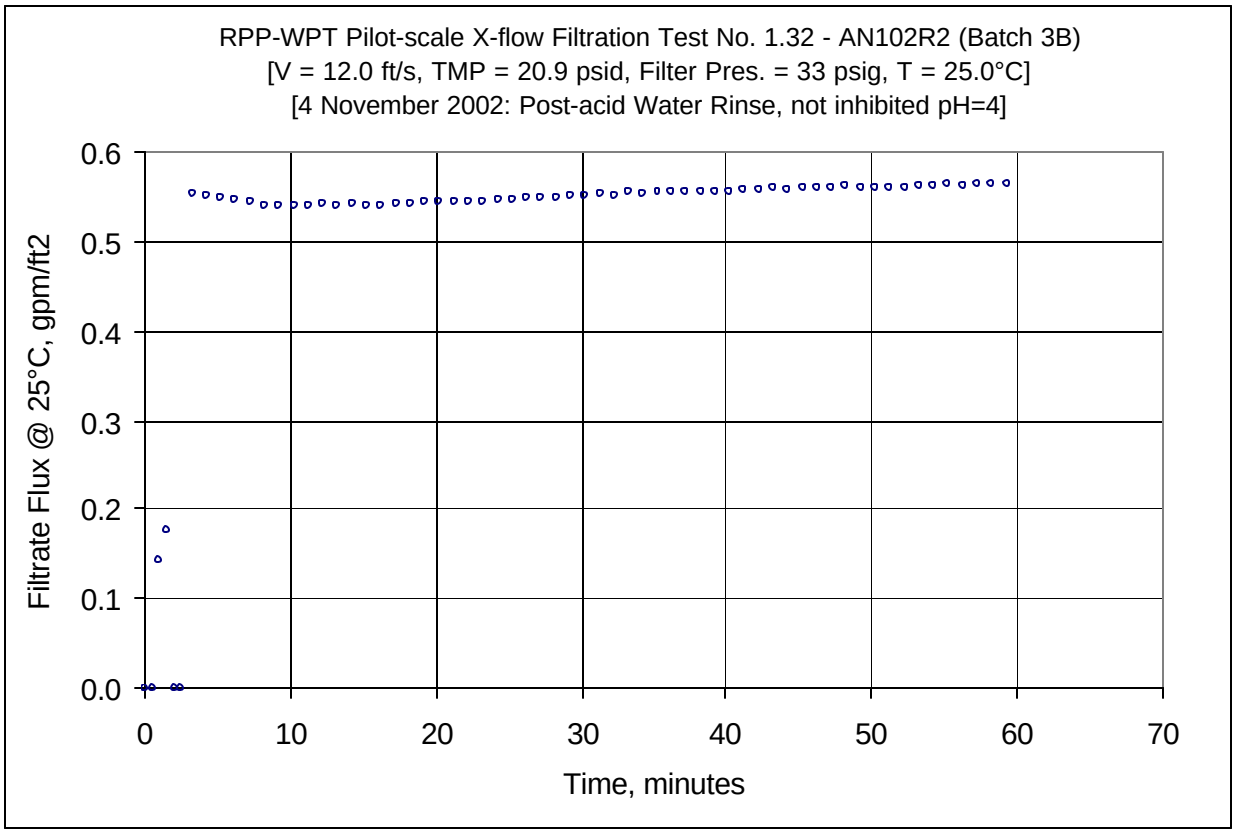
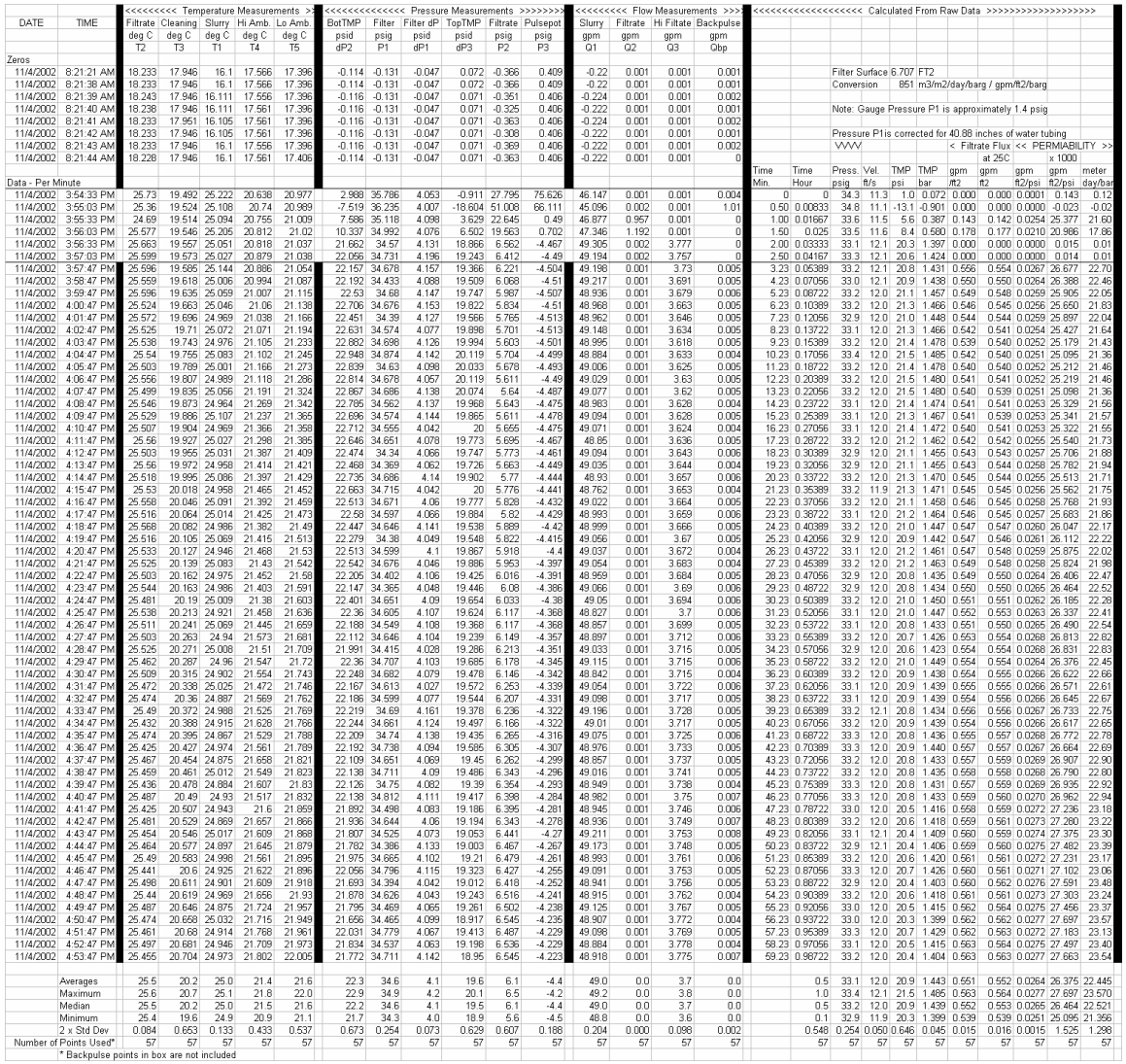


Figure A51: AN-102R2, Batch 3B Slurry Test 1.32 – Deionized & Filtered Water (pH=4) Rinse after Acid Cleaning



DATE	TIME	<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>				Calculated From Raw Data
		Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse	
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm	
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp	
Zeros																	
11/4/2002	8:21:21 AM	18.233	17.946	16.1	17.566	17.396	-0.114	-0.131	-0.047	0.072	-0.366	0.409	-0.22	0.001	0.001	0.001	
11/4/2002	8:21:38 AM	18.233	17.946	16.1	17.566	17.396	-0.114	-0.131	-0.047	0.072	-0.366	0.409	-0.22	0.001	0.001	0.001	
11/4/2002	8:21:39 AM	18.243	17.946	16.111	17.566	17.396	-0.116	-0.131	-0.047	0.071	-0.361	0.406	-0.224	0.001	0.001	0.002	
11/4/2002	8:21:40 AM	18.238	17.946	16.111	17.561	17.396	-0.116	-0.131	-0.047	0.071	-0.325	0.406	-0.222	0.001	0.001	0.001	
11/4/2002	8:21:41 AM	18.233	17.951	16.105	17.561	17.396	-0.116	-0.131	-0.047	0.071	-0.363	0.406	-0.224	0.001	0.001	0.002	
11/4/2002	8:21:42 AM	18.233	17.946	16.105	17.561	17.396	-0.116	-0.131	-0.047	0.071	-0.308	0.406	-0.222	0.001	0.001	0.001	
11/4/2002	8:21:43 AM	18.233	17.946	16.1	17.556	17.396	-0.116	-0.131	-0.047	0.071	-0.369	0.406	-0.222	0.001	0.001	0.002	
11/4/2002	8:21:44 AM	18.228	17.946	16.1	17.561	17.406	-0.114	-0.131	-0.047	0.071	-0.363	0.406	-0.222	0.001	0.001	0	
																	Time
Data - Per Minute																	Min.
11/4/2002	3:54:33 PM	25.73	19.492	25.222	20.638	20.977	2.988	35.786	4.053	-0.911	27.795	75.626	46.147	0.001	0.001	0.004	0
11/4/2002	3:55:03 PM	25.36	19.524	25.108	20.74	20.989	-7.519	36.235	4.007	-18.604	51.008	66.111	45.096	0.002	0.001	1.01	0.50
11/4/2002	3:55:33 PM	24.69	19.514	25.094	20.755	21.009	7.586	35.118	4.098	3.629	22.645	0.49	46.877	0.957	0.001	0	1.00
11/4/2002	3:56:03 PM	26.577	19.546	26.206	20.812	21.02	10.337	34.992	4.076	6.502	19.563	0.702	47.346	1.192	0.001	0	1.50
11/4/2002	3:56:33 PM	25.663	19.557	25.051	20.818	21.037	21.662	34.57	4.131	18.866	6.562	-4.467	49.305	0.002	3.777	0	2.00
11/4/2002	3:57:03 PM	25.599	19.573	25.027	20.879	21.038	22.056	34.731	4.196	19.243	6.412	-4.49	49.194	0.002	3.757	0	2.50
11/4/2002	3:57:47 PM	25.596	19.585	25.144	20.886	21.054	22.157	34.678	4.157	19.366	6.221	-4.504	49.198	0.001	3.73	0.005	3.23
11/4/2002	3:58:47 PM	25.559	19.618	25.006	20.994	21.087	22.192	34.433	4.088	19.509	6.068	-4.51	49.217	0.001	3.691	0.005	4.23
11/4/2002	3:59:47 PM	25.596	19.635	25.059	21.007	21.115	22.53	34.68	4.147	19.747	5.987	-4.507	48.936	0.001	3.679	0.006	5.23
11/4/2002	4:00:47 PM	25.524	19.663	25.046	21.06	21.138	22.706	34.676	4.153	19.822	5.834	-4.51	48.968	0.001	3.663	0.005	6.23
11/4/2002	4:01:47 PM	25.572	19.696	24.969	21.038	21.166	22.451	34.39	4.127	19.566	5.765	-4.513	48.962	0.001	3.646	0.005	7.23
11/4/2002	4:02:47 PM	25.525	19.71	25.072	21.071	21.194	22.631	34.574	4.077	19.898	5.701	-4.513	49.148	0.001	3.634	0.005	8.23
11/4/2002	4:03:47 PM	25.538	19.743	24.976	21.105	21.233	22.882	34.698	4.126	19.994	5.603	-4.501	48.995	0.001	3.618	0.005	9.23
11/4/2002	4:04:47 PM	25.54	19.755	25.083	21.102	21.245	22.948	34.874	4.142	20.119	5.704	-4.499	48.884	0.001	3.633	0.004	10.23
11/4/2002	4:05:47 PM	25.503	19.789	25.001	21.166	21.273	22.839	34.63	4.098	20.033	5.678	-4.493	49.006	0.001	3.625	0.005	11.23
11/4/2002	4:06:47 PM	25.556	19.807	24.989	21.118	21.286	22.814	34.678	4.057	20.119	5.611	-4.49	49.029	0.001	3.63	0.005	12.23
11/4/2002	4:07:47 PM	25.499	19.835	25.056	21.191	21.324	22.867	34.686	4.138	20.074	5.64	-4.487	49.077	0.001	3.62	0.005	13.23
11/4/2002	4:08:47 PM	25.546	19.873	24.964	21.269	21.342	22.785	34.562	4.137	19.968	5.643	-4.475	48.983	0.001	3.628	0.004	14.23
11/4/2002	4:09:47 PM	25.529	19.886	25.107	21.237	21.365	22.696	34.574	4.144	19.865	5.611	-4.478	49.094	0.001	3.628	0.005	15.23
11/4/2002	4:10:47 PM	25.507	19.904	24.969	21.366	21.358	22.712	34.555	4.042	20	5.655	-4.475	49.071	0.001	3.624	0.004	16.23
11/4/2002	4:11:47 PM	25.56	19.927	25.027	21.298	21.385	22.646	34.651	4.078	19.773	5.695	-4.467	48.85	0.001	3.636	0.005	17.23
11/4/2002	4:12:47 PM	25.503	19.955	25.031	21.387	21.409	22.474	34.34	4.066	19.747	5.773	-4.461	49.094	0.001	3.643	0.006	18.23
11/4/2002	4:13:47 PM	25.56	19.972	24.958	21.414	21.421	22.468	34.369	4.062	19.726	5.663	-4.449	49.035	0.001	3.644	0.004	19.23
11/4/2002	4:14:47 PM	25.518	19.995	25.086	21.397	21.429	22.736	34.686	4.14	19.902	5.77	-4.441	48.93	0.001	3.657	0.006	20.23
11/4/2002	4:15:47 PM	25.53	20.018	24.958	21.465	21.452	22.663	34.715	4.042	20	5.776	-4.441	48.762	0.001	3.653	0.004	21.23
11/4/2002	4:16:47 PM	25.558	20.046	25.091	21.392	21.459	22.513	34.671	4.06	19.777	5.828	-4.432	49.022	0.001	3.664	0.005	22.23
11/4/2002	4:17:47 PM	25.516	20.064	25.014	21.425	21.473	22.58	34.597	4.066	19.884	5.82	-4.429	48.993	0.001	3.659	0.006	23.23
11/4/2002	4:18:47 PM	25.568	20.082	24.986	21.382	21.49	22.447	34.646	4.141	19.538	5.889	-4.42	48.999	0.001	3.666	0.005	24.23
11/4/2002	4:19:47 PM	25.516	20.105	25.069	21.415	21.513	22.279	34.38	4.049	19.548	5.822	-4.415	49.056	0.001	3.67	0.005	25.23
11/4/2002	4:20:47 PM	25.533	20.127	24.946	21.468	21.53	22.513	34.599	4.1	19.867	5.918	-4.4	49.037	0.001	3.672	0.004	26.23
11/4/2002	4:21:47 PM	25.525	20.139	25.083	21.43	21.542	22.542	34.676	4.046	19.886	5.953	-4.397	49.054	0.001	3.683	0.004	27.23
11/4/2002	4:22:47 PM	25.503	20.162	24.975	21.452	21.58	22.205	34.402	4.106	19.425	6.016	-4.391	48.969	0.001	3.684	0.005	28.23
11/4/2002	4:23:47 PM	25.544	20.163	24.986	21.403	21.591	22.147	34.365	4.048	19.446	6.08	-4.386	49.066	0.001	3.69	0.006	29.23
11/4/2002	4:24:47 PM	25.481	20.19	25.009	21.38	21.603	22.401	34.651	4.09	19.654	6.033	-4.38	49.05	0.001	3.694	0.006	30.23
11/4/2002	4:25:47 PM	25.538	20.213	24.921	21.458	21.636	22.36	34.605	4.107	19.624	6.117	-4.368	48.827	0.001	3.7	0.006	31.23
11/4/2002	4:26:47 PM	25.511	20.241	25.069	21.445	21.659	22.188	34.549	4.108	19.368	6.117	-4.368	48.857	0.001	3.699	0.005	32.23
11/4/2002	4:27:47 PM	25.503	20.263	24.94	21.573	21.681	22.112	34.646	4.104	19.239	6.149	-4.357	48.897	0.001	3.712	0.006	33.23
11/4/2002	4:28:47 PM	25.525	20.271	25.008	21.51	21.709	21.991	34.415	4.028	19.286	6.213	-4.351	49.033	0.001	3.715	0.005	34.23
11/4/2002	4:29:47 PM	25.462	20.287	24.96	21.547	21.72	22.36	34.707	4.103	19.685	6.178	-4.345	49.115	0.001	3.715	0.006	35.23
11/4/2002	4:30:47 PM	25.509	20.315	24.902	21.554	21.743	22.248	34.682	4.079	19.478	6.146	-4.342	48.842	0.001	3.715	0.004	36.23
11/4/2002	4:31:47 PM	25.472	20.338	25.025	21.472	21.746	22.167	34.613	4.027	19.572	6.253	-4.339	49.054	0.001	3.722	0.006	37.23
11/4/2002	4:32:47 PM	25.474	20.36	24.887	21.569	21.762	22.186	34.599	4.077	19.544	6.207	-4.331	49.098	0.001	3.717	0.005	38.23
11/4/2002	4:33:47 PM	25.49	20.372	24.988	21.525	21.769	22.219	34.69	4.161	19.378	6.236	-4.322	49.196	0.001	3.728	0.005	39.23
11/4/2002	4:34:47 PM	25.432	20.388	24.915	21.628	21.768	22.244	34.661	4.124	19.497	6.166	-4.322	49.01	0.001	3.717	0.005	40.23
11/4/2002	4:35:47 PM	25.474	20.395	24.867	21.529	21.788	22.209	34.74	4.138	19.435	6.265	-4.316	49.075	0.001	3.725	0.006	41.23
11/4/2002	4:36:47 PM	25.425	20.427	24.974	21.561	21.789	22.192	34.738	4.094	19.585	6.305	-4.307	48.976	0.001	3.733	0.005	42.23
11/4/2002	4:37:47 PM	25.467	20.454	24.875	21.658	21.821	22.109	34.651	4.069	19.45	6.262	-4.299	48.857	0.001	3.737	0.005	43.23
11/4/2002	4:38:47 PM	25.459	20.461	25.012	21.549	21.823	22.138	34.711	4.09	19.486	6.343	-4.296	49.016	0.001	3.741	0.005	44.23
11/4/2002	4:39:47 PM	25.436	20.478	24.884	21.607	21.83	22.126	34.75	4.082	19.39	6.354	-4.293	48.949	0.001	3.738	0.004	45.23
11/4/2002	4:40:47 PM	25.487	20.49	24.93	21.517	21.832	22.138	34.812	4.111	19.417	6.398	-4.284	48.982	0.001	3.75	0.007	46.23
11/4/2002	4:41:47 PM	25.425	20.507	24.943	21.6	21.859	21.892	34.498	4.083	19.186	6.395	-4.281	48.945	0.001	3.746	0.006	47.23
11/4/2002	4:42:47 PM	25.481	20.529	24.869	21.657	21.866	21.936	34.644	4.06	19.194	6.343	-4.278	48.936	0.001	3.749	0.007	48.23
11/4/2002	4:43:47 PM	25.454	20.546	25.017	21.609	21.868	21.807	34.525	4.073	19.053	6.441	-4.27	49.211	0.001	3.753	0.008	49.23
11/4/2002	4:44:47 PM	25.464	20.577	24.897	21.645	21.879	21.782	34.386	4.133	19.003	6.467	-4.267	49.173	0.001	3.748	0.005	50.23
11/4/2002	4:45:47 PM	25.49	20.583	24.998	21.561	21.895	21.975	34.665	4.102	19.21	6.479	-4.267	48.993	0.001	3.761	0.006	51.23
11/4/2002	4:46:47 PM	25.441	20.6	24.925	21.622	21.896	22.056	34.796	4.115	19.323	6.427	-4.255	49.091	0.001	3.753	0.006	52.23
11/4/2002	4:47:47 PM	25.498	20.611	24.901	21.609	21.918	21.693	34.394	4.042	19.012	6.418	-4.252	48.941	0.001	3.766	0.005	53.23
11/4/2002	4:48:47 PM	25.44	20.619	24.969	21.656	21.93	21.878	34.626	4.043	19.243	6.516	-4.241	48.916	0.001	3.762	0.004	54.23
11/4/2002	4:49:47 PM	25.487	20.646	24.875	21.724	21.957	21.795	34.469	4.065	19.261	6.502	-4.238	49.125	0.001	3.767	0.005	55.23
11/4/2002	4:50:47 PM	25.474	20.658	25.032	21.715	21.949	21.656	34.465	4.099	18.917	6.545	-4.235	48.907	0.001	3.772	0.004	56.23
11/4/2002	4:51:47 PM	25.461	20.68	24.914	21.768	21.961	22.031	34.779	4.067	19.413	6.487	-4.229	49.098	0.001	3.769	0.005	57.23
11/4/2002	4:52:47 PM	25.497	20.681	24.946	21.709	21.973	21.834	34.537	4.063	19.198	6.536	-4.229	48.884	0.001	3.778	0.004	58.23
11/4/2002	4:53:47 PM	25.455	20.704	24.973	21.802	22.005	21.772	34.711	4.142	18.95	6.545	-4.223	48.918	0.001	3.775	0.007	59.23
	Averages	25.5	20.2	25.0	21.4	21.6	22.3	34.6	4.1	19.6	6.1	-4.4	49.0	0.0	3.7	0.0	
	Maximum	25.6	20.7	25.1	21.8	22.0	22.9	34.9	4.2	20.1	6.5	-4.2	49.2	0.0	3.8	0.0	
	Median	25.5	20.2	25.0	21.5	21.6	22.2	34.6	4.1	19.5	6.1	-4.4	49.0	0.0	3.7	0.0	
	Minimum	25.4	19.6	24.9	20.9	21.1	21.7	34.3	4.0	18.9	5.6	-4.5	48.8	0.0	3.6	0.0	
	2 x Std Dev	0.084	0.653	0.133	0.433	0.537	0.673	0.254	0.073	0.629	0.607	0.188	0.204	0.000	0.098	0.002	
Number of Points Used*		57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	

Calculated From Raw Data >>>>>>>>>>>>>>>>>>>										
Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
0	34.3	11.3	1.0	0.072	0.000	0.000	0.0001	0.143	0.12
0.00833	34.8	11.1	-13.1	-0.901	0.000	0.000	0.0000	-0.023	-0.02
0.01667	33.6	11.5	5.6	0.387	0.143	0.142	0.0254	25.377	21.60
0.025	33.5	11.6	8.4	0.580	0.178	0.177	0.0210	20.986	17.86
0.03333	33.1	12.1	20.3	1.397	0.000	0.000	0.0000	0.015	0.01
0.04167	33.3	12.1	20.6	1.424	0.000	0.000	0.0000	0.014	0.01
0.05389	33.2	12.1	20.8	1.431	0.556	0.554	0.0267	26.677	22.70
0.07056	33.0	12.1	20.9	1.438	0.550	0.550	0.0264	26.388	22.46
0.08722	33.2	12.0	21.1	1.457	0.549	0.548	0.0259	25.905	22.05
0.10389	33.2	12.0	21.3	1.466	0.546	0.545	0.0256	25.650	21.83
0.12056	32.9	12.0	21.0	1.448	0.544	0.544	0.0259	25.897	22.04
0.13722	33.1	12.0	21.3	1.466	0.542	0.541	0.0254	25.427	21.64
0.15389	33.2	12.0	21.4	1.478	0.539	0.540	0.0252	25.179	21.43
0.17056	33.4	12.0	21.5	1.485	0.542	0.540	0.0251	25.095	21.36
0.18722	33.2	12.0	21.4	1.478	0.540	0.540	0.0252	25.212	21.46
0.20389	33.2	12.0	21.5	1.480	0.541	0.541	0.0252	25.219	21.46
0.22056	33.2	12.0	21.5	1.480	0.540	0.539	0.0251	25.098	21.36
0.23722	33.1	12.0	21.4	1.474	0.541	0.541	0.0253	25.329	21.56
0.25389	33.1	12.0	21.3	1.467	0.541	0.539	0.0253	25.341	21.57
0.27056	33.1	12.0	21.4	1.472	0.540	0.541	0.0253	25.322	21.55
0.28722	33.2	12.0	21.2	1.462	0.542	0.542	0.0255	25.540	21.73
0.30389	32.9	12.0	21.1	1.455	0.543	0.543	0.0257	25.706	21.88
0.32056	32.9	12.0	21.1	1.455	0.543	0.544	0.0258	25.782	21.94
0.33722	33.2	12.0	21.3	1.470	0.545	0.544	0.0256	25.613	21.71
0.35389	33.2	11.9	21.3	1.471	0.545	0.545	0.0256	25.562	21.75
0.37056	33.2	12.0	21.1	1.458	0.546	0.545	0.0258	25.768	21.93
0.38722	33.1	12.0	21.2	1.464	0.546	0.545	0.0257	25.683	21.86
0.40389	33.2	12.0	21.0	1.447	0.547	0.547	0.0260	26.047	22.17
0.42056	32.9	12.0	20.9	1.442	0.547	0.546	0.0261	26.112	22.22
0.43722	33.1	12.0	21.2	1.461	0.547	0.548	0.0259	25.875	22.02
0.45389	33.2	12.0	21.2	1.463	0.549	0.548	0.0258	25.824	21.98
0.47056	32.9	12.0	20.8	1.435	0.549	0.550	0.0264	26.406	22.47
0.48722	32.9	12.0	20.8	1.434	0.550	0.550	0.0265	26.464	22.52
0.50389	33.2	12.0	21.0	1.450	0.551	0.551	0.0262	26.185	22.28
0.52056	33.1	12.0	21.0	1.447	0.552	0.553	0.0263	26.337	22.41
0.53722	33.1	12.0	20.8	1.433	0.551	0.550	0.0265	26.490	22.54
0.55389	33.2	12.0	20.7	1.426	0.553	0.554	0.0268	26.813	22.82
0.57056	32.9	12.0	20.6	1.423	0.554	0.554	0.0268	26.831	22.83
0.58722	33.2	12.0	21.0	1.449	0.554	0.554	0.0264	26.376	22.45
0.60389	33.2	12.0	20.9	1.438	0.554	0.555	0.0266	26.622	22.66
0.62056	33.1	12.0	20.9	1.439	0.555	0.555	0.0266	26.571	22.61
0.63722	33.1	12.0	20.9	1.439	0.554	0.556	0.0266	26.645	22.67
0.65389	33.2	12.1	20.8	1.434	0.556	0.556	0.0267	26.733	22.75
0.67056	33.2	12.0	20.9	1.439	0.554	0.556	0.0266	26.617	22.65
0.68722	33.3	12.0	20.8	1.436	0.555	0.557	0.0266	26.772	22.78
0.70389	33.3	12.0	20.9	1.440	0.557	0.557	0.0267	26.664	22.69
0.72056	33.2	12.0	20.8	1.433	0.557	0.559	0.0269	26.907	22.90
0.73722	33.2	12.0	20.8	1.435	0.558	0.558	0.0268	26.790	22.80
0.75389	33.3	12.0	20.8	1.431	0.557	0.559	0.0269	26.935	22.92
0.77056	33.3	12.0	20.8	1.433	0.559	0.560	0.0270	26.962	22.94
0.78722	33.0	12.0	20.5	1.416	0.558	0.559	0.0272	27.236	23.18
0.80389	33.2	12.0	20.6	1.418	0.559	0.561	0.0273	27.280	23.22
0.82056	33.1	12.1	20.4	1.409	0.560	0.559	0.0274	27.375	23.30
0.83722	32.9	12.1	20.4	1.406	0.559	0.560	0.0275	27.482	23.39
0.85389	33.2	12.0	20.6	1.420	0.561	0.561	0.0272	27.231	23.17
0.87056	33.3	12.0	20.7	1.426	0.560	0.561	0.0271	27.102	23.06
0.88722	32.9	12.0	20.4	1.403	0.560	0.562	0.0276	27.591	23.48
0.90389	33.2	12.0	20.6	1.418	0.561	0.561	0.0273	27.303	23.24
0.92056	33.0	12.0	20.5	1.415	0.562	0.564	0.0275	27.456	23.37
0.93722	33.0	12.0	20.3	1.399	0.562	0.562	0.0277	27.697	23.57
0.95389	33.3	12.0	20.7	1.429	0.562	0.563	0.0272	27.183	23.13
0.97056	33.1	12.0	20.5	1.415	0.563	0.564	0.0275	27.497	23.40
0.98722	33.2	12.0	20.4	1.404	0.563	0.563	0.0277	27.663	23.54
	33.1	12.0	20.9	1.443	0.551	0.552	0.0264	26.375	22.445
	33.4	12.1	21.5	1.485	0.563	0.564	0.0277	27.697	23.570
	33.2	12.0	20.9	1.439	0.562	0.563	0.0265	26.464	22.521
	32.9	11.9	20.3	1.399	0.539	0.539	0.0251	25.095	21.356
0.548	0.254	0.050	0.646	0.045	0.015	0.016	0.0015	1.525	1.298
	57	57	57	57	57	57	57	57	57

Flow Surface	6.707	FT2							
Conversion		851	m3/m2/day/barg / gpm/ft2/barg						
Note: Gauge Pressure P1 is approximately 1.4 psig									
Pressure P1 is corrected for 40.88 inches of water tubing									
VVVV					< Filtrate Flux << PERMIABILITY >>				
					at 25C		x 1000		

* Backpulse points in box are not included

Figure A52: AN-102R2, Batch 3B Slurry Test 1.32 – Deionized & Filtered Water (pH=4) Rinse after Acid Cleaning - Raw & Calculated Data

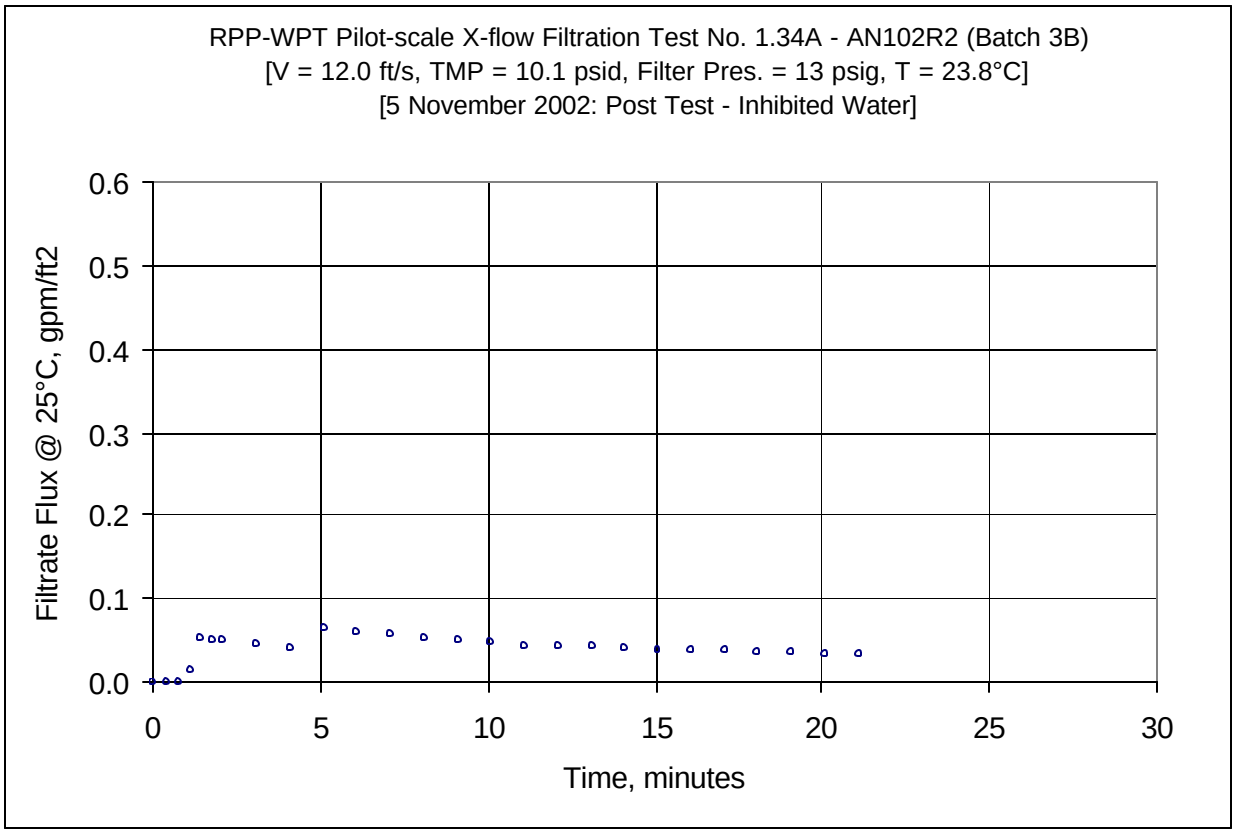


Figure A53: AN-102R2, Batch 3B Slurry Test 1.34A – Inhibited Deionized & Filtered Water Test after Standard Slurry

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
11/5/2002	8:48:46 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Filter Surface	6.707	FT2						
11/5/2002	8:49:01 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
11/5/2002	8:49:02 AM	24.624	19.589	24.096	20.033	19.924	-0.11	-0.076	-0.048	0.067	-0.308	0.389	38.846	1.019	0.001	0											
11/5/2002	8:49:03 AM	24.629	19.594	24.091	20.033	19.914	-0.11	-0.078	-0.048	0.067	-0.331	0.389	38.779	1.018	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
11/5/2002	8:49:04 AM	24.629	19.594	24.091	20.033	19.919	-0.11	-0.078	-0.048	0.067	-0.36	0.389	38.833	1.017	0.001	0											
11/5/2002	8:49:05 AM	24.624	19.589	24.091	20.028	19.924	-0.11	-0.076	-0.048	0.069	-0.354	0.392	38.856	1.018	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
11/5/2002	8:49:06 AM	24.629	19.589	24.096	20.038	19.919	-0.11	-0.078	-0.048	0.069	-0.357	0.392	38.796	1.017	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY		>>
11/5/2002	8:49:07 AM	24.629	19.589	24.096	20.038	19.924	-0.11	-0.076	-0.048	0.069	-0.351	0.389	38.772	1.018	0.001	0								at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/5/2002	3:59:53 PM	24.599	22.527	24.162	22.361	23.302	2.916	14.588	4.501	-1.523	6.458	54.422	48.917	0.001	0.001	0	0	0	13.1	12.0	0.7	0.048	0.000	0.000	0.0002	0.219	0.19
11/5/2002	4:00:19 PM	24.599	22.527	24.162	22.361	23.302	2.916	14.588	4.501	-1.523	6.458	54.422	48.917	0.001	0.001	0	0.43	0.00722	13.1	12.0	0.7	0.048	0.000	0.000	0.0002	0.219	0.19
11/5/2002	4:00:40 PM	24.633	22.526	24.006	22.461	23.312	-7.496	14.999	4.539	-15.053	20.694	24.225	47.802	0.001	0.001	1.563	0.78	0.01306	13.5	11.7	-11.3	-0.777	0.000	0.000	0.0000	-0.014	-0.01
11/5/2002	4:01:00 PM	24.488	22.537	24.031	22.461	23.292	3.873	14.449	4.466	-0.424	5.438	0.45	48.873	0.101	0.001	0	1.12	0.01861	13.0	12.0	1.7	0.119	0.015	0.015	0.0090	8.974	7.64
11/5/2002	4:01:20 PM	24.463	22.526	24.026	22.42	23.282	8.181	14.59	4.544	3.799	0.978	0.456	49.115	0.35	0.001	0	1.45	0.02417	13.1	12.0	6.0	0.413	0.052	0.054	0.0090	8.954	7.62
11/5/2002	4:01:40 PM	24.463	22.531	24.066	22.42	23.272	8.299	14.778	4.61	3.861	0.929	0.482	48.972	0.332	0.001	0	1.78	0.02972	13.3	12.0	6.1	0.419	0.049	0.051	0.0084	8.359	7.11
11/5/2002	4:01:59 PM	24.488	22.542	24.091	22.42	23.272	8.125	14.534	4.354	4.039	0.929	0.511	49.177	0.326	0.001	0	2.10	0.035	13.1	12.1	6.1	0.419	0.049	0.050	0.0082	8.199	6.98
11/5/2002	4:02:59 PM	24.503	22.537	23.896	22.39	23.262	8.268	14.64	4.518	4.024	0.816	0.598	49.027	0.291	0.001	0	3.10	0.05167	13.2	12.0	6.1	0.424	0.043	0.045	0.0073	7.283	6.20
11/5/2002	4:03:59 PM	24.458	22.526	23.971	22.335	23.252	8.39	14.656	4.557	4.039	0.81	0.679	49.198	0.27	0.001	0	4.10	0.06833	13.2	12.1	6.2	0.428	0.040	0.041	0.0067	6.669	5.68
11/5/2002	4:04:59 PM	24.378	22.542	23.796	22.401	23.277	11.269	14.567	4.414	6.911	-1.288	-3.314	49.094	0.418	0.001	0	5.10	0.085	13.1	12.0	9.1	0.627	0.062	0.064	0.0071	7.093	6.04
11/5/2002	4:05:59 PM	24.314	22.543	23.862	22.391	23.303	12.151	14.94	4.365	8.098	-1.285	-3.54	48.92	0.39	0.001	0	6.10	0.10167	13.5	12.0	10.1	0.698	0.058	0.060	0.0059	5.931	5.05
11/5/2002	4:06:59 PM	24.285	22.554	23.788	22.367	23.314	11.992	14.371	4.492	7.898	-1.288	-3.734	49.004	0.368	0.001	0	7.10	0.11833	12.9	12.0	9.9	0.686	0.055	0.057	0.0057	5.709	4.86
11/5/2002	4:07:59 PM	24.24	22.555	23.789	22.433	23.32	12.317	14.517	4.344	8.131	-1.285	-3.827	48.949	0.335	0.001	0	8.10	0.135	13.0	12.0	10.2	0.705	0.050	0.052	0.0051	5.055	4.30
11/5/2002	4:08:59 PM	24.196	22.55	23.874	22.409	23.305	12.624	14.538	4.519	8.278	-1.288	-3.995	49.142	0.332	0.001	0	9.10	0.15167	13.1	12.0	10.5	0.721	0.049	0.051	0.0049	4.889	4.16
11/5/2002	4:09:59 PM	24.161	22.56	23.714	22.484	23.255	12.696	14.397	4.393	8.465	-1.285	-4.111	48.907	0.309	0.001	0	10.10	0.16833	12.9	12.0	10.6	0.729	0.046	0.048	0.0045	4.515	3.84
11/5/2002	4:10:59 PM	24.104	22.539	23.793	22.317	23.254	13	14.584	4.643	8.422	-1.288	-4.131	48.964	0.282	0.001	0	11.10	0.185	13.1	12.0	10.7	0.738	0.042	0.044	0.0041	4.062	3.46
11/5/2002	4:11:59 PM	24.09	22.55	23.653	22.393	23.255	13.063	14.48	4.579	8.727	-1.288	-4.261	49.014	0.283	0.001	0	12.10	0.20167	13.0	12.0	10.9	0.751	0.042	0.044	0.0040	4.023	3.42
11/5/2002	4:12:59 PM	24.054	22.534	23.688	22.428	23.234	13.145	14.466	4.33	8.839	-1.291	-4.365	48.972	0.274	0.001	0	13.10	0.21833	13.0	12.0	11.0	0.758	0.041	0.042	0.0039	3.857	3.28
11/5/2002	4:13:59 PM	24.05	22.56	23.723	22.413	23.245	13.193	14.52	4.617	8.758	-1.285	-4.429	49.066	0.263	0.001	0	14.10	0.235	13.0	12.0	11.0	0.757	0.039	0.041	0.0037	3.704	3.15
11/5/2002	4:14:59 PM	24.019	22.554	23.657	22.418	23.254	13.549	14.859	4.745	8.846	-1.282	-4.472	48.961	0.251	0.001	0	15.10	0.25167	13.4	12.0	11.2	0.772	0.037	0.039	0.0035	3.471	2.95
11/5/2002	4:15:59 PM	23.999	22.565	23.784	22.358	23.26	13.409	14.561	4.46	9.263	-1.285	-4.525	49.201	0.244	0.001	0	16.10	0.26833	13.1	12.1	11.3	0.782	0.036	0.038	0.0033	3.321	2.83
11/5/2002	4:16:59 PM	23.979	22.56	23.613	22.474	23.235	13.429	14.625	4.551	9.101	-1.288	-4.582	49.066	0.241	0.001	0	17.10	0.285	13.2	12.0	11.3	0.777	0.036	0.037	0.0033	3.317	2.82
11/5/2002	4:17:59 PM	23.954	22.555	23.693	22.388	23.23	13.545	14.755	4.494	9.181	-1.288	-4.611	48.959	0.231	0.001	0	18.10	0.30167	13.3	12.0	11.4	0.783	0.034	0.036	0.0031	3.145	2.68
11/5/2002	4:18:59 PM	23.944	22.559	23.627	22.383	23.239	13.574	14.679	4.499	9.259	-1.285	-4.646	48.97	0.224	0.001	0	19.10	0.31833	13.2	12.0	11.4	0.787	0.033	0.035	0.0030	3.041	2.59
11/5/2002	4:19:59 PM	23.908	22.543	23.622	22.387	23.243	13.39	14.563	4.578	8.805	-1.285	-4.672	48.941	0.22	0.001	0	20.10	0.335	13.1	12.0	11.1	0.765	0.033	0.034	0.0031	3.073	2.62
11/5/2002	4:20:59 PM	23.888	22.538	23.697	22.337	23.243	13.241	14.387	4.424	8.837	-1.291	-4.704	48.901	0.217	0.001	0	21.10	0.35167	12.9	12.0	11.0	0.761	0.032	0.034	0.0030	3.041	2.59
	Averages	24.2	22.5	23.8	22.4	23.3	12.2	14.6	4.5	7.9	-1.0	-3.5	49.0	0.3	0.0	0.0		0.2	13.1	12.0	10.1	0.693	0.043	0.045	0.0047	4.670	3.974
	Maximum	24.5	22.6	24.1	22.5	23.3	13.6	14.9	4.7	9.3	0.9	0.7	49.2	0.4	0.0	0.0		0.4	13.5	12.1	11.4	0.787	0.062	0.064	0.0082	8.199	6.978
	Median	24.1	22.6	23.8	22.4	23.3	13.0	14.6	4.5	8.6	-1.3	-4.2	49.0	0.3	0.0	0.0		0.2	13.1	12.0	10.8	0.745	0.041	0.043	0.0040	4.042	3.440
	Minimum	23.9	22.5	23.6	22.3	23.2	8.1	14.4	4.3	4.0	-1.3	-4.7	48.9	0.2	0.0	0.0		0.0	12.9	12.0	6.1	0.419	0.032	0.034	0.0030	3.041	2.588
	2 x Std Dev	0.386	0.021	0.244	0.082	0.054	3.526	0.286	0.215	3.415	1.528	3.529	0.188	0.113	0.000	0.000		0.192	0.286	0.046	3.467	0.239	0.017	0.017	0.0032	3.152	2.683
Number of Points Used*		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		20	20	20	20	20	20	20	20	20	20
	* Backpulse points in box are not included																										

Figure A54: AN-102R2, Batch 3B Slurry Test 1.34A – Inhibited Deionized & Filtered Water Test after Standard Slurry – Raw & Calculated Data

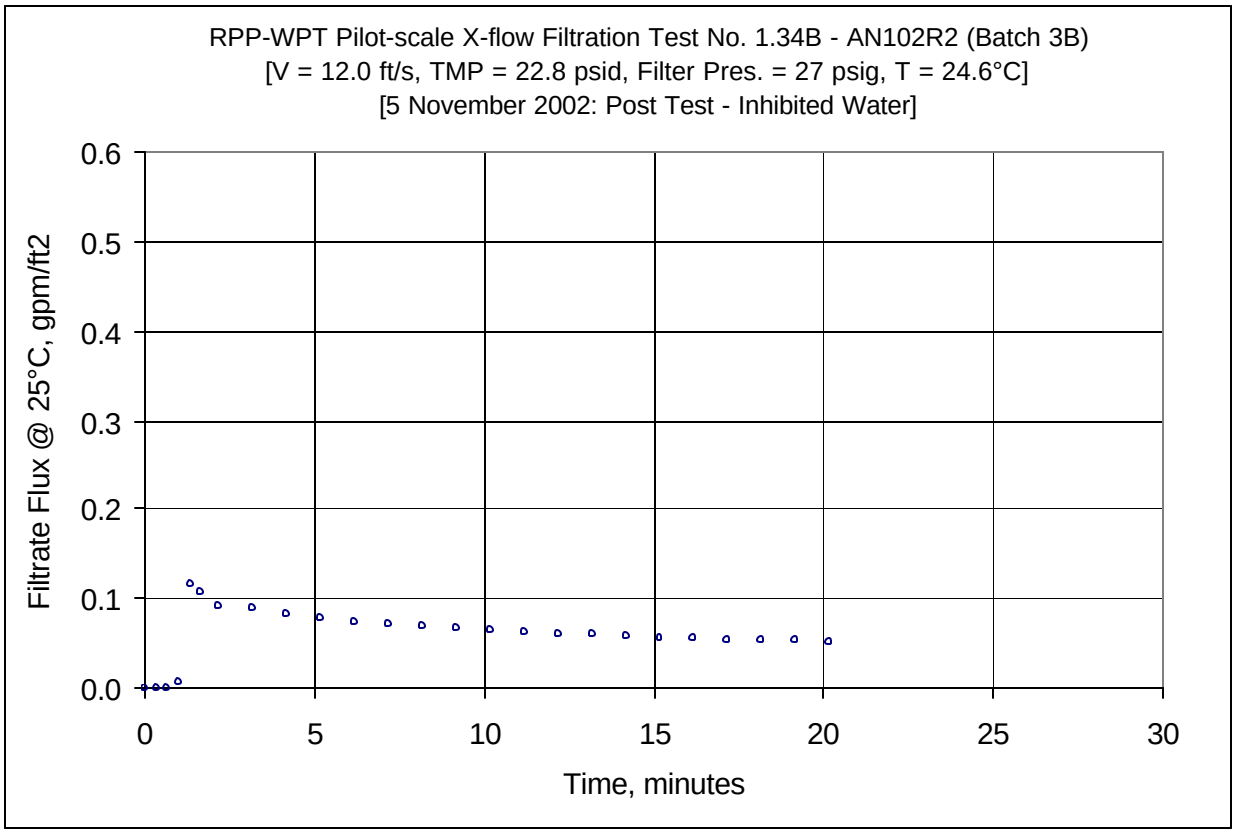


Figure A55: AN-102R2, Batch 3B Slurry Test 1.34B – Inhibited Deionized & Filtered Water Test after Standard Slurry

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
11/5/2002	8:48:46 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Filter Surface	6.707	FT2					
11/5/2002	8:49:01 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
11/5/2002	8:49:02 AM	24.624	19.589	24.096	20.033	19.924	-0.11	-0.076	-0.048	0.067	-0.308	0.389	38.846	1.019	0.001	0										
11/5/2002	8:49:03 AM	24.629	19.594	24.091	20.033	19.914	-0.11	-0.078	-0.048	0.067	-0.331	0.389	38.779	1.018	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig							
11/5/2002	8:49:04 AM	24.629	19.594	24.091	20.033	19.919	-0.11	-0.078	-0.048	0.067	-0.36	0.389	38.833	1.017	0.001	0										
11/5/2002	8:49:05 AM	24.624	19.589	24.091	20.028	19.924	-0.11	-0.076	-0.048	0.069	-0.354	0.392	38.856	1.018	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing							
11/5/2002	8:49:06 AM	24.629	19.589	24.096	20.038	19.919	-0.11	-0.078	-0.048	0.069	-0.357	0.392	38.796	1.017	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY	>>
11/5/2002	8:49:07 AM	24.629	19.589	24.096	20.038	19.924	-0.11	-0.076	-0.048	0.069	-0.351	0.389	38.772	1.018	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/5/2002	4:25:03 PM	23.915	22.555	24.135	22.389	23.205	3.204	28.664	4.468	-1.319	20.442	68.714	48.651	0.001	0.001	0	0	0	27.2	11.9	0.9	0.065	0.000	0.000	0.0002	0.162	0.14
11/5/2002	4:25:24 PM	23.915	22.555	24.135	22.389	23.205	3.204	28.664	4.468	-1.319	20.442	68.714	48.651	0.001	0.001	0	0.35	0.00583	27.2	11.9	0.9	0.065	0.000	0.000	0.0002	0.162	0.14
11/5/2002	4:25:43 PM	23.876	22.552	24.141	22.395	23.216	-7.498	28.817	4.442	-14.238	33.923	36.687	47.479	0.001	0.001	1.435	0.67	0.01111	27.3	11.6	-10.9	-0.749	0.000	0.000	0.0000	-0.014	-0.01
11/5/2002	4:26:03 PM	23.912	22.572	24.107	22.542	23.227	4.19	28.616	4.499	-0.262	19.838	0.56	48.681	0.04	0.001	0	1.00	0.01667	27.1	11.9	2.0	0.135	0.006	0.006	0.0031	3.114	2.65
11/5/2002	4:26:23 PM	24.122	22.572	24.132	22.481	23.217	16.565	28.577	4.513	12.201	6.794	0.502	49.119	0.754	0.001	0	1.33	0.02222	27.1	12.0	14.4	0.992	0.112	0.115	0.0080	8.010	6.82
11/5/2002	4:26:43 PM	24.268	22.573	24.203	22.487	23.218	19.094	28.629	4.493	14.795	4.212	0.566	49.171	0.701	0.001	0	1.67	0.02778	27.2	12.1	16.9	1.168	0.105	0.107	0.0063	6.308	5.37
11/5/2002	4:27:14 PM	24.359	22.573	24.333	22.487	23.208	19.997	28.564	4.478	15.699	3.285	0.653	49.245	0.597	0.001	0	2.18	0.03639	27.1	12.1	17.8	1.231	0.089	0.091	0.0051	5.082	4.32
11/5/2002	4:28:14 PM	24.481	22.57	24.25	22.635	23.22	22.482	28.616	4.479	18.201	0.773	-1.687	49.14	0.585	0.001	0	3.18	0.05306	27.1	12.0	20.3	1.402	0.087	0.089	0.0044	4.379	3.73
11/5/2002	4:29:14 PM	24.517	22.566	24.436	22.57	23.196	23.129	28.744	4.584	18.619	-0.045	-2.101	49.014	0.547	0.001	0	4.18	0.06972	27.3	12.0	20.9	1.439	0.082	0.083	0.0040	3.970	3.38
11/5/2002	4:30:14 PM	24.61	22.583	24.339	22.719	23.218	23.715	28.593	4.448	19.36	-0.609	-2.443	48.949	0.512	0.001	0	5.18	0.08639	27.1	12.0	21.5	1.485	0.076	0.078	0.0036	3.611	3.07
11/5/2002	4:31:14 PM	24.63	22.563	24.524	22.548	23.178	24.044	28.397	4.489	19.716	-1.063	-2.669	49.052	0.489	0.001	0	6.18	0.10306	26.9	12.0	21.9	1.509	0.073	0.074	0.0034	3.377	2.87
11/5/2002	4:32:14 PM	24.697	22.575	24.406	22.66	23.21	24.551	28.511	4.471	20.26	-1.285	-2.874	48.922	0.468	0.001	0	7.18	0.11972	27.0	12.0	22.4	1.545	0.070	0.071	0.0032	3.167	2.69
11/5/2002	4:33:14 PM	24.702	22.576	24.592	22.646	23.201	24.972	28.645	4.527	20.461	-1.291	-3.028	48.93	0.452	0.001	0	8.18	0.13639	27.2	12.0	22.7	1.566	0.067	0.068	0.0030	3.001	2.55
11/5/2002	4:34:14 PM	24.759	22.593	24.498	22.728	23.217	25.148	28.562	4.478	20.866	-1.282	-3.169	49.05	0.436	0.001	0	9.18	0.15306	27.1	12.0	23.0	1.586	0.065	0.066	0.0029	2.866	2.44
11/5/2002	4:35:14 PM	24.74	22.573	24.644	22.688	23.193	25.326	28.693	4.485	20.919	-1.285	-3.268	49.018	0.425	0.001	0	10.18	0.16972	27.2	12.0	23.1	1.594	0.063	0.064	0.0028	2.768	2.36
11/5/2002	4:36:14 PM	24.817	22.59	24.531	22.741	23.21	25.67	28.751	4.433	21.394	-1.288	-3.381	48.907	0.412	0.001	0	11.18	0.18639	27.3	12.0	23.5	1.622	0.061	0.062	0.0026	2.645	2.25
11/5/2002	4:37:14 PM	24.813	22.592	24.698	22.606	23.191	25.616	28.508	4.443	21.259	-1.288	-3.462	48.869	0.402	0.001	0	12.18	0.20306	27.0	12.0	23.4	1.616	0.060	0.060	0.0026	2.579	2.19
11/5/2002	4:38:14 PM	24.845	22.593	24.559	22.587	23.202	25.902	28.643	4.496	21.681	-1.288	-3.537	48.976	0.393	0.001	0	13.18	0.21972	27.2	12.0	23.8	1.640	0.059	0.059	0.0025	2.494	2.12
11/5/2002	4:39:14 PM	24.85	22.593	24.709	22.658	23.188	25.983	28.643	4.522	21.503	-1.288	-3.61	49.004	0.384	0.001	0	14.18	0.23639	27.2	12.0	23.7	1.637	0.057	0.058	0.0024	2.431	2.07
11/5/2002	4:40:14 PM	24.887	22.615	24.626	22.746	23.205	26.142	28.653	4.456	21.851	-1.288	-3.682	48.777	0.375	0.001	0	15.18	0.25306	27.2	12.0	24.0	1.654	0.056	0.057	0.0024	2.355	2.00
11/5/2002	4:41:14 PM	24.888	22.616	24.707	22.691	23.185	26.107	28.43	4.485	21.835	-1.288	-3.731	48.974	0.368	0.001	0	16.18	0.26972	27.0	12.0	24.0	1.653	0.055	0.055	0.0023	2.308	1.96
11/5/2002	4:42:14 PM	24.893	22.617	24.652	22.682	23.201	26.279	28.573	4.424	22.07	-1.285	-3.792	48.863	0.361	0.001	0	17.18	0.28639	27.1	12.0	24.2	1.667	0.054	0.054	0.0022	2.248	1.91
11/5/2002	4:43:14 PM	24.899	22.627	24.693	22.622	23.202	26.235	28.43	4.354	22.054	-1.288	-3.827	48.739	0.357	0.001	0	18.18	0.30306	27.0	11.9	24.1	1.665	0.053	0.054	0.0022	2.224	1.89
11/5/2002	4:44:14 PM	24.92	22.644	24.689	22.769	23.223	26.242	28.37	4.424	22.015	-1.288	-3.873	48.905	0.35	0.001	0	19.18	0.31972	26.9	12.0	24.1	1.664	0.052	0.053	0.0022	2.182	1.86
11/5/2002	4:45:14 PM	24.916	22.664	24.685	22.805	23.229	26.42	28.448	4.464	22.217	-1.288	-3.908	48.609	0.345	0.001	0	20.18	0.33639	27.0	11.9	24.3	1.677	0.051	0.052	0.0021	2.134	1.82
	Averages	24.7	22.6	24.6	22.7	23.2	24.9	28.6	4.5	20.6	-0.8	-3.0	48.9	0.4	0.0	0.0		0.2	27.1	12.0	22.8	1.571	0.065	0.066	0.0029	2.938	2.500
	Maximum	24.9	22.7	24.7	22.8	23.2	26.4	28.8	4.6	22.2	3.3	0.7	49.2	0.6	0.0	0.0		0.3	27.3	12.1	24.3	1.677	0.089	0.091	0.0051	5.082	4.325
	Median	24.8	22.6	24.6	22.7	23.2	25.6	28.6	4.5	21.3	-1.3	-3.4	48.9	0.4	0.0	0.0		0.2	27.1	12.0	23.4	1.616	0.061	0.062	0.0026	2.645	2.251
	Minimum	24.4	22.6	24.3	22.5	23.2	20.0	28.4	4.4	15.7	-1.3	-3.9	48.6	0.3	0.0	0.0		0.0	26.9	11.9	17.8	1.231	0.051	0.052	0.0021	2.134	1.816
	2 x Std Dev	0.319	0.054	0.281	0.158	0.027	3.230	0.223	0.093	3.288	2.208	2.119	0.277	0.154	0.000	0.000		0.183	0.223	0.068	3.258	0.225	0.023	0.024	0.0016	1.595	1.357
Number of Points Used*		19	19	19	19	19	19	19	19	19	19	19	19	19	19	19		19	19	19	19	19	19	19	19	19	19
	* Backpulse points in box are not included																										

Figure A56: AN-102R2, Batch 3B Slurry Test 1.34B – Inhibited Deionized & Filtered Water Test after Standard Slurry – Raw & Calculated Data

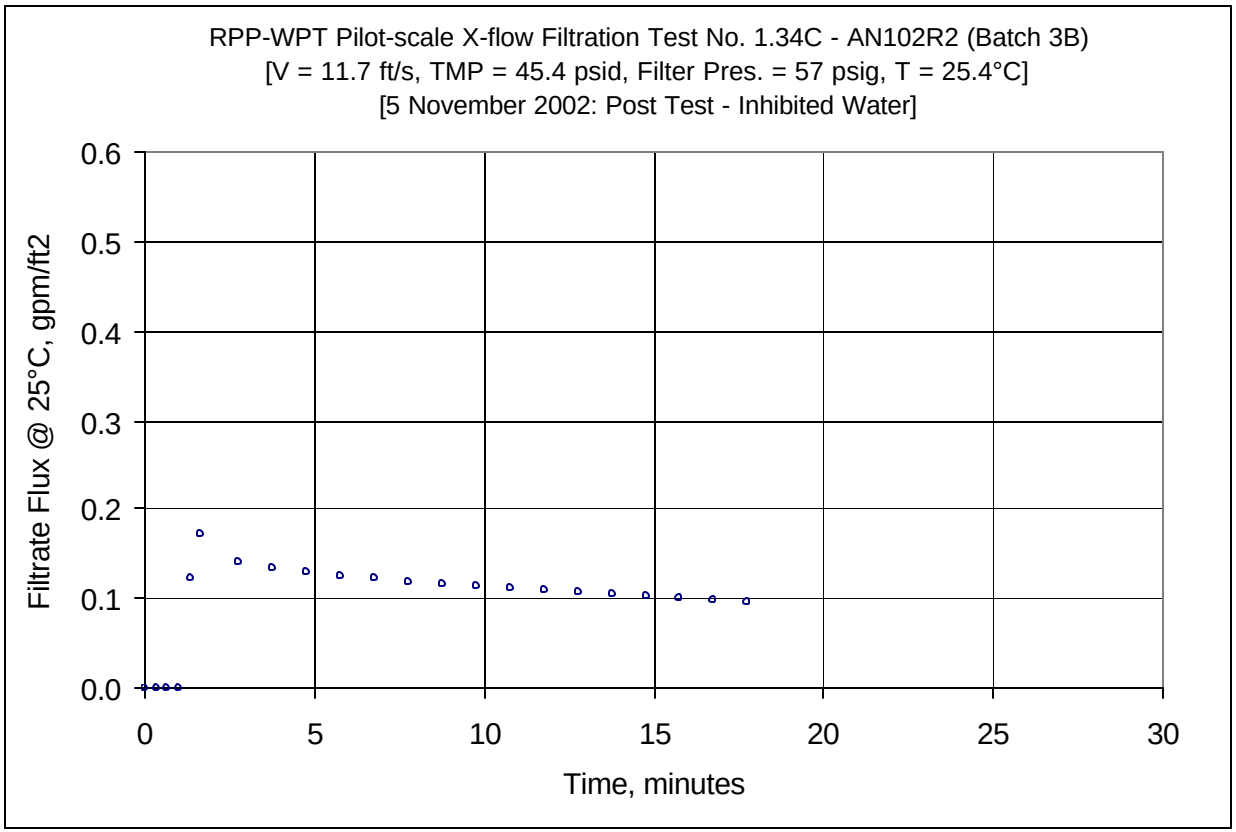


Figure A57: AN-102R2, Batch 3B Slurry Test 1.34C – Inhibited Deionized & Filtered Water Test after Standard Slurry

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
11/5/2002	8:48:46 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Filter Surface	6.707	FT2					
11/5/2002	8:49:01 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
11/5/2002	8:49:02 AM	24.624	19.589	24.096	20.033	19.924	-0.11	-0.076	-0.048	0.067	-0.308	0.389	38.846	1.019	0.001	0										
11/5/2002	8:49:03 AM	24.629	19.594	24.091	20.033	19.914	-0.11	-0.078	-0.048	0.067	-0.331	0.389	38.779	1.018	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig							
11/5/2002	8:49:04 AM	24.629	19.594	24.091	20.033	19.919	-0.11	-0.078	-0.048	0.067	-0.36	0.389	38.833	1.017	0.001	0										
11/5/2002	8:49:05 AM	24.624	19.589	24.091	20.028	19.924	-0.11	-0.076	-0.048	0.069	-0.354	0.392	38.856	1.018	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing							
11/5/2002	8:49:06 AM	24.629	19.589	24.096	20.038	19.919	-0.11	-0.078	-0.048	0.069	-0.357	0.392	38.796	1.017	0.001	0			VVVV			< Filtrate Flux		<< PERMIABILITY >>		
11/5/2002	8:49:07 AM	24.629	19.589	24.096	20.038	19.924	-0.11	-0.076	-0.048	0.069	-0.351	0.389	38.772	1.018	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/5/2002	4:51:46 PM	25.802	22.73	26.056	23.031	23.249	2.937	57.713	4.379	-1.542	49.976	97.689	48.37	0.001	0.001	0	0	0	56.2	11.9	0.7	0.048	0.000	0.000	0.0002	0.208	0.18
11/5/2002	4:52:06 PM	25.793	22.751	26.127	22.961	23.265	3.233	58.444	4.263	-1.03	50.338	96.769	47.529	0.001	0.001	0	0.33	0.00556	57.0	11.6	1.1	0.076	0.000	0.000	0.0001	0.131	0.11
11/5/2002	4:52:26 PM	25.217	22.736	26.057	22.951	23.255	-2.848	58.367	4.184	-6.93	56.584	57.257	46.965	0.001	0.001	0.639	0.67	0.01111	56.9	11.5	-4.9	-0.337	0.000	0.000	0.0000	-0.030	-0.03
11/5/2002	4:52:46 PM	25.248	22.746	26.027	23.027	23.26	3.266	57.999	4.202	-0.928	49.979	48.955	47.51	0.002	0.001	0	1.00	0.01667	56.5	11.6	1.2	0.081	0.000	0.000	0.0002	0.248	0.21
11/5/2002	4:53:06 PM	25.574	22.747	26.073	23.078	23.261	18.325	57.891	4.299	14.109	35.065	0.482	48.336	0.853	0.001	0	1.33	0.02222	56.4	11.8	16.2	1.118	0.127	0.123	0.0076	7.610	6.48
11/5/2002	4:53:26 PM	26.264	22.737	26.168	23.098	23.266	39.182	58.079	4.321	34.979	13.725	0.612	48.704	1.192	0.001	0	1.67	0.02778	56.6	11.9	37.1	2.557	0.178	0.172	0.0046	4.638	3.95
11/5/2002	4:54:32 PM	26.531	22.744	26.085	23.281	23.283	42.161	57.885	4.257	38.091	10.563	3.319	48.479	0.967	0.001	0	2.77	0.04611	56.4	11.9	40.1	2.767	0.144	0.140	0.0035	3.485	2.97
11/5/2002	4:55:32 PM	26.638	22.751	26.157	23.232	23.29	43.368	57.993	4.309	39.116	9.329	2.677	48.301	0.929	0.001	0	3.77	0.06278	56.5	11.8	41.2	2.843	0.139	0.134	0.0033	3.251	2.77
11/5/2002	4:56:32 PM	26.674	22.757	26.273	23.219	23.301	44.215	57.848	4.253	39.997	8.302	2.184	48.272	0.896	0.001	0	4.77	0.07944	56.4	11.8	42.1	2.903	0.134	0.129	0.0031	3.061	2.61
11/5/2002	4:57:32 PM	26.746	22.769	26.185	23.281	23.318	45.12	58.044	4.283	40.928	7.505	1.767	48.194	0.869	0.001	0	5.77	0.09611	56.6	11.8	43.0	2.966	0.130	0.125	0.0029	2.913	2.48
11/5/2002	4:58:32 PM	26.782	22.75	26.271	23.222	23.324	45.74	57.964	4.253	41.506	6.903	1.446	48.099	0.849	0.001	0	6.77	0.11278	56.5	11.8	43.6	3.008	0.127	0.122	0.0028	2.800	2.38
11/5/2002	4:59:32 PM	26.788	22.756	26.088	23.454	23.331	46.504	57.937	4.235	42.513	6.216	1.107	48.057	0.824	0.001	0	7.77	0.12944	56.5	11.8	44.5	3.069	0.123	0.119	0.0027	2.677	2.28
11/5/2002	5:00:32 PM	26.7	22.753	25.759	23.626	23.347	47.108	58.055	4.264	42.953	5.548	0.751	47.884	0.796	0.001	0	8.77	0.14611	56.6	11.7	45.0	3.105	0.119	0.116	0.0026	2.580	2.20
11/5/2002	5:01:32 PM	26.501	22.748	25.324	23.747	23.363	47.755	57.949	4.243	43.589	4.895	0.383	47.944	0.771	0.001	0	9.77	0.16278	56.5	11.7	45.7	3.149	0.115	0.114	0.0025	2.494	2.12
11/5/2002	5:02:32 PM	26.332	22.765	25.281	23.789	23.365	48.449	58.212	4.268	44.249	4.374	0.117	47.802	0.75	0.001	0	10.77	0.17944	56.7	11.7	46.3	3.196	0.112	0.111	0.0024	2.394	2.04
11/5/2002	5:03:32 PM	26.174	22.777	24.957	23.851	23.386	48.836	58.152	4.253	44.703	3.843	-0.152	47.863	0.728	0.001	0	11.77	0.19611	56.7	11.7	46.8	3.225	0.109	0.109	0.0023	2.324	1.98
11/5/2002	5:04:32 PM	26.015	22.778	24.943	23.812	23.402	49.205	57.912	4.188	45.215	3.464	-0.323	47.779	0.714	0.001	0	12.77	0.21278	56.4	11.7	47.2	3.255	0.106	0.107	0.0023	2.258	1.92
11/5/2002	5:05:32 PM	25.861	22.789	24.719	23.878	23.419	49.768	58.055	4.185	45.786	3.019	-0.572	47.695	0.693	0.001	0	13.77	0.22944	56.6	11.7	47.8	3.294	0.103	0.104	0.0022	2.180	1.85
11/5/2002	5:06:32 PM	25.727	22.785	24.67	23.869	23.419	50.151	58.297	4.275	46.005	2.672	-0.723	47.63	0.68	0.001	0	14.77	0.24611	56.8	11.7	48.1	3.315	0.101	0.102	0.0021	2.128	1.81
11/5/2002	5:07:32 PM	25.593	22.791	24.596	23.905	23.426	50.335	58.185	4.272	46.185	2.334	-0.908	47.561	0.663	0.001	0	15.77	0.26278	56.7	11.7	48.3	3.327	0.099	0.100	0.0021	2.072	1.76
11/5/2002	5:08:32 PM	25.5	22.808	24.458	23.942	23.453	50.512	57.924	4.187	46.521	2.065	-1.067	47.542	0.649	0.001	0	16.77	0.27944	56.5	11.7	48.5	3.345	0.097	0.098	0.0020	2.025	1.72
11/5/2002	5:09:32 PM	25.4	22.814	24.498	23.883	23.458	50.911	57.932	4.202	46.848	1.724	-1.206	47.546	0.636	0.001	0	17.77	0.29611	56.5	11.7	48.9	3.370	0.095	0.096	0.0020	1.968	1.67
	Averages	26.2	22.8	25.4	23.6	23.4	47.5	58.0	4.2	43.4	5.2	0.6	#	47.9	0.8	0.0	0.0			56.5	11.7	45.4	3.133	0.116	0.114	0.0025	2.538	2.160
	Maximum	26.8	22.8	26.3	23.9	23.5	50.9	58.3	4.3	46.8	10.6	3.3	0	48.5	1.0	0.0	0.0			56.8	11.9	48.9	3.370	0.144	0.140	0.0035	3.485	2.966
	Median	26.4	22.8	25.3	23.8	23.4	48.1	58.0	4.3	43.9	4.6	0.3	#	47.9	0.8	0.0	0.0			56.5	11.7	46.0	3.172	0.113	0.112	0.0024	2.444	2.080
	Minimum	25.4	22.7	24.5	23.2	23.3	42.2	57.8	4.2	38.1	1.7	-1.2	0	47.5	0.6	0.0	0.0			56.4	11.7	40.1	2.767	0.095	0.096	0.0020	1.968	1.674
	2 x Std Dev	0.962	0.042	1.374	0.558	0.111	5.312	0.252	0.072	5.395	5.284	2.723	#	0.568	0.202	0.000	0.000			0.252	0.139	5.353	0.369	0.030	0.026	0.0009	0.889	0.756
Number of Points Used*		16	16	16	16	16	16	16	16	16	16	16	0	16	16	16	16			16	16	16	16	16	16	16	16	16
	* Backpulse points in box are not included																										

Figure A58: AN-102R2, Batch 3B Slurry Test 1.34C – Inhibited Deionized & Filtered Water Test after Standard Slurry – Raw & Calculated Data

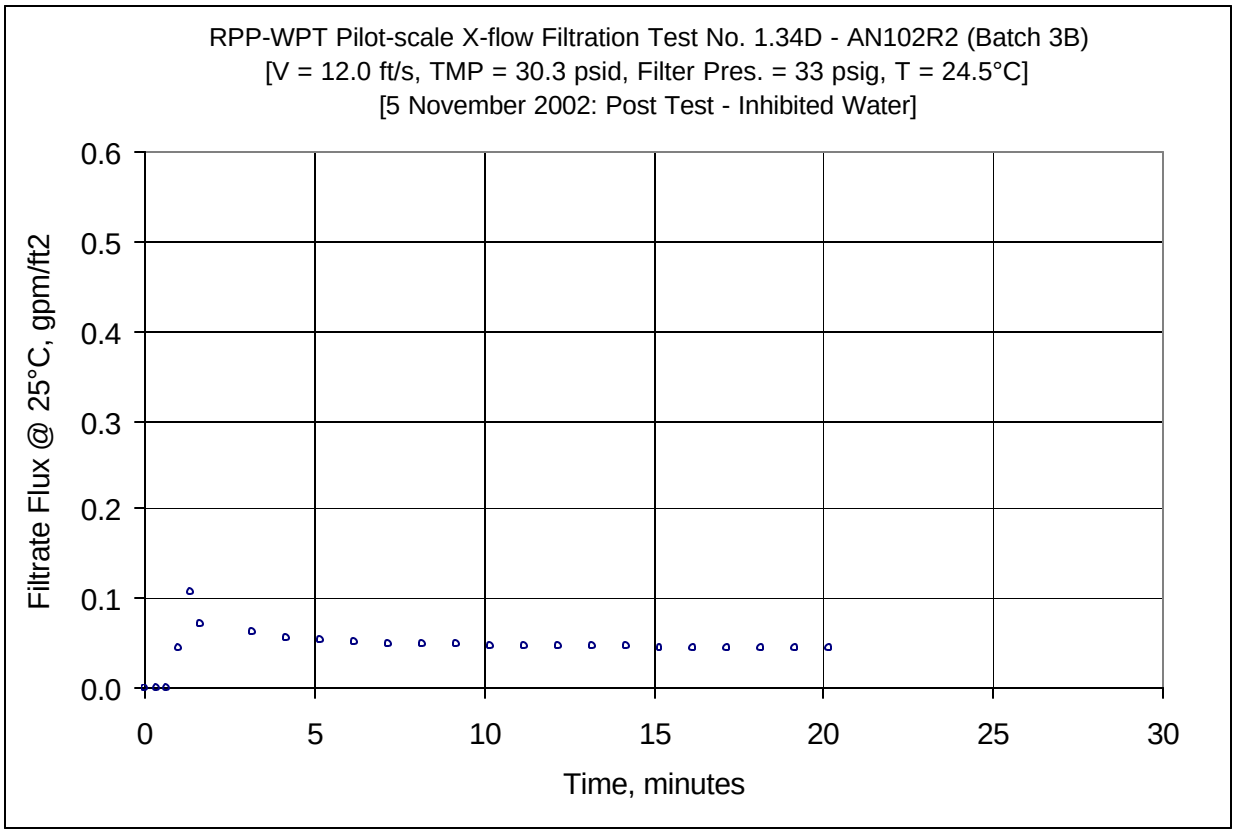


Figure A59: AN-102R2, Batch 3B Slurry Test 1.34D – Inhibited Deionized & Filtered Water Test after Standard Slurry

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
11/5/2002	8:48:46 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Filter Surface	6.707	FT2					
11/5/2002	8:49:01 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
11/5/2002	8:49:02 AM	24.624	19.589	24.096	20.033	19.924	-0.11	-0.076	-0.048	0.067	-0.308	0.389	38.846	1.019	0.001	0										
11/5/2002	8:49:03 AM	24.629	19.594	24.091	20.033	19.914	-0.11	-0.078	-0.048	0.067	-0.331	0.389	38.779	1.018	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig							
11/5/2002	8:49:04 AM	24.629	19.594	24.091	20.033	19.919	-0.11	-0.078	-0.048	0.067	-0.36	0.389	38.833	1.017	0.001	0										
11/5/2002	8:49:05 AM	24.624	19.589	24.091	20.028	19.924	-0.11	-0.076	-0.048	0.069	-0.354	0.392	38.856	1.018	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing							
11/5/2002	8:49:06 AM	24.629	19.589	24.096	20.038	19.919	-0.11	-0.078	-0.048	0.069	-0.357	0.392	38.796	1.017	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY >>	
11/5/2002	8:49:07 AM	24.629	19.589	24.096	20.038	19.924	-0.11	-0.076	-0.048	0.069	-0.351	0.389	38.772	1.018	0.001	0								at 25C		x 1000
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/5/2002	5:13:25 PM	25.236	22.82	24.59	23.513	23.555	3.266	34.342	4.524	-1.091	26.209	74.968	49.083	0.001	0.001	0	0	0	32.9	12.0	1.1	0.075	0.000	0.000	0.0001	0.139	0.12
11/5/2002	5:13:45 PM	25.216	22.815	24.565	23.528	23.555	2.833	34.013	4.451	-1.552	26.249	73.535	49.022	0.001	0.001	0	0.33	0.00556	32.5	12.0	0.6	0.044	0.000	0.000	0.0002	0.236	0.20
11/5/2002	5:14:05 PM	25.302	22.821	24.621	23.524	23.561	2.446	34.198	4.505	-2.06	27.102	37.075	48.708	0.001	0.001	0.045	0.67	0.01111	32.7	11.9	0.2	0.013	0.000	0.000	0.0008	0.781	0.66
11/5/2002	5:14:25 PM	25.228	22.822	24.686	23.464	23.566	8.409	34.605	4.615	3.777	21.393	0.43	49.136	0.294	0.001	0	1.00	0.01667	33.1	12.0	6.1	0.420	0.044	0.044	0.0073	7.258	6.18
11/5/2002	5:14:45 PM	25.143	22.827	24.642	23.455	23.567	24.893	34.467	4.533	20.424	4.129	0.505	49.62	0.707	0.001	0	1.33	0.02222	33.0	12.2	22.7	1.562	0.105	0.106	0.0047	4.699	4.00
11/5/2002	5:15:05 PM	25.165	22.828	24.538	23.476	23.573	26.635	34.057	4.481	22.375	2.068	0.551	49.406	0.479	0.001	0	1.67	0.02778	32.6	12.1	24.5	1.690	0.071	0.072	0.0030	2.953	2.51
11/5/2002	5:16:35 PM	25.152	22.835	24.55	23.423	23.6	30.989	34.247	4.544	26.523	-1.288	-3.303	49.278	0.418	0.001	0	3.17	0.05278	32.8	12.1	28.8	1.983	0.062	0.063	0.0022	2.195	1.87
11/5/2002	5:17:35 PM	25.083	22.847	24.622	23.439	23.612	31.856	34.256	4.523	27.513	-1.282	-3.74	49.163	0.367	0.001	0	4.17	0.06944	32.8	12.0	29.7	2.047	0.055	0.055	0.0019	1.863	1.59
11/5/2002	5:18:35 PM	25.07	22.854	24.478	23.546	23.629	32.269	34.34	4.543	27.849	-1.288	-3.888	49.089	0.348	0.001	0	5.17	0.08611	32.9	12.0	30.1	2.072	0.052	0.053	0.0018	1.752	1.49
11/5/2002	5:19:35 PM	25.026	22.85	24.585	23.412	23.64	32.318	34.278	4.544	27.851	-1.288	-3.96	49.173	0.338	0.001	0	6.17	0.10278	32.8	12.1	30.1	2.074	0.050	0.051	0.0017	1.695	1.44
11/5/2002	5:20:35 PM	24.996	22.846	24.48	23.488	23.646	32.438	34.249	4.558	28.097	-1.291	-4.021	49.209	0.33	0.001	0	7.17	0.11944	32.8	12.1	30.3	2.087	0.049	0.050	0.0016	1.650	1.40
11/5/2002	5:21:35 PM	24.978	22.863	24.457	23.314	23.663	32.362	34.179	4.532	27.978	-1.288	-4.058	49.134	0.325	0.001	0	8.17	0.13611	32.7	12.0	30.2	2.080	0.048	0.049	0.0016	1.631	1.39
11/5/2002	5:22:35 PM	24.973	22.873	24.562	23.37	23.673	32.492	34.243	4.579	27.982	-1.282	-4.087	49.066	0.319	0.001	0	9.17	0.15278	32.8	12.0	30.2	2.085	0.048	0.048	0.0016	1.592	1.36
11/5/2002	5:23:35 PM	24.95	22.87	24.409	23.367	23.705	32.538	34.464	4.572	28.109	-1.288	-4.119	49.136	0.315	0.001	0	10.17	0.16944	33.0	12.0	30.3	2.091	0.047	0.048	0.0016	1.575	1.34
11/5/2002	5:24:35 PM	24.926	22.881	24.53	23.303	23.721	32.629	34.326	4.525	28.226	-1.285	-4.139	49.247	0.312	0.001	0	11.17	0.18611	32.9	12.1	30.4	2.098	0.047	0.047	0.0015	1.549	1.32
11/5/2002	5:25:35 PM	24.918	22.887	24.442	23.334	23.723	32.515	34.291	4.565	28.062	-1.285	-4.166	49.205	0.309	0.001	0	12.17	0.20278	32.8	12.1	30.3	2.088	0.046	0.047	0.0015	1.545	1.31
11/5/2002	5:26:35 PM	24.898	22.893	24.427	23.32	23.733	32.704	34.278	4.536	28.332	-1.288	-4.186	49.14	0.306	0.001	0	13.17	0.21944	32.8	12.0	30.5	2.104	0.046	0.046	0.0015	1.519	1.29
11/5/2002	5:27:35 PM	24.895	22.91	24.524	23.261	23.745	32.788	34.415	4.566	28.265	-1.285	-4.197	49.077	0.305	0.001	0	14.17	0.23611	32.9	12.0	30.5	2.105	0.045	0.046	0.0015	1.510	1.28
11/5/2002	5:28:35 PM	24.881	22.906	24.385	23.302	23.731	32.844	34.475	4.513	28.357	-1.288	-4.209	49.001	0.301	0.001	0	15.17	0.25278	33.0	12.0	30.6	2.110	0.045	0.046	0.0015	1.492	1.27
11/5/2002	5:29:35 PM	24.866	22.916	24.515	23.267	23.731	32.61	34.04	4.426	28.293	-1.285	-4.218	49.035	0.3	0.001	0	16.17	0.26944	32.6	12.0	30.5	2.100	0.045	0.045	0.0015	1.489	1.27
11/5/2002	5:30:35 PM	24.852	22.911	24.42	23.358	23.752	32.803	34.266	4.549	28.33	-1.285	-4.247	48.89	0.297	0.001	0	17.17	0.28611	32.8	12.0	30.6	2.107	0.044	0.045	0.0015	1.473	1.25
11/5/2002	5:31:35 PM	24.843	22.923	24.392	23.309	23.763	32.764	34.227	4.498	28.39	-1.285	-4.252	48.903	0.296	0.001	0	18.17	0.30278	32.8	12.0	30.6	2.108	0.044	0.045	0.0015	1.468	1.25
11/5/2002	5:32:35 PM	24.838	22.928	24.493	23.405	23.779	32.749	34.185	4.504	28.318	-1.285	-4.258	48.834	0.294	0.001	0	19.17	0.31944	32.7	12.0	30.5	2.105	0.044	0.044	0.0015	1.456	1.24
11/5/2002	5:33:35 PM	24.829	22.939	24.353	23.496	23.789	32.851	34.233	4.44	28.604	-1.288	-4.281	48.961	0.292	0.001	0	20.17	0.33611	32.8	12.0	30.7	2.119	0.044	0.044	0.0014	1.443	1.23
	Averages	24.9	22.9	24.5	23.4	23.7	32.5	34.3	4.5	28.1	-1.3	-4.1	49.1	0.3	0.0	0.0			32.8	12.0	30.3	2.087	0.048	0.049	0.0016	1.605	1.366
	Maximum	25.2	22.9	24.6	23.5	23.8	32.9	34.5	4.6	28.6	-1.3	-3.3	49.3	0.4	0.0	0.0			33.0	12.1	30.7	2.119	0.062	0.063	0.0022	2.195	1.868
	Median	24.9	22.9	24.5	23.4	23.7	32.6	34.3	4.5	28.2	-1.3	-4.2	49.1	0.3	0.0	0.0			32.8	12.0	30.4	2.094	0.046	0.047	0.0015	1.547	1.317
	Minimum	24.8	22.8	24.4	23.3	23.6	31.0	34.0	4.4	26.5	-1.3	-4.3	48.8	0.3	0.0	0.0			32.6	12.0	28.8	1.983	0.044	0.044	0.0014	1.443	1.228
	2 x Std Dev	0.182	0.062	0.145	0.159	0.114	0.871	0.201	0.081	0.894	0.005	0.466	0.247	0.061	0.000	0.000			0.201	0.061	0.880	0.061	0.009	0.009	0.0004	0.360	0.306
Number of Points Used*		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18			18	18	18	18	18	18	18	18	18
	* Backpulse points in box are not included																										

Figure A60: AN-102R2, Batch 3B Slurry Test 1.34C – Inhibited Deionized & Filtered Water Test after Standard Slurry – Raw & Calculated Data

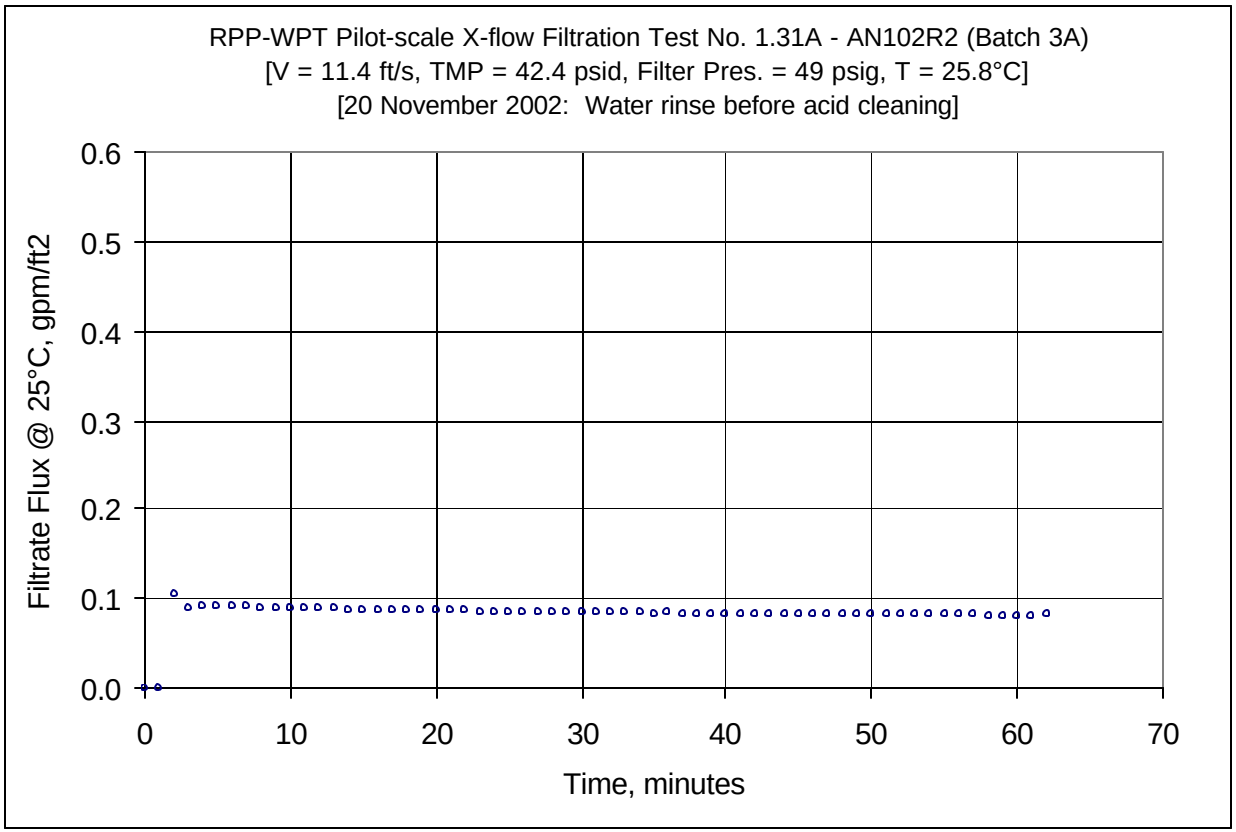
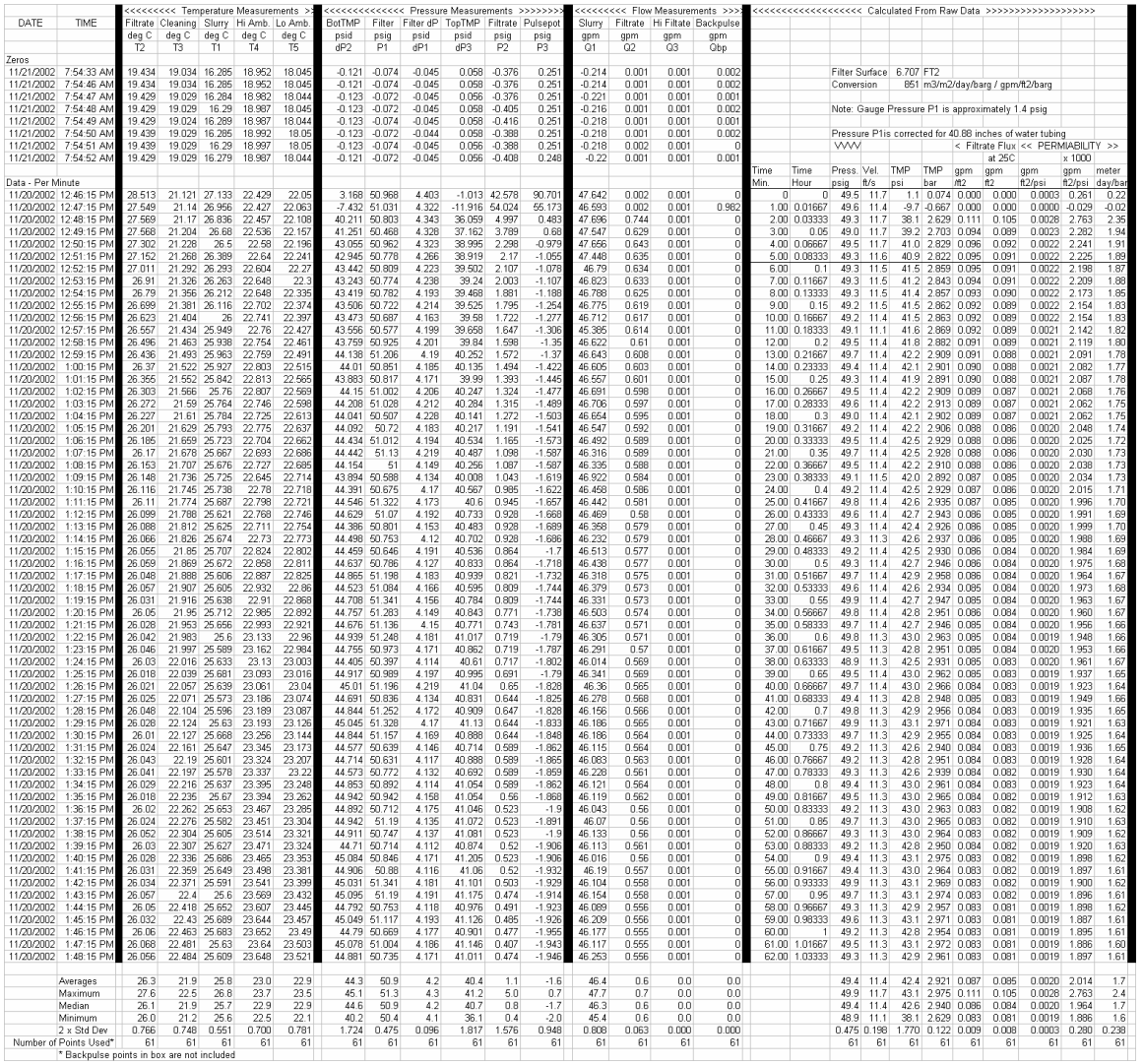


Figure A61: AN-102R2, Batch 3A Slurry Test 1.31A – Deionized & Filtered Water Rinse after Dewatering Slurry



DATE	TIME	<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
		Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
11/21/2002	7:54:33 AM	19.434	19.034	16.285	18.962	18.045	-0.121	-0.074	-0.045	0.058	-0.376	0.251	-0.214	0.001	0.001	0.002			Filter Surface	6.707	FT2					
11/21/2002	7:54:46 AM	19.434	19.034	16.285	18.962	18.045	-0.121	-0.074	-0.045	0.058	-0.376	0.251	-0.214	0.001	0.001	0.002			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
11/21/2002	7:54:47 AM	19.429	19.029	16.284	18.962	18.044	-0.123	-0.072	-0.045	0.056	-0.376	0.251	-0.221	0.001	0.001	0.001										
11/21/2002	7:54:48 AM	19.429	19.029	16.29	18.987	18.045	-0.123	-0.072	-0.045	0.058	-0.405	0.251	-0.216	0.001	0.001	0.002			Note: Gauge Pressure P1 is approximately 1.4 psig							
11/21/2002	7:54:49 AM	19.429	19.024	16.289	18.987	18.044	-0.123	-0.074	-0.045	0.058	-0.416	0.251	-0.218	0.001	0.001	0.001										
11/21/2002	7:54:50 AM	19.439	19.029	16.285	18.992	18.05	-0.123	-0.072	-0.044	0.058	-0.388	0.251	-0.218	0.001	0.001	0.002			Pressure P1 is corrected for 40.88 inches of water tubing							
11/21/2002	7:54:51 AM	19.439	19.029	16.29	18.997	18.05	-0.123	-0.074	-0.045	0.056	-0.388	0.251	-0.218	0.002	0.001	0			VVVV				< Filtrate Flux << PERMIABILITY >>			
11/21/2002	7:54:52 AM	19.429	19.029	16.279	18.987	18.044	-0.121	-0.072	-0.045	0.056	-0.408	0.248	-0.22	0.001	0.001	0.001							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/20/2002	12:46:15 PM	28.513	21.121	27.133	22.429	22.05	3.168	50.968	4.403	-1.013	42.578	90.701	47.642	0.002	0.001	0	0	0	49.5	11.7	1.1	0.074	0.000	0.000	0.0003	0.261	0.22
11/20/2002	12:47:15 PM	27.549	21.14	26.956	22.427	22.063	-7.432	51.031	4.322	-11.916	54.024	55.173	46.593	0.002	0.001	0.982	1.00	0.01667	49.6	11.4	-9.7	-0.667	0.000	0.000	0.0000	-0.029	-0.02
11/20/2002	12:48:15 PM	27.569	21.17	26.836	22.457	22.108	40.211	50.803	4.343	36.059	4.997	0.483	47.696	0.744	0.001	0	2.00	0.03333	49.3	11.7	38.1	2.629	0.111	0.105	0.0028	2.763	2.35
11/20/2002	12:49:15 PM	27.568	21.204	26.68	22.536	22.157	41.251	50.468	4.328	37.162	3.789	0.68	47.547	0.629	0.001	0	3.00	0.05	49.0	11.7	39.2	2.703	0.094	0.089	0.0023	2.282	1.94
11/20/2002	12:50:15 PM	27.302	21.228	26.5	22.58	22.196	43.055	50.962	4.323	38.995	2.298	-0.979	47.656	0.643	0.001	0	4.00	0.06667	49.5	11.7	41.0	2.829	0.096	0.092	0.0022	2.241	1.91
11/20/2002	12:51:15 PM	27.152	21.268	26.389	22.64	22.241	42.945	50.778	4.266	38.919	2.17	-1.055	47.448	0.635	0.001	0	5.00	0.08333	49.3	11.6	40.9	2.822	0.095	0.091	0.0022	2.225	1.89
11/20/2002	12:52:15 PM	27.011	21.292	26.293	22.604	22.27	43.442	50.809	4.223	39.502	2.107	-1.078	46.79	0.634	0.001	0	6.00	0.1	49.3	11.5	41.5	2.859	0.095	0.091	0.0022	2.198	1.87
11/20/2002	12:53:15 PM	26.91	21.326	26.263	22.648	22.3	43.243	50.774	4.238	39.24	2.003	-1.107	46.823	0.633	0.001	0	7.00	0.11667	49.3	11.5	41.2	2.843	0.094	0.091	0.0022	2.209	1.88
11/20/2002	12:54:15 PM	26.79	21.356	26.212	22.648	22.335	43.419	50.782	4.193	39.468	1.881	-1.188	46.788	0.625	0.001	0	8.00	0.13333	49.3	11.5	41.4	2.857	0.093	0.090	0.0022	2.173	1.85
11/20/2002	12:55:15 PM	26.699	21.381	26.116	22.702	22.374	43.506	50.722	4.214	39.525	1.795	-1.254	46.775	0.619	0.001	0	9.00	0.15	49.2	11.5	41.5	2.862	0.092	0.089	0.0022	2.154	1.83
11/20/2002	12:56:15 PM	26.623	21.404	26	22.741	22.397	43.473	50.687	4.163	39.58	1.722	-1.277	46.712	0.617	0.001	0	10.00	0.16667	49.2	11.4	41.5	2.863	0.092	0.089	0.0022	2.154	1.83
11/20/2002	12:57:15 PM	26.557	21.434	25.949	22.76	22.427	43.556	50.577	4.199	39.658	1.647	-1.306	45.386	0.614	0.001	0	11.00	0.18333	49.1	11.1	41.6	2.869	0.092	0.089	0.0021	2.142	1.82
11/20/2002	12:58:15 PM	26.496	21.463	25.938	22.754	22.461	43.759	50.925	4.201	39.84	1.598	-1.35	46.622	0.61	0.001	0	12.00	0.2	49.5	11.4	41.8	2.882	0.091	0.089	0.0021	2.119	1.80
11/20/2002	12:59:15 PM	26.436	21.493	25.963	22.759	22.491	44.138	51.206	4.19	40.252	1.572	-1.37	46.643	0.608	0.001	0	13.00	0.21667	49.7	11.4	42.2	2.909	0.091	0.088	0.0021	2.091	1.78
11/20/2002	1:00:15 PM	26.37	21.522	25.927	22.803	22.515	44.01	50.851	4.185	40.135	1.494	-1.422	46.605	0.603	0.001	0	14.00	0.23333	49.4	11.4	42.1	2.901	0.090	0.088	0.0021	2.082	1.77
11/20/2002	1:01:15 PM	26.355	21.552	25.842	22.813	22.565	43.883	50.817	4.171	39.99	1.393	-1.445	46.557	0.601	0.001	0	15.00	0.25	49.3	11.4	41.9	2.891	0.090	0.088	0.0021	2.087	1.78
11/20/2002	1:02:15 PM	26.303	21.566	25.76	22.807	22.569	44.15	51.002	4.206	40.247	1.324	-1.477	46.691	0.598	0.001	0	16.00	0.26667	49.5	11.4	42.2	2.909	0.089	0.087	0.0021	2.068	1.76
11/20/2002	1:03:15 PM	26.272	21.59	25.764	22.746	22.598	44.208	51.028	4.212	40.284	1.315	-1.489	46.706	0.597	0.001	0	17.00	0.28333	49.6	11.4	42.2	2.913	0.089	0.087	0.0021	2.062	1.75
11/20/2002	1:04:15 PM	26.227	21.61	25.784	22.725	22.613	44.041	50.507	4.228	40.141	1.272	-1.503	46.654	0.595	0.001	0	18.00	0.3	49.0	11.4	42.1	2.902	0.089	0.087	0.0021	2.062	1.75
11/20/2002	1:05:15 PM	26.201	21.629	25.793	22.775	22.637	44.092	50.72	4.183	40.217	1.191	-1.541	46.547	0.592	0.001	0	19.00	0.31667	49.2	11.4	42.2	2.906	0.088	0.086	0.0020	2.048	1.74
11/20/2002	1:06:15 PM	26.185	21.659	25.723	22.704	22.662	44.434	51.012	4.194	40.534	1.165	-1.573	46.492	0.589	0.001	0	20.00	0.33333	49.5	11.4	42.5	2.929	0.088	0.086	0.0020	2.025	1.72
11/20/2002	1:07:15 PM	26.17	21.678	25.667	22.693	22.686	44.442	51.13	4.219	40.487	1.098	-1.587	46.316	0.589	0.001	0	21.00	0.35	49.7	11.4	42.5	2.928	0.088	0.086	0.0020	2.030	1.73
11/20/2002	1:08:15 PM	26.153	21.707	25.676	22.727	22.685	44.154	51	4.149	40.256	1.087	-1.587	46.335	0.588	0.001	0	22.00	0.36667	49.5	11.4	42.2	2.910	0.088	0.086	0.0020	2.038	1.73
11/20/2002	1:09:15 PM	26.148	21.736	25.725	22.645	22.714	43.894	50.588	4.134	40.008	1.043	-1.619	46.922	0.584	0.001	0	23.00	0.38333	49.1	11.5	42.0	2.892	0.087	0.085	0.0020	2.034	1.73
11/20/2002	1:10:15 PM	26.116	21.745	25.738	22.78	22.718	44.391	50.675	4.17	40.567	0.985	-1.622	46.458	0.586	0.001	0	24.00	0.4	49.2	11.4	42.5	2.929	0.087	0.086	0.0020	2.015	1.71
11/20/2002	1:11:15 PM	26.11	21.774	25.687	22.798	22.721	44.546	51.322	4.173	40.6	0.945	-1.657	46.442	0.581	0.001	0	25.00	0.41667	49.8	11.4	42.6	2.935	0.087	0.085	0.0020	1.996	1.70
11/20/2002	1:12:15 PM	26.099	21.788	25.621	22.768	22.746	44.629	51.07	4.192	40.733	0.928	-1.668	46.469	0.58	0.001	0	26.00	0.43333	49.6	11.4	42.7	2.943	0.086	0.085	0.0020	1.991	1.69
11/20/2002	1:13:15 PM	26.088	21.812	25.625	22.711	22.754	44.386	50.801	4.153	40.483	0.928	-1.689	46.358	0.579	0.001	0	27.00	0.45	49.3	11.4	42.4	2.926	0.086	0.085	0.0020	1.999	1.70
11/20/2002	1:14:15 PM	26.066	21.826	25.674	22.73	22.773	44.498	50.753	4.12	40.702	0.928	-1.686	46.232	0.579	0.001	0	28.00	0.46667	49.3	11.3	42.6	2.937	0.086	0.085	0.0020	1.988	1.69
11/20/2002	1:15:15 PM	26.055	21.85	25.707	22.824	22.802	44.459	50.646	4.191	40.536	0.864	-1.7	46.513	0.577	0.001	0	29.00	0.48333	49.2	11.4	42.5	2.930	0.086	0.084	0.0020	1.984	1.69
11/20/2002	1:16:15 PM	26.059	21.869	25.672	22.858	22.811	44.637	50.786	4.127	40.833	0.864	-1.718	46.438	0.577	0.001	0	30.00	0.5	49.3	11.4	42.7	2.946	0.086	0.084	0.0020	1.975	1.68
11/20/2002	1:17:15 PM	26.048	21.888	25.606	22.887	22.825	44.865	51.198	4.183	40.939	0.821	-1.732	46.318	0.575	0.001	0	31.00	0.51667	49.7	11.4	42.9	2.958	0.086	0.084	0.0020	1.964	1.67
11/20/2002	1:18:15 PM	26.057	21.907	25.605	22.932	22.86	44.523	51.084	4.166	40.595	0.809	-1.744	46.379	0.573	0.001	0	32.00	0.53333	49.6	11.4	42.6	2.934	0.085	0.084	0.0020	1.973	1.68
11/20/2002	1:19:15 PM	26.031	21.916	25.638	22.91	22.868	44.708	51.341	4.156	40.784	0.809	-1.744	46.331	0.573	0.001	0	33.00	0.55	49.9	11.4	42.7	2.947	0.085	0.084	0.0020	1.963	1.67
11/20/2002	1:20:15 PM	26.05	21.95	25.712	22.985	22.892	44.757	51.283	4.149	40.843	0.771	-1.738	46.603	0.574	0.001	0	34.00	0.56667	49.8	11.4	42.8	2.951	0.086	0.084	0.0020	1.960	1.67
11/20/2002	1:21:15 PM	26.028	21.953	25.656	22.993	22.921	44.676	51.136	4.15	40.771	0.743	-1.781	46.637	0.571	0.001	0	35.00	0.58333	49.7	11.4	42.7	2.946	0.085	0.084	0.0020	1.956	1.66
11/20/2002	1:22:15 PM	26.042	21.983	25.6	23.133	22.96	44.939	51.248	4.181	41.017	0.719	-1.79	46.305	0.571	0.001	0	36.00	0.6	49.8	11.3	43.0	2.963	0.085	0.084	0.0019	1.948	1.66
11/20/2002	1:23:15 PM	26.046	21.997	25.589	23.162	22.984	44.755	50.973	4.171	40.862	0.719	-1.787	46.291	0.57	0.001	0	37.00	0.61667	49.5	11.3	42.8	2.951	0.085	0.084	0.0020	1.953	1.66
11/20/2002	1:24:15 PM	26.03	22.016	25.633	23.13	23.003	44.405	50.397	4.114	40.61	0.717	-1.802	46.014	0.569	0.001	0	38.00	0.63333	48.9	11.3	42.5	2.931	0.085	0.083	0.0020	1.961	1.67
11/20/2002	1:25:15 PM	26.018	22.039	25.681	23.093	23.016	44.917	50.989	4.197	40.995	0.691	-1.79	46.341	0.569	0.001	0	39.00	0.65	49.5	11.4	43.0	2.962	0.085	0.083	0.0019	1.937	1.65
11/20/2002	1:26:15 PM	26.021	22.057	25.639	23.061	23.04	45.01	51.196	4.219	41.04	0.65	-1.828	46.36	0.565	0.001	0	40.00	0.66667	49.7	11.4	43.0	2.966	0.084	0.083	0.0019	1.923	1.64
11/20/2002	1:27:15 PM	26.025	22.071	25.573	23.186	23.074	44.691	50.836	4.134	40.831	0.644	-1.825	46.278	0.568	0.001	0	41.00	0.68333	49.4	11.3	42.8	2.948	0.085	0.083	0.0019	1.949	1.66
11/20/2002	1:28:15 PM	26.048	22.104	25.596	23.189	23.087	44.844	51.252	4.172	40.909	0.647	-1.828	46.156	0.566	0.001	0	42.00	0.7	49.8	11.3	42.9	2.956	0.084	0.083	0.0019	1.935	1.65
11/20/2002	1:29:15 PM	26.028	22.124	25.63	23.193	23.126	45.045	51.328	4.17	41.13	0.644	-1.833	46.186	0.565	0.001	0	43.00	0.71667	49.9	11.3	43.1	2.971	0.084	0.083	0.0019	1.921	1.63
11/20/2002	1:30:15 PM	26.01	22.127	25.668	23.256	23.144	44.844	51.157	4.169	40.888	0.644	-1.848	46.186	0.564	0.001	0	44.00	0.73333	49.7	11.3	42.9	2.955	0.084	0.083	0.0019	1.925	1.64
11/20/2002	1:31:15 PM	26.024	22.161	25.647	23.345	23.173	44.577	50.639	4.146	40.714	0.589	-1.862	46.115	0.564	0.001	0	45.00	0.75	49.2	11.3	42.6	2.940	0.084	0.083	0.0019	1.936	1.65
11/20/2002	1:32:15 PM	26.043	22.19	25.601	23.324	23.207	44.714	50.631	4.117	40.888	0.589	-1.865	46.083	0.563	0.001	0	46.00	0.76667	49.2	11.3	42.8	2.951	0.084	0.083	0.0019	1.926	1.64
11/20/2002	1:33:15 PM	26.03	22.197	25.559	23.337	23.22	44.673	50.772	4.132	40.892	0.589	-1.859	46.228	0.561	0.001	0	47.00	0.78333	49.3	11.3	42.6	2.939	0.084	0.082	0.0019	1.930	1.64
11/20/2002	1:34:15 PM	26.029	22.216	25.637	23.395	23.248	44.853	50.892	4.114	41.054	0.589	-1.862	46.121	0.564	0.001	0	48.00	0.8	49.4	11.3	43.0	2.961	0.084	0.083	0.0019	1.923	1.64
11/20/2002	1:35:15 PM	26.018	22.235	25.67	23.394	23.262	44.942	50.942	4.158	41.054	0.56	-1.868	46.119	0.562	0.001	0	49.00	0.81667	49.5	11.3	43.0	2.965	0.084	0.082	0.0019	1.912	1.63
11/20/2002	1:36:15 PM	26.02	22.262	25.653	23.467	23.285	44.892	50.712	4.175	41.046	0.523	-1.9	46.043	0.56	0.001	0	50.00	0.83333	49.2	11.3	43.0	2.963	0.083	0.082	0.0019	1.908	1.62
11/20/2002	1:37:15 PM	26.024	22.276	25.582	23.451	23.304	44.942	51.19	4.135	41.072	0.523	-1.891	46.07	0.56	0.001	0	51.00	0.85	49.7	11.3	43.0	2.965	0.083	0.082	0.0019	1.910	1.63
11/20/2002	1:38:15 PM	26.052	22.304	25.605	23.514	23.321	44.911	50.747	4.137	41.081	0.523	-1.9	46.133	0.56	0.001	0	52.00	0.86667	49.3	11.3	43.0	2.964	0.083	0.082	0.0019	1.909	1.62
11/20/2002	1:39:15 PM	26.03	22.307	25.627	23.471	23.324	44.71	50.714	4.112	40.874	0.52	-1.906	46.113	0.561	0.001	0	53.00	0.88333	49.2	11.3	42.8	2.950	0.084	0.082	0.0019	1.920	1.63
11/20/2002	1:40:15 PM	26.028	22.336	25.686	23.465	23.353	45.084	50.846	4.171	41.205	0.523	-1.906	46.016	0.56	0.001	0	54.00	0.9	49.4	11.3	43.1	2.975	0.083	0.082	0.0019	1.898	1.62
11/20/2002	1:41:15 PM	26.031	22.359	25.649	23.498	23.381	44.906	50.88	4.116	41.06	0.52	-1.932	46.19	0.557	0.001	0	55.00	0.91667	49.4	11.3	43.0	2.964	0.083	0.082	0.0019	1.897	1.61
11/20/2002	1:42:15 PM	26.034	22.371	25.591	23.541	23.399	45.031	51.341	4.181	41.101	0.503	-1.929	46.104	0.558	0.001	0	56.00	0.93333	49.9	11.3	43.1	2.969	0.083	0.082	0.0019	1.900	1.62
11/20/2002	1:43:15 PM	26.057	22.4	25.6	23.569	23.432	45.095	51.19	4.191	41.175	0.474	-1.914	46.154	0.558	0.001	0	57.00	0.95	49.7	11.3	43.1	2.974	0.083	0.082	0.0019	1.896	1.61
11/20/2002	1:44:15 PM	26.05	22.418	25.652	23.607	23.445	44.792	50.753	4.118	40.976	0.491	-1.923	46.089	0.556	0.001	0	58.00	0.96667	49.3	11.3	42.9	2.957	0.083	0.081	0.0019	1.898	1.62
11/20/2002	1:45:15 PM	26.032	22.43	25.689	23.644	23.457	45.049	51.117	4.193	41.126	0.485	-1.926	46.209	0.556	0.001	0	59.00	0.98333	49.6	11.3	43.1	2.971	0.083	0.081	0.0019	1.887	1.61
11/20/2002	1:46:15 PM	26.06	22.463	25.683	23.652	23.49	44.79	50.669	4.177	40.901	0.477	-1.955	46.177	0.555	0.001	0	60.00	1	49.2	11.3	42.8	2.954	0.083	0.081	0.0019	1.895	1.61
11/20/2002	1:47:15 PM	26.068	22.481	25.63	23.64	23.503	45.078	51.004	4.186	41.146	0.407	-1.943	46.117	0.555	0.001	0	61.00	1.01667	49.5	11.3	43.1	2.972	0.083	0.081	0.0019	1.886	1.60
11/20/2002	1:48:15 PM	26.056	22.484	25.609	23.648	23.521	44.881	50.735	4.171	41.011	0.474	-1.946	46.253	0.556	0.001	0	62.00	1.03333	49.3	11.3	42.9	2.961	0.083	0.081	0.0019	1.897	1.61
	Averages	26.3	21.9	25.8	23.0	22.9	44.3	50.9	4.2	40.4	1.1	-1.6	46.4	0.6	0.0	0.0			49.4	11.4	42.4	2.921	0.087	0.085	0.0020	2.014	1.7
	Maximum	27.6	22.5	26.8	23.7	23.5	45.1	51.3	4.3	41.2	5.0	0.7	47.7	0.7	0.0	0.0			49.9	11.7	43.1	2.975	0.111	0.105	0.0028	2.763	2.4
	Median	26.1	21.9	25.7	22.9	22.9	44.6	50.9	4.2	40.7	0.8	-1.7	46.3	0.6	0.0	0.0			49.4	11.4	42.6	2.940	0.086	0.084	0.0020	1.964	1.7
	Minimum	26.0	21.2	25.6	22.5	22.1	40.2	50.4	4.1	36.1	0.4	-2.0	45.4	0.6	0.0	0.0			48.9	11.1	38.1	2.629	0.083	0.081	0.0019	1.886	1.6
	2 x Std Dev	0.766	0.748	0.551	0.700	0.781	1.724	0.475	0.096	1.817	1.576	0.948	0.808	0.063	0.000	0.000			0.475	0.198	1.770	0.122	0.009	0.008	0.0003	0.280	0.238
Number of Points Used*		61	61	61	61	61	61	61	61	61	61	61	61	61	61	61			61	61	61	61	61	61	61	61	61
	* Backpulse points in box are not included																										

Figure A62: AN-102R2, Batch 3A Slurry Test 1.31A – Deionized & Filtered Water Rinse after Dewatering Slurry – Raw & Calculated Data

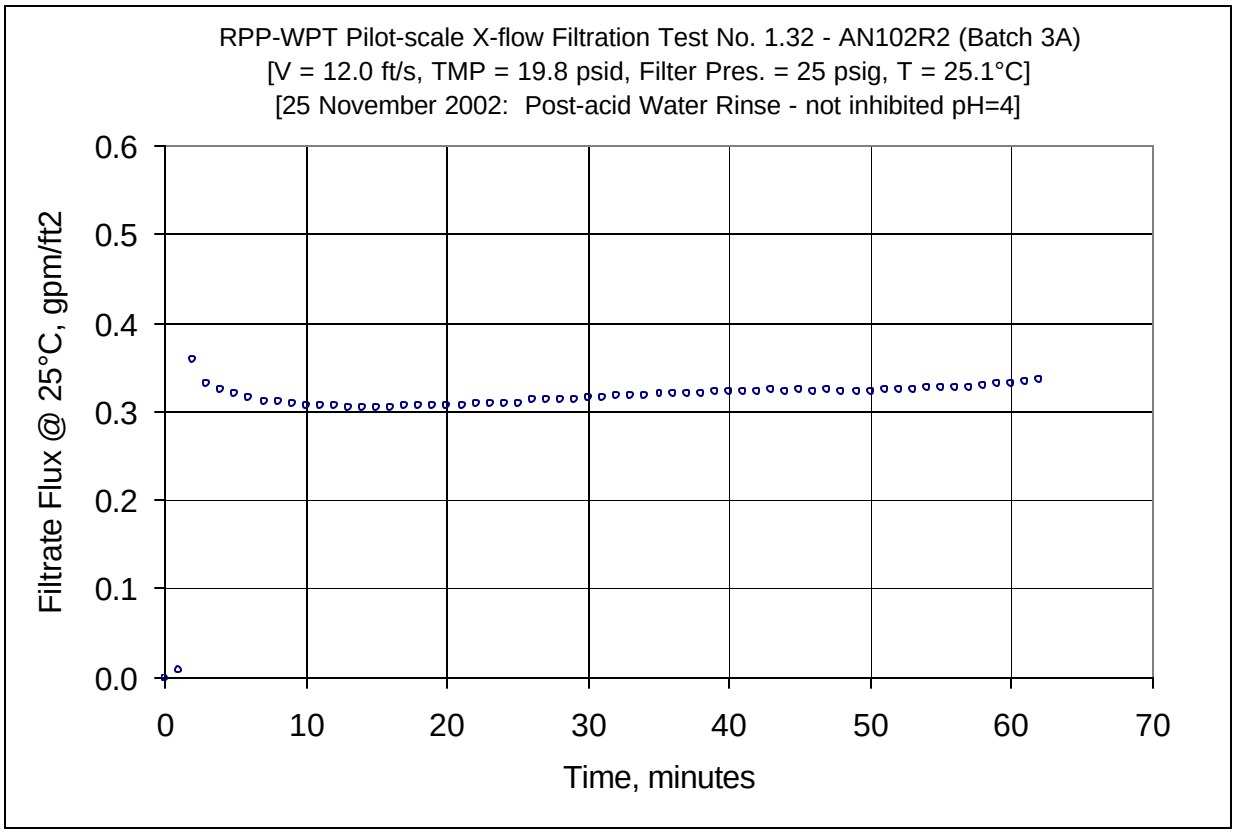


Figure A63: AN-102R2, Batch 3A Slurry Test 1.32 – Deionized & Filtered Water (pH=4) Rinse after Acid Cleaning

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>											
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
11/25/2002	8:03:13 AM	21.491	17.89	14.224	21.68	16.888	-0.123	-0.066	-0.049	0.06	-0.376	0.205	-0.218	0.001	0.001	0											
11/25/2002	8:03:26 AM	21.491	17.89	14.224	21.68	16.888	-0.123	-0.066	-0.049	0.06	-0.376	0.205	-0.218	0.001	0.001	0											
11/25/2002	8:03:27 AM	21.507	17.9	14.245	21.701	16.893	-0.123	-0.068	-0.048	0.062	-0.382	0.208	-0.212	0.002	0.001	0											
11/25/2002	8:03:28 AM	21.512	17.905	14.245	21.701	16.893	-0.125	-0.064	-0.048	0.062	-0.376	0.211	-0.212	0.002	0.001	0											
11/25/2002	8:03:29 AM	21.507	17.905	14.25	21.701	16.893	-0.123	-0.066	-0.048	0.062	-0.373	0.208	-0.212	0.002	0.001	0											
11/25/2002	8:03:30 AM	21.512	17.905	14.245	21.701	16.893	-0.123	-0.066	-0.048	0.062	-0.37	0.208	-0.21	0.002	0.001	0											
11/25/2002	8:03:31 AM	21.507	17.905	14.25	21.696	16.883	-0.123	-0.066	-0.048	0.064	-0.367	0.208	-0.214	0.002	0.001	0											
11/25/2002	8:03:32 AM	21.501	17.895	14.24	21.695	16.888	-0.121	-0.064	-0.048	0.062	-0.396	0.211	-0.21	0.002	0.001	0											
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/25/2002	12:39:42 PM	24.82	20.43	23.99	21.512	20.629	2.789	27.052	4.354	-1.346	19.094	67.473	47.365	0.001	0.001	0.003	0	0	25.6	11.6	0.7	0.050	0.000	0.000	0.0002	0.213	0.18
11/25/2002	12:40:42 PM	23.866	20.454	23.768	21.581	20.672	10.019	26.989	4.418	5.862	11.752	0.605	48.052	0.995	0.051	0	1.00	0.01667	25.5	11.8	7.9	0.547	0.008	0.008	0.0010	0.992	0.84
11/25/2002	12:41:42 PM	24.225	20.472	23.601	21.65	20.716	21.562	26.673	4.345	17.872	-0.624	-4.329	49.038	0.003	2.311	0	2.00	0.03333	25.2	12.0	19.7	1.359	0.345	0.358	0.0182	18.180	15.47
11/25/2002	12:42:42 PM	23.966	20.479	23.543	21.642	20.758	22.219	26.672	4.38	18.426	-1.286	-4.341	48.801	0.002	2.139	0	3.00	0.05	25.1	12.0	20.3	1.401	0.319	0.332	0.0164	16.353	13.92
11/25/2002	12:43:42 PM	23.809	20.513	23.461	21.716	20.802	22.509	26.592	4.415	18.722	-1.284	-4.341	48.749	0.002	2.087	0	4.00	0.06667	25.1	11.9	20.6	1.421	0.311	0.325	0.0158	15.765	13.42
11/25/2002	12:44:42 PM	23.777	20.521	23.639	21.668	20.84	22.716	26.692	4.373	18.961	-1.286	-4.344	48.755	0.001	2.071	0.008	5.00	0.08333	25.2	11.9	20.8	1.437	0.309	0.321	0.0154	15.399	13.10
11/25/2002	12:45:42 PM	23.931	20.555	23.949	21.611	20.899	22.534	26.615	4.333	18.796	-1.286	-4.338	48.686	0.001	2.059	0.003	6.00	0.1	25.1	11.9	20.7	1.425	0.307	0.316	0.0153	15.303	13.02
11/25/2002	12:46:42 PM	24.171	20.574	24.293	21.545	20.938	22.523	26.489	4.327	18.748	-1.286	-4.336	48.778	0.001	2.058	0.002	7.00	0.11667	25.0	12.0	20.6	1.423	0.307	0.313	0.0152	15.169	12.91
11/25/2002	12:47:42 PM	24.405	20.582	24.352	21.558	20.987	22.636	26.539	4.339	18.867	-1.286	-4.332	48.705	0.001	2.052	0.002	8.00	0.13333	25.1	11.9	20.8	1.431	0.306	0.312	0.0150	15.015	12.78
11/25/2002	12:48:42 PM	24.558	20.59	24.601	21.546	21.026	22.554	26.487	4.377	18.759	-1.286	-4.329	48.877	0.001	2.05	0.003	9.00	0.15	25.0	12.0	20.7	1.424	0.306	0.309	0.0150	14.964	12.73
11/25/2002	12:49:42 PM	24.777	20.614	24.714	21.524	21.069	22.567	26.435	4.306	18.873	-1.286	-4.326	48.72	0.001	2.052	0.002	10.00	0.16667	25.0	11.9	20.7	1.429	0.306	0.308	0.0149	14.885	12.67
11/25/2002	12:50:42 PM	24.891	20.637	24.908	21.538	21.113	22.531	26.449	4.268	18.879	-1.284	-4.318	48.925	0.001	2.057	0.002	11.00	0.18333	25.0	12.0	20.7	1.428	0.307	0.307	0.0149	14.860	12.64
11/25/2002	12:51:42 PM	25.044	20.661	24.921	21.566	21.147	22.595	26.429	4.362	18.824	-1.284	-4.312	48.881	0.002	2.06	0.003	12.00	0.2	25.0	12.0	20.7	1.428	0.307	0.308	0.0149	14.867	12.65
11/25/2002	12:52:42 PM	25.117	20.674	25.119	21.589	21.195	22.701	26.473	4.448	18.716	-1.286	-4.312	48.81	0.001	2.06	0.003	13.00	0.21667	25.3	12.0	20.7	1.428	0.307	0.306	0.0148	14.781	12.58
11/25/2002	12:53:42 PM	25.241	20.702	25.123	21.603	21.238	22.571	26.663	4.405	18.648	-1.284	-4.306	48.803	0.001	2.062	0.003	14.00	0.23333	25.2	12.0	20.6	1.421	0.307	0.306	0.0149	14.865	12.65
11/25/2002	12:54:42 PM	25.335	20.726	25.352	21.632	21.283	22.681	26.646	4.365	18.974	-1.284	-4.303	48.923	0.001	2.069	0.002	15.00	0.25	25.2	12.0	20.8	1.436	0.308	0.305	0.0147	14.665	12.48
11/25/2002	12:55:42 PM	25.428	20.744	25.304	21.655	21.331	22.532	26.423	4.33	18.83	-1.286	-4.3	48.831	0.002	2.068	0.002	16.00	0.26667	25.0	12.0	20.7	1.426	0.308	0.306	0.0148	14.781	12.58
11/25/2002	12:56:42 PM	25.506	20.758	25.453	21.673	21.369	22.556	26.648	4.379	18.732	-1.286	-4.292	48.984	0.001	2.087	0.002	17.00	0.28333	25.2	12.0	20.6	1.423	0.311	0.307	0.0149	14.882	12.66
11/25/2002	12:57:42 PM	25.559	20.776	25.471	21.691	21.407	22.614	26.696	4.429	18.757	-1.286	-4.289	48.847	0.001	2.086	0.003	18.00	0.3	25.2	12.0	20.7	1.426	0.311	0.307	0.0148	14.837	12.63
11/25/2002	12:58:42 PM	25.642	20.789	25.464	21.704	21.451	22.531	26.706	4.348	18.687	-1.286	-4.28	48.927	0.001	2.093	0.002	19.00	0.31667	25.2	12.0	20.6	1.421	0.312	0.308	0.0149	14.945	12.72
11/25/2002	12:59:42 PM	25.675	20.812	25.627	21.783	21.499	22.415	26.611	4.38	18.534	-1.286	-4.277	48.801	0.002	2.097	0.003	20.00	0.33333	25.1	12.0	20.5	1.412	0.313	0.307	0.0150	15.003	12.77
11/25/2002	1:00:42 PM	25.723	20.83	25.555	21.786	21.527	22.592	26.563	4.369	18.849	-1.286	-4.274	48.85	0.001	2.104	0.003	21.00	0.35	25.1	12.0	20.7	1.429	0.314	0.309	0.0149	14.905	12.68
11/25/2002	1:01:42 PM	25.786	20.853	25.633	21.804	21.575	22.482	26.551	4.381	18.708	-1.289	-4.266	48.871	0.001	2.113	0.003	22.00	0.36667	25.1	12.0	20.6	1.420	0.315	0.309	0.0150	15.027	12.79
11/25/2002	1:02:42 PM	25.804	20.877	25.696	21.878	21.604	22.432	26.622	4.38	18.803	-1.286	-4.26	48.86	0.001	2.114	0.003	23.00	0.38333	25.2	12.0	20.5	1.415	0.315	0.309	0.0151	15.064	12.82
11/25/2002	1:03:42 PM	25.857	20.895	25.644	21.921	21.647	22.393	26.487	4.376	18.665	-1.286	-4.257	48.755	0.002	2.115	0.001	24.00	0.4	25.0	11.9	20.5	1.415	0.315	0.310	0.0151	15.085	12.84
11/25/2002	1:04:42 PM	25.801	20.919	25.463	22	21.696	22.43	26.607	4.337	18.66	-1.289	-4.251	48.751	0.001	2.112	0.003	25.00	0.41667	25.1	11.9	20.5	1.417	0.315	0.311	0.0151	15.128	12.87
11/25/2002	1:05:42 PM	25.699	20.917	25.341	22.063	21.725	22.451	26.681	4.416	18.587	-1.286	-4.248	48.77	0.001	2.127	0.003	26.00	0.43333	25.2	12.0	20.5	1.415	0.317	0.314	0.0153	15.307	13.03
11/25/2002	1:06:42 PM	25.597	20.955	25.349	22.117	21.758	22.49	26.754	4.392	18.658	-1.286	-4.242	48.694	0.001	2.129	0.002	27.00	0.45	25.3	11.9	20.6	1.419	0.317	0.314	0.0153	15.277	13.00
11/25/2002	1:07:42 PM	25.496	20.974	25.192	22.146	21.802	22.237	26.298	4.358	18.533	-1.286	-4.24	48.954	0.001	2.12	0.003	28.00	0.46667	24.8	12.0	20.4	1.405	0.316	0.314	0.0154	15.422	13.12
11/25/2002	1:08:42 PM	25.424	20.988	25.061	22.21	21.836	22.314	26.437	4.343	18.605	-1.286	-4.234	48.9	0.001	2.121	0.003	29.00	0.48333	25.0	12.0	20.5	1.411	0.316	0.316	0.0154	15.430	13.13
11/25/2002	1:09:42 PM	25.352	21.001	25.064	22.193	21.879	22.357	26.512	4.384	18.521	-1.286	-4.228	48.887	0.001	2.129	0.002	30.00	0.5	25.0	12.0	20.4	1.409	0.317	0.317	0.0155	15.502	13.19
11/25/2002	1:10:42 PM	25.261	21.01	25.018	22.191	21.873	22.266	26.427	4.32	18.583	-1.289	-4.225	48.806	0.001	2.125	0.001	31.00	0.51667	25.0	12.0	20.4	1.408	0.317	0.317	0.0155	15.504	13.19
11/25/2002	1:11:42 PM	25.207	21.026	24.894	22.147	21.854	22.293	26.551	4.4	18.403	-1.286	-4.219	48.904	0.001	2.133	0.004	32.00	0.53333	25.1	12.0	20.3	1.403	0.318	0.319	0.0157	15.675	13.34
11/25/2002	1:12:42 PM	25.178	21.027	24.85	22.073	21.836	22.239	26.543	4.378	18.382	-1.289	-4.216	48.803	0.001	2.132	0.003	33.00	0.55	25.1	12.0	20.3	1.400	0.318	0.319	0.0157	15.716	13.37
11/25/2002	1:13:42 PM	25.109	21.048	24.906	22.044	21.826	22.287	26.495	4.316	18.622	-1.289	-4.214	48.852	0.001	2.136	0.002	34.00	0.56667	25.0	12.0	20.5	1.410	0.318	0.319	0.0156	15.610	13.28
11/25/2002	1:14:42 PM	25.06	21.06	24.782	21.995	21.827	22.432	26.714	4.386	18.636	-1.289	-4.208	48.747	0.001	2.14	0.002	35.00	0.58333	25.2	11.9	20.5	1.416	0.319	0.321	0.0156	15.634	13.30
11/25/2002	1:15:42 PM	25.042	21.071	24.714	21.981	21.849	22.25	26.584	4.405	18.302	-1.286	-4.205	48.789	0.001	2.144	0.002	36.00	0.6	25.1	12.0	20.3	1.398	0.320	0.322	0.0159	15.893	13.52
11/25/2002	1:16:42 PM	24.987	21.077	24.794	21.982	21.865	22.188	26.472	4.361	18.417	-1.286	-4.199	48.728	0.001	2.145	0.003	37.00	0.61667	25.0	11.9	20.3	1.400	0.320	0.322	0.0158	15.843	13.48
11/25/2002	1:17:42 PM	24.941	21.066	24.693	21.9	21.748	22.322	26.609	4.395	18.503	-1.289	-4.193	48.946	0.001	2.143	0.003	38.00	0.63333	25.1	12.0	20.4	1.407	0.320	0.322	0.0158	15.788	13.44
11/25/2002	1:18:42 PM	24.937	21.057	24.614	21.836	21.669	22.167	26.472	4.365	18.394	-1.289	-4.19	48.814	0.001	2.151	0.003	39.00	0.65	25.0	12.0	20.3	1.398	0.321	0.324	0.0160	15.986	13.60
11/25/2002	1:19:42 PM	24.926	21.076	24.728	21.84	21.687	22.146	26.483	4.38	18.271	-1.286	-4.185	48.789	0.001	2.156	0.002	40.00	0.66667	25.0	12.0	20.2	1.393	0.321	0.324	0.0160	16.029	13.64
11/25/2002	1:20:42 PM	24.934	21.084	24.791	21.818	21.68	22.055	26.379	4.341	18.29	-1.286	-4.185	48.912	0.001	2.159	0.002	41.00	0.68333	24.9	12.0	20.2	1.391	0.322	0.324	0.0161	16.051	13.66
11/25/2002	1:21:42 PM	24.959	20.948	24.931	21.692	21.353	22.117	26.325	4.291	18.538	-1.289	-4.179	48.956	0.001	2.17	0.003	42.00	0.7	24.9	12.0	20.3	1.402	0.324	0.324	0.0159	15.947	13.57
11/25/2002	1:22:42 PM	25.11	20.873	24.917	21.602	21.047	22.299	26.78	4.401	18.443	-1.286	-4.173	48.833	0.001	2.179	0.003	43.00	0.71667	25.3	12.0	20.4	1.405	0.325	0.326	0.0160	15.985	13.60
11/25/2002	1:23:42 PM	25.276	20.909	25.193	21.587	21.123	22.053	26.57	4.367	18.231	-1.284	-4.164	48.923	0.002	2.188	0.003	44.00	0.73333	25.1	12.0	20.1	1.399	0.326	0.324	0.0161	16.108	13.71
11/25/2002	1:24:42 PM	25.464	20.917	25.256	21.49	21.131	21.892	26.423	4.295	18.185	-1.289	-4.167	48.898	0.001	2.197	0.002	45.00	0.75	25.0	12.0	20.0	1.382	0.328	0.325	0.0162	16.229	13.81
11/25/2002	1:25:42 PM	25.525	20.918	25.452	21.567	21.182	22.066	26.741	4.409	18.126	-1.289	-4.159	48.921	0.001	2.2	0.002	46.00	0.76667	25.3	12.0	20.1	1.386	0.328	0.324	0.0161	16.116	13.71
11/25/2002	1:26:42 PM	25.672	20.955	25.498	21.754	21.269	22.192	26.812	4.423	18.294	-1.278	-4.147	48.948	0.002	2.212	0.003	47.00	0.78333	25.3	12.0	20.2	1.396	0.330	0.325	0.0161	16.065	13.67
11/25/2002	1:27:42 PM	25.74	20.978	25.727	21.848	21.348	21.983	26.549	4.296	18.339	-1.22	-4.147	49.022	0.002	2.21	0.003	48.00	0.8	25.1	12.0	20.2	1.390	0.329	0.323	0.0160	16.013	13.63
11/25/2002	1:28:42 PM	25.809	20.987	25.681	21.958	21.417	21.92	26.429	4.33	18.188	-1.22	-4.141	48.964	0.001	2.22	0.002	49.00	0.81667	25.0	12.0	20.1	1.383	0.331	0.325	0.0162	16.192	13.78
11/25/2002	1:29:42 PM	25.894	21.013	25.821	22.069	21.493	21.805	26.528	4.333	17.981	-1.174	-4.141	48.965	0.001	2.226	0.001	50.00	0.83333	25.1	12.0	19.9	1.372	0.332	0.324	0.0163	16.303	13.87
11/25/2002	1:30:42 PM	25.924	21.037	25.84	22.118	21.538	21.962	26.629	4.413	18.136	-1.162	-4.13	48.988	0.001	2.239	0.002	51.00	0.85	25.2	12.0	20.0	1.382	0.334	0.326	0.0163	16.262	13.84
11/25/2002	1:31:42 PM	26.024	21.083	25.861	22.184	21.599	21.881	26.601	4.36	18.069	-1.159	-4.127	48.885	0.002	2.237	0.003	52.00	0.86667	25.1	12.0	20.0	1.377	0.334	0.326	0.0163	16.298	13.87
11/25/2002	1:32:42 PM	26.038	21.097	25.979	22.183	21.643	21.761	26.47	4.365	17.973	-1.096	-4.121	49.003	0.001	2.248	0.002	53.00	0.88333	25.0	12.0	19.9	1.370	0.335	0.326	0.0164	16.413	13.97
11/25/2002	1:33:42 PM	26.087	21.142	25.914	22.228	21.723	21.794	26.495	4.384	18.001	-1.07	-4.116	48.929	0.001	2.252	0.003	54.00	0.9	25.1	12.0	19.9	1.372	0.336	0.327	0.0164	16.447	14.00
11/25/2002	1:34:42 PM	26.131	21.176	26.003	22.252	21.792	21.674	26.495	4.339	17.911	-1.009	-4.115	49.001	0.001	2.266	0.003	55.00	0.91667	25.0	12.0	19.8	1.365	0.338	0.328	0.0166	16.595	14.12
11/25/2002	1:35:42 PM	26.121	21.216	25.923	22.226	21.862	21.747	26.476	4.314	17.997	-1.003	-4.109	49.095	0.001	2.259	0.003	56.00	0.93333	25.0	12.0	19.9	1.370	0.337	0.328	0.0165	16.515	14.05
11/25/2002	1:36:42 PM	26.025	21.245	25.797	22.291	21.891	21.85	26.615	4.317	18.198	-1.075	-4.106	49.009	0.001	2.256	0.002	57.00	0.95	25.1	12.0	20.0	1.381	0.336	0.329	0.0164	16.426	13.98
11/25/2002	1:37:42 PM	25.954	21.269	25.636	22.34	21.931	21.765	26.404	4.333	18.136	-1.052	-4.106	48.931	0.001	2.257	0.002	58.00	0.96667	24.9	12.0	20.0	1.376	0.336	0.331	0.0166	16.568	14.10
11/25/2002	1:38:42 PM	25.878	21.263	25.55	22.344	21.98	21.755	26.514	4.367	18.034	-1.006	-4.098	49.009	0.001	2.262	0.002	59.00	0.98333	25.0	12.0	19.9	1.372	0.337	0.332	0.0167	16.692	14.20
11/25/2002	1:39:42 PM	25.792	21.318	25.604	22.378	22.019	21.566	26.375	4.388	17.741	-0.963	-4.092	48.954	0.002	2.273	0.002	60.00	1	24.9	12.0	19.7	1.355	0.339	0.333	0.0170	16.953	14.43
11/25/2002	1:40:42 PM	25.715	21.336	25.457	22.462	22.033	21.612	26.419	4.343	17.919	-0.969	-4.092	48.915	0.001	2.273	0.001	61.00	1.01667	24.9	12.0	19.8	1.363	0.339	0.335	0.0169	16.926	14.40
11/25/2002	1:41:42 PM	25.694	21.365	25.376	22.486	22.072	21.591	26.4	4.328	17.878	-0.997	-4.089	48.954	0.002	2.283	0.003	62.00	1.03333	24.9	12.0	19.7	1.361	0.340	0.337	0.0171	17.066	14.52
	Averages	25.3	20.9	25.1	21.9	21.5	21.7	26.6	4.4	17.9	-0.7	-3.0	48.8	0.0	2.1	0.0			25.1	12.0	19.8	1.367	0.311	0.310	0.0152	15.249	12.977
	Maximum	26.1	21.4	26.0	22.5	22.1	22.7	27.1	4.4	19.0	19.1	67.5	49.1	1.0	2.3	0.0			25.6	12.0	20.8	1.437	0.345	0.358	0.0182	18.180	15.472
	Median	25.4	20.9	25.2	21.8	21.5	22.3	26.6	4.4	18.5	-1.3	-4.2	48.9	0.0	2.1	0.0			25.1	12.0	20.4	1.405	0.318	0.321	0.0157	15.675	13.340
	Minimum	23.8	20.4	23.5	21.5	20.6	2.8	26.3	4.3	-1.3	-1.3	-4.3	47.4	0.0	0.0	0.0			24.8	11.6	0.7	0.050	0.000	0.000	0.0002	0.213	0.181
	2 x Std Dev	1.234	0.475	1.283	0.558	0.770	5.731	0.285	0.073	5.853	5.987	17.943	0.467	0.248	0.759	0.002			0.285	0.114	5.792	0.399	0.113	0.112	0.0055	5.490	4.672
Number of Points Used*		63	63	63	63	63	63	63	63	63	63	63	63	63	63	63			63	63	63	63	63	63	63	63	63
	* Backpulse points in box are not included																										

Figure A64: AN-102R2, Batch 3A Slurry Test 1.32 – Deionized & Filtered Water (pH=4) Rinse after Acid Cleaning – Raw & Calculated Data

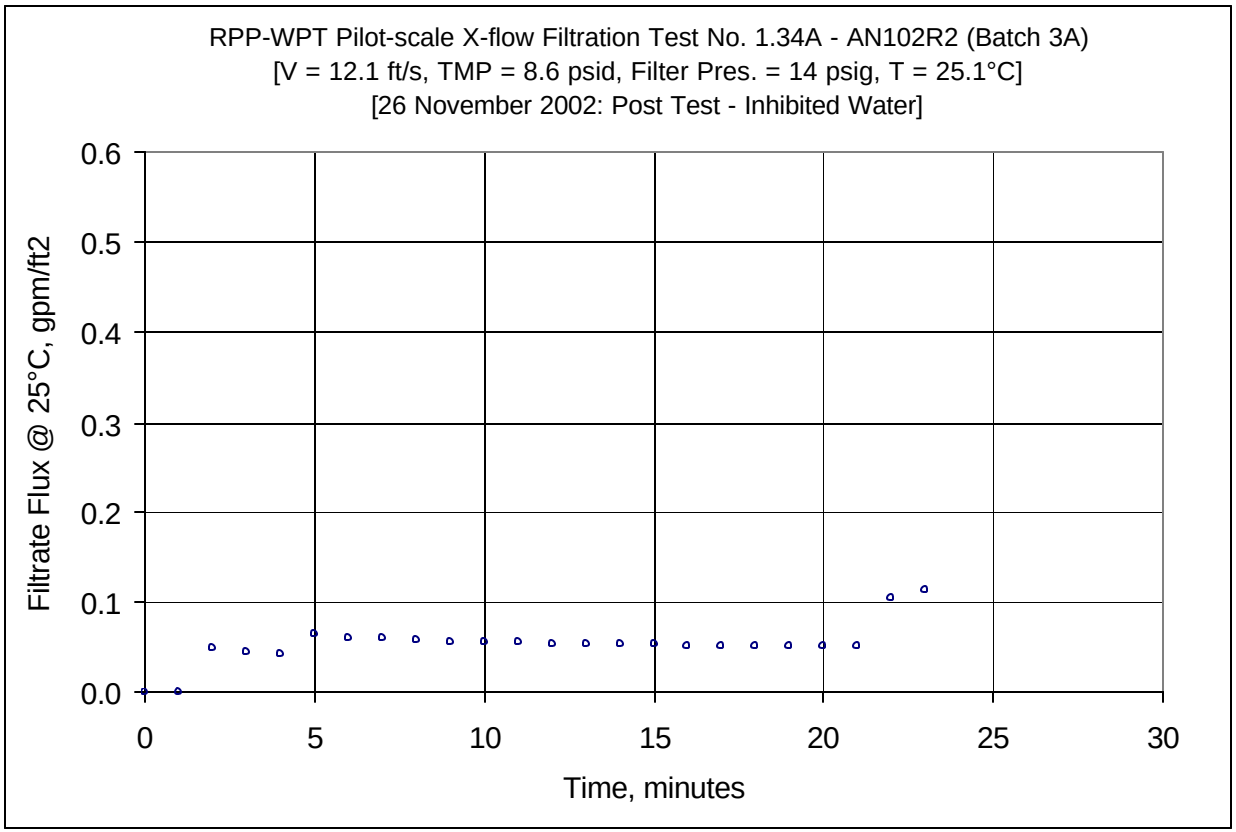


Figure A65: AN-102R2, Batch 3A Slurry Test 1.34A – Inhibited Deionized & Filtered Water Test after Standard Slurry

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
11/26/2002	8:02:52 AM	21.391	18.154	14.139	21.751	16.879	-0.123	-0.057	-0.049	0.058	-0.373	0.211	-0.212	0.001	0.001	0			Filter Surface	6.707	FT2						
11/26/2002	8:03:09 AM	21.391	18.154	14.139	21.751	16.879	-0.123	-0.057	-0.049	0.058	-0.373	0.211	-0.212	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
11/26/2002	8:03:10 AM	21.386	18.138	14.128	21.746	16.868	-0.123	-0.057	-0.049	0.058	-0.37	0.217	-0.212	0.002	0.001	0											
11/26/2002	8:03:11 AM	21.391	18.144	14.134	21.751	16.874	-0.123	-0.057	-0.048	0.06	-0.37	0.217	-0.216	0.002	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
11/26/2002	8:03:12 AM	21.386	18.143	14.133	21.756	16.873	-0.123	-0.055	-0.048	0.06	-0.37	0.217	-0.208	0.002	0.001	0											
11/26/2002	8:03:13 AM	21.386	18.143	14.123	21.751	16.873	-0.125	-0.057	-0.048	0.058	-0.379	0.214	-0.218	0.002	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
11/26/2002	8:03:14 AM	21.391	18.149	14.134	21.761	16.879	-0.125	-0.057	-0.049	0.058	-0.376	0.217	-0.21	0.002	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY >>		
11/26/2002	8:03:15 AM	21.391	18.143	14.133	21.756	16.873	-0.123	-0.057	-0.049	0.06	-0.379	0.211	-0.216	0.001	0.001	0							at 25C		x 1000		
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/26/2002	2:39:00 PM	23.12	22.461	23.712	23.078	22.845	2.669	14.252	4.681	-1.987	6.257	45.094	48.999	0.002	0.001	0	0	0	12.8	12.0	0.3	0.024	0.000	0.000	0.0009	0.907	0.77
11/26/2002	2:40:00 PM	23.252	22.467	23.944	23.003	22.871	-7.492	15.02	4.63	-18.579	30.213	38.86	47.545	0.002	0.001	2.516	1.00	0.01667	13.5	11.7	-13.0	-0.899	0.000	0.000	0.0000	-0.024	-0.02
11/26/2002	2:41:00 PM	23.495	22.464	24.121	22.925	22.878	8.031	14.331	4.614	3.602	0.968	0.555	49.412	0.323	0.001	0	2.00	0.03333	12.9	12.1	5.8	0.401	0.048	0.049	0.0085	8.487	7.22
11/26/2002	2:42:00 PM	23.813	22.471	24.343	22.882	22.87	8.396	14.614	4.467	4.114	0.864	0.631	49.172	0.296	0.001	0	3.00	0.05	13.1	12.1	6.3	0.431	0.044	0.045	0.0072	7.187	6.12
11/26/2002	2:43:00 PM	23.976	22.478	24.566	22.844	22.893	8.187	14.3	4.54	3.819	0.861	0.735	49.206	0.278	0.001	0	4.00	0.06667	12.8	12.1	6.0	0.414	0.041	0.042	0.0070	6.989	5.95
11/26/2002	2:44:00 PM	24.178	22.475	24.753	22.795	22.899	10.798	14.169	4.603	6.425	-1.289	-3.006	49.468	0.423	0.001	0	5.00	0.08333	12.7	12.1	8.6	0.594	0.063	0.064	0.0074	7.375	6.28
11/26/2002	2:45:00 PM	24.395	22.47	24.944	22.76	22.93	11.154	14.523	4.727	6.546	-1.289	-2.971	49.384	0.403	0.001	0	6.00	0.1	13.1	12.1	8.9	0.610	0.060	0.060	0.0068	6.800	5.79
11/26/2002	2:46:00 PM	24.639	22.459	25.113	22.719	22.908	11.295	14.413	4.666	6.818	-1.289	-3.11	49.512	0.395	0.001	0	7.00	0.11667	12.9	12.1	9.1	0.624	0.059	0.059	0.0065	6.482	5.52
11/26/2002	2:47:00 PM	24.879	22.469	25.308	22.704	22.938	11.442	14.482	4.651	6.949	-1.286	-3.194	49.561	0.385	0.001	0	8.00	0.13333	13.0	12.1	9.2	0.634	0.057	0.057	0.0062	6.188	5.27
11/26/2002	2:48:00 PM	25.066	22.495	25.399	22.715	22.97	11.629	14.507	4.667	7.168	-1.286	-3.258	49.464	0.38	0.001	0	9.00	0.15	13.0	12.1	9.4	0.648	0.057	0.056	0.0060	5.961	5.07
11/26/2002	2:49:00 PM	25.136	22.49	25.184	22.695	22.985	11.894	14.705	4.531	7.608	-1.286	-3.313	49.559	0.373	0.001	0	10.00	0.16667	13.2	12.1	9.8	0.672	0.056	0.055	0.0057	5.674	4.83
11/26/2002	2:50:00 PM	25.102	22.486	25.165	22.696	22.965	11.652	14.492	4.611	7.205	-1.286	-3.339	49.447	0.37	0.001	0	11.00	0.18333	13.0	12.1	9.4	0.650	0.055	0.055	0.0058	5.824	4.96
11/26/2002	2:51:00 PM	25.077	22.491	25.235	22.676	23.006	11.701	14.358	4.611	7.266	-1.289	-3.403	49.531	0.363	0.001	0	12.00	0.2	12.9	12.1	9.5	0.654	0.054	0.054	0.0057	5.669	4.82
11/26/2002	2:52:00 PM	25.132	22.491	25.35	22.671	23.011	11.842	14.48	4.622	7.385	-1.286	-3.446	49.34	0.36	0.001	0	13.00	0.21667	13.0	12.1	9.6	0.663	0.054	0.053	0.0055	5.528	4.70
11/26/2002	2:53:00 PM	25.221	22.49	25.484	22.66	23.03	11.797	14.298	4.632	7.377	-1.289	-3.458	49.523	0.359	0.001	0	14.00	0.23333	12.8	12.1	9.6	0.661	0.054	0.053	0.0055	5.508	4.69
11/26/2002	2:54:00 PM	25.335	22.468	25.563	22.648	23.078	11.968	14.596	4.622	7.485	-1.289	-3.478	49.51	0.356	0.001	0	15.00	0.25	13.1	12.1	9.7	0.671	0.053	0.052	0.0054	5.371	4.57
11/26/2002	2:55:00 PM	25.382	22.466	25.44	22.645	23.106	11.975	14.467	4.675	7.469	-1.289	-3.51	49.674	0.353	0.001	0	16.00	0.26667	13.0	12.2	9.7	0.670	0.053	0.052	0.0053	5.347	4.55
11/26/2002	2:56:00 PM	25.411	22.495	25.544	22.76	23.11	11.911	14.329	4.62	7.501	-1.289	-3.521	49.496	0.352	0.001	0	17.00	0.28333	12.9	12.1	9.7	0.669	0.052	0.052	0.0053	5.325	4.53
11/26/2002	2:57:00 PM	25.429	22.498	25.437	22.828	23.188	11.917	14.324	4.614	7.487	-1.289	-3.542	49.722	0.349	0.001	0	18.00	0.3	12.9	12.2	9.7	0.669	0.052	0.051	0.0053	5.298	4.51
11/26/2002	2:58:00 PM	25.433	22.527	25.526	22.877	23.207	12.012	14.498	4.635	7.499	-1.289	-3.559	49.491	0.347	0.001	0	19.00	0.31667	13.0	12.1	9.8	0.673	0.052	0.051	0.0052	5.225	4.45
11/26/2002	2:59:00 PM	25.458	22.562	25.461	22.973	23.242	11.89	14.229	4.588	7.495	-1.289	-3.571	49.617	0.346	0.001	0	20.00	0.33333	12.8	12.2	9.7	0.668	0.052	0.051	0.0053	5.254	4.47
11/26/2002	3:00:00 PM	25.462	22.571	25.495	22.992	23.252	12.138	14.387	4.534	7.895	-1.289	-3.582	49.397	0.345	0.001	0	21.00	0.35	12.9	12.1	10.0	0.691	0.051	0.051	0.0051	5.064	4.31
11/26/2002	3:01:00 PM	25.488	22.608	25.286	23.134	23.278	21.796	30.488	4.634	17.283	3.309	-0.357	49.409	0.704	0.001	0	22.00	0.36667	29.0	12.1	19.5	1.347	0.105	0.104	0.0053	5.329	4.53
11/26/2002	3:02:00 PM	25.476	22.62	25.189	23.262	23.301	22.293	32.316	4.445	17.969	4.752	0.396	49.019	0.764	0.001	0	23.00	0.38333	30.8	12.0	20.1	1.388	0.114	0.113	0.0056	5.628	4.79
	Averages	24.8	22.5	25.1	22.8	23.0	11.0	15.9	4.6	6.2	1.1	1.2	49.4	0.4	0.0	0.1			14.4	12.1	8.6	0.593	0.054	0.053	0.0055	5.517	4.695
	Maximum	25.5	22.6	25.6	23.3	23.3	22.3	32.3	4.7	18.0	30.2	45.1	49.7	0.8	0.0	2.5			30.8	12.2	20.1	1.388	0.114	0.113	0.0085	8.487	7.223
	Median	25.1	22.5	25.3	22.8	23.0	11.7	14.5	4.6	7.3	-1.3	-3.3	49.5	0.4	0.0	0.0			13.0	12.1	9.5	0.657	0.053	0.053	0.0056	5.578	4.747
	Minimum	23.1	22.5	23.7	22.6	22.8	-7.5	14.2	4.4	-18.6	-1.3	-3.6	47.5	0.0	0.0	0.0			12.7	11.7	-13.0	-0.899	0.000	0.000	0.0000	-0.024	-0.020
	2 x Std Dev	1.494	0.089	1.058	0.333	0.285	10.719	9.395	0.128	12.786	12.841	24.847	0.832	0.305	0.000	1.006			9.395	0.204	#####	0.808	0.046	0.045	0.0035	3.490	2.970
Number of Points Used*		24	24	24	24	24	24	24	24	24	24	24	24	24	24	24			24	24	24	24	24	24	24	24	24
	* Backpulse points in box are not included																										

Figure A66: AN-102R2, Batch 3A Slurry Test 1.34A – Inhibited Deionized & Filtered Water Test after Standard Slurry – Raw & Calculated Data

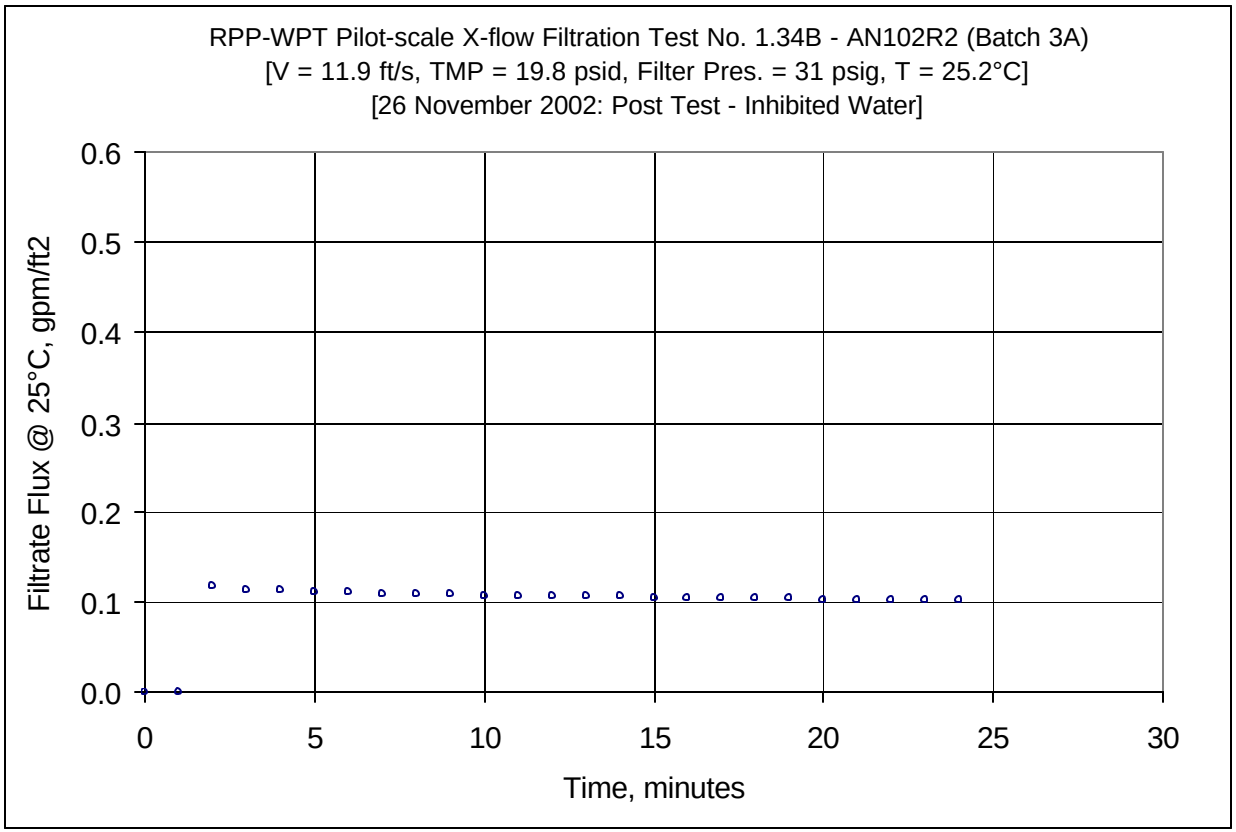


Figure A67: AN-102R2, Batch 3A Slurry Test 1.34B – Inhibited Deionized & Filtered Water Test after Standard Slurry

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
11/26/2002	8:02:52 AM	21.391	18.154	14.139	21.751	16.879	-0.123	-0.057	-0.049	0.058	-0.373	0.211	-0.212	0.001	0.001	0			Filter Surface	6.707	FT2					
11/26/2002	8:03:09 AM	21.391	18.154	14.139	21.751	16.879	-0.123	-0.057	-0.049	0.058	-0.373	0.211	-0.212	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
11/26/2002	8:03:10 AM	21.386	18.138	14.128	21.746	16.868	-0.123	-0.057	-0.049	0.058	-0.37	0.217	-0.212	0.002	0.001	0										
11/26/2002	8:03:11 AM	21.391	18.144	14.134	21.751	16.874	-0.123	-0.057	-0.048	0.06	-0.37	0.217	-0.216	0.002	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig							
11/26/2002	8:03:12 AM	21.386	18.143	14.133	21.756	16.873	-0.123	-0.055	-0.048	0.06	-0.37	0.217	-0.208	0.002	0.001	0										
11/26/2002	8:03:13 AM	21.386	18.143	14.123	21.751	16.873	-0.125	-0.057	-0.048	0.058	-0.379	0.214	-0.218	0.002	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing							
11/26/2002	8:03:14 AM	21.391	18.149	14.134	21.761	16.879	-0.125	-0.057	-0.049	0.058	-0.376	0.217	-0.21	0.002	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY	>>
11/26/2002	8:03:15 AM	21.391	18.143	14.133	21.756	16.873	-0.123	-0.057	-0.049	0.06	-0.379	0.211	-0.216	0.001	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/26/2002	3:05:09 PM	25.323	22.668	25.241	23.41	23.343	2.996	32.811	4.463	-1.352	24.638	72.98	48.3	0.001	0.001	0	0	0	31.3	11.8	0.8	0.057	0.000	0.000	0.0002	0.180	0.15
11/26/2002	3:06:09 PM	25.265	22.68	25.168	23.417	23.36	3.077	32.945	4.535	-1.453	24.661	71.964	48.283	0.002	0.001	0	1.00	0.01667	31.5	11.8	0.8	0.056	0.000	0.000	0.0004	0.365	0.31
11/26/2002	3:07:09 PM	25.328	22.698	25.166	23.415	23.368	21.879	32.652	4.457	17.522	5.413	0.662	48.793	0.794	0.001	0	2.00	0.03333	31.2	12.0	19.7	1.358	0.118	0.118	0.0060	5.981	5.09
11/26/2002	3:08:09 PM	25.4	22.716	25.243	23.458	23.391	22.256	32.532	4.502	17.811	4.896	0.483	48.774	0.77	0.001	0	3.00	0.05	31.1	12.0	20.0	1.381	0.115	0.114	0.0057	5.691	4.84
11/26/2002	3:09:09 PM	25.403	22.723	25.206	23.5	23.408	22.718	32.583	4.454	18.409	4.636	0.338	48.728	0.759	0.001	0	4.00	0.06667	31.1	11.9	20.6	1.418	0.113	0.113	0.0055	5.471	4.66
11/26/2002	3:10:09 PM	25.416	22.742	25.134	23.499	23.416	22.813	32.482	4.461	18.45	4.35	0.228	48.728	0.75	0.001	0	5.00	0.08333	31.0	11.9	20.6	1.422	0.112	0.111	0.0054	5.399	4.59
11/26/2002	3:11:09 PM	25.414	22.749	25.152	23.466	23.444	22.942	32.484	4.452	18.605	4.226	0.144	48.789	0.744	0.001	0	6.00	0.1	31.0	12.0	20.8	1.432	0.111	0.110	0.0053	5.317	4.52
11/26/2002	3:12:09 PM	25.411	22.772	25.254	23.509	23.447	23.29	32.72	4.515	18.859	4.101	0.066	48.751	0.738	0.001	0	7.00	0.11667	31.2	11.9	21.1	1.453	0.110	0.109	0.0052	5.184	4.41
11/26/2002	3:13:09 PM	25.404	22.774	25.192	23.541	23.479	23.236	32.453	4.395	19.025	3.977	0.017	48.755	0.733	0.001	0	8.00	0.13333	31.0	11.9	21.1	1.457	0.109	0.109	0.0051	5.144	4.38
11/26/2002	3:14:09 PM	25.423	22.803	25.156	23.575	23.503	23.476	32.652	4.555	19.017	3.827	-0.056	48.755	0.727	0.001	0	9.00	0.15	31.2	11.9	21.2	1.465	0.108	0.108	0.0051	5.079	4.32
11/26/2002	3:15:09 PM	25.432	22.817	25.205	23.609	23.532	23.316	32.449	4.455	18.947	3.778	-0.09	48.678	0.724	0.001	0	10.00	0.16667	31.0	11.9	21.1	1.457	0.108	0.107	0.0051	5.079	4.32
11/26/2002	3:16:09 PM	25.414	22.825	25.272	23.592	23.52	23.716	32.77	4.518	19.277	3.676	-0.148	48.856	0.72	0.001	0	11.00	0.18333	31.3	12.0	21.5	1.482	0.107	0.107	0.0050	4.956	4.22
11/26/2002	3:17:09 PM	25.417	22.838	25.195	23.58	23.553	23.888	32.888	4.503	19.459	3.555	-0.2	48.612	0.716	0.001	0	12.00	0.2	31.4	11.9	21.7	1.494	0.107	0.106	0.0049	4.898	4.17
11/26/2002	3:18:09 PM	25.436	22.862	25.169	23.583	23.567	23.869	32.708	4.479	19.539	3.471	-0.232	48.719	0.713	0.001	0	13.00	0.21667	31.2	11.9	21.7	1.496	0.106	0.106	0.0049	4.875	4.15
11/26/2002	3:19:09 PM	25.433	22.869	25.236	23.616	23.579	23.927	32.668	4.463	19.598	3.439	-0.247	48.785	0.711	0.001	0	14.00	0.23333	31.2	12.0	21.8	1.500	0.106	0.105	0.0048	4.839	4.12
11/26/2002	3:20:09 PM	25.415	22.871	25.263	23.643	23.596	24.014	32.722	4.513	19.569	3.37	-0.313	48.78	0.708	0.001	0	15.00	0.25	31.2	12.0	21.8	1.502	0.106	0.105	0.0048	4.808	4.09
11/26/2002	3:21:09 PM	25.428	22.884	25.191	23.671	23.619	24.033	32.588	4.477	19.7	3.251	-0.339	48.705	0.704	0.001	0	16.00	0.26667	31.1	11.9	21.9	1.508	0.105	0.104	0.0048	4.774	4.06
11/26/2002	3:22:09 PM	25.446	22.902	25.174	23.664	23.637	24.251	32.716	4.482	19.944	3.249	-0.351	48.747	0.702	0.001	0	17.00	0.28333	31.2	11.9	22.1	1.524	0.105	0.104	0.0047	4.713	4.01
11/26/2002	3:23:09 PM	25.458	22.924	25.276	23.701	23.665	24.077	32.61	4.496	19.684	3.202	-0.377	48.73	0.7	0.001	0	18.00	0.3	31.1	11.9	21.9	1.509	0.104	0.104	0.0047	4.733	4.03
11/26/2002	3:24:09 PM	25.44	22.926	25.258	23.693	23.676	24.13	32.656	4.493	19.67	3.127	-0.415	48.762	0.698	0.001	-0.001	19.00	0.31667	31.2	11.9	21.9	1.510	0.104	0.103	0.0047	4.718	4.01
11/26/2002	3:25:09 PM	25.447	22.944	25.18	23.725	23.694	24.337	32.836	4.505	19.905	3.061	-0.458	48.692	0.694	0.001	0	20.00	0.33333	31.4	11.9	22.1	1.525	0.103	0.103	0.0047	4.654	3.96
11/26/2002	3:26:09 PM	25.474	22.961	25.202	23.753	23.696	24.313	32.687	4.503	19.897	3.014	-0.467	48.74	0.693	0.001	0	21.00	0.35	31.2	11.9	22.1	1.524	0.103	0.103	0.0046	4.648	3.96
11/26/2002	3:27:09 PM	25.466	22.973	25.309	23.749	23.723	24.251	32.457	4.464	19.893	3	-0.484	48.707	0.692	0.001	0	22.00	0.36667	31.0	11.9	22.1	1.522	0.103	0.102	0.0046	4.634	3.94
11/26/2002	3:28:09 PM	25.465	22.991	25.263	23.758	23.766	24.485	32.668	4.42	20.259	2.916	-0.533	48.778	0.689	0.001	0	23.00	0.38333	31.2	12.0	22.4	1.542	0.103	0.102	0.0046	4.558	3.88
11/26/2002	3:29:09 PM	25.487	23.014	25.225	23.841	23.779	24.466	32.643	4.485	20.116	2.905	-0.536	48.709	0.686	0.001	0	24.00	0.4	31.2	11.9	22.3	1.537	0.102	0.102	0.0046	4.559	3.88
	Averages	25.4	22.8	25.2	23.6	23.6	22.0	32.7	4.5	17.6	5.3	5.7	48.7	0.7	0.0	0.0			31.2	11.9	19.8	1.365	0.099	0.098	0.0046	4.610	3.923
	Maximum	25.5	23.0	25.3	23.8	23.8	24.5	32.9	4.6	20.3	24.7	73.0	48.9	0.8	0.0	0.0			31.5	12.0	22.4	1.542	0.118	0.118	0.0060	5.981	5.090
	Median	25.4	22.8	25.2	23.6	23.6	23.9	32.7	4.5	19.5	3.6	-0.2	48.7	0.7	0.0	0.0			31.2	11.9	21.7	1.494	0.106	0.105	0.0048	4.839	4.118
	Minimum	25.3	22.7	25.1	23.4	23.3	3.0	32.4	4.4	-1.5	2.9	-0.5	48.3	0.0	0.0	0.0			31.0	11.8	0.8	0.056	0.000	0.000	0.0002	0.180	0.153
	2 x Std Dev	0.097	0.201	0.091	0.237	0.260	11.260	0.263	0.069	11.298	11.453	39.406	0.261	0.394	0.000	0.000			0.263	0.064	11.3	0.778	0.059	0.058	0.0027	2.655	2.259
Number of Points Used*		25	25	25	25	25	25	25	25	25	25	25	25	25	25	25			25	25	25	25	25	25	25	25	25
	* Backpulse points in box are not included																									

Figure A68: AN-102R2, Batch 3A Slurry Test 1.34B – Inhibited Deionized & Filtered Water Test after Standard Slurry – Raw & Calculated Data

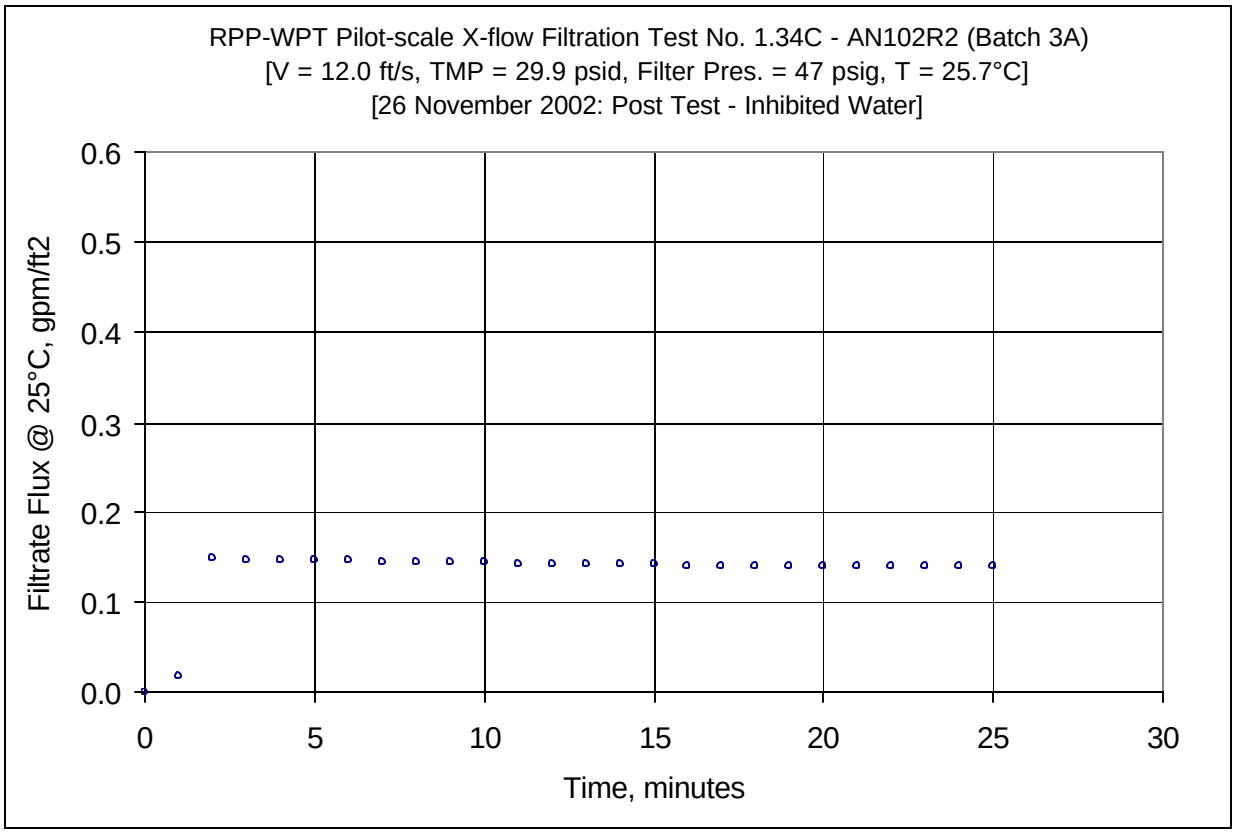


Figure A69: AN-102R2, Batch 3A Slurry Test 1.34C – Inhibited Deionized & Filtered Water Test after Standard Slurry

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
11/26/2002	8:02:52 AM	21.391	18.154	14.139	21.751	16.879	-0.123	-0.057	-0.049	0.058	-0.373	0.211	-0.212	0.001	0.001	0			Filter Surface	6.707	FT2						
11/26/2002	8:03:09 AM	21.391	18.154	14.139	21.751	16.879	-0.123	-0.057	-0.049	0.058	-0.373	0.211	-0.212	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
11/26/2002	8:03:10 AM	21.386	18.138	14.128	21.746	16.868	-0.123	-0.057	-0.049	0.058	-0.37	0.217	-0.212	0.002	0.001	0											
11/26/2002	8:03:11 AM	21.391	18.144	14.134	21.751	16.874	-0.123	-0.057	-0.048	0.06	-0.37	0.217	-0.216	0.002	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
11/26/2002	8:03:12 AM	21.386	18.143	14.133	21.756	16.873	-0.123	-0.055	-0.048	0.06	-0.37	0.217	-0.208	0.002	0.001	0											
11/26/2002	8:03:13 AM	21.386	18.143	14.123	21.751	16.873	-0.125	-0.057	-0.048	0.058	-0.379	0.214	-0.218	0.002	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
11/26/2002	8:03:14 AM	21.391	18.149	14.134	21.761	16.879	-0.125	-0.057	-0.049	0.058	-0.376	0.217	-0.21	0.002	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY >>		
11/26/2002	8:03:15 AM	21.391	18.143	14.133	21.756	16.873	-0.123	-0.057	-0.049	0.06	-0.379	0.211	-0.216	0.001	0.001	0							at 25C		x 1000		
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/26/2002	3:35:46 PM	25.629	23.056	25.552	23.592	23.575	2.717	48.43	4.453	-1.647	40.795	89.363	48.275	0.002	0.001	0	0	0	47.0	11.8	0.5	0.037	0.000	0.000	0.0005	0.549	0.47
11/26/2002	3:36:46 PM	25.295	23.047	25.573	23.522	23.485	18.273	48.438	4.484	14.261	32.462	2.023	48.357	0.115	0.001	0	1.00	0.01667	47.0	11.9	16.3	1.122	0.017	0.017	0.0010	1.037	0.88
11/26/2002	3:37:46 PM	25.86	23.041	25.632	23.461	23.404	31.162	48.689	4.501	26.765	12.09	4.094	49.084	1.018	0.001	0	2.00	0.03333	47.2	12.0	29.0	1.997	0.152	0.149	0.0051	5.148	4.38
11/26/2002	3:38:46 PM	25.919	23.025	25.617	23.38	23.349	31.338	48.19	4.431	27.131	11.749	3.989	48.998	1.002	0.001	0	3.00	0.05	46.7	12.0	29.2	2.016	0.149	0.147	0.0050	5.022	4.27
11/26/2002	3:39:46 PM	25.928	23.009	25.536	23.329	23.343	31.904	48.703	4.479	27.574	11.428	3.738	48.925	0.996	0.001	0	4.00	0.06667	47.2	12.0	29.7	2.050	0.148	0.146	0.0049	4.919	4.19
11/26/2002	3:40:46 PM	25.973	23.03	25.541	23.314	23.323	32.048	48.507	4.455	27.785	11.298	3.685	48.929	0.991	0.001	0	5.00	0.08333	47.0	12.0	29.9	2.063	0.148	0.146	0.0049	4.864	4.14
11/26/2002	3:41:46 PM	25.973	23.014	25.585	23.359	23.317	32.214	48.668	4.447	27.973	11.113	3.636	48.984	0.99	0.001	0	6.00	0.1	47.2	12.0	30.1	2.075	0.148	0.145	0.0048	4.825	4.11
11/26/2002	3:42:46 PM	25.983	23.024	25.666	23.475	23.333	32.011	48.225	4.46	27.735	11.009	3.538	48.969	0.985	0.001	0	7.00	0.11667	46.8	12.0	29.9	2.060	0.147	0.144	0.0048	4.825	4.11
11/26/2002	3:43:46 PM	25.978	23.019	25.661	23.55	23.353	32.558	48.724	4.494	28.206	10.842	3.468	48.948	0.979	0.001	0	8.00	0.13333	47.3	12.0	30.4	2.095	0.146	0.143	0.0047	4.716	4.01
11/26/2002	3:44:46 PM	25.995	23.016	25.602	23.627	23.374	32.659	48.773	4.494	28.333	10.775	3.384	48.896	0.975	0.001	0	9.00	0.15	47.3	12.0	30.5	2.103	0.145	0.143	0.0047	4.687	3.99
11/26/2002	3:45:46 PM	26.017	23.028	25.594	23.689	23.401	32.693	48.474	4.49	28.415	10.657	3.373	48.904	0.974	0.001	0	10.00	0.16667	47.0	12.0	30.6	2.107	0.145	0.143	0.0047	4.674	3.98
11/26/2002	3:46:46 PM	26.002	23.013	25.62	23.71	23.397	32.454	48.368	4.429	28.225	10.631	3.344	48.944	0.974	0.001	0	11.00	0.18333	46.9	12.0	30.3	2.092	0.145	0.143	0.0047	4.704	4.00
11/26/2002	3:47:46 PM	26.014	23.031	25.692	23.752	23.424	32.807	48.831	4.453	28.485	10.631	3.326	48.732	0.972	0.001	0	12.00	0.2	47.4	11.9	30.6	2.113	0.145	0.142	0.0046	4.638	3.95
11/26/2002	3:48:46 PM	26.016	23.038	25.689	23.88	23.441	32.56	48.403	4.433	28.225	10.44	3.225	48.816	0.967	0.001	0	13.00	0.21667	46.9	12.0	30.4	2.095	0.144	0.141	0.0047	4.653	3.96
11/26/2002	3:49:46 PM	26.038	23.05	25.636	23.907	23.469	32.763	48.351	4.446	28.554	10.397	3.199	48.879	0.966	0.001	0	14.00	0.23333	46.9	12.0	30.7	2.114	0.144	0.141	0.0046	4.614	3.93
11/26/2002	3:50:46 PM	26.042	23.058	25.63	23.97	23.497	32.856	48.5	4.425	28.56	10.304	3.193	48.854	0.963	0.001	0	15.00	0.25	47.0	12.0	30.7	2.117	0.144	0.141	0.0046	4.593	3.91
11/26/2002	3:51:46 PM	26.064	23.081	25.707	24.003	23.52	32.73	48.604	4.455	28.35	10.319	3.144	48.812	0.961	0.001	0	16.00	0.26667	47.1	12.0	30.5	2.106	0.143	0.140	0.0046	4.599	3.91
11/26/2002	3:52:46 PM	26.056	23.078	25.744	23.985	23.547	33.221	48.755	4.477	28.88	10.275	3.15	48.849	0.96	0.001	0	17.00	0.28333	47.3	12.0	31.1	2.141	0.143	0.140	0.0045	4.514	3.84
11/26/2002	3:53:46 PM	26.059	23.096	25.717	24.013	23.57	32.707	47.967	4.356	28.575	10.214	3.118	48.82	0.958	0.001	0	18.00	0.3	46.5	12.0	30.6	2.113	0.143	0.140	0.0046	4.568	3.89
11/26/2002	3:54:46 PM	26.067	23.108	25.66	24.051	23.603	33.138	48.569	4.45	28.839	10.105	3.115	48.803	0.958	0.001	0	19.00	0.31667	47.1	12.0	31.0	2.137	0.143	0.140	0.0045	4.524	3.85
11/26/2002	3:55:46 PM	26.08	23.121	25.653	24.054	23.635	32.941	48.291	4.394	28.73	10.053	3.063	48.816	0.956	0.001	0	20.00	0.33333	46.8	12.0	30.8	2.126	0.143	0.140	0.0045	4.538	3.86
11/26/2002	3:56:46 PM	26.077	23.133	25.71	24.066	23.653	33.241	48.786	4.432	28.945	10.053	3.045	48.761	0.954	0.001	0	21.00	0.35	47.3	11.9	31.1	2.144	0.142	0.139	0.0045	4.484	3.82
11/26/2002	3:57:46 PM	26.084	23.141	25.767	24.083	23.675	33.115	48.387	4.392	28.914	10.021	3.022	48.768	0.952	0.001	0	22.00	0.36667	46.9	12.0	31.0	2.138	0.142	0.139	0.0045	4.479	3.81
11/26/2002	3:58:46 PM	26.076	23.143	25.724	24.116	23.692	33.279	48.654	4.446	28.96	9.975	2.99	48.663	0.951	0.001	0	23.00	0.38333	47.2	11.9	31.1	2.146	0.142	0.139	0.0045	4.464	3.80
11/26/2002	3:59:46 PM	26.1	23.177	25.693	24.159	23.731	33.252	48.484	4.404	29.003	9.842	2.964	48.841	0.95	0.001	0	24.00	0.4	47.0	12.0	31.1	2.146	0.142	0.139	0.0045	4.463	3.80
11/26/2002	4:00:46 PM	26.112	23.184	25.68	24.201	23.758	33.285	48.298	4.417	29.072	9.816	2.95	48.738	0.951	0.001	0	25.00	0.41667	46.8	11.9	31.2	2.150	0.142	0.139	0.0045	4.462	3.80
	Averages	26.0	23.1	25.7	23.8	23.5	32.0	48.5	4.4	27.8	11.5	3.3	48.8	0.9	0.0	0.0			47.0	12.0	29.9	2.062	0.140	0.137	0.0045	4.521	3.847
	Maximum	26.1	23.2	25.8	24.2	23.8	33.3	48.8	4.5	29.1	32.5	4.1	49.1	1.0	0.0	0.0			47.4	12.0	31.2	2.150	0.152	0.149	0.0051	5.148	4.381
	Median	26.0	23.0	25.7	23.9	23.5	32.7	48.5	4.4	28.4	10.4	3.2	48.8	1.0	0.0	0.0			47.0	12.0	30.6	2.107	0.144	0.141	0.0046	4.614	3.927
	Minimum	25.3	23.0	25.5	23.3	23.3	18.3	48.0	4.4	14.3	9.8	2.0	48.4	0.1	0.0	0.0			46.5	11.9	16.3	1.122	0.017	0.017	0.0010	1.037	0.883
	2 x Std Dev	0.309	0.107	0.119	0.576	0.272	5.736	0.426	0.071	5.638	8.653	0.794	0.274	0.337	0.000	0.000			0.426	0.067	5.7	0.392	0.050	0.049	0.0015	1.466	1.248
Number of	Points Used*	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25			25	25	25	25	25	25	25	25	25
	* Backpulse points in box are not included																										

Figure A70: AN-102R2, Batch 3A Slurry Test 1.34C – Inhibited Deionized & Filtered Water Test after Standard Slurry – Raw & Calculated Data

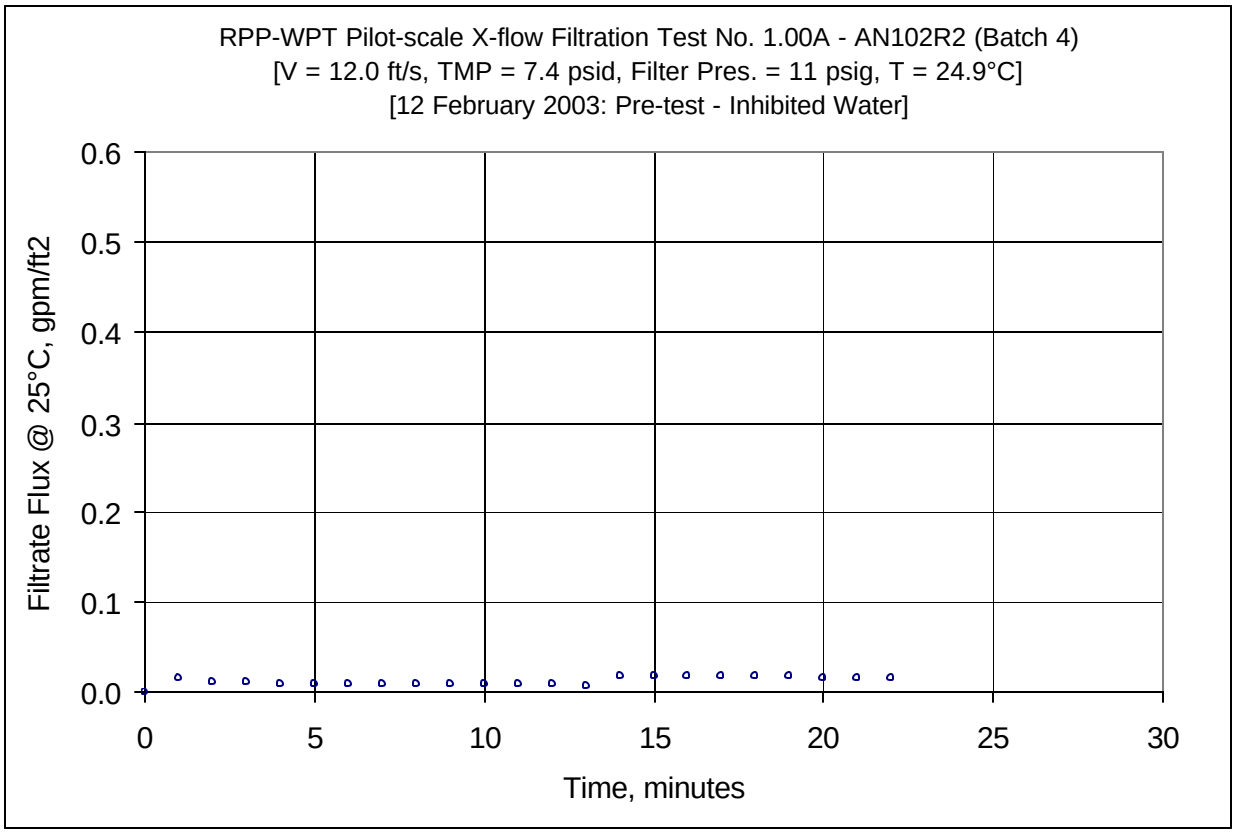


Figure A71: AN-102R2, Batch 4 Slurry Test 1.00A – Inhibited Deionized & Filtered Water (Compare to 1.34A on 11/26/02)

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
2/12/2003	9:34:41 AM	20.579	18.899	16.02	20.6	19.572	-0.114	-0.092	-0.058	0.063	-0.221	0.256	32.612	0.001	0.001	0			Filter Surface	6.707	FT2						
2/12/2003	9:35:58 AM	20.579	18.899	16.02	20.6	19.572	-0.114	-0.092	-0.058	0.063	-0.221	0.256	32.612	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
2/12/2003	9:35:59 AM	20.583	18.928	15.43	20.68	19.632	-0.116	-0.096	-0.058	0.061	-0.233	0.259	32.065	0.001	0.001	0											
2/12/2003	9:36:00 AM	20.593	18.934	15.431	20.69	19.637	-0.114	-0.094	-0.058	0.063	-0.245	0.256	32.573	0.001	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
2/12/2003	9:36:01 AM	20.583	18.928	15.415	20.68	19.637	-0.114	-0.094	-0.058	0.061	-0.187	0.259	32.497	0.001	0.001	0											
2/12/2003	9:36:02 AM	20.583	18.934	15.405	20.68	19.637	-0.114	-0.094	-0.059	0.061	-0.236	0.256	32.26	0.001	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
2/12/2003	9:36:03 AM	20.589	18.939	15.396	20.681	19.643	-0.116	-0.096	-0.059	0.061	-0.201	0.256	32.076	0.001	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY >>		
2/12/2003	9:36:04 AM	20.578	18.919	15.38	20.67	19.627	-0.114	-0.096	-0.059	0.061	-0.236	0.256	32.298	0.001	0.001	0							at 25C		x 1000		
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
2/12/2003	3:35:15 PM	24.704	20.195	25.143	21.394	20.998	3.005	12.18	4.489	-0.279	4.103	53.388	48.913	0.001	0.001	0	0	0	10.7	12.0	1.4	0.094	0.000	0.000	0.0001	0.109	0.09
2/12/2003	3:36:15 PM	23.967	20.2	25.083	21.43	21.019	7.156	12.277	4.637	3.748	0.021	0.459	48.899	0.099	0.001	0	1.00	0.01667	10.8	12.0	5.5	0.376	0.015	0.015	0.0027	2.701	2.30
2/12/2003	3:37:15 PM	24.802	20.223	25.021	21.428	21.042	7.133	12.306	4.665	3.556	0.036	0.502	48.94	0.078	0.001	0	2.00	0.03333	10.8	12.0	5.3	0.368	0.012	0.012	0.0022	2.175	1.85
2/12/2003	3:38:15 PM	24.969	20.219	24.952	21.459	21.083	7.083	12.161	4.599	3.617	0.004	0.511	48.892	0.071	0.001	0	3.00	0.05	10.7	12.0	5.4	0.369	0.011	0.011	0.0020	1.981	1.69
2/12/2003	3:39:15 PM	25.01	20.246	25.024	21.521	21.11	7.048	12.161	4.515	3.617	0.024	0.525	48.768	0.066	0.001	0	4.00	0.06667	10.7	12.0	5.3	0.368	0.010	0.010	0.0018	1.844	1.57
2/12/2003	3:40:15 PM	25.027	20.248	24.966	21.533	21.147	7.087	12.203	4.583	3.511	0.042	0.537	48.859	0.064	0.001	0	5.00	0.08333	10.7	12.0	5.3	0.365	0.010	0.010	0.0018	1.802	1.53
2/12/2003	3:41:15 PM	24.994	20.26	24.907	21.499	21.199	7.108	12.323	4.653	3.548	0.065	0.557	48.842	0.062	0.001	0	6.00	0.1	10.9	12.0	5.3	0.367	0.009	0.009	0.0017	1.739	1.48
2/12/2003	3:42:15 PM	24.971	20.272	24.874	21.456	21.206	7.002	12.145	4.42	3.791	0.062	0.574	48.888	0.06	0.001	0	7.00	0.11667	10.7	12.0	5.4	0.372	0.009	0.009	0.0017	1.664	1.42
2/12/2003	3:43:15 PM	24.967	20.283	24.925	21.422	21.253	6.936	12.188	4.504	3.541	0.065	0.592	48.905	0.059	0.001	0	8.00	0.13333	10.7	12.0	5.2	0.361	0.009	0.009	0.0017	1.683	1.43
2/12/2003	3:44:15 PM	24.959	20.301	24.893	21.434	21.265	7.189	12.378	4.508	3.799	0.073	0.606	49.001	0.058	0.001	0	9.00	0.15	10.9	12.0	5.5	0.379	0.009	0.009	0.0016	1.579	1.34
2/12/2003	3:45:15 PM	24.931	20.297	24.829	21.471	21.282	6.982	12.215	4.557	3.611	0.125	0.618	49.033	0.057	0.001	0	10.00	0.16667	10.7	12.0	5.3	0.365	0.008	0.009	0.0016	1.612	1.37
2/12/2003	3:46:15 PM	24.912	20.319	24.831	21.528	21.314	6.922	12.153	4.463	3.576	0.128	0.635	48.737	0.057	0.001	0	11.00	0.18333	10.7	11.9	5.2	0.362	0.008	0.009	0.0016	1.627	1.38
2/12/2003	3:47:15 PM	24.914	20.331	24.887	21.55	21.356	7.156	12.451	4.577	3.812	0.128	0.655	48.991	0.056	0.001	0	12.00	0.2	11.0	12.0	5.5	0.378	0.008	0.008	0.0015	1.527	1.30
2/12/2003	3:48:15 PM	24.91	20.332	24.823	21.576	21.367	6.797	12.078	4.576	3.367	0.128	0.754	48.79	0.05	0.001	0	13.00	0.21667	10.6	12.0	5.1	0.350	0.007	0.007	0.0015	1.474	1.25
2/12/2003	3:49:15 PM	24.697	20.354	24.801	21.548	21.379	11.721	12.18	4.538	8.43	-1.288	-4.826	48.941	0.124	0.001	0	14.00	0.23333	10.7	12.0	10.1	0.695	0.018	0.019	0.0018	1.845	1.57
2/12/2003	3:50:15 PM	24.598	20.355	24.807	21.569	21.42	11.677	12.126	4.38	8.495	-1.288	-4.942	48.985	0.119	0.001	0	15.00	0.25	10.7	12.0	10.1	0.695	0.018	0.018	0.0018	1.769	1.51
2/12/2003	3:51:15 PM	24.549	20.377	24.833	21.647	21.467	11.714	12.221	4.51	8.463	-1.288	-4.898	48.928	0.116	0.001	0	16.00	0.26667	10.7	12.0	10.1	0.696	0.017	0.017	0.0017	1.722	1.47
2/12/2003	3:52:15 PM	24.521	20.389	24.785	21.679	21.475	11.706	12.213	4.518	8.324	-1.288	-4.823	49.024	0.114	0.001	0	17.00	0.28333	10.7	12.0	10.0	0.690	0.017	0.017	0.0017	1.707	1.45
2/12/2003	3:53:15 PM	24.483	20.407	24.768	21.706	21.517	11.6	12.13	4.517	8.272	-1.288	-4.73	48.899	0.112	0.001	0	18.00	0.3	10.7	12.0	9.9	0.685	0.017	0.017	0.0017	1.692	1.44
2/12/2003	3:54:15 PM	24.455	20.428	24.824	21.728	21.529	11.667	12.298	4.628	8.225	-1.288	-4.638	48.844	0.111	0.001	0	19.00	0.31667	10.8	12.0	9.9	0.686	0.017	0.017	0.0017	1.672	1.42
2/12/2003	3:55:15 PM	24.422	20.441	24.796	21.761	21.581	11.53	12.171	4.606	8.035	-1.288	-4.548	48.974	0.109	0.001	0	20.00	0.33333	10.7	12.0	9.8	0.674	0.016	0.016	0.0017	1.671	1.42
2/12/2003	3:56:15 PM	24.393	20.447	24.748	21.727	21.613	11.501	12.211	4.402	8.285	-1.288	-4.438	48.947	0.108	0.001	0	21.00	0.35	10.7	12.0	9.9	0.682	0.016	0.016	0.0016	1.639	1.39
2/12/2003	3:57:15 PM	24.385	20.469	24.75	21.713	21.645	11.414	12.171	4.66	7.859	-1.288	-4.342	48.936	0.107	0.001	0	22.00	0.36667	10.7	12.0	9.6	0.664	0.016	0.016	0.0017	1.667	1.42
	Averages	24.8	20.3	24.9	21.6	21.4	9.1	12.2	4.5	5.7	-0.5	-1.8	48.9	0.1	0.0	0.0			10.7	12.0	7.4	0.510	0.013	0.013	0.0017	1.696	1.4
	Maximum	25.0	20.5	25.0	21.8	21.6	11.7	12.5	4.7	8.5	0.1	0.8	49.0	0.1	0.0	0.0			11.0	12.0	10.1	0.696	0.018	0.019	0.0020	1.981	1.7
	Median	24.9	20.3	24.8	21.5	21.4	7.2	12.2	4.5	3.8	0.0	0.5	48.9	0.1	0.0	0.0			10.7	12.0	5.5	0.378	0.010	0.010	0.0017	1.677	1.4
	Minimum	24.4	20.2	24.7	21.4	21.1	6.8	12.1	4.4	3.4	-1.3	-4.9	48.7	0.1	0.0	0.0			10.6	11.9	5.1	0.350	0.007	0.007	0.0015	1.474	1.3
	2 x Std Dev	0.479	0.145	0.147	0.214	0.328	4.568	0.176	0.153	4.636	1.359	5.265	0.163	0.054	0.000	0.000			0.176	0.040	4.601	0.317	0.008	0.008	0.0002	0.226	0.192
Number of Points Used*		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			20	20	20	20	20	20	20	20	20
	* Backpulse points in box are not included																										

Figure A72: AN-102R2, Batch 4 Slurry Test 1.00A – Inhibited Deionized & Filtered Water (Compare to 1.34A on 11/26/02) – Raw & Calculated Data

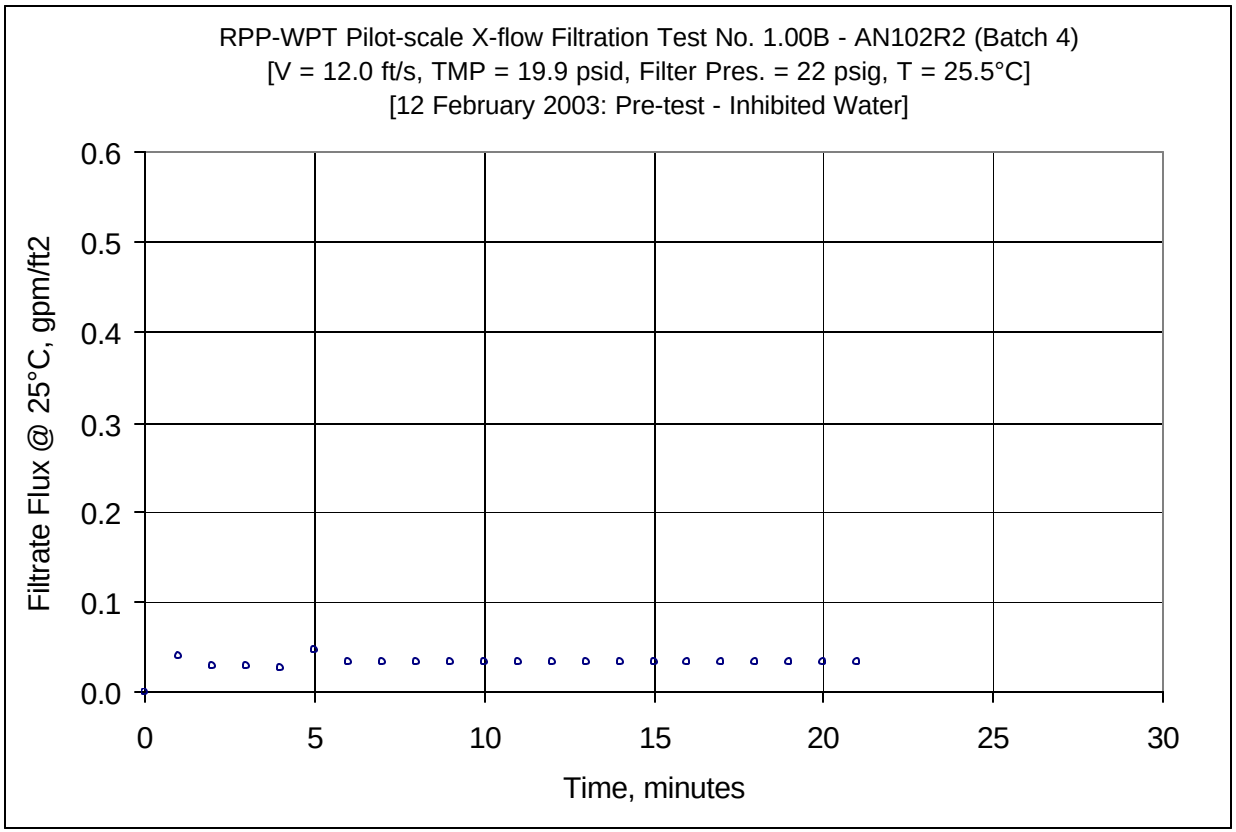


Figure A73: AN-102R2, Batch 4 Slurry Test 1.00B – Inhibited Deionized & Filtered Water (Compare to 1.34B on 11/26/02)

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
2/12/2003	9:34:41 AM	20.579	18.899	16.02	20.6	19.572	-0.114	-0.092	-0.058	0.063	-0.221	0.256	32.612	0.001	0.001	0			Filter Surface	6.707	FT2					
2/12/2003	9:35:58 AM	20.579	18.899	16.02	20.6	19.572	-0.114	-0.092	-0.058	0.063	-0.221	0.256	32.612	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
2/12/2003	9:35:59 AM	20.583	18.928	15.43	20.68	19.632	-0.116	-0.096	-0.058	0.061	-0.233	0.259	32.065	0.001	0.001	0										
2/12/2003	9:36:00 AM	20.593	18.934	15.431	20.69	19.637	-0.114	-0.094	-0.058	0.063	-0.245	0.256	32.573	0.001	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig							
2/12/2003	9:36:01 AM	20.583	18.928	15.415	20.68	19.637	-0.114	-0.094	-0.058	0.061	-0.187	0.259	32.497	0.001	0.001	0										
2/12/2003	9:36:02 AM	20.583	18.934	15.405	20.68	19.637	-0.114	-0.094	-0.059	0.061	-0.236	0.256	32.26	0.001	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing							
2/12/2003	9:36:03 AM	20.589	18.939	15.396	20.681	19.643	-0.116	-0.096	-0.059	0.061	-0.201	0.256	32.076	0.001	0.001	0			VVVV				< Filtrate Flux <<		PERMIABILITY >>	
2/12/2003	9:36:04 AM	20.578	18.919	15.38	20.67	19.627	-0.114	-0.096	-0.059	0.061	-0.236	0.256	32.298	0.001	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
2/12/2003	4:06:45 PM	24.76	20.569	25.284	21.873	21.744	3.543	23.229	4.568	0.012	14.682	63.493	48.773	0.001	0.001	0	0	0	21.8	12.0	1.8	0.123	0.000	0.000	0.0001	0.083	0.07
2/12/2003	4:07:45 PM	24.4	20.581	25.276	21.87	21.741	17.652	23.212	4.519	14.084	0.547	0.473	49.014	0.264	0.001	0	1.00	0.01667	21.7	12.0	15.9	1.094	0.039	0.039	0.0025	2.461	2.09
2/12/2003	4:08:45 PM	24.593	20.598	25.303	21.887	21.778	17.919	23.382	4.534	14.232	0.296	0.525	48.794	0.195	0.001	0	2.00	0.03333	21.9	12.0	16.1	1.108	0.029	0.029	0.0018	1.793	1.53
2/12/2003	4:09:45 PM	24.85	20.61	25.34	21.818	21.8	17.959	23.477	4.607	14.139	0.351	0.58	48.752	0.189	0.001	0	3.00	0.05	22.0	11.9	16.0	1.107	0.028	0.028	0.0017	1.739	1.48
2/12/2003	4:10:45 PM	24.982	20.611	25.396	21.74	21.832	17.922	23.564	4.669	14.113	0.403	0.629	48.896	0.186	0.001	0	4.00	0.06667	22.1	12.0	16.0	1.104	0.028	0.027	0.0017	1.712	1.46
2/12/2003	4:11:45 PM	25.084	20.628	25.438	21.776	21.799	21.465	23.316	4.461	18.013	-1.288	-3.74	49.052	0.311	0.001	0	5.00	0.08333	21.8	12.0	19.7	1.361	0.046	0.046	0.0023	2.320	1.97
2/12/2003	4:12:45 PM	25.086	20.645	25.425	21.859	21.846	22.041	23.152	4.565	18.745	-1.288	-4.522	48.93	0.232	0.001	0	6.00	0.1	21.7	12.0	20.4	1.406	0.035	0.034	0.0017	1.676	1.43
2/12/2003	4:13:45 PM	25.093	20.672	25.416	21.81	21.887	22.004	23.448	4.529	18.533	-1.288	-4.151	48.951	0.224	0.001	0	7.00	0.11667	22.0	12.0	20.3	1.397	0.033	0.033	0.0016	1.629	1.39
2/12/2003	4:14:45 PM	25.094	20.669	25.393	21.822	21.884	21.89	23.324	4.474	18.582	-1.288	-4.009	49.018	0.229	0.001	0	8.00	0.13333	21.9	12.0	20.2	1.395	0.034	0.034	0.0017	1.669	1.42
2/12/2003	4:15:45 PM	25.115	20.675	25.404	21.803	21.885	21.936	23.324	4.569	18.479	-1.288	-4.09	48.966	0.231	0.001	0	9.00	0.15	21.9	12.0	20.2	1.393	0.034	0.034	0.0017	1.685	1.43
2/12/2003	4:16:45 PM	25.111	20.686	25.44	21.829	21.907	22.004	23.368	4.588	18.424	-1.288	-4.137	49.004	0.228	0.001	0	10.00	0.16667	21.9	12.0	20.2	1.394	0.034	0.034	0.0017	1.661	1.41
2/12/2003	4:17:45 PM	25.133	20.698	25.487	21.876	21.863	21.998	23.341	4.522	18.651	-1.288	-4.157	48.941	0.227	0.001	0	11.00	0.18333	21.9	12.0	20.3	1.401	0.034	0.033	0.0016	1.643	1.40
2/12/2003	4:18:45 PM	25.134	20.704	25.468	21.917	21.914	21.898	23.246	4.57	18.43	-1.288	-4.177	48.915	0.225	0.001	0	12.00	0.2	21.8	12.0	20.2	1.390	0.034	0.033	0.0016	1.642	1.40
2/12/2003	4:19:45 PM	25.151	20.721	25.45	21.909	21.901	22.101	23.345	4.538	18.756	-1.288	-4.2	50.398	0.225	0.001	0	13.00	0.21667	21.9	12.4	20.4	1.408	0.034	0.033	0.0016	1.621	1.38
2/12/2003	4:20:45 PM	25.163	20.727	25.437	21.956	21.908	21.979	23.173	4.503	18.743	-1.285	-4.151	48.798	0.223	0.001	0	14.00	0.23333	21.7	12.0	20.4	1.404	0.033	0.033	0.0016	1.613	1.37
2/12/2003	4:21:45 PM	25.184	20.744	25.453	21.947	21.954	22.194	23.461	4.551	18.823	-1.282	-4.267	48.899	0.224	0.001	0	15.00	0.25	22.0	12.0	20.5	1.414	0.033	0.033	0.0016	1.608	1.37
2/12/2003	4:22:45 PM	25.201	20.766	25.489	21.959	21.936	22.099	23.322	4.545	18.631	-1.282	-4.281	48.754	0.224	0.001	0	16.00	0.26667	21.8	11.9	20.4	1.404	0.033	0.033	0.0016	1.618	1.38
2/12/2003	4:23:45 PM	25.207	20.762	25.501	21.955	21.947	22.288	23.471	4.542	18.944	-1.285	-4.29	48.855	0.225	0.001	0	17.00	0.28333	22.0	12.0	20.6	1.421	0.034	0.033	0.0016	1.604	1.37
2/12/2003	4:24:45 PM	25.213	20.768	25.527	22.012	21.944	22.172	23.312	4.55	18.829	-1.288	-4.307	48.999	0.224	0.001	0	18.00	0.3	21.8	12.0	20.5	1.413	0.033	0.033	0.0016	1.605	1.37
2/12/2003	4:25:45 PM	25.231	20.796	25.53	22.08	21.966	22.165	23.293	4.515	18.854	-1.288	-4.29	48.892	0.222	0.001	0	19.00	0.31667	21.8	12.0	20.5	1.414	0.033	0.033	0.0016	1.590	1.35
2/12/2003	4:26:45 PM	25.242	20.808	25.506	22.127	21.998	22.391	23.519	4.575	19.083	-1.288	-4.345	48.894	0.222	0.001	0	20.00	0.33333	22.0	12.0	20.7	1.430	0.033	0.033	0.0016	1.574	1.34
2/12/2003	4:27:45 PM	25.254	20.824	25.487	22.168	22.014	22.217	23.407	4.569	18.815	-1.285	-4.336	48.8	0.221	0.001	0	21.00	0.35	21.9	12.0	20.5	1.415	0.033	0.033	0.0016	1.584	1.35
	Averages	25.1	20.7	25.5	21.9	21.9	21.6	23.4	4.5	18.2	-1.1	-3.7	49.0	0.2	0.0	0.0			21.9	12.0	19.9	1.372	0.034	0.033	0.0017	1.673	1.4
	Maximum	25.3	20.8	25.5	22.2	22.0	22.4	23.6	4.7	19.1	0.4	0.6	50.4	0.3	0.0	0.0			22.1	12.4	20.7	1.430	0.046	0.046	0.0023	2.320	2.0
	Median	25.1	20.7	25.5	21.9	21.9	22.0	23.3	4.6	18.7	-1.3	-4.2	48.9	0.2	0.0	0.0			21.9	12.0	20.4	1.404	0.033	0.033	0.0016	1.629	1.4
	Minimum	24.9	20.6	25.3	21.7	21.8	17.9	23.2	4.5	14.1	-1.3	-4.5	48.8	0.2	0.0	0.0			21.7	11.9	16.0	1.104	0.028	0.027	0.0016	1.574	1.3
	2 x Std Dev	0.188	0.127	0.098	0.232	0.117	2.550	0.214	0.091	2.824	1.021	2.967	0.687	0.047	0.000	0.000			0.214	0.168	2.686	0.185	0.007	0.007	0.0003	0.317	0.270
Number of Points Used*		19	19	19	19	19	19	19	19	19	19	19	19	19	19	19			19	19	19	19	19	19	19	19	19
	* Backpulse points in box are not included																										

Figure A74: AN-102R2, Batch 4 Slurry Test 1.00B – Inhibited Deionized & Filtered Water (Compare to 1.34B on 11/26/02) – Raw & Calculated Data

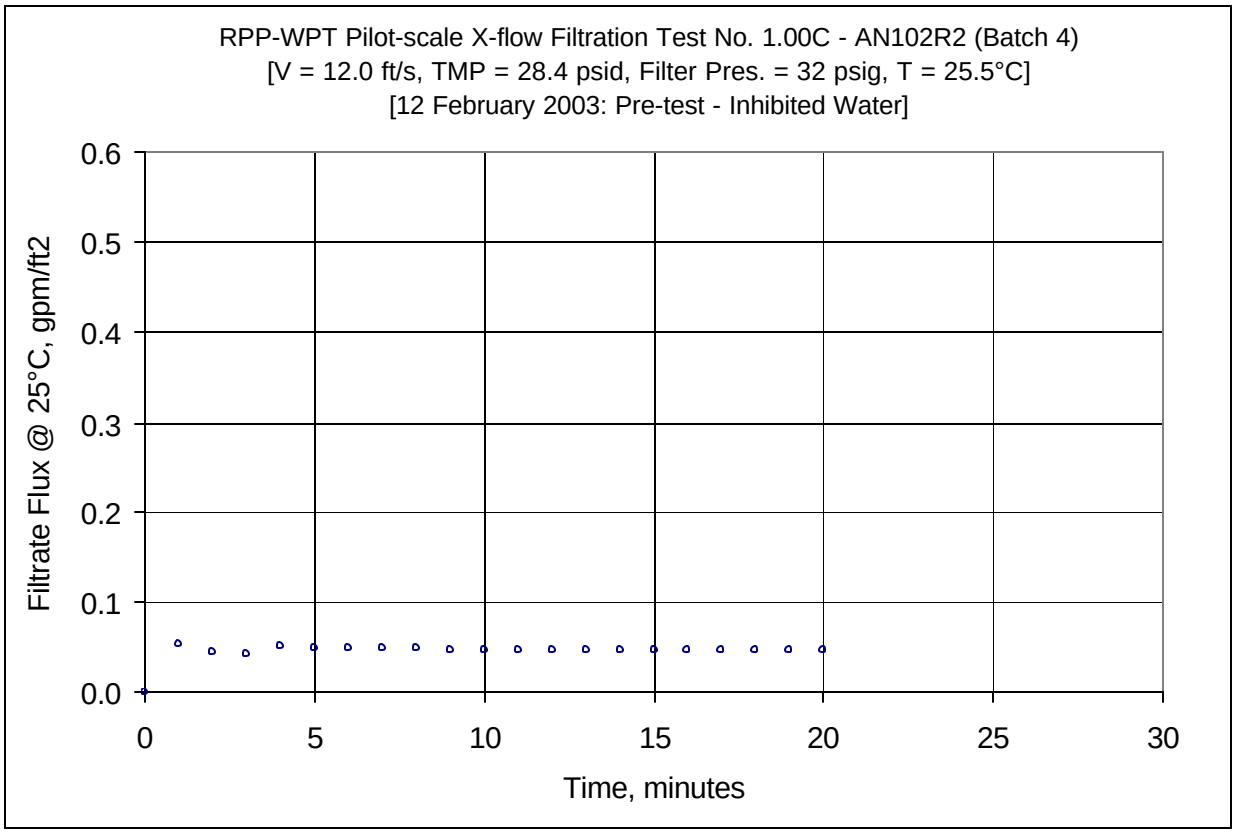


Figure A75: AN-102R2, Batch 4 Slurry Test 1.00C – Inhibited Deionized & Filtered Water (Compare to 1.34C on 11/26/02)

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
2/12/2003	9:34:41 AM	20.579	18.899	16.02	20.6	19.572	-0.114	-0.092	-0.058	0.063	-0.221	0.256	32.612	0.001	0.001	0			Filter Surface	6.707	FT2						
2/12/2003	9:35:58 AM	20.579	18.899	16.02	20.6	19.572	-0.114	-0.092	-0.058	0.063	-0.221	0.256	32.612	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
2/12/2003	9:35:59 AM	20.583	18.928	15.43	20.68	19.632	-0.116	-0.096	-0.058	0.061	-0.233	0.259	32.065	0.001	0.001	0											
2/12/2003	9:36:00 AM	20.593	18.934	15.431	20.69	19.637	-0.114	-0.094	-0.058	0.063	-0.245	0.256	32.573	0.001	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
2/12/2003	9:36:01 AM	20.583	18.928	15.415	20.68	19.637	-0.114	-0.094	-0.058	0.061	-0.187	0.259	32.497	0.001	0.001	0											
2/12/2003	9:36:02 AM	20.583	18.934	15.405	20.68	19.637	-0.114	-0.094	-0.059	0.061	-0.236	0.256	32.26	0.001	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
2/12/2003	9:36:03 AM	20.589	18.939	15.396	20.681	19.643	-0.116	-0.096	-0.059	0.061	-0.201	0.256	32.076	0.001	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY >>		
2/12/2003	9:36:04 AM	20.578	18.919	15.38	20.67	19.627	-0.114	-0.096	-0.059	0.061	-0.236	0.256	32.298	0.001	0.001	0								at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
2/12/2003	4:31:38 PM	25.332	20.877	25.96	22.161	22.128	3.572	34.105	4.557	-0.319	25.57	74.884	48.649	0.001	0.001	0	0	0	32.6	11.9	1.6	0.112	0.000	0.000	0.0001	0.089	0.08
2/12/2003	4:32:38 PM	25.404	20.885	26.048	22.178	22.15	27.637	33.815	4.527	23.916	1.102	0.479	48.823	0.363	0.001	0	1.00	0.01667	32.3	12.0	25.8	1.777	0.054	0.053	0.0020	2.039	1.74
2/12/2003	4:33:38 PM	25.636	20.922	26.134	22.251	22.152	27.72	33.734	4.48	24.031	0.868	0.569	48.884	0.299	0.001	0	2.00	0.03333	32.3	12.0	25.9	1.784	0.045	0.043	0.0017	1.669	1.42
2/12/2003	4:34:38 PM	25.878	20.938	26.176	22.217	22.209	27.84	33.836	4.487	24.156	0.929	0.653	48.999	0.294	0.001	0	3.00	0.05	32.4	12.0	26.0	1.792	0.044	0.042	0.0016	1.631	1.39
2/12/2003	4:35:38 PM	25.975	20.94	26.188	22.163	22.206	31.995	33.846	4.517	28.594	-1.288	-3.827	48.953	0.346	0.001	0	4.00	0.06667	32.4	12.0	30.3	2.089	0.052	0.050	0.0016	1.647	1.40
2/12/2003	4:36:38 PM	26.031	20.942	26.17	22.11	22.212	31.765	33.68	4.55	28.277	-1.288	-3.659	49.022	0.333	0.001	0	5.00	0.08333	32.2	12.0	30.0	2.070	0.050	0.048	0.0016	1.600	1.36
2/12/2003	4:37:38 PM	26.062	20.958	26.116	22.046	22.214	31.871	33.745	4.436	28.535	-1.288	-3.766	48.959	0.333	0.001	0	6.00	0.1	32.3	12.0	30.2	2.082	0.050	0.048	0.0016	1.593	1.36
2/12/2003	4:38:38 PM	26.045	20.966	25.988	22.058	22.176	31.856	33.736	4.54	28.424	-1.288	-3.786	48.962	0.332	0.001	0	7.00	0.11667	32.3	12.0	30.1	2.078	0.049	0.048	0.0016	1.597	1.36
2/12/2003	4:39:38 PM	26.011	20.972	25.769	22.17	22.167	32.032	33.865	4.482	28.742	-1.288	-3.838	48.911	0.327	0.001	0	8.00	0.13333	32.4	12.0	30.4	2.095	0.049	0.048	0.0016	1.570	1.34
2/12/2003	4:40:38 PM	25.938	20.968	25.566	22.217	22.239	32.07	33.852	4.473	28.752	-1.291	-3.867	48.922	0.324	0.001	0	9.00	0.15	32.4	12.0	30.4	2.097	0.048	0.048	0.0016	1.563	1.33
2/12/2003	4:41:38 PM	25.849	20.985	25.457	22.268	22.25	31.966	33.716	4.46	28.662	-1.285	-3.873	48.917	0.321	0.001	0	10.00	0.16667	32.2	12.0	30.3	2.090	0.048	0.047	0.0016	1.559	1.33
2/12/2003	4:42:38 PM	25.78	20.986	25.344	22.275	22.242	32.086	33.852	4.497	28.807	-1.288	-3.908	48.873	0.319	0.001	0	11.00	0.18333	32.4	12.0	30.4	2.099	0.048	0.047	0.0015	1.547	1.32
2/12/2003	4:43:38 PM	25.697	20.998	25.225	22.267	22.208	32.186	33.91	4.484	28.95	-1.291	-3.922	48.982	0.317	0.001	0	12.00	0.2	32.4	12.0	30.6	2.108	0.047	0.047	0.0015	1.536	1.31
2/12/2003	4:44:38 PM	25.609	21.02	25.117	22.299	22.286	32.151	33.852	4.536	28.781	-1.288	-3.945	48.854	0.314	0.001	0	13.00	0.21667	32.4	12.0	30.5	2.101	0.047	0.047	0.0015	1.532	1.30
2/12/2003	4:45:38 PM	25.56	21.047	25.034	22.351	22.222	32.275	33.9	4.44	29.067	-1.285	-3.957	48.735	0.312	0.001	0	14.00	0.23333	32.4	11.9	30.7	2.115	0.047	0.046	0.0015	1.515	1.29
2/12/2003	4:46:38 PM	25.472	21.044	24.91	22.398	22.274	32.302	33.931	4.538	28.934	-1.288	-3.966	48.8	0.312	0.001	0	15.00	0.25	32.5	12.0	30.6	2.111	0.047	0.047	0.0015	1.523	1.30
2/12/2003	4:47:38 PM	25.409	21.051	24.832	22.415	22.312	32.2	33.912	4.568	28.811	-1.291	-3.983	48.844	0.31	0	0	16.00	0.26667	32.4	12.0	30.5	2.103	0.046	0.046	0.0015	1.522	1.30
2/12/2003	4:48:38 PM	25.33	21.062	24.788	22.375	22.327	32.126	33.807	4.476	28.852	-1.288	-3.969	48.794	0.311	0.001	0	17.00	0.28333	32.3	12.0	30.5	2.102	0.046	0.047	0.0015	1.530	1.30
2/12/2003	4:49:38 PM	25.257	21.064	24.735	22.338	22.309	32.418	34.086	4.554	29.053	-1.291	-4.001	48.725	0.306	0.001	0	18.00	0.3	32.6	11.9	30.7	2.119	0.046	0.046	0.0015	1.495	1.27
2/12/2003	4:50:38 PM	25.188	21.081	24.711	22.359	22.356	32.269	33.893	4.545	28.817	-1.288	-4.015	48.519	0.305	0.001	0	19.00	0.31667	32.4	11.9	30.5	2.106	0.045	0.046	0.0015	1.501	1.28
2/12/2003	4:51:38 PM	25.139	21.091	24.682	22.329	22.326	32.378	33.931	4.526	29.083	-1.288	-4.012	48.693	0.305	0.001	0	20.00	0.33333	32.5	11.9	30.7	2.119	0.045	0.046	0.0015	1.493	1.27
	Averages	25.6	21.0	25.5	22.2	22.2	30.1	33.9	4.5	26.7	0.3	0.5	48.8	0.3	0.0	0.0			32.4	12.0	28.4	1.959	0.045	0.045	0.0015	1.512	1.3
	Maximum	26.1	21.1	26.2	22.4	22.4	32.4	34.1	4.6	29.1	25.6	74.9	49.0	0.4	0.0	0.0			32.6	12.0	30.7	2.119	0.054	0.053	0.0020	2.039	1.7
	Median	25.6	21.0	25.5	22.3	22.2	32.1	33.9	4.5	28.8	-1.3	-3.9	48.9	0.3	0.0	0.0			32.4	12.0	30.4	2.097	0.047	0.047	0.0015	1.547	1.3
	Minimum	25.1	20.9	24.7	22.0	22.1	3.6	33.7	4.4	-0.3	-1.3	-4.0	48.5	0.0	0.0	0.0			32.2	11.9	1.6	0.112	0.000	0.000	0.0001	0.089	0.1
	2 x Std Dev	0.601	0.122	1.123	0.210	0.127	12.268	0.210	0.078	12.537	11.404	33.416	0.250	0.139	0.000	0.000			0.210	0.061	12.4	0.855	0.021	0.020	0.0007	0.675	0.574
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21			21	21	21	21	21	21	21	21	21
	* Backpulse points in box are not included																										

Figure A76: AN-102R2, Batch 4 Slurry Test 1.00C – Inhibited Deionized & Filtered Water (Compare to 1.34C on 11/26/02) – Raw & Calculated Data

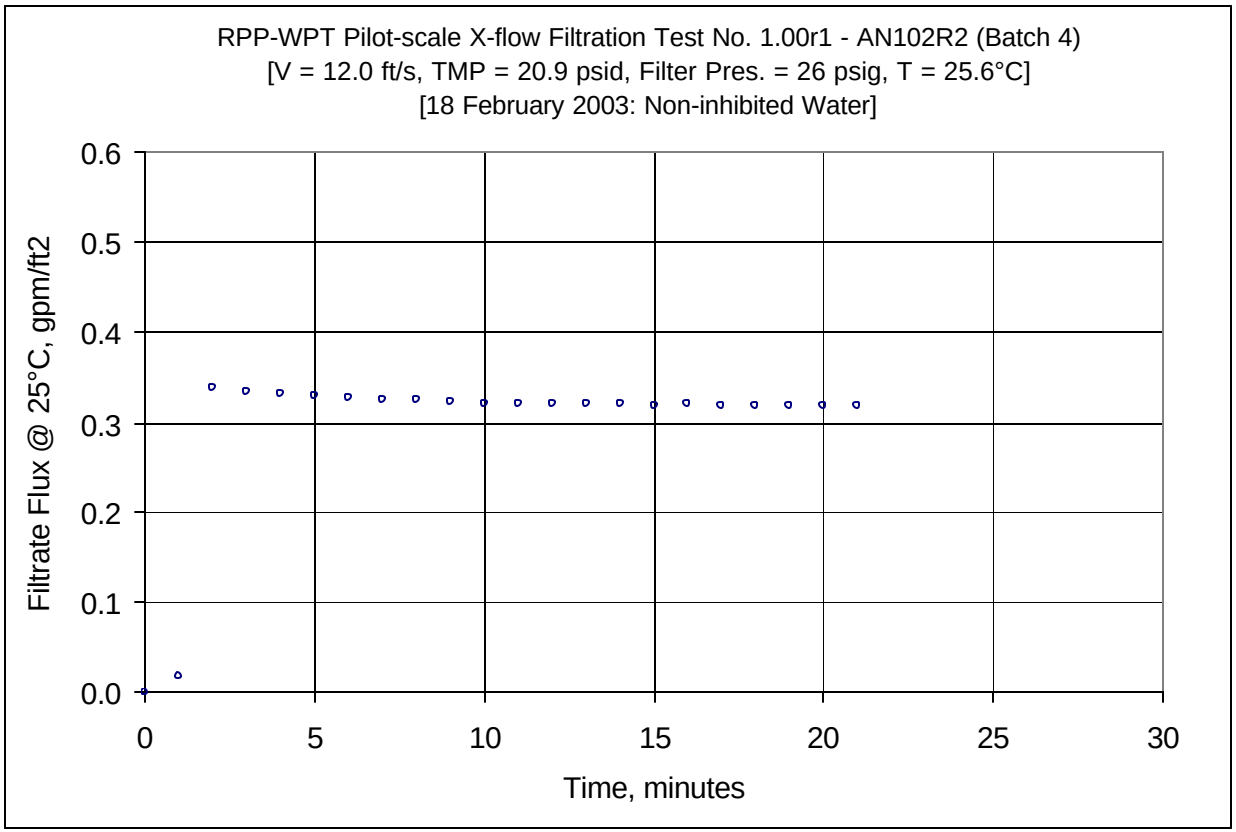


Figure A77: AN-102R2, Batch 4 Slurry Test 1.00r1 – Non-Inhibited Deionized & Filtered Water

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
2/18/2003	7:41:35 AM	22.045	17.928	13.92	21.779	16.794	-0.125	-0.104	-0.058	0.055	-0.175	0.227	-0.216	0.001	0.001	0			Filter Surface	6.707	FT2					
2/18/2003	7:41:53 AM	22.045	17.928	13.92	21.779	16.794	-0.125	-0.104	-0.058	0.055	-0.175	0.227	-0.216	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
2/18/2003	7:41:54 AM	22.024	17.912	13.889	21.744	16.798	-0.125	-0.102	-0.058	0.053	-0.175	0.227	-0.215	0.001	0.001	0										
2/18/2003	7:41:55 AM	22.024	17.907	13.884	21.739	16.793	-0.125	-0.104	-0.059	0.053	-0.178	0.224	-0.218	0.001	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig							
2/18/2003	7:41:56 AM	22.024	17.907	13.883	21.728	16.788	-0.125	-0.102	-0.059	0.051	-0.181	0.224	-0.218	0.001	0.001	0										
2/18/2003	7:41:57 AM	22.034	17.917	13.894	21.739	16.793	-0.123	-0.102	-0.059	0.051	-0.178	0.224	-0.218	0.001	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing							
2/18/2003	7:41:58 AM	22.029	17.922	13.899	21.749	16.788	-0.123	-0.104	-0.059	0.051	-0.181	0.224	-0.218	0.001	0.001	0			VVVV				< Filtrate Flux <<		PERMIABILITY >>	
2/18/2003	7:41:59 AM	22.034	17.922	13.904	21.759	16.788	-0.125	-0.102	-0.058	0.053	-0.181	0.221	-0.216	0.001	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
2/18/2003	12:58:17 PM	25.66	18.462	25.792	20.865	18.721	2.553	27.545	4.291	-1.439	19.925	68.378	47.221	0.001	0.001	0.002	0	0	26.1	11.6	0.6	0.038	0.000	0.000	0.0003	0.262	0.22
2/18/2003	12:59:17 PM	23.095	18.463	25.823	20.816	18.733	2.769	27.662	4.286	-1.296	19.815	14.27	47.296	0.001	0.114	0	1.00	0.01667	26.2	11.6	0.7	0.051	0.017	0.017	0.0226	22.550	19.19
2/18/2003	1:00:17 PM	25.938	18.475	25.785	20.777	18.734	22.199	27.106	4.352	18.383	-0.82	0.682	48.995	0.002	2.317	0	2.00	0.03333	25.6	12.0	20.3	1.399	0.345	0.338	0.0167	16.653	14.17
2/18/2003	1:01:17 PM	26.006	18.487	25.762	20.749	18.752	22.279	27.137	4.23	18.52	-0.875	0.684	48.815	0.001	2.297	0	3.00	0.05	25.7	12.0	20.4	1.406	0.342	0.335	0.0164	16.432	13.98
2/18/2003	1:02:17 PM	26.006	18.472	25.727	20.689	18.747	22.46	27.16	4.272	18.743	-0.958	0.684	48.928	0.001	2.275	0.002	4.00	0.06667	25.7	12.0	20.6	1.420	0.339	0.332	0.0161	16.131	13.73
2/18/2003	1:03:17 PM	26.018	18.474	25.719	20.666	18.749	22.582	27.232	4.301	18.821	-1.019	0.684	49.004	0.001	2.26	0.002	5.00	0.08333	25.8	12.0	20.7	1.427	0.337	0.330	0.0160	15.951	13.57
2/18/2003	1:04:17 PM	26.034	18.486	25.751	20.652	18.735	22.72	27.211	4.207	19.198	-1.086	0.687	48.953	0.001	2.247	0.003	6.00	0.1	25.7	12.0	21.0	1.445	0.335	0.328	0.0157	15.650	13.32
2/18/2003	1:05:17 PM	26.036	18.503	25.718	20.669	18.768	22.575	27.044	4.293	18.915	-1.158	0.69	48.768	0.001	2.235	0.002	7.00	0.11667	25.6	12.0	20.7	1.430	0.333	0.327	0.0157	15.742	13.40
2/18/2003	1:06:17 PM	25.973	18.485	25.655	20.611	18.769	22.621	27.104	4.272	18.858	-1.221	0.684	48.897	0.001	2.217	0.001	8.00	0.13333	25.6	12.0	20.7	1.430	0.331	0.325	0.0156	15.647	13.32
2/18/2003	1:07:17 PM	25.941	18.488	25.647	20.603	18.787	22.946	27.427	4.276	19.204	-1.221	0.684	48.94	0.001	2.209	0.003	9.00	0.15	26.0	12.0	21.1	1.453	0.329	0.323	0.0153	15.346	13.06
2/18/2003	1:08:17 PM	25.918	18.51	25.65	20.601	18.775	22.64	27.036	4.292	18.909	-1.282	0.69	48.85	0.001	2.192	0.004	10.00	0.16667	25.6	12.0	20.8	1.432	0.327	0.321	0.0154	15.447	13.15
2/18/2003	1:09:17 PM	25.86	18.497	25.582	20.553	18.772	22.99	27.365	4.329	19.145	-1.285	0.684	48.773	0.001	2.193	0.002	11.00	0.18333	25.9	12.0	21.1	1.453	0.327	0.322	0.0153	15.268	12.99
2/18/2003	1:10:17 PM	25.838	18.51	25.524	20.54	18.789	22.779	27.112	4.298	18.954	-1.285	0.687	48.884	0.001	2.184	0.002	12.00	0.2	25.6	12.0	20.9	1.439	0.326	0.321	0.0154	15.377	13.09
2/18/2003	1:11:17 PM	25.814	18.516	25.466	20.531	18.826	22.878	27.187	4.261	19.081	-1.285	0.687	48.781	0.001	2.177	0.003	13.00	0.21667	25.7	12.0	21.0	1.446	0.325	0.320	0.0153	15.270	12.99
2/18/2003	1:12:17 PM	25.79	18.522	25.432	20.542	18.832	22.855	27.1	4.231	19.196	-1.285	0.687	48.771	0.001	2.173	0.004	14.00	0.23333	25.6	12.0	21.0	1.450	0.324	0.320	0.0152	15.223	12.95
2/18/2003	1:13:17 PM	25.782	18.54	25.419	20.564	18.885	22.93	27.154	4.252	19.222	-1.285	0.69	48.704	0.001	2.17	0.003	15.00	0.25	25.7	11.9	21.1	1.453	0.324	0.320	0.0152	15.171	12.91
2/18/2003	1:14:17 PM	25.76	18.567	25.406	20.592	18.953	22.882	27.116	4.315	19.104	-1.282	0.69	48.687	0.001	2.172	0.003	16.00	0.26667	25.6	11.9	21.0	1.447	0.324	0.320	0.0153	15.250	12.98
2/18/2003	1:15:17 PM	25.741	18.569	25.418	20.624	19.03	22.863	27.137	4.295	19.112	-1.282	0.69	48.903	0.001	2.165	0.003	17.00	0.28333	25.7	12.0	21.0	1.447	0.323	0.319	0.0152	15.200	12.94
2/18/2003	1:16:17 PM	25.712	18.575	25.429	20.59	19.032	23.073	27.375	4.322	19.155	-1.285	0.69	48.892	0.001	2.165	0.002	18.00	0.3	25.9	12.0	21.1	1.456	0.323	0.319	0.0151	15.104	12.85
2/18/2003	1:17:17 PM	25.699	18.576	25.42	20.571	19.018	22.892	27.104	4.244	19.208	-1.285	0.69	48.748	0.001	2.167	0.003	19.00	0.31667	25.6	11.9	21.1	1.451	0.323	0.319	0.0152	15.168	12.91
2/18/2003	1:18:17 PM	25.691	18.604	25.398	20.604	19.041	22.936	27.24	4.312	19.071	-1.285	0.69	48.743	0.001	2.161	0.004	20.00	0.33333	25.8	11.9	21.0	1.448	0.322	0.319	0.0152	15.169	12.91
2/18/2003	1:19:17 PM	25.673	18.601	25.355	20.646	19.068	22.992	27.187	4.245	19.27	-1.285	0.69	48.754	0.001	2.162	0.005	21.00	0.35	25.7	11.9	21.1	1.457	0.322	0.319	0.0151	15.103	12.85
	Averages	25.9	18.5	25.6	20.6	18.9	22.8	27.2	4.3	19.0	-1.2	0.7	48.8	0.0	2.2	0.0		0.2	25.7	12.0	20.9	1.442	0.328	0.323	0.0155	15.455	13.2
	Maximum	26.0	18.6	25.8	20.7	19.1	23.1	27.4	4.3	19.3	-0.9	0.7	49.0	0.0	2.3	0.0		0.4	26.0	12.0	21.1	1.457	0.342	0.335	0.0164	16.432	14.0
	Median	25.8	18.5	25.5	20.6	18.8	22.9	27.2	4.3	19.1	-1.3	0.7	48.8	0.0	2.2	0.0		0.2	25.7	12.0	21.0	1.447	0.326	0.321	0.0153	15.270	13.0
	Minimum	25.7	18.5	25.4	20.5	18.7	22.3	27.0	4.2	18.5	-1.3	0.7	48.7	0.0	2.2	0.0		0.1	25.6	11.9	20.4	1.406	0.322	0.319	0.0151	15.103	12.9
	2 x Std Dev	0.252	0.085	0.281	0.111	0.236	0.404	0.211	0.067	0.386	0.250	0.005	0.180	0.000	0.082	0.002		0.183	0.211	0.044	0.386	0.027	0.012	0.010	0.0007	0.734	0.624
Number of Points Used*		19	19	19	19	19	19	19	19	19	19	19	19	19	19	19		19	19	19	19	19	19	19	19	19	19
	* Backpulse points in box are not included																										

Figure A78: AN-102R2, Batch 4 Slurry Test 1.00r1 – Non-Inhibited Deionized & Filtered Water – Raw & Calculated Data

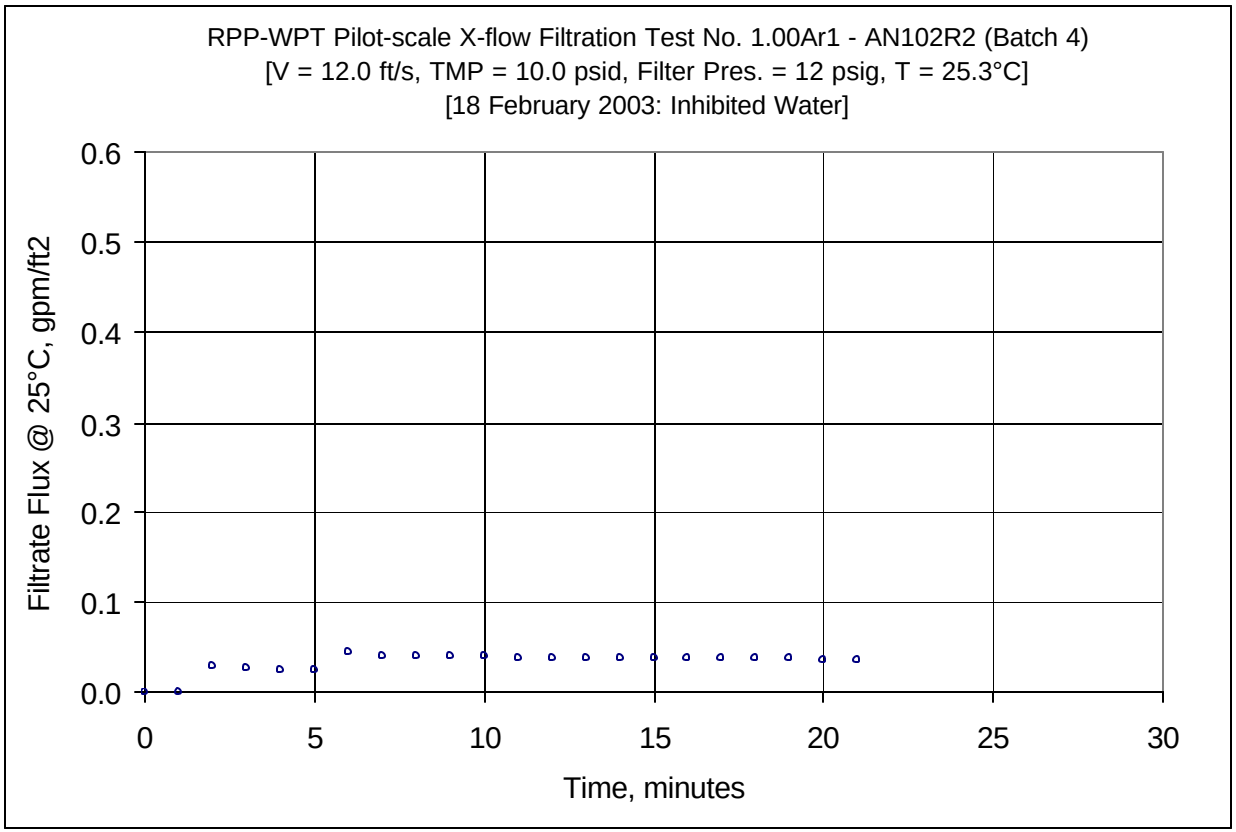


Figure A79: AN-102R2, Batch 4 Slurry Test 1.00Ar1 – Inhibited Deionized & Filtered Water (compare to Test 1.00A done on 2/12/03)

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
2/18/2003	7:41:35 AM	22.045	17.928	13.92	21.779	16.794	-0.125	-0.104	-0.058	0.055	-0.175	0.227	-0.216	0.001	0.001	0			Filter Surface	6.707	FT2					
2/18/2003	7:41:53 AM	22.045	17.928	13.92	21.779	16.794	-0.125	-0.104	-0.058	0.055	-0.175	0.227	-0.216	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
2/18/2003	7:41:54 AM	22.024	17.912	13.889	21.744	16.798	-0.125	-0.102	-0.058	0.053	-0.175	0.227	-0.215	0.001	0.001	0										
2/18/2003	7:41:55 AM	22.024	17.907	13.884	21.739	16.793	-0.125	-0.104	-0.059	0.053	-0.178	0.224	-0.218	0.001	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig							
2/18/2003	7:41:56 AM	22.024	17.907	13.883	21.728	16.788	-0.125	-0.102	-0.059	0.051	-0.181	0.224	-0.218	0.001	0.001	0										
2/18/2003	7:41:57 AM	22.034	17.917	13.894	21.739	16.793	-0.123	-0.102	-0.059	0.051	-0.178	0.224	-0.218	0.001	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing							
2/18/2003	7:41:58 AM	22.029	17.922	13.899	21.749	16.788	-0.123	-0.104	-0.059	0.051	-0.181	0.224	-0.218	0.001	0.001	0			VVVV				< Filtrate Flux <<		PERMIABILITY >>	
2/18/2003	7:41:59 AM	22.034	17.922	13.904	21.759	16.788	-0.125	-0.102	-0.058	0.053	-0.181	0.221	-0.216	0.001	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
2/18/2003	1:28:49 PM	25.152	18.798	25.215	21.004	19.523	2.852	13.959	4.659	-1.646	5.82	55.218	48.855	0.001	0.001	0	0	0	12.5	12.0	0.6	0.042	0.000	0.000	0.0002	0.246	0.21
2/18/2003	1:29:49 PM	23.83	18.799	25.281	20.944	19.503	0.687	13.913	4.62	-3.707	8.38	30.178	48.632	0.001	0.001	0.055	1.00	0.01667	12.4	11.9	-1.5	-0.104	0.000	0.000	-0.0001	-0.098	-0.08
2/18/2003	1:30:49 PM	25.004	18.805	25.251	20.9	19.489	8.359	13.918	4.517	4.131	0.238	0.629	48.922	0.199	0.001	0	2.00	0.03333	12.4	12.0	6.2	0.431	0.030	0.029	0.0047	4.717	4.01
2/18/2003	1:31:49 PM	25.195	18.811	25.323	20.846	19.5	8.214	13.735	4.521	3.93	0.192	0.574	49.211	0.181	0.001	0	3.00	0.05	12.3	12.1	6.1	0.419	0.027	0.027	0.0044	4.404	3.75
2/18/2003	1:32:49 PM	25.312	18.823	25.309	20.812	19.517	8.429	13.998	4.594	4.102	0.25	0.621	49.123	0.167	0.001	0	4.00	0.06667	12.5	12.0	6.3	0.432	0.025	0.025	0.0039	3.939	3.35
2/18/2003	1:33:49 PM	25.338	18.829	25.275	20.792	19.553	8.299	13.884	4.677	3.787	0.258	0.67	49.112	0.158	0.001	0	5.00	0.08333	12.4	12.0	6.0	0.417	0.024	0.023	0.0039	3.868	3.29
2/18/2003	1:34:49 PM	25.338	18.819	25.336	20.743	19.533	12.913	13.909	4.622	8.575	-1.285	-4.212	49.127	0.294	0.001	0	6.00	0.1	12.4	12.0	10.7	0.741	0.044	0.043	0.0040	4.041	3.44
2/18/2003	1:35:49 PM	25.349	18.825	25.262	20.713	19.529	12.619	13.735	4.506	8.397	-1.285	-4.041	49.064	0.276	0.001	0	7.00	0.11667	12.3	12.0	10.5	0.724	0.041	0.041	0.0039	3.887	3.31
2/18/2003	1:36:49 PM	25.385	18.836	25.333	20.709	19.581	12.682	13.767	4.533	8.334	-1.285	-4.087	49.144	0.271	0.001	0	8.00	0.13333	12.3	12.0	10.5	0.724	0.040	0.040	0.0038	3.809	3.24
2/18/2003	1:37:49 PM	25.382	18.833	25.289	20.665	19.592	12.829	13.773	4.594	8.5	-1.285	-4.189	49.165	0.268	0.001	0	9.00	0.15	12.3	12.0	10.7	0.735	0.040	0.040	0.0037	3.716	3.16
2/18/2003	1:38:49 PM	25.398	18.849	25.24	20.666	19.603	12.876	13.796	4.537	8.575	-1.285	-4.215	49.112	0.263	0.001	0	10.00	0.16667	12.3	12.0	10.7	0.739	0.039	0.039	0.0036	3.631	3.09
2/18/2003	1:39:49 PM	25.394	18.86	25.336	20.683	19.64	12.868	13.785	4.57	8.477	-1.285	-4.235	49.001	0.26	0.001	0	11.00	0.18333	12.3	12.0	10.7	0.736	0.039	0.038	0.0036	3.598	3.06
2/18/2003	1:40:49 PM	25.396	18.878	25.263	20.73	19.672	12.972	13.814	4.615	8.614	-1.285	-4.261	49.037	0.258	0.001	0	12.00	0.2	12.3	12.0	10.8	0.744	0.038	0.038	0.0035	3.538	3.01
2/18/2003	1:41:49 PM	25.383	18.895	25.29	20.792	19.78	13.002	13.856	4.562	8.706	-1.285	-4.284	49.037	0.256	0.001	0	13.00	0.21667	12.4	12.0	10.9	0.748	0.038	0.038	0.0035	3.488	2.97
2/18/2003	1:42:49 PM	25.409	18.921	25.337	20.935	19.837	13.007	13.793	4.574	8.602	-1.279	-4.299	49.113	0.254	0.001	0	14.00	0.23333	12.3	12.0	10.8	0.745	0.038	0.038	0.0035	3.472	2.95
2/18/2003	1:43:49 PM	25.396	18.923	25.263	21.052	19.854	13.007	13.796	4.594	8.624	-1.288	-4.328	49.056	0.252	0.001	0	15.00	0.25	12.3	12.0	10.8	0.746	0.038	0.037	0.0034	3.448	2.93
2/18/2003	1:44:49 PM	25.418	18.956	25.315	21.221	19.912	13.003	13.791	4.558	8.682	-1.282	-4.331	49.169	0.251	0.001	0	16.00	0.26667	12.3	12.0	10.8	0.748	0.037	0.037	0.0034	3.421	2.91
2/18/2003	1:45:49 PM	25.391	18.973	25.298	21.38	19.95	13.147	13.961	4.63	8.733	-1.285	-4.336	49.083	0.25	0.001	0	17.00	0.28333	12.5	12.0	10.9	0.754	0.037	0.037	0.0034	3.379	2.88
2/18/2003	1:46:49 PM	25.414	19.007	25.271	21.584	20.029	13.131	13.918	4.589	8.774	-1.285	-4.345	49.069	0.248	0.001	0	18.00	0.3	12.4	12.0	11.0	0.755	0.037	0.037	0.0034	3.350	2.85
2/18/2003	1:47:49 PM	25.427	19.041	25.355	21.774	20.118	13.069	13.856	4.629	8.588	-1.285	-4.354	49.129	0.248	0.001	0	19.00	0.31667	12.4	12.0	10.8	0.747	0.037	0.037	0.0034	3.381	2.88
2/18/2003	1:48:49 PM	25.421	19.059	25.318	21.923	20.156	13.094	13.856	4.531	8.758	-1.285	-4.377	49.106	0.247	0.001	0	20.00	0.33333	12.4	12.0	10.9	0.753	0.037	0.036	0.0033	3.340	2.84
2/18/2003	1:49:49 PM	25.445	19.088	25.282	22.018	20.211	13.11	13.903	4.592	8.694	-1.285	-4.362	49.136	0.246	0.001	0	21.00	0.35	12.4	12.0	10.9	0.752	0.037	0.036	0.0033	3.338	2.84
	Averages	25.4	18.9	25.3	21.1	19.8	12.2	13.8	4.6	7.9	-1.0	-3.5	49.1	0.2	0.0	0.0		0.2	12.4	12.0	10.0	0.693	0.036	0.036	0.0036	3.634	3.1
	Maximum	25.4	19.1	25.4	22.0	20.2	13.1	14.0	4.7	8.8	0.3	0.7	49.2	0.3	0.0	0.0		0.4	12.5	12.1	11.0	0.755	0.044	0.043	0.0044	4.404	3.7
	Median	25.4	18.9	25.3	20.8	19.7	13.0	13.8	4.6	8.6	-1.3	-4.3	49.1	0.3	0.0	0.0		0.2	12.3	12.0	10.8	0.744	0.038	0.037	0.0035	3.538	3.0
	Minimum	25.2	18.8	25.2	20.7	19.5	8.2	13.7	4.5	3.8	-1.3	-4.4	49.0	0.2	0.0	0.0		0.1	12.3	12.0	6.0	0.417	0.024	0.023	0.0033	3.338	2.8
	2 x Std Dev	0.109	0.175	0.063	0.888	0.462	3.399	0.146	0.085	3.409	1.107	3.569	0.101	0.070	0.000	0.000		0.183	0.146	0.025	3.403	0.235	0.010	0.010	0.0006	0.568	0.483
Number of Points Used*		19	19	19	19	19	19	19	19	19	19	19	19	19	19	19		19	19	19	19	19	19	19	19	19	19
	* Backpulse points in box are not included																										

Figure A80: AN-102R2, Batch 4 Slurry Test 1.00Ar1 – Inhibited Deionized & Filtered Water – Raw & Calculated Data

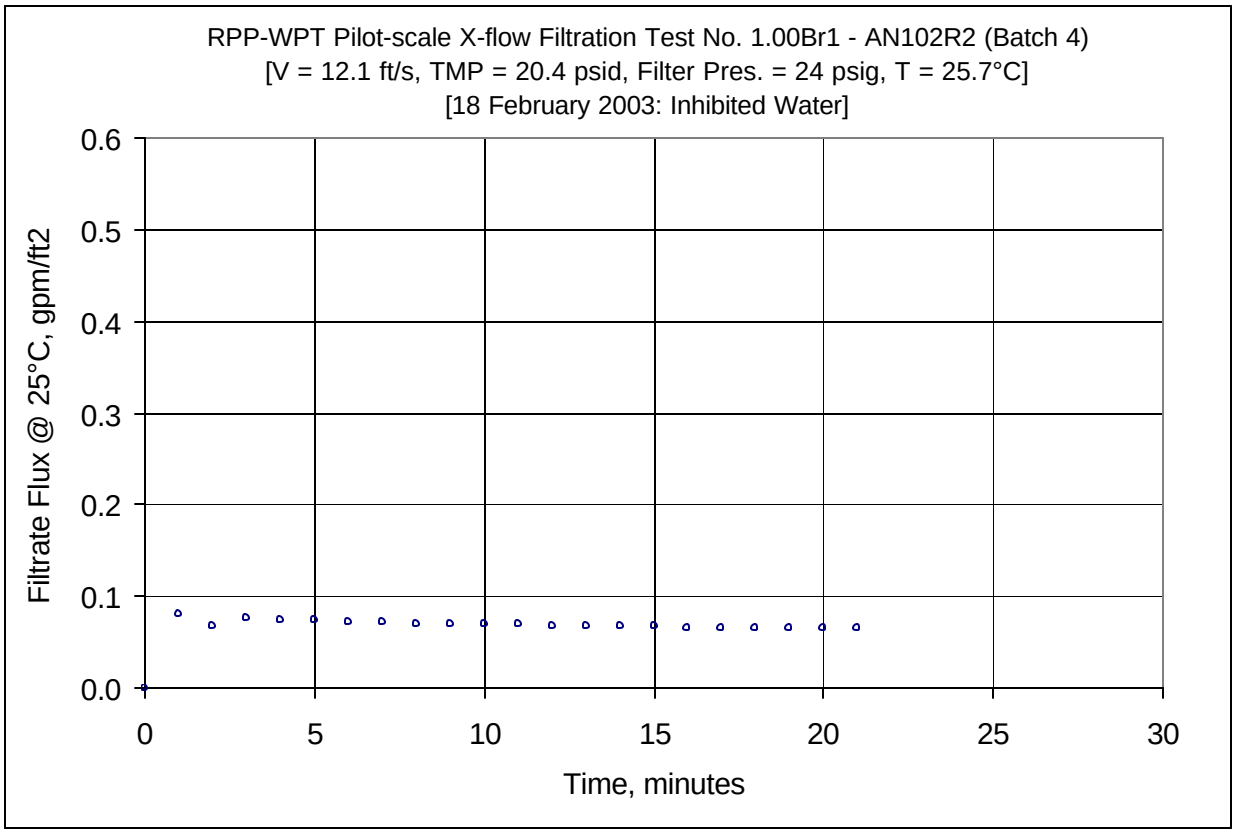


Figure A81: AN-102R2, Batch 4 Slurry Test 1.00Br1 – Inhibited Deionized & Filtered Water (compare to Test 1.00B done on 2/12/03)

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>											
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
2/18/2003	7:41:35 AM	22.045	17.928	13.92	21.779	16.794	-0.125	-0.104	-0.058	0.055	-0.175	0.227	-0.216	0.001	0.001	0			Filter Surface	6.707	FT2						
2/18/2003	7:41:53 AM	22.045	17.928	13.92	21.779	16.794	-0.125	-0.104	-0.058	0.055	-0.175	0.227	-0.216	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
2/18/2003	7:41:54 AM	22.024	17.912	13.889	21.744	16.798	-0.125	-0.102	-0.058	0.053	-0.175	0.227	-0.215	0.001	0.001	0											
2/18/2003	7:41:55 AM	22.024	17.907	13.884	21.739	16.793	-0.125	-0.104	-0.059	0.053	-0.178	0.224	-0.218	0.001	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
2/18/2003	7:41:56 AM	22.024	17.907	13.883	21.728	16.788	-0.125	-0.102	-0.059	0.051	-0.181	0.224	-0.218	0.001	0.001	0											
2/18/2003	7:41:57 AM	22.034	17.917	13.894	21.739	16.793	-0.123	-0.102	-0.059	0.051	-0.178	0.224	-0.218	0.001	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
2/18/2003	7:41:58 AM	22.029	17.922	13.899	21.749	16.788	-0.123	-0.104	-0.059	0.051	-0.181	0.224	-0.218	0.001	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY >>		
2/18/2003	7:41:59 AM	22.034	17.922	13.904	21.759	16.788	-0.125	-0.102	-0.058	0.053	-0.181	0.221	-0.216	0.001	0.001	0							at 25C		x 1000		
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
2/18/2003	1:54:17 PM	25.33	19.22	25.598	22.647	20.519	3.073	25.689	4.637	-1.366	17.63	65.978	49.257	0.001	0.001	0	0	0	24.2	12.1	0.9	0.059	0.000	0.000	0.0002	0.172	0.15
2/18/2003	1:55:17 PM	25.108	19.248	25.586	22.751	20.588	19.046	25.728	4.648	14.676	1.394	0.496	49.306	0.552	0.001	0	1.00	0.01667	24.3	12.1	16.9	1.163	0.082	0.081	0.0048	4.801	4.09
2/18/2003	1:56:17 PM	25.621	19.266	25.583	22.793	20.62	19.272	25.693	4.617	14.899	1.102	0.615	49.356	0.46	0.001	0	2.00	0.03333	24.2	12.1	17.1	1.178	0.069	0.067	0.0039	3.949	3.36
2/18/2003	1:57:17 PM	25.728	19.288	25.565	22.805	20.653	22.035	25.819	4.64	17.509	-1.285	-2.338	49.406	0.512	0.001	0	3.00	0.05	24.3	12.1	19.8	1.363	0.076	0.075	0.0038	3.800	3.23
2/18/2003	1:58:17 PM	25.765	19.316	25.557	22.757	20.695	22.267	25.763	4.579	17.89	-1.285	-2.506	49.306	0.505	0.001	0	4.00	0.06667	24.3	12.1	20.1	1.384	0.075	0.074	0.0037	3.692	3.14
2/18/2003	1:59:17 PM	25.761	19.342	25.599	22.708	20.727	22.271	25.672	4.632	17.765	-1.285	-2.588	49.316	0.497	0.001	0	5.00	0.08333	24.2	12.1	20.0	1.380	0.074	0.073	0.0036	3.640	3.10
2/18/2003	2:00:17 PM	25.823	19.38	25.686	22.735	20.779	22.259	25.488	4.563	17.912	-1.282	-2.654	49.429	0.49	0.001	0	6.00	0.1	24.0	12.1	20.1	1.385	0.073	0.072	0.0036	3.568	3.04
2/18/2003	2:01:17 PM	25.825	19.402	25.683	22.712	20.816	22.344	25.639	4.627	17.662	-1.282	-2.706	49.377	0.486	0.001	0	7.00	0.11667	24.2	12.1	20.0	1.379	0.072	0.071	0.0036	3.554	3.02
2/18/2003	2:02:17 PM	25.832	19.419	25.649	22.643	20.843	22.54	25.736	4.601	18.068	-1.285	-2.755	49.373	0.48	0.001	0	8.00	0.13333	24.3	12.1	20.3	1.400	0.072	0.070	0.0035	3.461	2.95
2/18/2003	2:03:17 PM	25.853	19.445	25.63	22.59	20.855	22.517	25.633	4.65	17.957	-1.285	-2.793	49.35	0.476	0.001	0	9.00	0.15	24.2	12.1	20.2	1.395	0.071	0.070	0.0034	3.445	2.93
2/18/2003	2:04:17 PM	25.865	19.462	25.612	22.516	20.912	22.712	25.832	4.645	18.164	-1.285	-2.828	49.318	0.472	0.001	0	10.00	0.16667	24.4	12.1	20.4	1.409	0.070	0.069	0.0034	3.384	2.88
2/18/2003	2:05:17 PM	25.881	19.479	25.613	22.437	20.933	22.665	25.699	4.648	18.096	-1.285	-2.851	49.326	0.469	0.001	0	11.00	0.18333	24.2	12.1	20.4	1.405	0.070	0.069	0.0034	3.372	2.87
2/18/2003	2:06:17 PM	25.877	19.495	25.664	22.362	20.919	22.565	25.556	4.65	17.974	-1.285	-2.874	49.169	0.467	0.001	0	12.00	0.2	24.1	12.0	20.3	1.398	0.070	0.068	0.0034	3.372	2.87
2/18/2003	2:07:17 PM	25.883	19.511	25.72	22.313	20.91	22.677	25.55	4.624	18.266	-1.288	-2.926	49.601	0.461	0.001	0	13.00	0.21667	24.1	12.2	20.5	1.411	0.069	0.067	0.0033	3.290	2.80
2/18/2003	2:08:17 PM	25.905	19.533	25.717	22.279	20.881	22.749	25.594	4.683	18.14	-1.285	-2.958	49.729	0.46	0.001	0	14.00	0.23333	24.1	12.2	20.4	1.410	0.069	0.067	0.0033	3.288	2.80
2/18/2003	2:09:17 PM	25.901	19.554	25.693	22.25	20.897	22.737	25.625	4.62	18.375	-1.282	-2.973	49.582	0.455	0.001	0	15.00	0.25	24.2	12.2	20.6	1.417	0.068	0.067	0.0032	3.236	2.75
2/18/2003	2:10:17 PM	25.907	19.576	25.669	22.216	20.959	22.872	25.695	4.7	18.328	-1.288	-2.993	49.715	0.453	0.001	0	16.00	0.26667	24.2	12.2	20.6	1.420	0.068	0.066	0.0032	3.218	2.74
2/18/2003	2:11:17 PM	25.913	19.582	25.65	22.172	20.95	22.812	25.61	4.641	18.27	-1.291	-3.019	49.566	0.451	0.001	0	17.00	0.28333	24.1	12.1	20.5	1.416	0.067	0.066	0.0032	3.214	2.74
2/18/2003	2:12:17 PM	25.924	19.603	25.661	22.163	20.941	22.865	25.544	4.659	18.356	-1.285	-3.033	49.643	0.448	0.001	0	18.00	0.3	24.1	12.2	20.6	1.421	0.067	0.066	0.0032	3.181	2.71
2/18/2003	2:13:17 PM	25.936	19.614	25.688	22.124	20.928	22.851	25.573	4.629	18.414	-1.285	-3.033	49.222	0.448	0.001	0	19.00	0.31667	24.1	12.1	20.6	1.423	0.067	0.066	0.0032	3.175	2.70
2/18/2003	2:14:17 PM	25.942	19.636	25.759	22.106	20.914	22.838	25.546	4.653	18.414	-1.282	-3.048	49.272	0.446	0.001	0	20.00	0.33333	24.1	12.1	20.6	1.422	0.066	0.065	0.0032	3.156	2.69
2/18/2003	2:15:17 PM	25.929	19.638	25.766	22.067	20.91	22.95	25.621	4.625	18.612	-1.285	-3.071	49.524	0.444	0.001	0	21.00	0.35	24.1	12.1	20.8	1.433	0.066	0.065	0.0031	3.118	2.65
	Averages	25.9	19.5	25.7	22.4	20.9	22.6	25.6	4.6	18.1	-1.3	-2.8	49.4	0.5	0.0	0.0		0.2	24.2	12.1	20.4	1.404	0.070	0.069	0.0034	3.377	2.9
	Maximum	25.9	19.6	25.8	22.8	21.0	23.0	25.8	4.7	18.6	-1.3	-2.3	49.7	0.5	0.0	0.0		0.4	24.4	12.2	20.8	1.433	0.076	0.075	0.0038	3.800	3.2
	Median	25.9	19.5	25.7	22.4	20.9	22.7	25.6	4.6	18.1	-1.3	-2.9	49.4	0.5	0.0	0.0		0.2	24.2	12.1	20.4	1.409	0.070	0.068	0.0034	3.372	2.9
	Minimum	25.7	19.3	25.6	22.1	20.7	22.0	25.5	4.6	17.5	-1.3	-3.1	49.2	0.4	0.0	0.0		0.1	24.0	12.0	19.8	1.363	0.066	0.065	0.0031	3.118	2.7
	2 x Std Dev	0.122	0.212	0.112	0.494	0.176	0.508	0.186	0.062	0.558	0.004	0.399	0.323	0.041	0.000	0.000		0.183	0.186	0.079	0.525	0.036	0.006	0.006	0.0004	0.386	0.329
Number of Points Used*		19	19	19	19	19	19	19	19	19	19	19	19	19	19	19		19	19	19	19	19	19	19	19	19	19
	* Backpulse points in box are not included																										

Figure A82: AN-102R2, Batch 4 Slurry Test 1.00Br1 – Inhibited Deionized & Filtered Water – Raw & Calculated Data

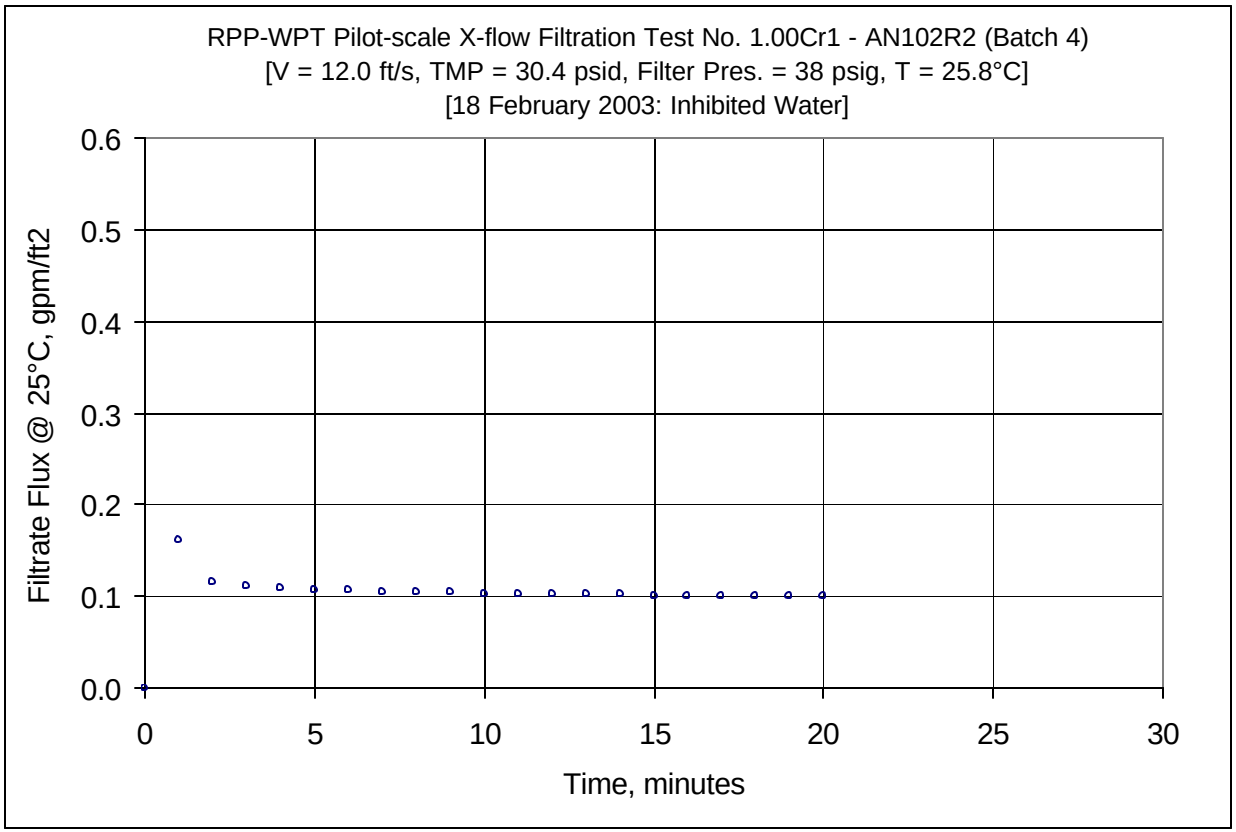


Figure A83: AN-102R2, Batch 4 Slurry Test 1.00Cr1 – Inhibited Deionized & Filtered Water (compare to Test 1.00C done on 2/12/03)

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
2/18/2003	7:41:35 AM	22.045	17.928	13.92	21.779	16.794	-0.125	-0.104	-0.058	0.055	-0.175	0.227	-0.216	0.001	0.001	0			Filter Surface	6.707	FT2					
2/18/2003	7:41:53 AM	22.045	17.928	13.92	21.779	16.794	-0.125	-0.104	-0.058	0.055	-0.175	0.227	-0.216	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
2/18/2003	7:41:54 AM	22.024	17.912	13.889	21.744	16.798	-0.125	-0.102	-0.058	0.053	-0.175	0.227	-0.215	0.001	0.001	0										
2/18/2003	7:41:55 AM	22.024	17.907	13.884	21.739	16.793	-0.125	-0.104	-0.059	0.053	-0.178	0.224	-0.218	0.001	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig							
2/18/2003	7:41:56 AM	22.024	17.907	13.883	21.728	16.788	-0.125	-0.102	-0.059	0.051	-0.181	0.224	-0.218	0.001	0.001	0										
2/18/2003	7:41:57 AM	22.034	17.917	13.894	21.739	16.793	-0.123	-0.102	-0.059	0.051	-0.178	0.224	-0.218	0.001	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing							
2/18/2003	7:41:58 AM	22.029	17.922	13.899	21.749	16.788	-0.123	-0.104	-0.059	0.051	-0.181	0.224	-0.218	0.001	0.001	0			VVVV				< Filtrate Flux << PERMIABILITY >>			
2/18/2003	7:41:59 AM	22.034	17.922	13.904	21.759	16.788	-0.125	-0.102	-0.058	0.053	-0.181	0.221	-0.216	0.001	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
2/18/2003	2:21:07 PM	25.895	19.705	25.878	22.008	20.857	3.142	39.682	4.532	-1.165	31.625	81.026	48.565	0.001	0.001	0	0	0	38.2	11.9	1.0	0.068	0.000	0.000	0.0001	0.147	0.13
2/18/2003	2:22:07 PM	25.315	19.715	25.853	22.024	20.822	27.503	39.494	4.478	23.388	7.169	1.093	49.048	1.107	0.001	0	1.00	0.01667	38.0	12.0	25.4	1.754	0.165	0.161	0.0063	6.333	5.39
2/18/2003	2:23:07 PM	26.071	19.726	25.824	22.014	20.812	30.653	39.425	4.452	26.447	3.447	0.826	48.993	0.789	0.001	0	2.00	0.03333	38.0	12.0	28.6	1.968	0.118	0.115	0.0040	4.026	3.43
2/18/2003	2:24:07 PM	26.148	19.748	25.805	22.031	20.809	31.403	39.272	4.567	27.092	2.562	0.244	49.02	0.758	0.001	0	3.00	0.05	37.8	12.0	29.2	2.017	0.113	0.110	0.0038	3.778	3.21
2/18/2003	2:25:07 PM	26.173	19.768	25.806	22.041	20.804	32.086	39.792	4.541	27.843	2.339	0.105	48.953	0.748	0.001	0	4.00	0.06667	38.3	12.0	30.0	2.066	0.112	0.109	0.0036	3.638	3.10
2/18/2003	2:26:07 PM	26.164	19.769	25.787	22.042	20.82	31.668	39.041	4.521	27.499	2.131	-0.028	49.175	0.737	0.001	0	5.00	0.08333	37.6	12.1	29.6	2.040	0.110	0.107	0.0036	3.633	3.09
2/18/2003	2:27:07 PM	26.145	19.765	25.782	22.018	20.811	32.179	39.349	4.565	27.896	1.946	-0.121	49.012	0.73	0.001	0	6.00	0.1	37.9	12.0	30.0	2.071	0.109	0.106	0.0035	3.545	3.02
2/18/2003	2:28:07 PM	26.146	19.787	25.794	22.024	20.807	32.229	39.508	4.573	27.878	1.837	-0.213	49.136	0.723	0.001	0	7.00	0.11667	38.0	12.0	30.1	2.072	0.108	0.105	0.0035	3.508	2.99
2/18/2003	2:29:07 PM	26.153	19.793	25.815	22.021	20.799	32.033	39.138	4.547	27.736	1.75	-0.242	48.938	0.714	0.001	0	8.00	0.13333	37.7	12.0	29.9	2.060	0.106	0.104	0.0035	3.482	2.96
2/18/2003	2:30:07 PM	26.149	19.795	25.807	21.977	20.78	32.532	39.425	4.459	28.353	1.64	-0.352	49.026	0.711	0.001	0	9.00	0.15	38.0	12.0	30.4	2.099	0.106	0.104	0.0034	3.404	2.90
2/18/2003	2:31:07 PM	26.157	19.818	25.834	21.995	20.823	32.364	39.264	4.476	28.148	1.571	-0.375	48.901	0.708	0.001	0	10.00	0.16667	37.8	12.0	30.3	2.086	0.106	0.103	0.0034	3.408	2.90
2/18/2003	2:32:07 PM	26.159	19.84	25.836	22.012	20.85	32.525	39.336	4.473	28.371	1.498	-0.439	49.087	0.703	0.001	0	11.00	0.18333	37.9	12.0	30.4	2.099	0.105	0.102	0.0034	3.362	2.86
2/18/2003	2:33:07 PM	26.166	19.852	25.853	22.049	20.852	32.714	39.421	4.543	28.461	1.423	-0.465	48.978	0.701	0.001	0	12.00	0.2	37.9	12.0	30.6	2.109	0.105	0.102	0.0033	3.336	2.84
2/18/2003	2:34:07 PM	26.158	19.854	25.821	22.026	20.84	32.631	39.365	4.49	28.383	1.365	-0.517	48.789	0.697	0.001	0	13.00	0.21667	37.9	12.0	30.5	2.103	0.104	0.102	0.0033	3.329	2.83
2/18/2003	2:35:07 PM	26.155	19.862	25.798	22.013	20.872	32.757	39.361	4.524	28.41	1.299	-0.552	48.882	0.694	0.001	0	14.00	0.23333	37.9	12.0	30.6	2.109	0.103	0.101	0.0033	3.308	2.82
2/18/2003	2:36:07 PM	26.143	19.879	25.78	22.026	20.854	32.648	39.092	4.492	28.402	1.206	-0.601	48.989	0.69	0.001	0	15.00	0.25	37.6	12.0	30.5	2.105	0.103	0.101	0.0033	3.297	2.81
2/18/2003	2:37:07 PM	26.139	19.871	25.777	21.997	20.816	33.076	39.578	4.558	28.766	1.169	-0.627	48.976	0.688	0.001	0	16.00	0.26667	38.1	12.0	30.9	2.132	0.103	0.100	0.0032	3.246	2.76
2/18/2003	2:38:07 PM	26.162	19.894	25.785	21.995	20.793	32.875	39.312	4.486	28.649	1.047	-0.659	48.945	0.685	0.001	0	17.00	0.28333	37.8	12.0	30.8	2.121	0.102	0.100	0.0032	3.248	2.76
2/18/2003	2:39:07 PM	26.143	19.905	25.771	21.986	20.774	33.012	39.376	4.533	28.778	1.045	-0.682	49.041	0.683	0.001	0	18.00	0.3	37.9	12.0	30.9	2.130	0.102	0.100	0.0032	3.225	2.74
2/18/2003	2:40:07 PM	26.144	19.911	25.767	21.992	20.815	32.923	39.339	4.509	28.639	0.978	-0.723	49.066	0.68	0.001	0	19.00	0.31667	37.9	12.0	30.8	2.122	0.101	0.099	0.0032	3.223	2.74
2/18/2003	2:41:07 PM	26.145	19.922	25.773	21.983	20.796	33.039	39.301	4.507	28.793	0.964	-0.743	48.989	0.678	0.001	0	20.00	0.33333	37.8	12.0	30.9	2.132	0.101	0.099	0.0032	3.199	2.72
	Averages	26.2	19.8	25.8	22.0	20.8	32.5	39.3	4.5	28.2	1.5	-0.4	49.0	0.7	0.0	0.0		0.2	37.9	12.0	30.4	2.093	0.105	0.103	0.0034	3.398	2.9
	Maximum	26.2	19.9	25.9	22.0	20.9	33.1	39.8	4.6	28.8	2.6	0.2	49.2	0.8	0.0	0.0		0.3	38.3	12.1	30.9	2.132	0.113	0.110	0.0038	3.778	3.2
	Median	26.2	19.8	25.8	22.0	20.8	32.6	39.3	4.5	28.4	1.5	-0.5	49.0	0.7	0.0	0.0		0.2	37.9	12.0	30.5	2.101	0.105	0.102	0.0033	3.349	2.9
	Minimum	26.1	19.7	25.8	22.0	20.8	31.4	39.0	4.5	27.1	1.0	-0.7	48.8	0.7	0.0	0.0		0.1	37.6	12.0	29.2	2.017	0.101	0.099	0.0032	3.199	2.7
	2 x Std Dev	0.019	0.109	0.048	0.042	0.052	0.923	0.336	0.069	0.929	0.922	0.568	0.178	0.046	0.000	0.000		0.173	0.336	0.044	0.924	0.064	0.007	0.007	0.0003	0.324	0.275
Number of Points Used*		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18		18	18	18	18	18	18	18	18	18	18
	* Backpulse points in box are not included																										

Figure A84: AN-102R2, Batch 4 Slurry Test 1.00Cr1 – Inhibited Deionized & Filtered Water – Raw & Calculated Data

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Appendix B: Baseline Slurry

As required by the RPP-WTP Test Specification each time the cross-flow filter experienced a slurry run the filter was to be tested with a standard slurry, called here the Baseline Slurry, of 5 wt% of SrCo3 in distilled and filtered (to 0.1 micron absolute) water. Those tests were noted in the test matrix as runs 1.01 before a slurry test and 1.33 after a slurry. Initial tests with the slurry (during the preconditioning test with AN-107 and slurry AN-102R2 batch 3C) determined that only with considerable number of water rinses and acid cleaning could the baseline slurry be removed from the filter, costing time and money, therefore starting the AN-102R2 batch 3B test the RPP-WTP customer allowed baselining the filter only after each slurry test (run 1.33). As such, the baseline slurry run 1.33 after any slurry test could be used as the initial baseline run (1.01) for the next subsequential slurry test. This report deals with the testing of five separate batches of slurry (peconditioning with AN-107, AN-102R2:3C, AN-102R2:3B, AN-102R2:3A, and AN-102R2:4) therefore the baseline slurry runs were:

2A, 2B	Before Preconditioning the filter with AN-107; pre-test rig modification
2A, 2B, 2C, 2D	After Preconditioning the filter with AN-107, post-test rig modification
7A, 7B, 7C	After Preconditioning the filter with AN-107
1.01A, 1.01B, 1.01C	Before AN-102R2, batch 3C
1.33A, 1.33B, 1.33C	After AN-102R2, batch 3C
1.33A, 1.33B, 1.33C	After AN-102R2, batch 3B
1.33A, 1.33B, 1.33C	After AN-102R2, batch 3A
1.33A, 1.33B, 1.33C	After AN-102R2, batch 4A

The letter a, b, c indicate different constant transmembrane pressure (TMP), generally, but not always: A=10 psid, B=20 psid, C=30 ; psid. Test runs that do not hold to this are 2A, 2B, (pre-test rig modification) because the high filtration pressure drop did not allow TMPs above 7 psid; 2D was done at above 40 psid to determine the limit the modified test rig could attain.

For each baseline slurry test this appendix contains a graph of the filtrate flux with time and tables of the data taken and calculated. To better understand the presented information important aspects of the graphs and tables are explained below:

Graphs – Each graph contains time averages of some of the imporant parameters taken during the run at the top of the figures, i.e. Slurry velocity in the filter tube, V; transmembrane pressure, TMP; slurry pressure at the entrance of the filter tube, Filter Pres; and the slurry temperature, T.

Tables – Each table is divided into raw data (the first 17 columns) and calculations (the last 10 columns) which are based on the raw data. The raw data section is divided into three parts:

<u>Individual Entries – Raw Data</u>

Temperature	Filtrate – from the filtrate loop at the exit of the filter bundle
	Cleaning – from the cleaning loop (this loop was not used)
	Slurry – from the slurry loop in the slurry reservoir
	Hi Amb. – outside ambient temperature at the top of the test rig
	Lo Amb. – inside ambient temperature at the bottom of the test rig
Pressure	BotTMP – differential pressure across the filter tube at the bottom of the vertical tube
	Filter – gauge pressure of the slurry at the entrance of the filter tube bundle
	Filter dP – differential pressure of the slurry along the height of the vertical 90-inch tube
	TopTMP – differential pressure across the filter tube at the top the vertical 90-inch tube
	Filtrate – gauge pressure of the filtrate at the exit of the filter tube housing
	Pulsepot – gauge pressure of the filtrate at the bottom of the pulsepot
Flow	Slurry – rate of slurry just before entering the seven-filter-tube bundle
	Filtrate – rate of slurry filtrate under normal flow (max. is 1.2 gpm)
	Hi Filtrate – rate of any liquid which has a high flowrate (water, acid, etc.) (max. 5 gpm)
	Backpulse – rate of filtrate in opposite direction from normal flow, i.e., backpulse

Individual Entries – Calculated Data

Time – Minutes after start of test, including the backpulse (based on raw data TIME column)
Press. – Internal filter pressure of slurry at the filter bundle entrance (based on raw data P1 column and corrected for a 40.9-inch water column that exists from the transducer to the point where P1 is measured.)
Vel. – Slurry velocity in filter tube (based on raw data Q1 column and i.d. of the tubes of 0.488 inches)
TMP – Filter transmembrane pressure (based on average of raw data columns dP2 and dP3) in psi.
TMP – Filter transmembrane pressure (based on average of raw data columns dP2 and dP3) in bar.
Filtrate Flux – Filtrate flow rate (raw data columns Q2/Q3) divided by inside filter surface area (6.707 ft2)[†]
Filtrate Flux @ 25°C – Same as Filtrate flux, but correct for temperature with the following multiplier:

T(corrected) = T x Exp[2500/((1/273+T))-(1/298)] as per Test Spec 24590-WTP-TSP-RT-01-029, Rev. 0

Permiability – Filterate flow rate per TMP (based on calculated columns Filtrate Flux @ 25°C and TMP)
Permiability x 1000 – Same as the above Permiability, but increase by 1000 to facilitate graphing
Permiability – Same as Permiability but in metric units, meter/day/bar

Statistics

At the bottom of the last individual entry there are six rows with some data statistics to better understand the data and their fluctuations. The columns are self explained with titles of Averages, Maximum, Median, and Minimum. The next row 2 x Std Dev, is two times the population standard deviation based on the number of data points used, which is the last row. The Number of Points used generally do not included the points taken during the backpulse sequence of each test. This is explained below.

Raw Data Table Layout

The raw data is generally made up of three sections:

Zeros – These eight rows include approximately 15 to 20 seconds of data taken with the pressure transducers placed in the "zero" mode to determine if any zero drift occurred from one test to the next.

Data-Per Minute – On most of the tables the first six rows of these data are contained in a box which indicate data taken during the backpulse. This is were the filtrate flow is reversed temporarily to knock the filtrate cake of the filter surface. During these first few minutes the filtrate flow is stopped, then reversed, then stopped again, then it is finally returned to normal operation. The data during the backpulse operation were taken with a separate log, therefore those data are marked with a box to note this fact. Most or all of those data points are not counted in the statistics at the bottom of the table. The tables of some of the later tests (see Figs. B36, B38, and B40) do not show the boxed data because separate logs of data were not taken, however since a backpulse for each run still occurred only those data were not included in the statistics at the bottom of the page.

[†] For the baseline slurry tests during preconditioning it will be noticed that 6.87 ft2 was used. This was based on a tube inside diameter of 0.5 inch, which was based on the manufacturer's specification. After the tubes were measured the i.d. was changed to 0.488 inch and the area to 6.707 ft2. This means that absolute axial velocity and filtrate flux are low by 2.5% for the preconditioning runs.

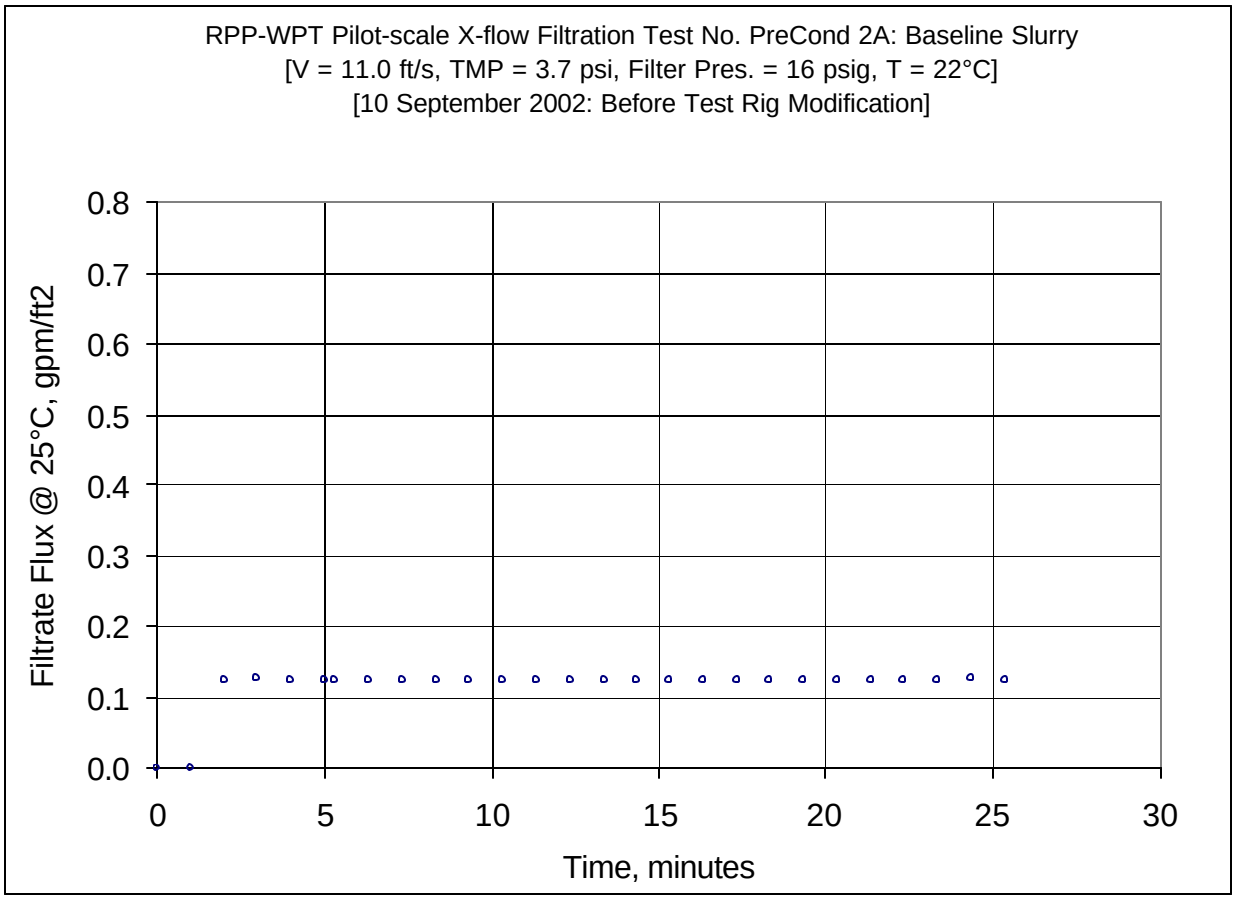


Figure B1: PreConditioning 2A – Baseline Slurry – Before Test Rig Modification

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/10/2002	8:48:15 AM	21.896	20.524	21.376	21.274	20.244	-0.108	-0.07	-0.068	0.066	-0.246	0.324	31.724	1.192	1.231	0		Filter Surface	6.87	FT2						
9/10/2002	8:48:36 AM	21.896	20.524	21.376	21.274	20.244	-0.108	-0.07	-0.068	0.066	-0.246	0.324	31.724	1.192	1.231	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/10/2002	8:48:37 AM	21.879	20.528	21.325	21.373	20.258	-0.111	-0.07	-0.069	0.064	-0.246	0.318	31.659	1.192	1.231	0										
9/10/2002	8:48:38 AM	21.885	20.523	21.314	21.368	20.253	-0.109	-0.068	-0.068	0.066	-0.246	0.324	31.67	1.192	1.231	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/10/2002	8:48:39 AM	21.879	20.523	21.32	21.378	20.263	-0.109	-0.072	-0.069	0.066	-0.246	0.321	31.66	1.192	1.23	0										
9/10/2002	8:48:40 AM	21.885	20.528	21.314	21.378	20.258	-0.109	-0.068	-0.069	0.064	-0.246	0.324	31.611	1.192	1.227	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/10/2002	8:48:41 AM	21.89	20.523	21.309	21.388	20.263	-0.109	-0.07	-0.069	0.064	-0.246	0.318	31.662	1.192	1.233	0		VVVV				< Filtrate Flux <<		PERMIABILITY >>		
9/10/2002	8:48:42 AM	21.879	20.517	21.304	21.383	20.257	-0.109	-0.07	-0.069	0.066	-0.246	0.321	31.62	1.192	1.232	0							at 25C		x 1000	
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/10/2002	2:26:27 PM	25.663	25.076	22.321	28.75	25.313	3.23	17.506	4.845	-1.694	8.966	58.048	47.069	0.002	0.001	0	0	16.0	11.0	0.8	0.053	0.000	0.000	0.000	0.204	0.17
9/10/2002	2:27:27 PM	26.118	25.081	22.166	28.686	25.283	3.255	17.424	4.79	-1.575	8.954	27.9	47.004	0.002	0.001	0.002	1	16.0	11.0	0.8	0.058	0.000	0.000	0.000	0.188	0.16
9/10/2002	2:28:27 PM	23.408	25.087	22.171	28.681	25.338	5.956	17.105	4.567	1.507	5.812	5.295	47.39	0.814	0.794	0	2	15.6	11.1	3.7	0.257	0.116	0.125	0.034	33.555	28.56
9/10/2002	2:29:27 PM	23.049	25.119	22.124	28.594	25.461	5.788	16.995	4.676	1.112	5.885	5.373	47.413	0.818	0.798	0	3	15.5	11.1	3.5	0.238	0.116	0.126	0.037	36.525	31.08
9/10/2002	2:30:27 PM	22.876	25.153	22.333	28.588	25.47	6.03	17.318	4.658	1.305	5.885	5.336	47.415	0.816	0.796	0	4	15.8	11.1	3.7	0.253	0.116	0.125	0.034	34.068	28.99
9/10/2002	2:31:27 PM	22.799	25.167	22.382	28.332	25.448	6.066	17.231	4.752	1.35	5.835	5.35	47.22	0.814	0.794	0	5	15.8	11.0	3.7	0.256	0.116	0.124	0.034	33.564	28.56
9/10/2002	2:31:47 PM	22.796	25.163	22.439	28.264	25.45	5.873	17.078	4.608	1.385	5.882	5.373	47.214	0.815	0.795	0	5.33	15.6	11.0	3.6	0.250	0.116	0.124	0.034	34.282	29.17
9/10/2002	2:32:47 PM	22.774	25.161	22.391	27.987	25.422	6.059	17.221	4.819	1.286	5.885	5.339	47.316	0.815	0.795	0	6.33	15.7	11.0	3.7	0.253	0.116	0.125	0.034	33.922	28.87
9/10/2002	2:33:47 PM	22.782	25.169	22.491	27.811	25.401	5.975	17.099	4.756	1.272	5.815	5.324	47.212	0.813	0.794	0	7.33	15.6	11.0	3.6	0.250	0.116	0.124	0.034	34.240	29.14
9/10/2002	2:34:47 PM	22.79	25.162	22.458	27.61	25.364	5.898	17.045	4.671	1.344	5.928	5.414	47.333	0.816	0.796	0	8.33	15.6	11.0	3.6	0.250	0.116	0.124	0.034	34.382	29.26
9/10/2002	2:35:47 PM	22.802	25.159	22.475	27.582	25.341	6.03	17.363	4.661	1.411	6.02	5.489	47.018	0.82	0.798	0	9.33	15.9	11.0	3.7	0.257	0.116	0.125	0.034	33.530	28.53
9/10/2002	2:36:47 PM	22.805	25.157	22.488	27.645	25.334	6.082	17.384	4.664	1.45	6.044	5.481	47.082	0.819	0.798	0	10.3	15.9	11.0	3.8	0.260	0.116	0.125	0.033	33.113	28.18
9/10/2002	2:37:47 PM	22.817	25.149	22.435	27.617	25.301	5.968	17.281	4.695	1.297	6.026	5.466	47.048	0.818	0.797	0	11.3	15.8	11.0	3.6	0.250	0.116	0.125	0.034	34.339	29.22
9/10/2002	2:38:47 PM	22.802	25.139	22.505	27.532	25.261	6.026	17.397	4.671	1.397	6.02	5.452	46.88	0.818	0.798	0	12.3	15.9	10.9	3.7	0.256	0.116	0.125	0.034	33.583	28.58
9/10/2002	2:39:47 PM	22.817	25.129	22.415	27.337	25.181	5.89	17.177	4.552	1.44	6.006	5.449	47.081	0.816	0.798	0	13.3	15.7	11.0	3.7	0.253	0.116	0.125	0.034	34.097	29.02
9/10/2002	2:40:47 PM	22.827	25.129	22.521	27.287	25.131	6.066	17.392	4.666	1.458	6.032	5.437	46.981	0.817	0.797	0	14.3	15.9	11.0	3.8	0.259	0.116	0.124	0.033	33.075	28.15
9/10/2002	2:41:47 PM	22.819	25.105	22.401	27.194	25.067	6.003	17.359	4.646	1.391	6.044	5.452	47.23	0.818	0.799	0	15.3	15.9	11.0	3.7	0.255	0.116	0.125	0.034	33.857	28.81
9/10/2002	2:42:47 PM	22.817	25.089	22.495	27.272	25.03	5.896	17.107	4.59	1.381	6.026	5.472	47.018	0.819	0.798	0	16.3	15.6	11.0	3.6	0.251	0.116	0.125	0.034	34.266	29.16
9/10/2002	2:43:47 PM	22.799	25.076	22.392	27.135	24.958	5.966	17.227	4.65	1.356	5.945	5.428	47.094	0.819	0.799	0	17.3	15.8	11.0	3.7	0.252	0.116	0.125	0.034	34.199	29.10
9/10/2002	2:44:47 PM	22.812	25.048	22.475	27.122	24.875	6.037	17.275	4.66	1.526	5.931	5.4	46.811	0.818	0.798	0	18.3	15.8	10.9	3.8	0.261	0.116	0.125	0.033	32.990	28.07
9/10/2002	2:45:47 PM	22.793	25.035	22.391	27.019	24.856	5.801	17.163	4.51	1.376	6.049	5.489	46.886	0.817	0.797	0	19.3	15.7	10.9	3.6	0.247	0.116	0.125	0.035	34.804	29.62
9/10/2002	2:46:47 PM	22.8	25.027	22.438	27.056	24.803	6.018	17.272	4.647	1.422	5.954	5.417	46.96	0.817	0.798	0	20.3	15.8	11.0	3.7	0.256	0.116	0.125	0.034	33.570	28.57
9/10/2002	2:47:47 PM	22.77	24.992	22.383	27.056	24.763	6.057	17.407	4.727	1.325	5.977	5.437	46.807	0.819	0.798	0	21.3	15.9	10.9	3.7	0.254	0.116	0.125	0.034	33.888	28.84
9/10/2002	2:48:47 PM	22.783	24.97	22.406	26.974	24.721	5.997	17.339	4.552	1.579	6.049	5.469	46.939	0.818	0.798	0	22.3	15.9	11.0	3.8	0.261	0.116	0.125	0.033	32.998	28.08
9/10/2002	2:49:47 PM	22.785	24.956	22.397	27.025	24.662	5.946	17.213	4.57	1.51	6.049	5.518	46.983	0.819	0.8	0	23.3	15.7	11.0	3.7	0.257	0.116	0.125	0.034	33.622	28.61
9/10/2002	2:50:47 PM	22.776	24.943	22.379	27.032	24.599	5.79	17.045	4.504	1.358	6.044	5.434	46.859	0.818	0.8	0	24.3	15.6	10.9	3.6	0.246	0.116	0.125	0.035	35.089	29.86
9/10/2002	2:51:47 PM	22.754	24.926	22.402	27.005	24.552	6.033	17.347	4.542	1.596	6.023	5.452	46.897	0.819	0.799	0	25.3	15.9	10.9	3.8	0.263	0.116	0.125	0.033	32.814	27.92
	Averages	22.8	25.1	22.4	27.4	25.1	6.0	17.2	4.6	1.4	6.0	5.4	47.0	0.818	0.798	0.0		15.8	11.0	3.7	0.254	0.116	0.125	0.0338	33.8	28.8
	Maximum	22.8	25.2	22.5	28.3	25.5	6.1	17.4	4.8	1.6	6.0	5.5	47.3	0.820	0.800	0.0		15.9	11.0	3.8	0.263	0.116	0.125	0.0351	35.1	29.9
	Median	22.8	25.1	22.4	27.3	25.1	6.0	17.3	4.7	1.4	6.0	5.4	47.0	0.818	0.798	0.0		15.8	11.0	3.7	0.254	0.116	0.125	0.0339	33.9	28.8
	Minimum	22.8	24.9	22.4	27.0	24.6	5.8	17.0	4.5	1.3	5.8	5.3	46.8	0.813	0.794	0.0		15.6	10.9	3.6	0.246	0.116	0.124	0.0328	32.8	27.9
	2 x Std Dev	0.037	0.162	0.089	0.710	0.577	0.166	0.239	0.157	0.174	0.131	0.094	0.307	0.003	0.003	0.000		0.239	0.072	0.133	0.009	0.000	0.001	0.0012	1.207	1.028
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21
	* Backpulse points in box are not included																									

Figure B2: PreConditioning 2A – Baseline Slurry – Before Test Rig Modification – Raw & Calculated Data

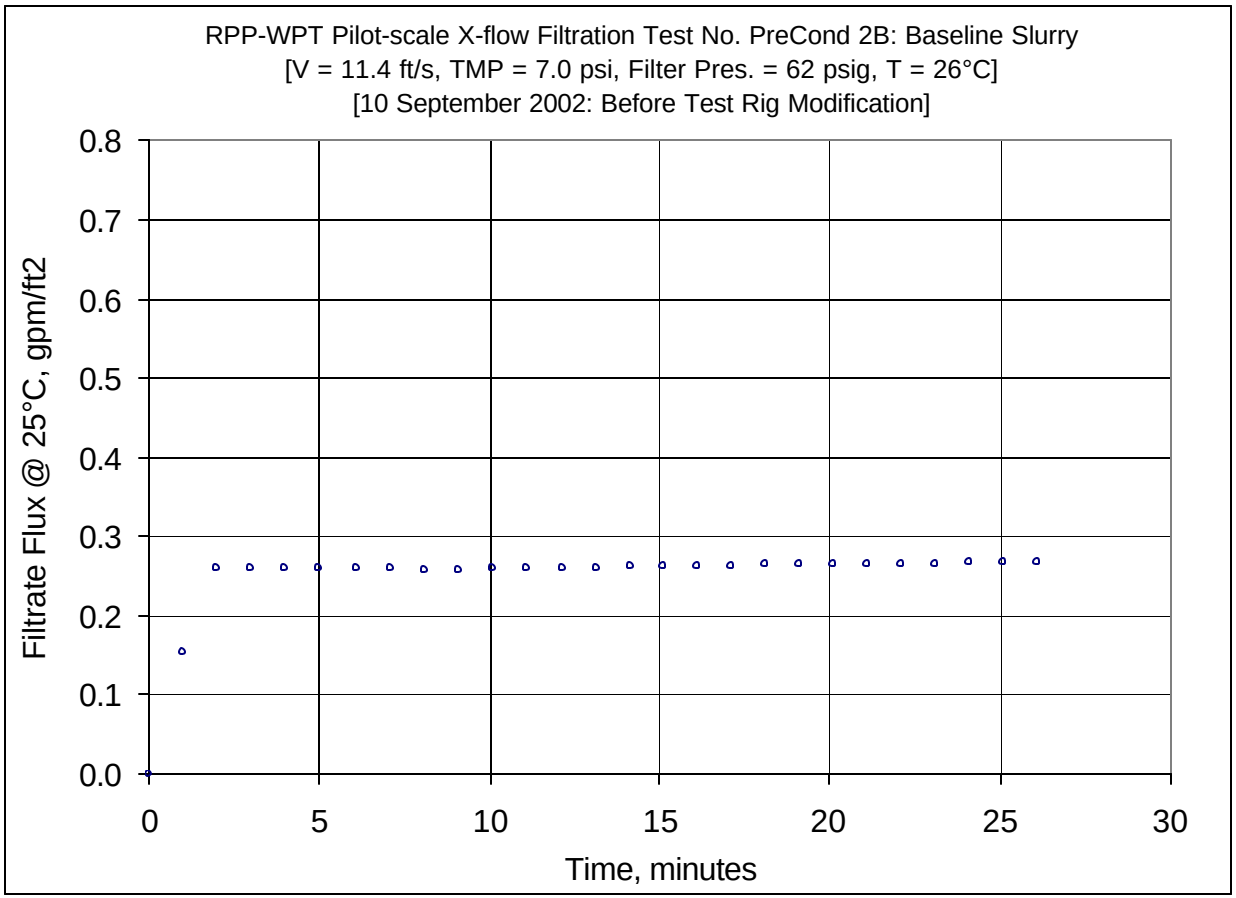


Figure B3: PreConditioning 2B – Baseline Slurry – Before Test Rig Modification

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/10/2002	8:48:15 AM	21.896	20.524	21.376	21.274	20.244	-0.108	-0.07	-0.068	0.066	-0.246	0.324	31.724	1.192	1.231	0		Filter Surface	6.87	FT2						
9/10/2002	8:48:36 AM	21.896	20.524	21.376	21.274	20.244	-0.108	-0.07	-0.068	0.066	-0.246	0.324	31.724	1.192	1.231	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/10/2002	8:48:37 AM	21.879	20.528	21.325	21.373	20.258	-0.111	-0.07	-0.069	0.064	-0.246	0.318	31.659	1.192	1.231	0										
9/10/2002	8:48:38 AM	21.885	20.523	21.314	21.368	20.253	-0.109	-0.068	-0.068	0.066	-0.246	0.324	31.67	1.192	1.231	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/10/2002	8:48:39 AM	21.879	20.523	21.32	21.378	20.263	-0.109	-0.072	-0.069	0.066	-0.246	0.321	31.66	1.192	1.23	0										
9/10/2002	8:48:40 AM	21.885	20.528	21.314	21.378	20.258	-0.109	-0.068	-0.069	0.064	-0.246	0.324	31.611	1.192	1.227	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/10/2002	8:48:41 AM	21.89	20.523	21.309	21.388	20.263	-0.109	-0.07	-0.069	0.064	-0.246	0.318	31.662	1.192	1.233	0		VVVV				< Filtrate Flux	<< PERMIABILITY >>			
9/10/2002	8:48:42 AM	21.879	20.517	21.304	21.383	20.257	-0.109	-0.07	-0.069	0.066	-0.246	0.321	31.62	1.192	1.232	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/10/2002	2:58:13 PM	24.515	24.789	25.82	26.634	23.984	2.909	63.876	4.162	-1.266	55.906	105.048	44.399	0.002	0.001	0	0	62.4	10.4	0.8	0.057	0.000	0.000	0.000	0.173	0.15
9/10/2002	2:59:13 PM	25.973	24.791	25.821	26.626	23.945	14.756	62.7	4.282	11.545	40.457	29.826	48.315	0.329	1.084	0	1	61.2	11.3	13.2	0.907	0.158	0.154	0.012	11.721	9.98
9/10/2002	3:00:13 PM	26.301	24.773	25.684	26.538	23.912	9.085	63.408	4.23	5.215	49.284	44.764	45.861	1.192	1.815	0	2	61.9	10.7	7.2	0.493	0.264	0.259	0.036	36.235	30.84
9/10/2002	3:01:13 PM	26.398	24.755	25.836	26.405	23.869	8.57	62.388	4.18	4.713	49.515	44.68	45.655	1.192	1.817	0	3	60.9	10.7	6.6	0.458	0.264	0.258	0.039	38.886	33.09
9/10/2002	3:02:13 PM	26.491	24.744	25.809	26.289	23.828	8.729	63.005	4.189	4.781	49.382	45.013	45.618	1.192	1.819	0	4	61.5	10.6	6.8	0.466	0.265	0.259	0.038	38.304	32.60
9/10/2002	3:03:13 PM	26.518	24.731	25.871	26.34	23.799	8.777	63.304	4.182	4.992	49.562	45.097	45.655	1.192	1.825	0	5	61.8	10.7	6.9	0.475	0.266	0.259	0.038	37.642	32.03
9/10/2002	3:04:19 PM	26.62	24.712	25.963	26.417	23.771	8.489	62.947	3.999	4.902	49.397	45.352	45.416	1.192	1.822	0	6.10	61.5	10.6	6.7	0.462	0.265	0.258	0.039	38.542	32.80
9/10/2002	3:05:19 PM	26.693	24.706	25.936	26.511	23.76	9.106	63.795	4.273	4.949	49.296	45.123	45.16	1.192	1.822	0	7.1	62.3	10.5	7.0	0.485	0.265	0.258	0.037	36.749	31.27
9/10/2002	3:06:19 PM	26.706	24.694	26.039	26.654	23.783	8.619	63.125	4.094	4.807	49.489	45.34	45.29	1.192	1.821	0	8.1	61.7	10.6	6.7	0.463	0.265	0.257	0.038	38.339	32.63
9/10/2002	3:07:19 PM	26.765	24.707	26.023	26.832	23.831	8.574	63.427	3.98	5.029	49.55	45.392	45.143	1.192	1.823	0	9.1	62.0	10.5	6.8	0.469	0.265	0.258	0.038	37.898	32.25
9/10/2002	3:08:19 PM	26.75	24.693	25.924	27.087	23.897	9.172	64.306	4.107	5.432	49.559	45.189	45.057	1.192	1.828	0	10.1	62.8	10.5	7.3	0.503	0.266	0.259	0.035	35.496	30.21
9/10/2002	3:09:19 PM	26.712	24.699	25.875	27.209	23.944	8.75	63.528	4.043	5.067	49.472	45.566	44.951	1.192	1.825	0	11.1	62.1	10.5	6.9	0.476	0.266	0.259	0.038	37.507	31.92
9/10/2002	3:10:19 PM	26.654	24.706	25.802	27.395	24.016	9.135	64.089	4.064	5.446	49.397	45.155	44.766	1.192	1.823	0	12.1	62.6	10.5	7.3	0.503	0.265	0.259	0.036	35.576	30.28
9/10/2002	3:11:19 PM	26.587	24.714	25.72	27.348	24.079	8.503	62.783	3.947	5.008	49.637	45.224	44.837	1.192	1.825	0	13.1	61.3	10.5	6.8	0.466	0.266	0.260	0.039	38.524	32.78
9/10/2002	3:12:19 PM	26.53	24.733	25.653	27.267	24.117	9.079	63.942	4.044	5.471	49.411	45.14	44.758	1.192	1.823	0	14.1	62.5	10.4	7.3	0.502	0.265	0.260	0.036	35.801	30.47
9/10/2002	3:13:19 PM	26.453	24.73	25.566	27.194	24.17	8.756	63.654	4.135	4.783	49.654	45.311	44.537	1.192	1.823	0	15.1	62.2	10.4	6.8	0.467	0.265	0.261	0.039	38.568	32.82
9/10/2002	3:14:19 PM	26.381	24.754	25.499	27.208	24.224	8.45	62.703	3.933	4.918	49.975	44.966	44.533	1.192	1.829	0	16.1	61.2	10.4	6.7	0.461	0.266	0.262	0.039	39.263	33.41
9/10/2002	3:15:19 PM	26.303	24.751	25.421	27.14	24.246	8.909	63.764	3.992	5.303	49.732	45.297	44.483	1.192	1.823	0	17.1	62.3	10.4	7.1	0.490	0.265	0.262	0.037	36.891	31.40
9/10/2002	3:16:19 PM	26.237	24.759	25.349	27.203	24.285	8.8	63.358	4.008	5.16	49.553	45.311	44.512	1.192	1.825	0	18.1	61.9	10.4	7.0	0.481	0.266	0.263	0.038	37.675	32.06
9/10/2002	3:17:19 PM	26.164	24.761	25.271	27.22	24.302	8.949	63.451	4.033	5.119	49.828	44.998	44.506	1.192	1.827	0	19.1	62.0	10.4	7.0	0.485	0.266	0.264	0.038	37.508	31.92
9/10/2002	3:18:19 PM	26.085	24.748	25.173	27.312	24.278	8.907	63.888	3.99	5.231	49.645	45.372	44.411	1.192	1.823	0	20.1	62.4	10.4	7.1	0.487	0.265	0.264	0.037	37.344	31.78
9/10/2002	3:19:19 PM	26.036	24.763	25.133	27.237	24.284	8.887	63.652	4.04	5.082	49.267	45.378	44.342	1.192	1.82	0	21.1	62.2	10.4	7.0	0.482	0.265	0.264	0.038	37.776	32.15
9/10/2002	3:20:19 PM	25.971	24.768	25.068	27.297	24.279	8.905	63.911	4.035	5.076	49.605	45.514	44.403	1.192	1.825	0	22.1	62.4	10.4	7.0	0.482	0.266	0.265	0.038	37.916	32.27
9/10/2002	3:21:19 PM	25.91	24.763	25.008	27.356	24.278	9.315	64.273	4.039	5.725	49.374	45.331	44.294	1.192	1.823	0	23.1	62.8	10.3	7.5	0.518	0.265	0.265	0.035	35.267	30.01
9/10/2002	3:22:19 PM	25.854	24.767	24.942	27.356	24.287	8.874	63.427	3.94	5.321	49.593	45.036	44.217	1.192	1.823	0	24.1	62.0	10.3	7.1	0.489	0.265	0.266	0.037	37.436	31.86
9/10/2002	3:23:19 PM	25.793	24.766	24.885	27.444	24.301	8.8	63.005	3.901	5.418	49.299	44.952	44.311	1.192	1.819	0	25.1	61.5	10.3	7.1	0.490	0.265	0.266	0.037	37.354	31.79
9/10/2002	3:24:19 PM	25.747	24.764	24.839	27.548	24.29	9.098	63.675	4.051	5.278	49.229	44.978	44.227	1.192	1.819	0	26.1	62.2	10.3	7.2	0.496	0.265	0.266	0.037	36.991	31.48
	Averages	26.3	24.7	25.5	27.2	24.1	8.9	63.6	4.0	5.2	49.5	45.2	44.7	1.2	1.8	0.0		62.1	10.4	7.0	0.484	0.265	0.262	0.0374	37.4	31.8
	Maximum	26.8	24.8	26.0	27.5	24.3	9.3	64.3	4.3	5.7	50.0	45.6	45.4	1.2	1.8	0.0		62.8	10.6	7.5	0.518	0.266	0.266	0.0393	39.3	33.4
	Median	26.4	24.7	25.5	27.2	24.2	8.9	63.7	4.0	5.1	49.6	45.3	44.5	1.2	1.8	0.0		62.2	10.4	7.0	0.485	0.265	0.262	0.0375	37.5	31.9
	Minimum	25.7	24.7	24.8	26.4	23.8	8.5	62.7	3.9	4.8	49.2	45.0	44.2	1.2	1.8	0.0		61.2	10.3	6.7	0.461	0.265	0.257	0.0353	35.3	30.0
	2 x Std Dev	0.682	0.055	0.796	0.587	0.396	0.471	0.889	0.158	0.479	0.371	0.351	0.720	0.000	0.005	0.000		0.889	0.168	0.443	0.031	0.001	0.006	0.0021	2.134	1.816
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21

Figure B4: PreConditioning 2B – Baseline Slurry – Before Test Rig Modification – Raw & Calculated Data

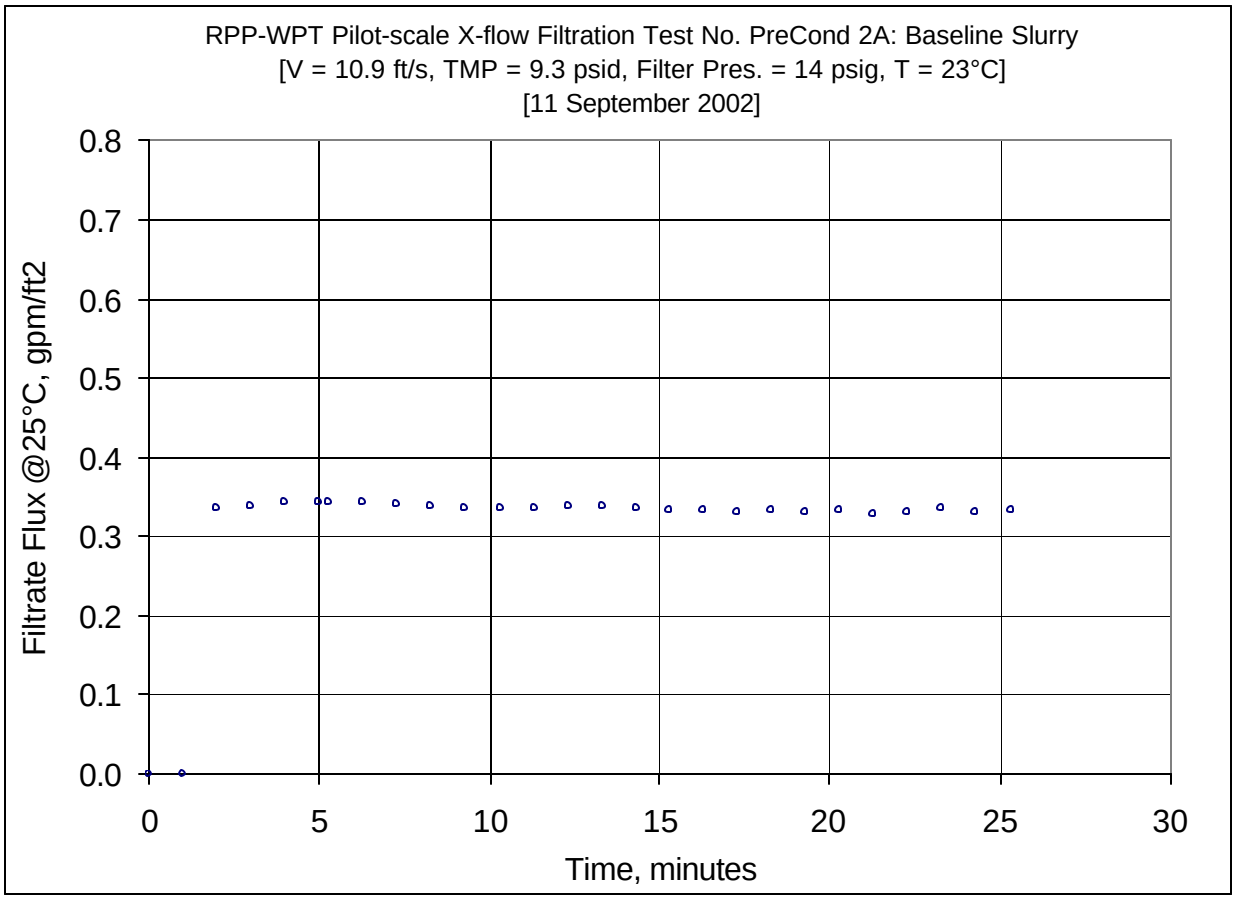


Figure B5: PreConditioning 2A – Baseline Slurry – After Test Rig Modification

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/11/2002	8:10:10 AM	20.716	20.836	20.261	20.264	20.354	-0.121	-0.035	-0.059	0.06	-0.226	0.361	-0.216	0.002	0.001	0.002		Filter Surface		6.87	FT2					
9/11/2002	8:10:25 AM	20.716	20.836	20.261	20.264	20.354	-0.121	-0.035	-0.059	0.06	-0.226	0.361	-0.216	0.002	0.001	0.002		Conversion		851	m3/m2/day/barg / gpm/ft2/barg					
9/11/2002	8:10:26 AM	20.716	20.841	20.256	20.269	20.359	-0.117	-0.037	-0.059	0.06	-0.246	0.358	-0.214	0.002	0.001	0.002										
9/11/2002	8:10:27 AM	20.716	20.841	20.261	20.264	20.364	-0.121	-0.035	-0.059	0.062	-0.246	0.361	-0.218	0.001	0.001	0.001		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/11/2002	8:10:28 AM	20.711	20.841	20.256	20.264	20.359	-0.119	-0.037	-0.059	0.06	-0.249	0.358	-0.216	0.001	0.001	0.003										
9/11/2002	8:10:29 AM	20.715	20.83	20.256	20.259	20.358	-0.117	-0.035	-0.059	0.06	-0.246	0.358	-0.218	0.002	0.001	0.002		Pressure P1is corrected for 40.88 inches of water tubing								
9/11/2002	8:10:30 AM	20.721	20.841	20.261	20.264	20.359	-0.121	-0.035	-0.059	0.06	-0.246	0.358	-0.218	0.002	0.001	0.001		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/11/2002	8:10:31 AM	20.71	20.835	20.256	20.254	20.358	-0.119	-0.035	-0.059	0.06	-0.246	0.356	-0.218	0.002	0.001	0.002						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/11/2002	1:12:43 PM	24.537	22.427	22.297	24.63	21.775	3.415	15.754	4.873	-1.34	7.269	55.688	46.698	0.002	0.001	0.003	0	14.3	10.9	1.0	0.072	0.000	0.000	0.000	0.151	0.13
9/11/2002	1:13:43 PM	24.009	22.446	22.044	25.044	21.819	2.934	15.27	4.551	-1.426	7.26	8.249	46.845	0.268	0.001	0.003	1	13.8	10.9	0.8	0.052	0.000	0.000	0.000	0.210	0.18
9/11/2002	1:14:43 PM	23.009	22.44	21.721	25.033	21.874	11.065	15.096	4.71	6.73	-1.289	0.602	48.088	0.001	2.097	0.003	2	13.6	11.2	8.9	0.613	0.305	0.335	0.038	37.650	32.04
9/11/2002	1:15:43 PM	22.32	22.46	21.6	24.952	21.923	11.26	15.357	4.627	7.074	-1.286	0.625	47.53	0.002	2.1	0.002	3	13.9	11.1	9.2	0.632	0.306	0.337	0.037	36.723	31.25
9/11/2002	1:16:43 PM	21.972	22.479	21.363	24.942	21.963	11.409	15.545	4.551	7.227	-1.284	0.628	47.09	0.002	2.12	0.002	4	14.1	11.0	9.3	0.642	0.308	0.342	0.037	36.722	31.25
9/11/2002	1:17:43 PM	21.755	22.488	21.135	24.896	21.977	11.194	15.287	4.528	7.108	-1.284	0.631	47.205	0.002	2.108	0.002	5	13.8	11.0	9.2	0.631	0.307	0.342	0.037	37.427	31.85
9/11/2002	1:18:00 PM	21.679	22.493	21.07	24.871	21.987	11.318	15.382	4.504	7.285	-1.284	0.631	47.102	0.002	2.103	0.002	5.28	13.9	11.0	9.3	0.641	0.306	0.342	0.037	36.803	31.32
9/11/2002	1:19:00 PM	21.499	22.509	21.065	24.751	22.023	11.25	15.324	4.547	7.127	-1.286	0.631	47.239	0.002	2.103	0.001	6.28	13.9	11.0	9.2	0.634	0.306	0.342	0.037	37.261	31.71
9/11/2002	1:20:00 PM	21.52	22.525	21.464	24.607	22.049	11.415	15.609	4.572	7.143	-1.286	0.631	47.023	0.002	2.116	0.002	7.28	14.1	11.0	9.3	0.640	0.308	0.341	0.037	36.700	31.23
9/11/2002	1:21:00 PM	21.763	22.536	21.802	24.593	22.07	11.349	15.558	4.457	7.256	-1.289	0.625	46.972	0.001	2.121	0.002	8.28	14.1	11.0	9.3	0.641	0.309	0.338	0.036	36.338	30.92
9/11/2002	1:22:00 PM	22.036	22.543	22.151	24.344	22.102	11.492	15.601	4.492	7.481	-1.284	0.631	47.123	0.002	2.121	0.002	9.28	14.1	11.0	9.5	0.654	0.309	0.335	0.035	35.278	30.02
9/11/2002	1:23:00 PM	22.228	22.549	22.097	24.119	22.123	11.329	15.535	4.581	7.149	-1.284	0.631	47.125	0.002	2.123	0.001	10.3	14.1	11.0	9.2	0.637	0.309	0.336	0.036	36.314	30.90
9/11/2002	1:24:00 PM	22.28	22.551	22.114	23.955	22.13	11.455	15.502	4.474	7.571	-1.286	0.628	46.975	0.002	2.116	0.001	11.3	14.0	11.0	9.5	0.656	0.308	0.334	0.035	35.134	29.90
9/11/2002	1:25:00 PM	22.336	22.561	22.21	24.076	22.136	11.449	15.682	4.461	7.418	-1.284	0.636	46.698	0.002	2.14	0.002	12.3	14.2	10.9	9.4	0.650	0.311	0.337	0.036	35.734	30.41
9/11/2002	1:26:00 PM	22.412	22.556	22.31	24.197	22.136	11.299	15.576	4.56	7.033	-1.286	0.631	46.958	0.002	2.141	0.003	13.3	14.1	11.0	9.2	0.632	0.312	0.336	0.037	36.688	31.22
9/11/2002	1:27:00 PM	22.527	22.546	22.451	24.202	22.146	11.382	15.63	4.362	7.368	-1.286	0.631	46.91	0.002	2.132	0.002	14.3	14.2	11.0	9.4	0.646	0.310	0.334	0.036	35.576	30.28
9/11/2002	1:28:00 PM	22.672	22.551	22.621	24.276	22.15	11.229	15.415	4.344	7.409	-1.284	0.634	46.83	0.002	2.137	0.003	15.3	13.9	10.9	9.3	0.643	0.311	0.333	0.036	35.699	30.38
9/11/2002	1:29:00 PM	22.833	22.551	22.792	24.251	22.14	11.136	15.344	4.519	7.027	-1.289	0.628	46.651	0.001	2.146	0.003	16.3	13.9	10.9	9.1	0.626	0.312	0.332	0.037	36.608	31.15
9/11/2002	1:30:00 PM	23.014	22.561	23.008	24.156	22.15	11.36	15.504	4.426	7.379	-1.284	0.636	47.025	0.002	2.145	0.003	17.3	14.0	11.0	9.4	0.646	0.312	0.330	0.035	35.248	30.00
9/11/2002	1:31:00 PM	23.199	22.56	23.198	24.291	22.145	11.268	15.57	4.554	6.998	-1.286	0.631	46.737	0.002	2.165	0.003	18.3	14.1	10.9	9.1	0.630	0.315	0.332	0.036	36.300	30.89
9/11/2002	1:32:00 PM	23.394	22.559	23.393	24.179	22.128	11.19	15.555	4.47	7.047	-1.286	0.628	46.696	0.001	2.169	0.002	19.3	14.1	10.9	9.1	0.629	0.316	0.330	0.036	36.224	30.83
9/11/2002	1:33:00 PM	23.579	22.563	23.603	24.063	22.138	11.291	15.62	4.402	7.282	-1.284	0.636	46.463	0.002	2.186	0.003	20.3	14.1	10.8	9.3	0.640	0.318	0.331	0.036	35.634	30.32
9/11/2002	1:34:00 PM	23.784	22.558	23.808	24.163	22.157	11.31	15.622	4.315	7.577	-1.284	0.636	46.549	0.002	2.181	0.001	21.3	14.1	10.9	9.4	0.651	0.317	0.328	0.035	34.758	29.58
9/11/2002	1:35:00 PM	23.937	22.545	23.74	24.276	22.125	11.43	15.773	4.293	7.655	-1.284	0.636	46.565	0.002	2.189	0.002	22.3	14.3	10.9	9.5	0.658	0.319	0.330	0.035	34.590	29.44
9/11/2002	1:36:00 PM	23.848	22.521	23.425	24.302	22.086	11.198	15.524	4.455	7.256	-1.229	0.631	46.431	0.001	2.193	0.002	23.3	14.1	10.8	9.2	0.636	0.319	0.334	0.036	36.161	30.77
9/11/2002	1:37:00 PM	23.714	22.532	23.356	24.423	22.076	11.283	15.568	4.44	7.213	-1.284	0.636	46.622	0.002	2.163	0.002	24.3	14.1	10.9	9.2	0.638	0.315	0.330	0.036	35.655	30.34
9/11/2002	1:38:00 PM	23.544	22.518	23.116	24.43	22.098	11.13	15.346	4.298	7.371	-1.289	0.631	46.574	0.001	2.159	0.003	25.3	13.9	10.9	9.3	0.638	0.314	0.331	0.036	35.824	30.49
	Averages	22.8	22.5	22.6	24.3	22.1	11.3	15.5	4.5	7.3	-1.3	0.6	46.8	0.0	2.1	0.0		14.1	10.9	9.3	0.641	0.312	0.334	0.0359	35.9	30.6
	Maximum	23.9	22.6	23.8	24.9	22.2	11.5	15.8	4.6	7.7	-1.2	0.6	47.2	0.0	2.2	0.0		14.3	11.0	9.5	0.658	0.319	0.342	0.0373	37.3	31.7
	Median	22.7	22.5	22.6	24.3	22.1	11.3	15.6	4.5	7.3	-1.3	0.6	46.8	0.0	2.1	0.0		14.1	10.9	9.3	0.640	0.312	0.334	0.0358	35.8	30.5
	Minimum	21.5	22.5	21.1	24.0	22.0	11.1	15.3	4.3	7.0	-1.3	0.6	46.4	0.0	2.1	0.0		13.9	10.8	9.1	0.626	0.306	0.328	0.0346	34.6	29.4
	2 x Std Dev	1.584	0.038	1.636	0.453	0.089	0.201	0.228	0.176	0.375	0.024	0.006	0.474	0.001	0.055	0.001		0.228	0.111	0.255	0.018	0.008	0.008	0.0014	1.369	1.165
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21

Figure B6: PreConditioning 2A – Baseline Slurry – After Test Rig Modification – Raw & Calculated Data

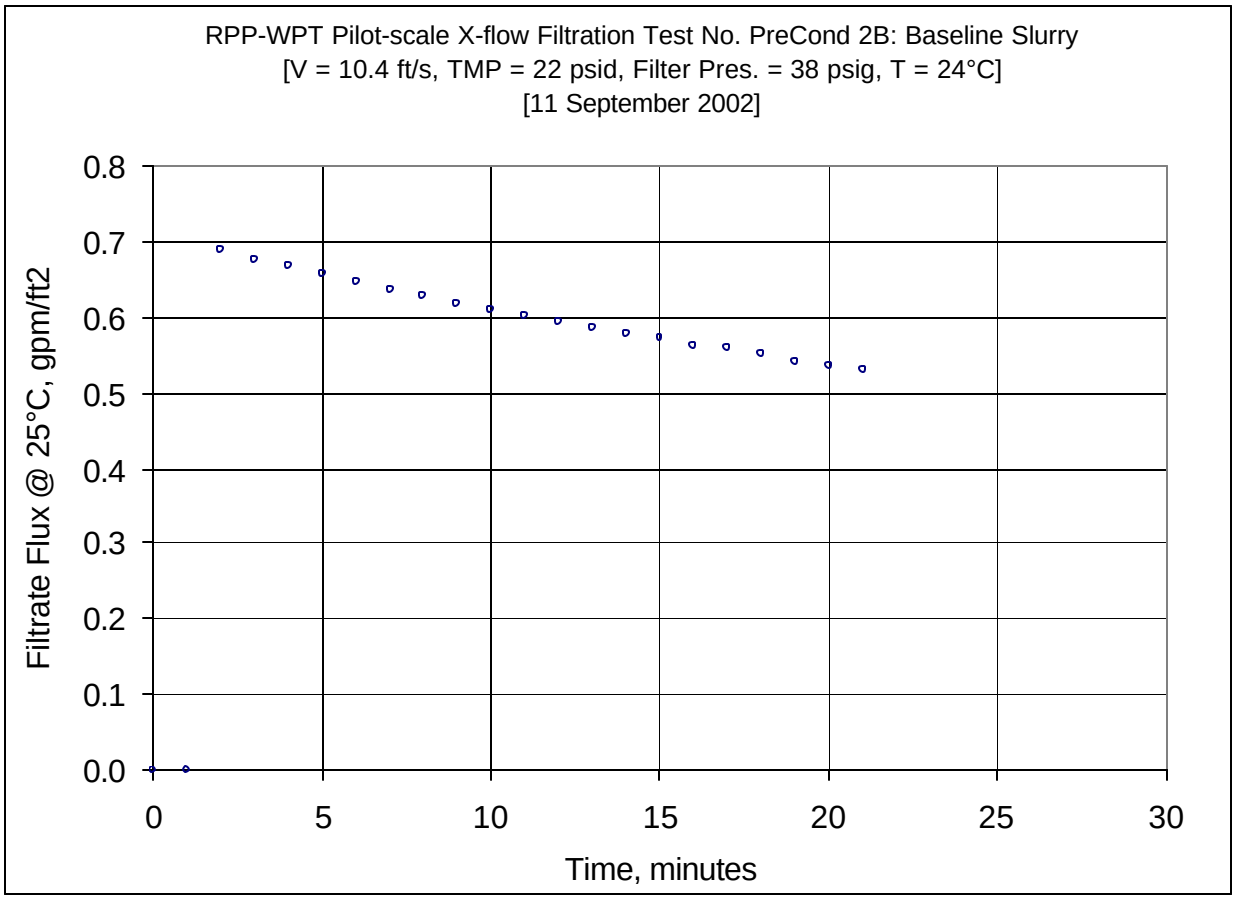


Figure B7: PreConditioning 2B – Baseline Slurry – After Test Rig Modification

		<< Temperature Measurements >>					<< Pressure Measurements >>						<< Flow Measurements >>				<< Calculated From Raw Data >>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/11/2002	8:10:10 AM	20.716	20.836	20.261	20.264	20.354	-0.121	-0.035	-0.059	0.06	-0.226	0.361	-0.216	0.002	0.001	0.002		Filter Surface	6.87	FT2						
9/11/2002	8:10:25 AM	20.716	20.836	20.261	20.264	20.354	-0.121	-0.035	-0.059	0.06	-0.226	0.361	-0.216	0.002	0.001	0.002		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/11/2002	8:10:26 AM	20.716	20.841	20.256	20.269	20.359	-0.117	-0.037	-0.059	0.06	-0.246	0.358	-0.214	0.002	0.001	0.002										
9/11/2002	8:10:27 AM	20.716	20.841	20.261	20.264	20.364	-0.121	-0.035	-0.059	0.062	-0.246	0.361	-0.218	0.001	0.001	0.001		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/11/2002	8:10:28 AM	20.711	20.841	20.256	20.264	20.359	-0.119	-0.037	-0.059	0.06	-0.249	0.358	-0.216	0.001	0.001	0.003										
9/11/2002	8:10:29 AM	20.715	20.83	20.256	20.259	20.358	-0.117	-0.035	-0.059	0.06	-0.246	0.358	-0.218	0.002	0.001	0.002		Pressure P1is corrected for 40.88 inches of water tubing								
9/11/2002	8:10:30 AM	20.721	20.841	20.261	20.264	20.359	-0.121	-0.035	-0.059	0.06	-0.246	0.358	-0.218	0.002	0.001	0.001		VVVV				< Filtrate Flux <<		PERMIABILITY >>		
9/11/2002	8:10:31 AM	20.71	20.835	20.256	20.254	20.358	-0.119	-0.035	-0.059	0.06	-0.246	0.356	-0.218	0.002	0.001	0.002							at 25C		x 1000	
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/11/2002	1:46:54 PM	24.007	22.61	23.664	25.237	22.274	2.739	40.103	4.072	-1.32	32.491	81.461	43.185	0.002	0.001	0.002	0.00	38.6	10.1	0.7	0.049	0.000	0.000	0.000	0.213	0.18
9/11/2002	1:47:54 PM	23.752	22.621	23.59	25.248	22.326	2.781	40.339	4.081	-1.23	32.583	41.11	43.302	0.002	0.001	0.004	1	38.9	10.1	0.8	0.053	0.000	0.000	0.000	0.195	0.17
9/11/2002	1:48:54 PM	24.101	22.643	23.668	25.271	22.389	20.587	39.148	4.17	18.411	12.209	-2.25	46.635	0.002	4.566	0	2	37.7	10.9	19.5	1.344	0.664	0.690	0.035	35.382	30.11
9/11/2002	1:49:54 PM	24.079	22.652	23.686	25.244	22.437	21.674	39.541	4.236	19.225	11.374	-2.227	46.347	0.002	4.473	0	3	38.1	10.8	20.4	1.410	0.651	0.676	0.033	33.034	28.11
9/11/2002	1:50:54 PM	24.146	22.684	23.668	25.462	22.5	22.237	39.917	4.163	19.713	11.015	-2.233	45.972	0.002	4.413	0	4	38.4	10.7	21.0	1.446	0.642	0.667	0.032	31.790	27.05
9/11/2002	1:51:54 PM	24.169	22.702	23.766	25.484	22.543	22.672	39.868	3.996	20.484	10.703	-2.245	45.253	0.002	4.37	0.003	5	38.4	10.6	21.6	1.488	0.636	0.658	0.031	30.516	25.97
9/11/2002	1:52:54 PM	24.156	22.724	23.733	25.542	22.6	23.126	39.667	4.094	20.792	10.073	-2.265	45.573	0.002	4.282	0.003	6	38.2	10.6	22.0	1.514	0.623	0.646	0.029	29.410	25.03
9/11/2002	1:53:54 PM	24.205	22.732	23.711	25.6	22.649	23.331	39.208	4.127	20.861	9.616	-2.279	45.479	0.002	4.209	0.003	7	37.7	10.6	22.1	1.523	0.612	0.635	0.029	28.747	24.46
9/11/2002	1:54:54 PM	24.192	22.755	23.819	25.747	22.691	23.9	39.35	4.091	21.457	9.284	-2.279	45.357	0.002	4.168	0.003	8	37.9	10.6	22.7	1.564	0.606	0.627	0.028	27.651	23.53
9/11/2002	1:55:54 PM	24.215	22.778	23.742	25.88	22.719	24.779	40.068	4.234	21.85	8.766	-2.302	45.244	0.002	4.098	0.002	9	38.6	10.6	23.3	1.607	0.596	0.618	0.027	26.503	22.55
9/11/2002	1:56:54 PM	24.257	22.795	23.784	26.007	22.736	24.905	39.814	4.179	22.095	8.558	-2.314	45.123	0.002	4.055	0.002	10	38.3	10.5	23.5	1.620	0.590	0.611	0.026	25.987	22.12
9/11/2002	1:57:54 PM	24.224	22.807	23.816	25.749	22.769	25.067	39.534	4.121	22.356	8.188	-2.329	45.03	0.001	3.999	0.001	11	38.1	10.5	23.7	1.635	0.582	0.602	0.025	25.376	21.60
9/11/2002	1:58:54 PM	24.271	22.829	23.758	25.656	22.745	25.717	39.524	4.132	23.066	7.801	-2.34	44.965	0.002	3.936	0.002	12	38.1	10.5	24.4	1.682	0.573	0.593	0.024	24.320	20.70
9/11/2002	1:59:54 PM	24.272	22.83	23.824	25.576	22.741	26.16	39.824	4.086	23.377	7.549	-2.349	44.214	0.002	3.9	0.002	13	38.4	10.3	24.8	1.708	0.568	0.587	0.024	23.687	20.16
9/11/2002	2:00:54 PM	24.262	22.855	23.824	25.586	22.731	26.33	39.766	4.01	23.492	7.234	-2.352	44.2	0.002	3.849	0.002	14	38.3	10.3	24.9	1.718	0.560	0.579	0.023	23.243	19.78
9/11/2002	2:01:54 PM	24.307	22.866	23.769	25.517	22.747	26.844	40.178	4.04	24.008	6.989	-2.363	44.181	0.002	3.809	0.003	15	38.7	10.3	25.4	1.753	0.554	0.574	0.023	22.571	19.21
9/11/2002	2:02:54 PM	24.302	22.881	23.879	25.442	22.747	27.21	39.832	4.017	24.521	6.607	-2.384	43.906	0.002	3.748	0.002	16	38.4	10.2	25.9	1.783	0.545	0.563	0.022	21.764	18.52
9/11/2002	2:03:54 PM	24.272	22.86	23.749	25.342	22.727	27.612	39.77	4.041	24.839	6.269	-2.41	43.961	0.001	3.705	0.003	17	38.3	10.3	26.2	1.808	0.539	0.559	0.021	21.297	18.12
9/11/2002	2:04:54 PM	24.317	22.875	23.799	25.351	22.721	27.981	40.209	4.053	25.033	6.058	-2.424	43.927	0.002	3.66	0.001	18	38.7	10.3	26.5	1.828	0.533	0.551	0.021	20.786	17.69
9/11/2002	2:05:54 PM	24.275	22.874	23.837	25.36	22.73	28.076	39.619	3.983	25.383	5.671	-2.444	43.854	0.002	3.608	0.003	19	38.1	10.2	26.7	1.843	0.525	0.543	0.020	20.298	17.27
9/11/2002	2:06:54 PM	24.299	22.882	23.741	25.524	22.718	28.432	39.81	4.2	25.355	5.445	-2.456	43.787	0.002	3.561	0.002	20	38.3	10.2	26.9	1.854	0.518	0.537	0.020	19.966	16.99
9/11/2002	2:07:54 PM	24.324	22.912	23.856	25.799	22.698	29.165	40.289	4.175	26.157	5.263	-2.468	43.728	0.002	3.523	0.002	21	38.8	10.2	27.7	1.907	0.513	0.529	0.019	19.142	16.29
	Averages	24.2	22.8	23.8	25.5	22.6	23.2	39.8	4.1	20.5	10.4	3.4	44.7	0.0	3.6	0.0		38.3	10.4	21.8	1.506	0.529	0.547	0.0233	23.3	19.8
	Maximum	24.3	22.9	23.9	26.0	22.8	29.2	40.3	4.2	26.2	32.6	81.5	46.6	0.0	4.6	0.0		38.9	10.9	27.7	1.907	0.664	0.690	0.0354	35.4	30.1
	Median	24.2	22.8	23.8	25.5	22.7	25.0	39.8	4.1	22.2	8.4	-2.3	44.6	0.0	3.9	0.0		38.3	10.4	23.6	1.628	0.570	0.590	0.0240	24.0	20.4
	Minimum	23.8	22.6	23.6	25.2	22.3	2.7	39.1	4.0	-1.3	5.3	-2.5	43.2	0.0	0.0	0.0		37.7	10.1	0.7	0.049	0.000	0.000	0.0002	0.2	0.2
	2 x Std Dev	0.255	0.187	0.142	0.420	0.297	13.742	0.642	0.147	14.365	14.509	38.550	1.912	0.001	2.372	0.002		0.642	0.446	14.049	0.969	0.345	0.358	0.0170	17.009	14.475
Number of Points Used*		22	22	22	22	22	22	22	22	22	22	22	22	22	22	22		22	22	22	22	22	22	22	22	22

Figure B8: PreConditioning 2B – Baseline Slurry – After Test Rig Modification – Raw & Calculated Data

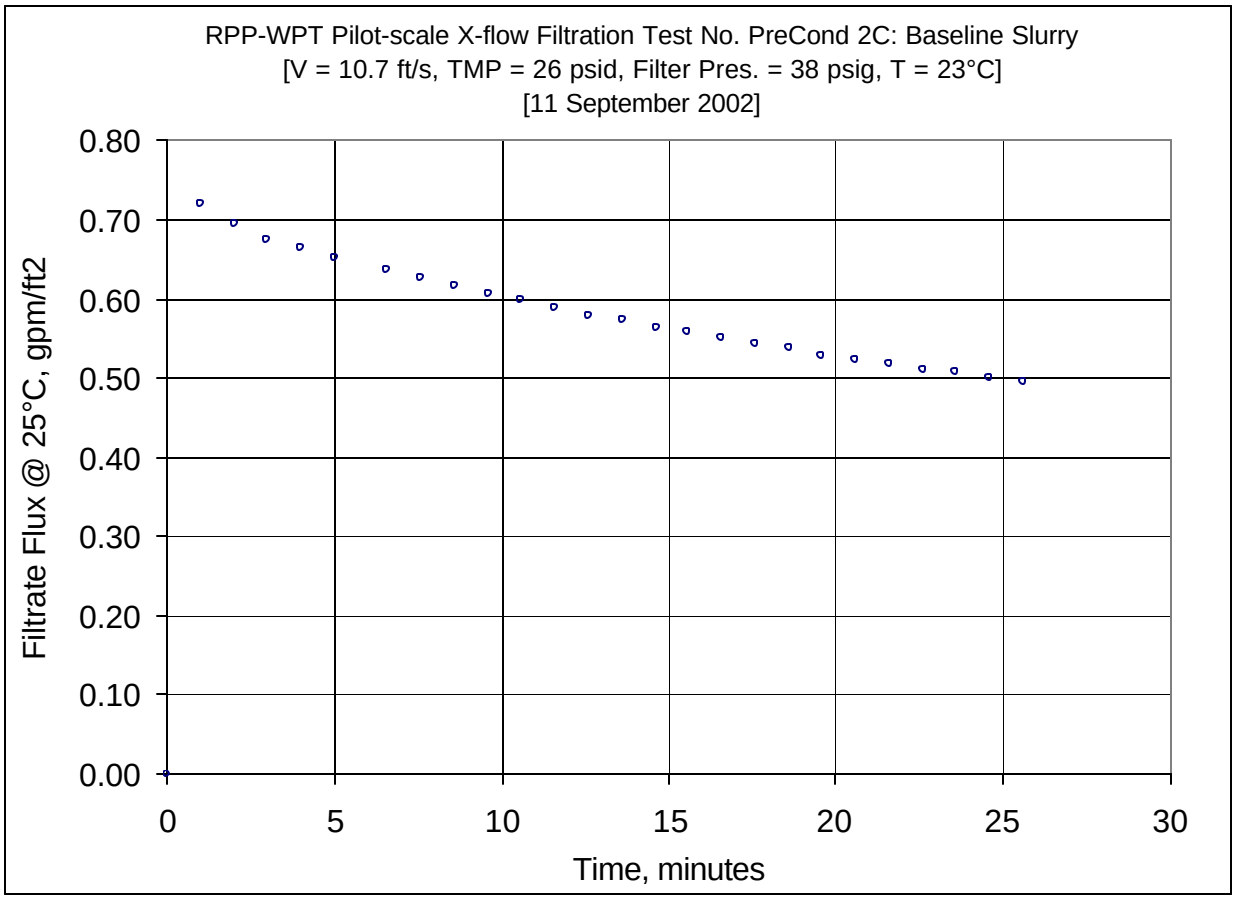


Figure B9: PreConditioning 2C – Baseline Slurry – After Test Rig Modification

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/11/2002	8:10:10 AM	20.716	20.836	20.261	20.264	20.354	-0.121	-0.035	-0.059	0.06	-0.226	0.361	-0.216	0.002	0.001	0.002		Filter Surface	6.87	FT2						
9/11/2002	8:10:25 AM	20.716	20.836	20.261	20.264	20.354	-0.121	-0.035	-0.059	0.06	-0.226	0.361	-0.216	0.002	0.001	0.002		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/11/2002	8:10:26 AM	20.716	20.841	20.256	20.269	20.359	-0.117	-0.037	-0.059	0.06	-0.246	0.358	-0.214	0.002	0.001	0.002										
9/11/2002	8:10:27 AM	20.716	20.841	20.261	20.264	20.364	-0.121	-0.035	-0.059	0.062	-0.246	0.361	-0.218	0.001	0.001	0.001		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/11/2002	8:10:28 AM	20.711	20.841	20.256	20.264	20.359	-0.119	-0.037	-0.059	0.06	-0.249	0.358	-0.216	0.001	0.001	0.003										
9/11/2002	8:10:29 AM	20.715	20.83	20.256	20.259	20.358	-0.117	-0.035	-0.059	0.06	-0.246	0.358	-0.218	0.002	0.001	0.002		Pressure P1is corrected for 40.88 inches of water tubing								
9/11/2002	8:10:30 AM	20.721	20.841	20.261	20.264	20.359	-0.121	-0.035	-0.059	0.06	-0.246	0.358	-0.218	0.002	0.001	0.001		VVVV				< Filtrate Flux<< PERMIABILITY >>				
9/11/2002	8:10:31 AM	20.71	20.835	20.256	20.254	20.358	-0.119	-0.035	-0.059	0.06	-0.246	0.356	-0.218	0.002	0.001	0.002							at 25C		x 1000	
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/11/2002	2:43:24 PM	24.237	23.318	22.509	26.677	23.385	3.531	40.136	4.515	-0.765	31.679	80.364	44.139	0.002	0.001	0.003	0	38.7	10.3	1.4	0.095	0.000	0.000	0.000	0.226	0.19
9/11/2002	2:44:24 PM	23.257	23.346	22.567	26.6	23.433	19.887	38.845	4.373	17.395	12.55	1.077	47.755	0.002	4.62	0	1	37.4	11.1	18.6	1.285	0.672	0.720	0.039	38.643	32.89
9/11/2002	2:45:24 PM	23.149	23.359	22.651	26.719	23.481	21.581	39.417	4.352	19.082	11.394	1.05	47.377	0.002	4.466	0	2	37.9	11.1	20.3	1.402	0.650	0.695	0.034	34.166	29.08
9/11/2002	2:46:24 PM	23.164	23.389	22.791	26.728	23.551	22.252	39.274	4.392	19.627	10.665	1.024	47.272	0.002	4.36	0	3	37.8	11.0	20.9	1.444	0.634	0.675	0.032	32.258	27.45
9/11/2002	2:47:24 PM	23.213	23.413	22.725	26.732	23.595	23.095	39.636	4.284	20.579	10.188	0.984	46.742	0.002	4.287	0.002	4	38.2	10.9	21.8	1.506	0.624	0.665	0.030	30.471	25.93
9/11/2002	2:48:24 PM	23.256	23.421	22.833	26.67	23.623	23.532	39.568	4.46	20.538	9.619	0.969	46.689	0.002	4.214	0.002	5	38.1	10.9	22.0	1.519	0.613	0.652	0.030	29.592	25.18
9/11/2002	2:49:59 PM	23.296	23.44	22.868	26.624	23.643	24.286	39.652	4.351	21.406	9.029	0.943	46.7	0.001	4.123	0.003	6.58	38.2	10.9	22.8	1.575	0.600	0.637	0.028	27.897	23.74
9/11/2002	2:50:59 PM	23.309	23.464	22.856	26.508	23.631	24.706	39.537	4.336	21.707	8.509	0.917	46.486	0.002	4.05	0.003	7.58	38.1	10.9	23.2	1.600	0.589	0.626	0.027	26.987	22.97
9/11/2002	2:51:59 PM	23.356	23.47	22.832	26.394	23.637	25.263	39.592	4.345	22.302	8.064	0.888	46.515	0.001	3.983	0.003	8.58	38.1	10.9	23.8	1.640	0.580	0.616	0.026	25.915	22.05
9/11/2002	2:52:59 PM	23.352	23.481	22.949	26.285	23.654	25.292	39.193	4.454	22.257	7.801	0.874	46.538	0.002	3.935	0.004	9.58	37.7	10.9	23.8	1.639	0.573	0.607	0.026	25.526	21.72
9/11/2002	2:53:59 PM	23.379	23.503	22.886	26.142	23.631	25.966	39.476	4.322	23.08	7.292	0.859	46.341	0.002	3.868	0.003	10.6	38.0	10.8	24.5	1.691	0.563	0.598	0.024	24.369	20.74
9/11/2002	2:54:59 PM	23.399	23.493	22.931	26.227	23.59	26.398	39.677	4.379	23.418	7.073	0.839	46.328	0.002	3.82	0.003	11.6	38.2	10.8	24.9	1.717	0.556	0.589	0.024	23.665	20.14
9/11/2002	2:55:59 PM	23.385	23.5	22.947	26.229	23.622	26.496	39.356	4.434	23.269	6.72	0.819	46.301	0.003	3.758	0.001	12.6	37.9	10.8	24.9	1.716	0.547	0.580	0.023	23.294	19.82
9/11/2002	2:56:59 PM	23.431	23.51	22.883	26.189	23.587	27.001	39.648	4.454	23.762	6.442	0.807	46.165	0.002	3.715	0.003	13.6	38.2	10.8	25.4	1.750	0.541	0.574	0.023	22.616	19.25
9/11/2002	2:57:59 PM	23.426	23.51	22.988	26.159	23.607	27.219	39.373	4.416	23.919	6.125	0.796	46.003	0.002	3.666	0.002	14.6	37.9	10.7	25.6	1.763	0.533	0.565	0.022	22.088	18.80
9/11/2002	2:58:59 PM	23.427	23.522	22.919	26.071	23.619	27.8	39.712	4.547	24.431	5.726	0.784	46.045	0.002	3.615	0.003	15.6	38.2	10.7	26.1	1.801	0.526	0.558	0.021	21.367	18.18
9/11/2002	2:59:59 PM	23.462	23.521	22.949	26.095	23.593	28.416	40.141	4.53	24.929	5.52	0.781	45.985	0.002	3.579	0.002	16.6	38.7	10.7	26.7	1.839	0.521	0.552	0.021	20.694	17.61
9/11/2002	3:00:59 PM	23.453	23.542	23.025	26.071	23.599	28.6	39.994	4.47	25.199	5.226	0.767	45.899	0.002	3.525	0.003	17.6	38.5	10.7	26.9	1.855	0.513	0.542	0.020	20.166	17.16
9/11/2002	3:01:59 PM	23.472	23.537	22.924	26.146	23.579	28.994	40.163	4.492	25.549	5.061	0.758	45.943	0.002	3.487	0.003	18.6	38.7	10.7	27.3	1.880	0.507	0.538	0.020	19.734	16.79
9/11/2002	3:02:59 PM	23.477	23.537	23.01	26.126	23.569	28.844	39.568	4.501	25.369	4.772	0.746	45.878	0.002	3.439	0.003	19.6	38.1	10.7	27.1	1.869	0.500	0.529	0.020	19.532	16.62
9/11/2002	3:03:59 PM	23.457	23.537	22.979	26.061	23.553	29.321	40.089	4.506	25.862	4.555	0.738	45.787	0.002	3.394	0.002	20.6	38.6	10.7	27.6	1.902	0.494	0.523	0.019	18.955	16.13
9/11/2002	3:04:59 PM	23.492	23.541	22.954	26.295	23.533	29.252	39.596	4.539	25.817	4.286	0.735	45.859	0.002	3.367	0.002	21.6	38.1	10.7	27.5	1.898	0.490	0.519	0.019	18.856	16.05
9/11/2002	3:05:59 PM	23.486	23.54	23.048	26.459	23.547	29.75	39.919	4.482	26.126	4.101	0.723	45.464	0.002	3.326	0.002	22.6	38.4	10.6	27.9	1.926	0.484	0.512	0.018	18.308	15.58
9/11/2002	3:06:59 PM	23.5	23.559	22.977	26.328	23.551	30.174	40.263	4.586	26.523	3.884	0.723	45.523	0.002	3.29	0.002	23.6	38.8	10.6	28.3	1.955	0.479	0.507	0.018	17.884	15.22
9/11/2002	3:07:59 PM	23.514	23.549	23.001	26.262	23.525	29.932	39.76	4.464	26.401	3.714	0.712	45.445	0.002	3.258	0.003	24.6	38.3	10.6	28.2	1.942	0.474	0.502	0.018	17.813	15.16
9/11/2002	3:08:59 PM	23.494	23.569	23.036	26.207	23.52	30.371	39.979	4.494	26.89	3.581	0.703	45.399	0.002	3.223	0.003	25.6	38.5	10.6	28.6	1.974	0.469	0.496	0.017	17.318	14.74
	Averages	23.4	23.5	22.9	26.2	23.6	27.7	39.7	4.5	24.4	5.9	0.8	46.0	0.0	3.6	0.0		38.3	10.7	26.1	1.797	0.527	0.559	0.0216	21.6	18.4
	Maximum	23.5	23.6	23.0	26.6	23.7	30.4	40.3	4.6	26.9	9.0	0.9	46.7	0.0	4.1	0.0		38.8	10.9	28.6	1.974	0.600	0.637	0.0279	27.9	23.7
	Median	23.4	23.5	22.9	26.2	23.6	28.1	39.7	4.5	24.7	5.6	0.8	46.0	0.0	3.6	0.0		38.2	10.7	26.4	1.820	0.523	0.555	0.0210	21.0	17.9
	Minimum	23.3	23.4	22.8	26.1	23.5	24.3	39.2	4.3	21.4	3.6	0.7	45.4	0.0	3.2	0.0		37.7	10.6	22.8	1.575	0.469	0.496	0.0173	17.3	14.7
	2 x Std Dev	0.126	0.066	0.120	0.302	0.080	3.769	0.579	0.148	3.312	3.277	0.138	0.760	0.001	0.541	0.001		0.579	0.177	3.539	0.244	0.079	0.085	0.0063	6.344	5.399
Number of Points Used*		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		20	20	20	20	20	20	20	20	20

Figure B10: PreConditioning 2C – Baseline Slurry – After Test Rig Modification – Raw & Calculated Data

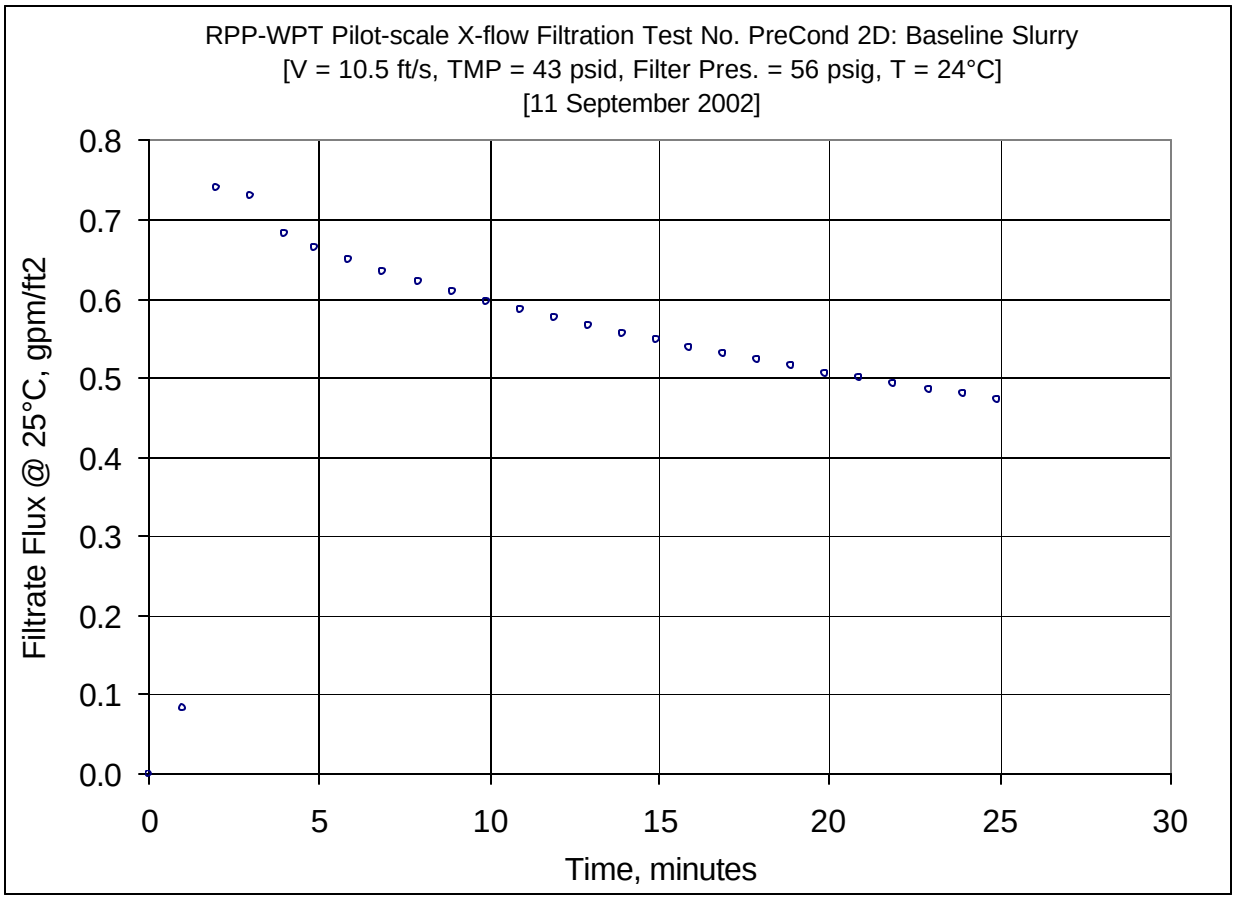


Figure B11: PreConditioning 2D – Baseline Slurry – After Test Rig Modification

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/11/2002	8:10:10 AM	20.716	20.836	20.261	20.264	20.354	-0.121	-0.035	-0.059	0.06	-0.226	0.361	-0.216	0.002	0.001	0.002		Filter Surface		6.87	FT2					
9/11/2002	8:10:25 AM	20.716	20.836	20.261	20.264	20.354	-0.121	-0.035	-0.059	0.06	-0.226	0.361	-0.216	0.002	0.001	0.002		Conversion		851	m3/m2/day/barg / gpm/ft2/barg					
9/11/2002	8:10:26 AM	20.716	20.841	20.256	20.269	20.359	-0.117	-0.037	-0.059	0.06	-0.246	0.358	-0.214	0.002	0.001	0.002										
9/11/2002	8:10:27 AM	20.716	20.841	20.261	20.264	20.364	-0.121	-0.035	-0.059	0.062	-0.246	0.361	-0.218	0.001	0.001	0.001		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/11/2002	8:10:28 AM	20.711	20.841	20.256	20.264	20.359	-0.119	-0.037	-0.059	0.06	-0.249	0.358	-0.216	0.001	0.001	0.003										
9/11/2002	8:10:29 AM	20.715	20.83	20.256	20.259	20.358	-0.117	-0.035	-0.059	0.06	-0.246	0.358	-0.218	0.002	0.001	0.002		Pressure P1is corrected for 40.88 inches of water tubing								
9/11/2002	8:10:30 AM	20.721	20.841	20.261	20.264	20.359	-0.121	-0.035	-0.059	0.06	-0.246	0.358	-0.218	0.002	0.001	0.001		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/11/2002	8:10:31 AM	20.71	20.835	20.256	20.254	20.358	-0.119	-0.035	-0.059	0.06	-0.246	0.356	-0.218	0.002	0.001	0.002						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/11/2002	3:16:28 PM	24.271	23.623	24.339	26.631	23.469	3.354	57.558	4.276	-0.953	49.411	97.937	43.021	0.002	0.001	0.002	0	56.1	10.0	1.2	0.083	0.000	0.000	0.000	0.123	0.11
9/11/2002	3:17:28 PM	24.362	23.623	24.511	26.407	23.444	2.698	57.605	3.992	-1.287	49.943	46.64	43.082	0.555	0.001	0.003	1	56.1	10.1	0.7	0.049	0.081	0.082	0.116	#####	98.77
9/11/2002	3:18:28 PM	25.1	23.63	24.502	26.233	23.415	31.29	56.165	4.263	29.619	18.01	0.822	47.256	0.002	5.014	0	2	54.7	11.0	30.5	2.100	0.730	0.740	0.024	24.296	20.68
9/11/2002	3:19:28 PM	25.225	23.63	24.708	26.289	23.416	34.561	56.521	4.303	32.389	15.088	0.599	46.897	0.003	4.97	0	3	55.0	10.9	33.5	2.308	0.723	0.729	0.022	21.783	18.54
9/11/2002	3:21:28 PM	25.466	23.635	24.878	26.454	23.381	37.518	56.852	4.317	35.048	12.677	0.428	46.345	0.002	4.662	0.003	4	55.4	10.8	36.3	2.502	0.678	0.681	0.019	18.761	15.97
9/11/2002	3:22:21 PM	25.542	23.641	24.844	26.514	23.407	38.508	56.986	4.362	35.903	11.79	0.385	46.268	0.002	4.539	0.001	4.88	55.5	10.8	37.2	2.565	0.660	0.663	0.018	17.830	15.17
9/11/2002	3:23:21 PM	25.526	23.656	24.779	26.529	23.447	39.438	56.964	4.471	36.626	10.983	0.35	46.033	0.002	4.437	0.003	5.88	55.5	10.7	38.0	2.622	0.646	0.650	0.017	17.082	14.54
9/11/2002	3:24:21 PM	25.431	23.645	24.638	26.638	23.441	40.134	56.622	4.29	37.57	10.258	0.315	45.781	0.002	4.318	0.003	6.88	55.1	10.7	38.9	2.679	0.628	0.635	0.016	16.338	13.90
9/11/2002	3:25:21 PM	25.336	23.666	24.523	26.854	23.482	40.897	56.691	4.361	38.106	9.37	0.292	45.638	0.003	4.211	0.003	7.88	55.2	10.7	39.5	2.723	0.613	0.621	0.016	15.722	13.38
9/11/2002	3:26:21 PM	25.217	23.672	24.393	26.905	23.483	42.073	57.169	4.428	39.224	8.836	0.269	45.454	0.002	4.114	0.003	8.88	55.7	10.6	40.6	2.803	0.599	0.609	0.015	14.982	12.75
9/11/2002	3:27:21 PM	25.082	23.677	24.243	26.855	23.472	42.404	56.776	4.404	39.404	8.151	0.237	45.362	0.003	4.013	0.003	9.88	55.3	10.6	40.9	2.820	0.584	0.597	0.015	14.584	12.41
9/11/2002	3:28:21 PM	24.956	23.692	24.108	26.835	23.483	43.21	57.106	4.442	40.276	7.729	0.225	45.33	0.002	3.936	0.003	10.9	55.6	10.6	41.7	2.878	0.573	0.587	0.014	14.071	11.97
9/11/2002	3:29:21 PM	24.831	23.702	23.977	26.979	23.513	43.612	56.794	4.448	40.546	7.107	0.196	45.158	0.002	3.844	0.002	11.9	55.3	10.5	42.1	2.901	0.559	0.576	0.014	13.683	11.64
9/11/2002	3:30:21 PM	24.706	23.722	23.853	27.12	23.538	44.612	57.528	4.519	41.269	6.625	0.188	45.062	0.002	3.77	0.003	12.9	56.1	10.5	42.9	2.961	0.549	0.567	0.013	13.196	11.23
9/11/2002	3:31:21 PM	24.571	23.727	23.727	27.095	23.558	44.869	57.224	4.553	41.578	6.234	0.164	44.967	0.002	3.692	0.002	13.9	55.8	10.5	43.2	2.980	0.537	0.557	0.013	12.885	10.97
9/11/2002	3:32:21 PM	24.446	23.733	23.587	27.14	23.538	45.111	57.018	4.529	41.783	5.766	0.133	44.808	0.002	3.614	0.001	14.9	55.5	10.5	43.4	2.996	0.526	0.547	0.013	12.598	10.72
9/11/2002	3:33:21 PM	24.346	23.758	23.481	27.24	23.558	45.662	57.293	4.654	42.098	5.434	0.107	44.73	0.002	3.548	0.002	15.9	55.8	10.4	43.9	3.025	0.516	0.539	0.012	12.282	10.45
9/11/2002	3:34:21 PM	24.215	23.758	23.356	27.15	23.558	45.762	56.767	4.481	42.454	5.015	0.092	44.445	0.002	3.487	0.001	16.9	55.3	10.4	44.1	3.041	0.507	0.532	0.012	12.052	10.26
9/11/2002	3:35:21 PM	24.131	23.793	23.281	27.006	23.564	46.741	57.233	4.518	43.404	4.728	0.081	44.456	0.002	3.425	0.002	17.9	55.8	10.4	45.1	3.108	0.498	0.523	0.012	11.609	9.88
9/11/2002	3:36:21 PM	24.016	23.79	23.142	26.842	23.57	46.752	57.239	4.605	43.105	4.295	0.066	44.376	0.002	3.361	0.003	18.9	55.8	10.4	44.9	3.098	0.489	0.516	0.011	11.474	9.76
9/11/2002	3:37:21 PM	23.967	23.795	23.349	26.758	23.586	47.112	57.262	4.591	43.511	4.104	0.054	44.409	0.002	3.324	0.002	19.9	55.8	10.4	45.3	3.124	0.484	0.507	0.011	11.185	9.52
9/11/2002	3:38:21 PM	24.097	23.815	23.414	26.908	23.631	46.909	56.521	4.508	43.49	3.983	0.052	44.372	0.002	3.29	0.003	20.9	55.0	10.4	45.2	3.116	0.479	0.501	0.011	11.078	9.43
9/11/2002	3:39:21 PM	24.253	23.821	23.695	27.148	23.627	47.176	56.949	4.545	43.637	3.809	0.046	44.313	0.003	3.266	0.002	21.9	55.5	10.3	45.4	3.131	0.475	0.493	0.011	10.860	9.24
9/11/2002	3:40:21 PM	24.378	23.8	23.78	26.863	23.641	47.804	57.218	4.551	44.246	3.52	0.031	44.325	0.002	3.225	0.003	22.9	55.7	10.3	46.0	3.173	0.469	0.486	0.011	10.554	8.98
9/11/2002	3:41:21 PM	24.567	23.809	23.934	26.722	23.615	47.74	57.086	4.714	43.959	3.376	0.025	44.189	0.002	3.198	0.002	23.9	55.6	10.3	45.8	3.161	0.465	0.480	0.010	10.460	8.90
9/11/2002	3:42:21 PM	24.688	23.829	24.14	26.612	23.59	48.011	57.268	4.731	44.155	3.254	0.023	44.12	0.002	3.168	0.002	24.9	55.8	10.3	46.1	3.177	0.461	0.472	0.010	10.249	8.72
	Averages	24.7	23.7	23.9	26.9	23.5	44.5	57.0	4.5	41.3	6.4	0.2	44.9	0.0	3.7	0.0		55.6	10.5	42.9	2.956	0.539	0.555	0.0131	13.1	11.1
	Maximum	25.5	23.8	24.8	27.2	23.6	48.0	57.5	4.7	44.2	11.8	0.4	46.3	0.0	4.5	0.0		56.1	10.8	46.1	3.177	0.660	0.663	0.0178	17.8	15.2
	Median	24.6	23.7	23.9	26.9	23.6	45.1	57.1	4.5	41.8	5.8	0.1	44.8	0.0	3.6	0.0		55.6	10.5	43.4	2.996	0.526	0.547	0.0126	12.6	10.7
	Minimum	24.0	23.6	23.1	26.5	23.4	38.5	56.5	4.3	35.9	3.3	0.0	44.1	0.0	3.2	0.0		55.0	10.3	37.2	2.565	0.461	0.472	0.0102	10.2	8.7
	2 x Std Dev	1.002	0.125	0.997	0.415	0.131	5.747	0.508	0.220	5.044	5.178	0.225	1.256	0.001	0.847	0.001		0.508	0.293	5.394	0.372	0.123	0.113	0.0044	4.449	3.786
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21

Figure B12: PreConditioning 2D – Baseline Slurry – After Test Rig Modification – Raw & Calculated Data

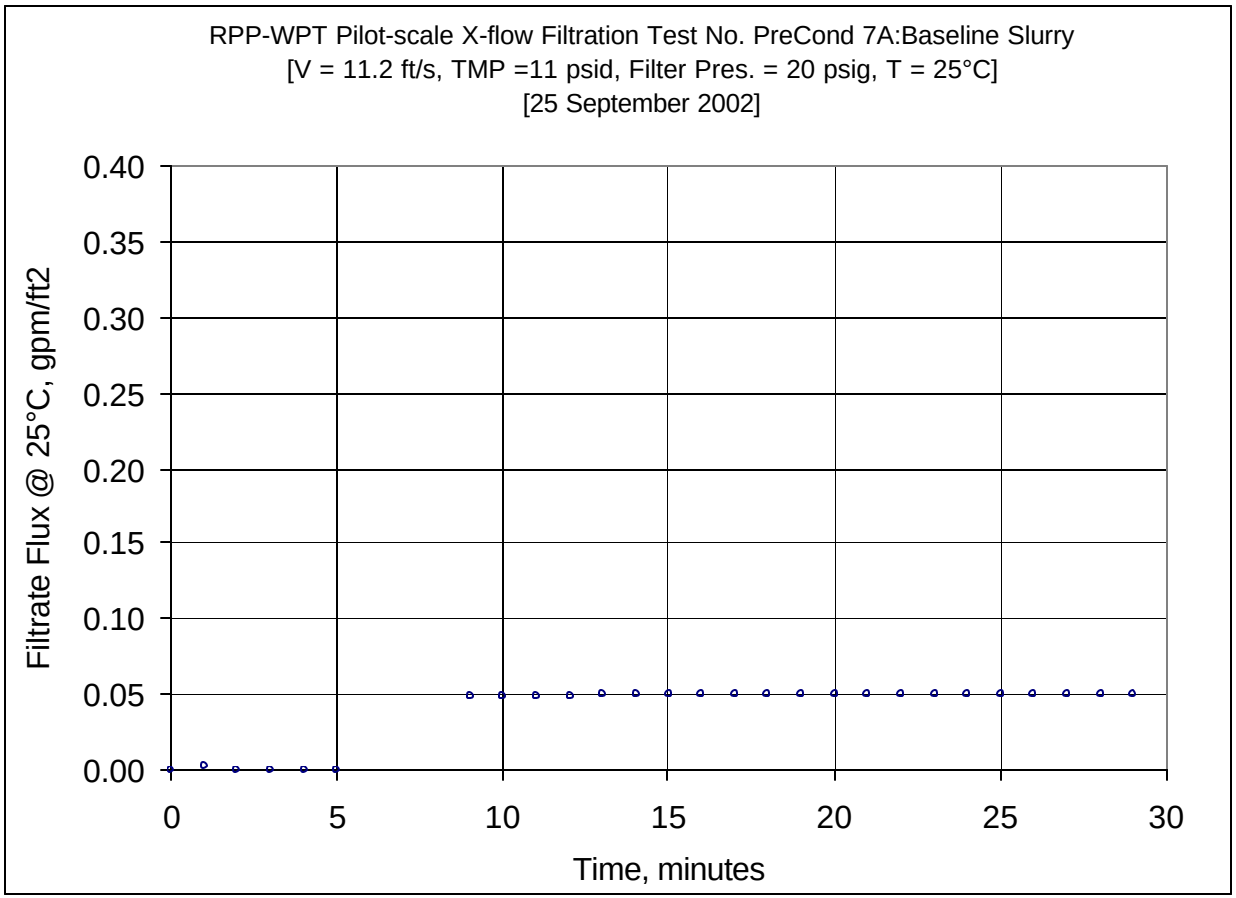


Figure B13: PreConditioning 7A – Baseline Slurry – After Preconditioning Filter with AN-107

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																		Filter Surface	6.87	FT2						
9/25/2002	7:37:47 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/25/2002	7:38:00 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001										
9/25/2002	7:38:01 AM	20.881	21.177	20.528	20.516	20.65	-0.119	-0.039	-0.049	0.064	-0.307	0.353	-0.216	0.002	0.001	0.001										
9/25/2002	7:38:02 AM	20.881	21.177	20.528	20.521	20.65	-0.121	-0.039	-0.049	0.064	-0.347	0.353	-0.212	0.001	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/25/2002	7:38:03 AM	20.882	21.178	20.534	20.521	20.666	-0.119	-0.039	-0.049	0.064	-0.37	0.356	-0.216	0.002	0.001	0.001										
9/25/2002	7:38:04 AM	20.881	21.177	20.533	20.526	20.65	-0.119	-0.041	-0.048	0.064	-0.327	0.356	-0.212	0.002	0.001	0.002		Pressure P1is corrected for 40.88 inches of water tubing								
9/25/2002	7:38:05 AM	20.882	21.183	20.544	20.531	20.666	-0.121	-0.039	-0.048	0.064	-0.33	0.356	-0.216	0.002	0.001	0.001		VVVV				< Filtrate Flux << PERMIABILITY >>				
9/25/2002	7:38:06 AM	20.887	21.183	20.544	20.531	20.671	-0.121	-0.039	-0.048	0.064	-0.324	0.358	-0.212	0.001	0.001	0.001						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/25/2002	10:06:18 AM	24.833	22.383	25.707	22.773	22.455	12.103	20.314	15.493	-3.311	3.02	60.104	47.04	0.002	0.001	0	0	18.8	11.0	4.4	0.303	0.000	0.000	0.000	0.065	0.06
9/25/2002	10:07:18 AM	24.301	22.391	25.841	22.737	22.509	15.431	20.392	15.292	0.308	-0.229	0.573	47.01	0.015	0.196	0	1	18.9	11.0	7.9	0.543	0.002	0.002	0.000	0.271	0.23
9/25/2002	10:08:18 AM	25.316	22.394	25.914	22.755	22.537	14.754	19.939	15.253	-0.274	-0.041	0.5	46.511	0.002	0.001	0	2	18.5	10.9	7.2	0.499	0.000	0.000	0.000	0.039	0.03
9/25/2002	10:09:18 AM	25.631	22.399	26.024	22.72	22.592	15.676	20.986	16.142	-0.237	-0.041	0.538	48.103	0.001	0.001	0	3	19.5	11.2	7.7	0.532	0.000	0.000	0.000	0.018	0.02
9/25/2002	10:10:18 AM	25.882	22.426	26.115	22.741	22.659	15.577	20.781	15.944	0.058	0.046	0.584	48.105	0.001	0.001	0	4	19.3	11.2	7.8	0.539	0.000	0.000	0.000	0.018	0.02
9/25/2002	10:11:18 AM	25.987	22.436	26.185	22.927	22.714	15.628	20.974	15.917	-0.05	0.089	0.631	47.971	0.002	0.001	0	5	19.5	11.2	7.8	0.537	0.000	0.000	0.000	0.036	0.03
9/25/2002	10:15:18 AM	26.073	22.492	26.425	23.118	22.886	18.969	21.245	16.265	2.975	-1.284	-2.624	48.017	0.352	0.001	0	9.00	19.8	11.2	11.0	0.756	0.051	0.049	0.004	4.486	3.82
9/25/2002	10:16:18 AM	26.116	22.5	26.479	23.096	22.879	18.884	21.124	16.31	3.014	-1.284	-2.641	48.155	0.354	0.001	0	10	19.7	11.2	10.9	0.755	0.052	0.049	0.005	4.514	3.84
9/25/2002	10:17:18 AM	26.193	22.501	26.495	23.063	22.885	18.909	21.093	16.326	3.012	-1.284	-2.662	48.246	0.354	0.001	0	11	19.6	11.3	11.0	0.756	0.052	0.049	0.005	4.507	3.84
9/25/2002	10:18:18 AM	26.242	22.511	26.419	23.142	22.879	19.317	21.72	16.126	3.358	-1.284	-2.679	48.254	0.354	0.001	0	12	20.2	11.3	11.3	0.782	0.052	0.050	0.004	4.366	3.72
9/25/2002	10:19:18 AM	26.311	22.509	26.253	23.191	22.873	19.025	21.28	16.32	3.186	-1.286	-2.699	47.956	0.354	0.001	0	13	19.8	11.2	11.1	0.766	0.052	0.050	0.004	4.478	3.81
9/25/2002	10:20:18 AM	26.299	22.512	26.021	23.385	22.836	19.071	21.307	16.186	3.315	-1.284	-2.731	47.815	0.352	0.001	0	14	19.8	11.2	11.2	0.772	0.051	0.050	0.004	4.447	3.78
9/25/2002	10:21:18 AM	26.246	22.51	25.814	23.287	22.854	19.164	21.453	16.439	3.02	-1.284	-2.743	47.988	0.35	0.001	0	15	20.0	11.2	11.1	0.765	0.051	0.050	0.004	4.488	3.82
9/25/2002	10:22:18 AM	26.194	22.517	25.611	23.24	22.851	18.81	20.978	16.246	2.875	-1.286	-2.757	48.105	0.349	0.001	0	16	19.5	11.2	10.8	0.748	0.051	0.050	0.005	4.604	3.92
9/25/2002	10:23:18 AM	26.151	22.52	25.484	23.152	22.843	19.191	21.468	16.294	3.203	-1.284	-2.786	47.858	0.346	0.001	0	17	20.0	11.2	11.2	0.772	0.050	0.050	0.004	4.436	3.77
9/25/2002	10:24:18 AM	26.109	22.527	25.321	23.134	22.846	18.977	21.232	16.297	2.926	-1.284	-2.783	47.958	0.347	0.001	0	18	19.8	11.2	11.0	0.755	0.050	0.050	0.005	4.569	3.89
9/25/2002	10:25:18 AM	26.047	22.526	25.204	23.112	22.849	18.894	21.1	16.18	3.102	-1.284	-2.798	48.118	0.343	0.001	0	19	19.6	11.2	11.0	0.758	0.050	0.050	0.005	4.512	3.84
9/25/2002	10:26:18 AM	25.985	22.529	25.087	23.08	22.852	19.11	21.371	16.4	2.902	-1.284	-2.838	47.799	0.345	0.001	0	20	19.9	11.2	11.0	0.759	0.050	0.050	0.005	4.550	3.87
9/25/2002	10:27:18 AM	25.907	22.531	24.974	23.197	22.824	19.025	21.135	16.202	3.305	-1.281	-2.847	47.975	0.343	0.001	0	21	19.7	11.2	11.2	0.770	0.050	0.050	0.004	4.474	3.81
9/25/2002	10:28:18 AM	25.808	22.507	24.845	23.073	22.805	19.062	21.16	16.293	3.117	-1.289	-2.861	47.839	0.343	0.001	0	22	19.7	11.2	11.1	0.765	0.050	0.050	0.005	4.520	3.85
9/25/2002	10:29:18 AM	25.731	22.52	24.758	23.111	22.818	19.499	21.776	16.504	3.153	-1.281	-2.876	47.811	0.342	0.001	0	23	20.3	11.2	11.3	0.781	0.050	0.050	0.004	4.424	3.76
9/25/2002	10:30:18 AM	25.644	22.517	24.715	23.114	22.791	19.097	21.176	16.224	3.264	-1.284	-2.899	47.879	0.339	0.001	0	24	19.7	11.2	11.2	0.771	0.049	0.050	0.004	4.448	3.78
9/25/2002	10:31:18 AM	25.567	22.521	24.639	23.088	22.794	19.303	21.352	16.679	2.83	-1.284	-2.919	48.057	0.338	0.001	0	25	19.9	11.2	11.1	0.763	0.049	0.050	0.004	4.490	3.82
9/25/2002	10:32:18 AM	25.475	22.519	24.566	23.09	22.777	19.282	21.377	16.457	3.288	-1.284	-2.925	47.686	0.337	0.001	0	26	19.9	11.1	11.3	0.778	0.049	0.050	0.004	4.399	3.74
9/25/2002	10:33:18 AM	25.408	22.522	24.535	23.044	22.776	19.01	21.093	16.494	2.914	-1.284	-2.925	47.87	0.336	0.001	0	27	19.6	11.2	11.0	0.756	0.049	0.050	0.005	4.519	3.85
9/25/2002	10:34:18 AM	25.315	22.509	24.427	23.036	22.752	19.224	21.145	16.803	2.828	-1.281	-2.94	47.943	0.336	0.001	0	28	19.7	11.2	11.0	0.760	0.049	0.050	0.005	4.507	3.84
9/25/2002	10:35:18 AM	25.248	22.507	24.415	22.988	22.751	19.485	21.627	16.676	3.203	-1.286	-2.954	47.803	0.335	0.001	0	29	20.2	11.2	11.3	0.782	0.049	0.050	0.004	4.369	3.72
	Averages	25.9	22.5	25.4	23.1	22.8	19.1	21.3	16.4	3.1	-1.3	-2.8	48.0	0.3	0.0	0.0		19.8	11.2	11.1	0.8	0.050	0.050	0.0045	4.5	3.8
	Maximum	26.3	22.5	26.5	23.4	22.9	19.5	21.8	16.8	3.4	-1.3	-2.6	48.3	0.4	0.0	0.0		20.3	11.3	11.3	0.8	0.052	0.050	0.0046	4.6	3.9
	Median	26.0	22.5	25.2	23.1	22.8	19.1	21.2	16.3	3.1	-1.3	-2.8	48.0	0.3	0.0	0.0		19.8	11.2	11.1	0.8	0.050	0.050	0.0045	4.5	3.8
	Minimum	25.2	22.5	24.4	23.0	22.8	18.8	21.0	16.1	2.8	-1.3	-3.0	47.7	0.3	0.0	0.0		19.5	11.1	10.8	0.7	0.049	0.049	0.0044	4.4	3.7
	2 x Std Dev	0.669	0.020	1.461	0.176	0.084	0.370	0.421	0.353	0.333	0.003	0.206	0.301	0.013	0.000	0.000		0.421	0.070	0.284	0.020	0.002	0.000	0.0001	0.119	0.101
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21

Figure B12: PreConditioning 7A – Baseline Slurry – After Preconditioning Filter with AN-107– Raw & Calculated Data

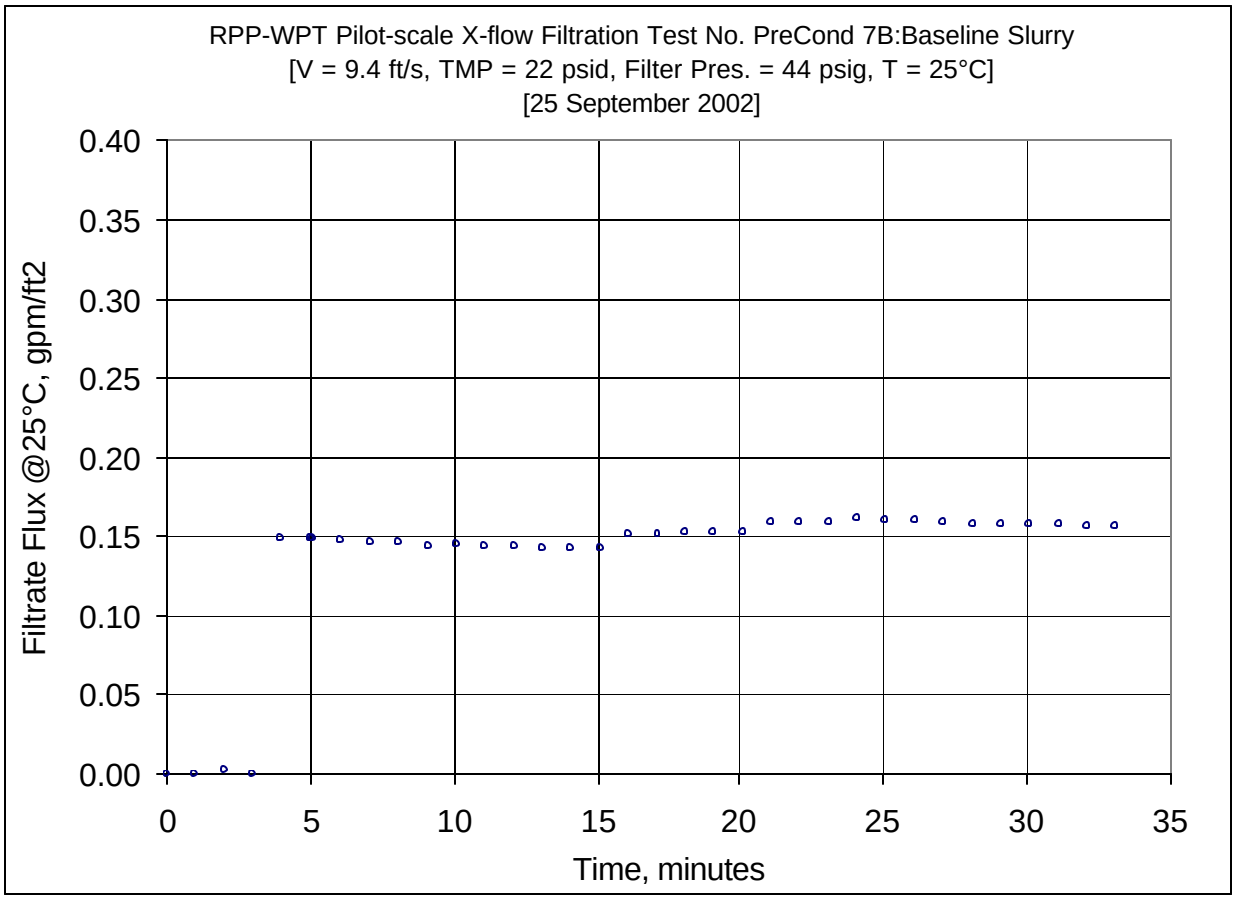


Figure B15: PreConditioning 7B – Baseline Slurry – After Preconditioning Filter with AN-107

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/25/2002	7:37:47 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001		Filter Surface	6.87	FT2						
9/25/2002	7:38:00 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/25/2002	7:38:01 AM	20.881	21.177	20.528	20.516	20.65	-0.119	-0.039	-0.049	0.064	-0.307	0.353	-0.216	0.002	0.001	0.001										
9/25/2002	7:38:02 AM	20.881	21.177	20.528	20.521	20.65	-0.121	-0.039	-0.049	0.064	-0.347	0.353	-0.212	0.001	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/25/2002	7:38:03 AM	20.882	21.178	20.534	20.521	20.666	-0.119	-0.039	-0.049	0.064	-0.37	0.356	-0.216	0.002	0.001	0.001										
9/25/2002	7:38:04 AM	20.881	21.177	20.533	20.526	20.65	-0.119	-0.041	-0.048	0.064	-0.327	0.356	-0.212	0.002	0.001	0.002		Pressure P1is corrected for 40.88 inches of water tubing								
9/25/2002	7:38:05 AM	20.882	21.183	20.544	20.531	20.666	-0.121	-0.039	-0.048	0.064	-0.33	0.356	-0.216	0.002	0.001	0.001		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/25/2002	7:38:06 AM	20.887	21.183	20.544	20.531	20.671	-0.121	-0.039	-0.048	0.064	-0.324	0.358	-0.212	0.001	0.001	0.001							at 25C		x 1000	
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/25/2002	10:43:09 AM	24.831	22.501	25.074	23.152	22.477	11.242	44.621	13.52	-2.222	28.233	83.61	43.843	0.002	0.001	0	0	43.1	10.2	4.5	0.311	0.000	0.000	0.000	0.064	0.05
9/25/2002	10:43:39 AM	24.795	22.495	25.063	23.152	22.482	-7.339	45.896	12.53	-18.509	43.154	76.608	43.612	0.002	0.001	0.416	1	44.4	10.2	-12.9	-0.891	0.000	0.000	0.000	-0.022	-0.02
9/25/2002	10:44:09 AM	24.8	22.495	25.148	23.157	22.492	19.526	44.574	13.833	5.911	19.782	19.362	44.323	0.017	0.001	0	2	43.1	10.3	12.7	0.877	0.002	0.002	0.000	0.194	0.16
9/25/2002	10:44:39 AM	25.342	22.521	25.255	23.198	22.528	34.379	44.144	14.161	20.587	4.376	0.79	44.982	0.002	0.001	0	3	42.7	10.5	27.5	1.895	0.000	0.000	0.000	0.011	0.01
9/25/2002	10:45:09 AM	25.437	22.526	25.265	23.274	22.533	26.102	44.022	14.114	12.202	12.758	11.677	45.148	1.025	0.001	0	4	42.5	10.5	19.2	1.320	0.149	0.148	0.008	7.730	6.58
9/25/2002	10:45:39 AM	25.563	22.517	25.24	23.289	22.549	25.742	43.542	13.92	12.218	12.689	11.605	45.02	1.025	0.001	0	5	42.1	10.5	19.0	1.309	0.149	0.148	0.008	7.805	6.64
9/25/2002	10:45:44 AM	25.569	22.528	25.241	23.295	22.555	25.966	43.602	14.219	11.964	12.694	11.619	45.16	1.027	0.001	0	5.08	42.1	10.5	19.0	1.308	0.149	0.148	0.008	7.827	6.66
9/25/2002	10:46:44 AM	25.68	22.524	25.382	23.346	22.596	26.601	44.404	14.348	12.322	12.527	11.492	45.213	1.021	0.001	0	6.08	42.9	10.6	19.5	1.342	0.149	0.147	0.008	7.552	6.43
9/25/2002	10:47:44 AM	25.773	22.542	25.4	23.405	22.629	26.568	44.121	14.052	12.689	12.434	11.353	44.911	1.016	0.001	0	7.08	42.6	10.5	19.6	1.353	0.148	0.146	0.007	7.448	6.34
9/25/2002	10:48:44 AM	25.832	22.551	25.455	23.464	22.694	26.614	44.034	13.99	12.847	12.261	11.228	45.162	1.012	0.001	0	8.08	42.6	10.5	19.7	1.360	0.147	0.145	0.007	7.369	6.27
9/25/2002	10:49:44 AM	25.902	22.566	25.514	23.519	22.754	27.014	44.148	14.108	13.019	11.992	10.936	44.873	1.003	0.001	0	9.08	42.7	10.5	20.0	1.380	0.146	0.144	0.007	7.187	6.12
9/25/2002	10:50:44 AM	25.94	22.564	25.457	23.597	22.782	26.645	43.693	13.67	13.223	11.908	10.892	44.554	1.003	0.001	0	10.1	42.2	10.4	19.9	1.374	0.146	0.144	0.007	7.228	6.15
9/25/2002	10:51:44 AM	25.979	22.578	25.612	23.612	22.836	27.15	44.384	13.842	13.434	11.871	10.863	44.665	1.001	0.001	0	11.1	42.9	10.4	20.3	1.399	0.146	0.143	0.007	7.056	6.00
9/25/2002	10:52:44 AM	26.029	22.578	25.552	23.737	22.897	26.728	43.635	13.437	13.575	11.755	10.774	44.613	0.997	0.001	0	12.1	42.2	10.4	20.2	1.389	0.145	0.143	0.007	7.088	6.03
9/25/2002	10:53:44 AM	26.044	22.608	25.507	23.883	22.942	27.482	44.381	13.745	13.78	11.634	10.617	44.615	0.991	0.001	0	13.1	42.9	10.4	20.6	1.422	0.144	0.142	0.007	6.891	5.86
9/25/2002	10:54:44 AM	26.014	22.623	25.391	23.947	22.982	27.55	43.943	13.764	13.997	11.417	10.432	44.462	0.987	0.001	0	14.1	42.5	10.4	20.8	1.432	0.144	0.142	0.007	6.838	5.82
9/25/2002	10:55:44 AM	25.984	22.653	25.296	24.043	23.037	27.844	44.375	13.741	14.222	11.267	10.313	44.583	0.983	0.001	0	15.1	42.9	10.4	21.0	1.450	0.143	0.142	0.007	6.744	5.74
9/25/2002	10:56:44 AM	25.913	22.667	25.16	24.117	23.091	26.968	45.331	11.354	15.809	13.29	12.175	40.894	1.043	0.001	0	16.1	43.9	9.5	21.4	1.475	0.152	0.151	0.007	7.064	6.01
9/25/2002	10:57:44 AM	25.835	22.685	25.022	24.184	23.094	27.422	46.032	11.452	16.009	13.27	12.132	40.557	1.041	0.001	0	17.1	44.6	9.5	21.7	1.497	0.151	0.151	0.007	6.971	5.93
9/25/2002	10:58:44 AM	25.732	22.697	24.854	24.226	23.11	27.264	45.747	11.153	16.308	13.212	12.1	40.483	1.042	0.001	0	18.1	44.3	9.5	21.8	1.502	0.152	0.152	0.007	6.988	5.95
9/25/2002	10:59:44 AM	25.627	22.697	24.719	24.161	23.11	27.529	45.722	11.22	16.48	12.995	11.891	40.34	1.036	0.001	0	19.1	44.2	9.4	22.0	1.517	0.151	0.152	0.007	6.905	5.88
9/25/2002	11:00:44 AM	25.511	22.711	24.588	24.181	23.105	27.444	45.786	10.935	16.56	12.917	11.865	40.951	1.034	0.001	0	20.1	44.3	9.6	22.0	1.517	0.150	0.152	0.007	6.918	5.89
9/25/2002	11:01:44 AM	25.41	22.72	24.471	24.199	23.073	27.144	46.577	9.426	18.003	14.449	13.177	37.127	1.075	0.001	0	21.1	45.1	8.7	22.6	1.556	0.156	0.159	0.007	7.034	5.99
9/25/2002	11:02:44 AM	25.313	22.729	24.355	24.218	23.062	26.927	46.585	9.286	17.723	14.336	13.122	37.211	1.071	0.001	0	22.1	45.1	8.7	22.3	1.539	0.156	0.159	0.007	7.109	6.05
9/25/2002	11:03:44 AM	25.197	22.733	24.209	24.142	23.097	27.616	46.814	9.47	18.476	14.18	12.957	37.111	1.069	0.001	0	23.1	45.3	8.7	23.0	1.589	0.156	0.159	0.007	6.902	5.87
9/25/2002	11:04:44 AM	25.076	22.742	24.107	24.116	23.1	27.943	47.7	9.137	18.974	14.492	13.261	36.42	1.076	0.001	0	24.1	46.2	8.5	23.5	1.617	0.157	0.161	0.007	6.845	5.83
9/25/2002	11:05:44 AM	25.01	22.756	24.342	23.975	23.12	27.424	47.265	8.963	18.533	14.481	13.252	36.179	1.075	0.001	0	25.1	45.8	8.4	23.0	1.584	0.156	0.159	0.007	6.935	5.90
9/25/2002	11:06:44 AM	24.995	22.746	24.351	23.934	23.134	27.148	46.746	8.715	18.683	14.504	13.296	35.936	1.076	0.001	0	26.1	45.3	8.4	22.9	1.580	0.157	0.159	0.007	6.959	5.92
9/25/2002	11:07:44 AM	25.039	22.755	24.576	23.908	23.108	27.62	47.224	9.042	18.763	14.29	13.096	36.14	1.073	0.001	0	27.1	45.8	8.4	23.2	1.599	0.156	0.158	0.007	6.813	5.80
9/25/2002	11:08:44 AM	25.119	22.76	24.566	23.929	23.078	28.041	47.54	9.055	19.084	14.261	13.018	36.223	1.071	0.001	0	28.1	46.1	8.5	23.6	1.625	0.156	0.158	0.007	6.696	5.70
9/25/2002	11:09:44 AM	25.149	22.775	24.666	23.888	23.088	27.167	46.547	8.826	18.427	14.244	13.058	36.269	1.071	0.001	0	29.1	45.1	8.5	22.8	1.572	0.156	0.157	0.007	6.901	5.87
9/25/2002	11:10:44 AM	25.219	22.759	24.706	23.858	23.083	27.939	47.425	8.949	19.162	14.223	12.977	36.364	1.07	0.001	0	30.1	46.0	8.5	23.6	1.624	0.156	0.157	0.007	6.866	5.67
9/25/2002	11:11:44 AM	25.268	22.768	24.68	23.871	23.081	27.829	47.286	8.827	19.139	14.131	12.908	36.177	1.069	0.001	0	31.1	45.8	8.4	23.5	1.619	0.156	0.157	0.007	6.684	5.69
9/25/2002	11:12:44 AM	25.322	22.773	24.824	23.806	23.066	27.734	47.046	8.562	19.363	14.174	12.974	35.968	1.07	0.001	0	32.1	45.6	8.4	23.5	1.624	0.156	0.156	0.007	6.645	5.65
9/25/2002	11:13:44 AM	25.376	22.781	24.798	23.865	23.07	27.699	46.881	8.824	19.082	14.122	12.876	36.081	1.069	0.001	0	33.1	45.4	8.4	23.4	1.613	0.156	0.156	0.007	6.688	5.69
	Averages	25.5	22.7	24.9	23.9	23.0	27.3	45.7	11.2	16.2	13.2	12.1	40.3	1.0	0.0	0.0		44.2	9.4	21.7	1.499	0.151	0.152	0.0070	7.0	6.0
	Maximum	26.0	22.8	25.6	24.2	23.1	28.0	47.7	14.3	19.4	14.5	13.3	45.2	1.1	0.0	0.0		46.2	10.6	23.6	1.625	0.157	0.161	0.0078	7.8	6.7
	Median	25.6	22.7	24.8	23.9	23.1	27.4	45.8	11.2	16.5	13.3	12.1	40.5	1.0	0.0	0.0		44.3	9.5	22.0	1.517	0.152	0.152	0.0069	6.9	5.9
	Minimum	25.0	22.5	24.1	23.3	22.6	26.0	43.6	8.6	12.0	11.3	10.3	35.9	1.0	0.0	0.0		42.1	8.4	19.0	1.308	0.143	0.142	0.0066	6.6	5.7
	2 x Std Dev	0.709	0.172	0.915	0.546	0.351	0.992	2.781	4.465	5.129	2.184	1.996	7.653	0.064	0.000	0.000		2.781	1.786	2.939	0.203	0.009	0.013	0.0005	0.547	0.466
Number of Points Used*		29	29	29	29	29	29	29	29	29	29	29	29	29	29	29		29	29	29	29	29	29	29	29	29

Figure B14: PreConditioning 7B – Baseline Slurry – After Preconditioning Filter with AN-107– Raw & Calculated Data

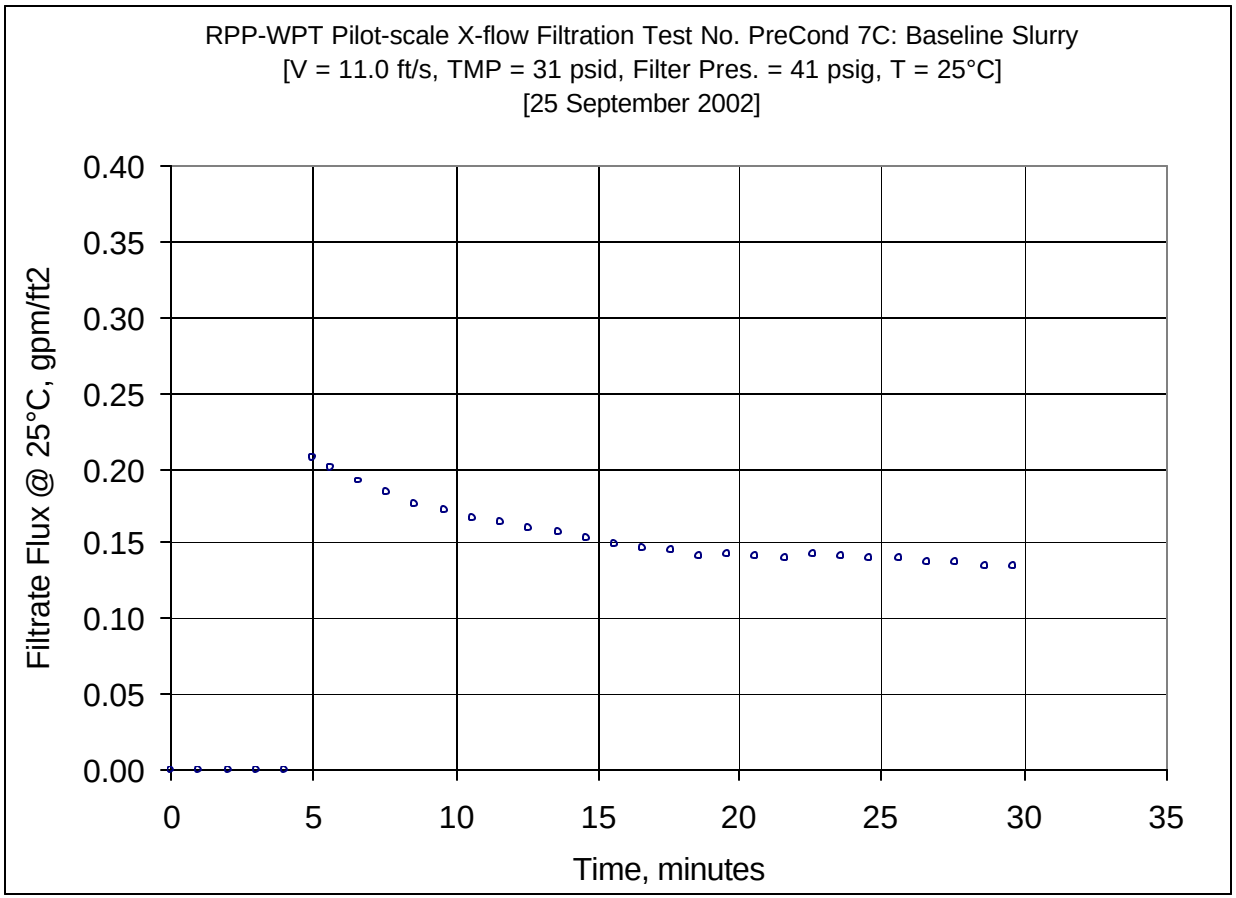


Figure B15: PreConditioning 7C – Baseline Slurry – After Preconditioning Filter with AN-107

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/25/2002	7:37:47 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001		Filter Surface	6.87	FT2						
9/25/2002	7:38:00 AM	20.881	21.183	20.533	20.516	20.65	-0.121	-0.039	-0.049	0.062	-0.356	0.356	-0.212	0.002	0.001	0.001		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/25/2002	7:38:01 AM	20.881	21.177	20.528	20.516	20.65	-0.119	-0.039	-0.049	0.064	-0.307	0.353	-0.216	0.002	0.001	0.001										
9/25/2002	7:38:02 AM	20.881	21.177	20.528	20.521	20.65	-0.121	-0.039	-0.049	0.064	-0.347	0.353	-0.212	0.001	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/25/2002	7:38:03 AM	20.882	21.178	20.534	20.521	20.666	-0.119	-0.039	-0.049	0.064	-0.37	0.356	-0.216	0.002	0.001	0.001										
9/25/2002	7:38:04 AM	20.881	21.177	20.533	20.526	20.65	-0.119	-0.041	-0.048	0.064	-0.327	0.356	-0.212	0.002	0.001	0.002		Pressure P1is corrected for 40.88 inches of water tubing								
9/25/2002	7:38:05 AM	20.882	21.183	20.544	20.531	20.666	-0.121	-0.039	-0.048	0.064	-0.33	0.356	-0.216	0.002	0.001	0.001		VVVV				< Filtrate Flux << PERMIABILITY >>				
9/25/2002	7:38:06 AM	20.887	21.183	20.544	20.531	20.671	-0.121	-0.039	-0.048	0.064	-0.324	0.358	-0.212	0.001	0.001	0.001						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/25/2002	12:12:56 PM	24.835	22.922	24.608	23.513	22.517	19.29	42.747	22.876	-3.469	18.51	82.857	47.23	0.002	0.001	0	0	41.3	11.0	7.9	0.545	0.000	0.000	0.000	0.019	0.02
9/25/2002	12:13:56 PM	24.539	22.942	24.707	23.593	22.566	20.019	42.867	22.471	-2.308	17.55	39.72	47.304	0.001	0.001	0	1	41.4	11.0	8.9	0.611	0.000	0.000	0.000	0.017	0.01
9/25/2002	12:14:56 PM	24.537	22.93	24.701	23.647	22.6	19.953	42.1	22.603	-2.462	17.212	40.154	46.847	0.002	0.001	0.001	2	40.6	10.9	8.7	0.603	0.000	0.000	0.000	0.017	0.01
9/25/2002	12:15:56 PM	24.528	22.951	24.792	23.738	22.656	20.141	42.396	22.705	-2.654	17.25	40.16	47.255	0.002	0.001	0.002	3	40.9	11.0	8.7	0.603	0.000	0.000	0.000	0.017	0.01
9/25/2002	12:16:56 PM	25.115	22.952	24.777	23.753	22.712	35.309	42.526	22.731	13.129	1.948	0.752	47.662	0.002	0.001	0	4	41.1	11.1	24.2	1.670	0.000	0.000	0.000	0.006	0.01
9/25/2002	12:17:56 PM	25.255	22.957	24.832	23.844	22.767	40.584	42.3	22.791	18.071	-1.284	-4.196	48.002	0.002	1.422	0	5	40.8	11.2	29.3	2.022	0.207	0.208	0.007	7.089	6.03
9/25/2002	12:18:31 PM	25.308	22.965	24.795	23.932	22.776	40.743	42.278	22.482	18.665	-1.281	-4.199	47.788	0.002	1.374	0	5.58	40.8	11.2	29.7	2.048	0.200	0.201	0.007	6.770	5.76
9/25/2002	12:19:31 PM	25.338	22.959	24.87	23.967	22.8	40.656	41.965	22.86	18.233	-1.289	-4.208	47.66	0.001	1.307	0	6.58	40.5	11.1	29.4	2.030	0.190	0.191	0.006	6.483	5.52
9/25/2002	12:20:31 PM	25.396	22.968	24.829	24.006	22.794	41.385	42.708	23.118	18.626	-1.286	-4.205	47.555	0.001	1.254	0	7.58	41.2	11.1	30.0	2.069	0.182	0.183	0.006	6.111	5.20
9/25/2002	12:21:31 PM	25.413	22.965	24.936	23.937	22.811	41.365	42.635	22.791	19.011	-1.284	-4.199	47.658	0.002	1.208	0	8.58	41.2	11.1	30.2	2.081	0.176	0.176	0.006	5.833	4.96
9/25/2002	12:22:31 PM	25.449	22.96	24.856	23.893	22.801	40.969	42.058	22.784	18.478	-1.281	-4.196	47.669	0.002	1.175	0	9.58	40.6	11.1	29.7	2.049	0.171	0.172	0.006	5.776	4.92
9/25/2002	12:23:31 PM	25.46	22.966	24.947	23.883	22.807	41.271	42.319	22.336	19.277	-1.284	-4.199	47.295	0.002	1.143	0	10.6	40.8	11.0	30.3	2.087	0.166	0.167	0.006	5.502	4.68
9/25/2002	12:24:31 PM	25.495	22.961	24.877	23.873	22.817	41.307	42.24	22.451	19.068	-1.284	-4.196	47.587	0.001	1.117	0	11.6	40.8	11.1	30.2	2.081	0.163	0.163	0.005	5.403	4.60
9/25/2002	12:25:31 PM	25.477	22.948	24.934	23.856	22.794	41.226	42.087	22.488	19.447	-1.284	-4.196	47.444	0.002	1.093	0.001	12.6	40.6	11.1	30.3	2.092	0.159	0.159	0.005	5.252	4.47
9/25/2002	12:26:31 PM	25.499	22.945	24.881	23.913	22.786	41.468	42.342	22.457	19.385	-1.284	-4.187	47.381	0.002	1.074	0.001	13.6	40.9	11.1	30.4	2.098	0.156	0.157	0.005	5.154	4.39
9/25/2002	12:27:31 PM	25.517	22.948	24.964	23.895	22.774	41.354	42.313	22.281	19.492	-1.286	-4.19	47.405	0.002	1.052	0.002	14.6	40.8	11.1	30.4	2.098	0.153	0.153	0.005	5.037	4.29
9/25/2002	12:28:31 PM	25.533	22.939	24.875	23.937	22.775	41.176	41.94	22.683	18.746	-1.286	-4.19	47.514	0.002	1.022	0	15.6	40.5	11.1	30.0	2.066	0.149	0.149	0.005	4.981	4.24
9/25/2002	12:29:31 PM	25.55	22.946	24.977	23.868	22.772	41.472	42.203	22.497	19.69	-1.284	-4.185	47.667	0.002	1.003	0.001	16.6	40.7	11.1	30.6	2.108	0.146	0.146	0.005	4.776	4.06
9/25/2002	12:30:31 PM	25.561	22.932	24.893	23.94	22.773	41.186	41.769	22.199	19.473	-1.284	-4.182	47.501	0.001	0.994	0	17.6	40.3	11.1	30.3	2.091	0.145	0.145	0.005	4.783	4.07
9/25/2002	12:31:31 PM	25.567	22.933	24.999	23.961	22.784	41.315	41.992	23.173	18.472	-1.281	-4.176	47.818	0.002	0.968	0	18.6	40.5	11.2	29.9	2.061	0.141	0.141	0.005	4.712	4.01
9/25/2002	12:32:31 PM	25.584	22.945	24.931	24.003	22.796	41.425	42.005	21.747	20.02	-1.284	-4.173	47.046	0.002	0.979	0	19.6	40.5	11.0	30.7	2.118	0.142	0.143	0.005	4.646	3.95
9/25/2002	12:33:31 PM	25.597	22.948	25.004	23.945	22.794	41.793	42.578	21.886	20.65	-1.286	-4.17	46.861	0.001	0.973	0.001	20.6	41.1	10.9	31.2	2.153	0.142	0.142	0.005	4.534	3.86
9/25/2002	12:34:31 PM	25.604	22.94	24.936	24.083	22.816	41.626	42.255	22.109	19.983	-1.284	-4.167	47.151	0.002	0.958	0	21.6	40.8	11.0	30.8	2.124	0.139	0.140	0.005	4.534	3.86
9/25/2002	12:35:31 PM	25.601	22.942	24.988	24.02	22.838	41.717	42.323	21.31	20.665	-1.284	-4.159	46.572	0.002	0.977	0	22.6	40.9	10.9	31.2	2.151	0.142	0.142	0.005	4.559	3.88
9/25/2002	12:36:31 PM	25.609	22.945	24.936	24.063	22.872	41.621	42.259	20.941	21.18	-1.284	-4.156	46.511	0.002	0.965	0	23.6	40.8	10.9	31.4	2.165	0.140	0.141	0.004	4.480	3.81
9/25/2002	12:37:31 PM	25.606	22.942	24.968	23.99	22.874	41.797	42.309	21.087	21.019	-1.284	-4.15	46.201	0.002	0.963	0	24.6	40.8	10.8	31.4	2.165	0.140	0.140	0.004	4.466	3.80
9/25/2002	12:38:31 PM	25.601	22.952	24.933	23.929	22.893	41.543	42.021	21.054	21.053	-1.284	-4.147	46.291	0.002	0.956	0	25.6	40.5	10.8	31.3	2.158	0.139	0.139	0.004	4.453	3.79
9/25/2002	12:39:31 PM	25.599	22.951	24.956	23.878	22.912	41.897	42.518	21.238	20.966	-1.284	-4.147	46.075	0.002	0.945	0.002	26.6	41.0	10.8	31.4	2.167	0.138	0.138	0.004	4.380	3.73
9/25/2002	12:40:31 PM	25.584	22.946	24.916	23.888	22.942	41.621	42.118	20.791	21.455	-1.284	-4.138	46.131	0.001	0.939	0.001	27.6	40.6	10.8	31.5	2.174	0.137	0.137	0.004	4.343	3.70
9/25/2002	12:41:31 PM	25.595	22.956	24.947	23.949	22.973	41.688	42.282	21.411	20.708	-1.286	-4.138	46.272	0.002	0.926	0.003	28.6	40.8	10.8	31.2	2.151	0.135	0.135	0.004	4.325	3.68
9/25/2002	12:42:31 PM	25.566	22.942	24.902	23.904	22.974	41.733	42.147	20.893	21.244	-1.289	-4.135	46.029	0.001	0.925	0	29.6	40.7	10.7	31.5	2.171	0.135	0.135	0.004	4.286	3.65
	Averages	25.5	22.9	24.9	23.9	22.8	41.4	42.2	22.0	19.8	-1.3	-4.2	47.1	0.0	1.1	0.0		40.8	11.0	30.6	2.110	0.153	0.153	0.0050	5.0	4.3
	Maximum	25.6	23.0	25.0	24.1	23.0	41.9	42.7	23.2	21.5	-1.3	-4.1	47.8	0.0	1.4	0.0		41.2	11.2	31.5	2.174	0.200	0.201	0.0068	6.8	5.8
	Median	25.6	22.9	24.9	23.9	22.8	41.4	42.3	22.3	19.5	-1.3	-4.2	47.4	0.0	1.0	0.0		40.8	11.1	30.4	2.098	0.145	0.145	0.0048	4.8	4.1
	Minimum	25.3	22.9	24.8	23.9	22.8	40.7	41.8	20.8	18.2	-1.3	-4.2	46.0	0.0	0.9	0.0		40.3	10.7	29.4	2.030	0.135	0.135	0.0043	4.3	3.6
	2 x Std Dev	0.172	0.020	0.103	0.118	0.124	0.615	0.444	1.465	2.008	0.004	0.046	1.222	0.001	0.248	0.002		0.444	0.285	1.272	0.088	0.036	0.037	0.0014	1.381	1.175
Number of Points Used*		25	25	25	25	25	25	25	25	25	25	25	25	25	25	25		25	25	25	25	25	25	25	25	25

Figure B14: PreConditioning 7C – Baseline Slurry – After Preconditioning Filter with AN-107– Raw & Calculated Data

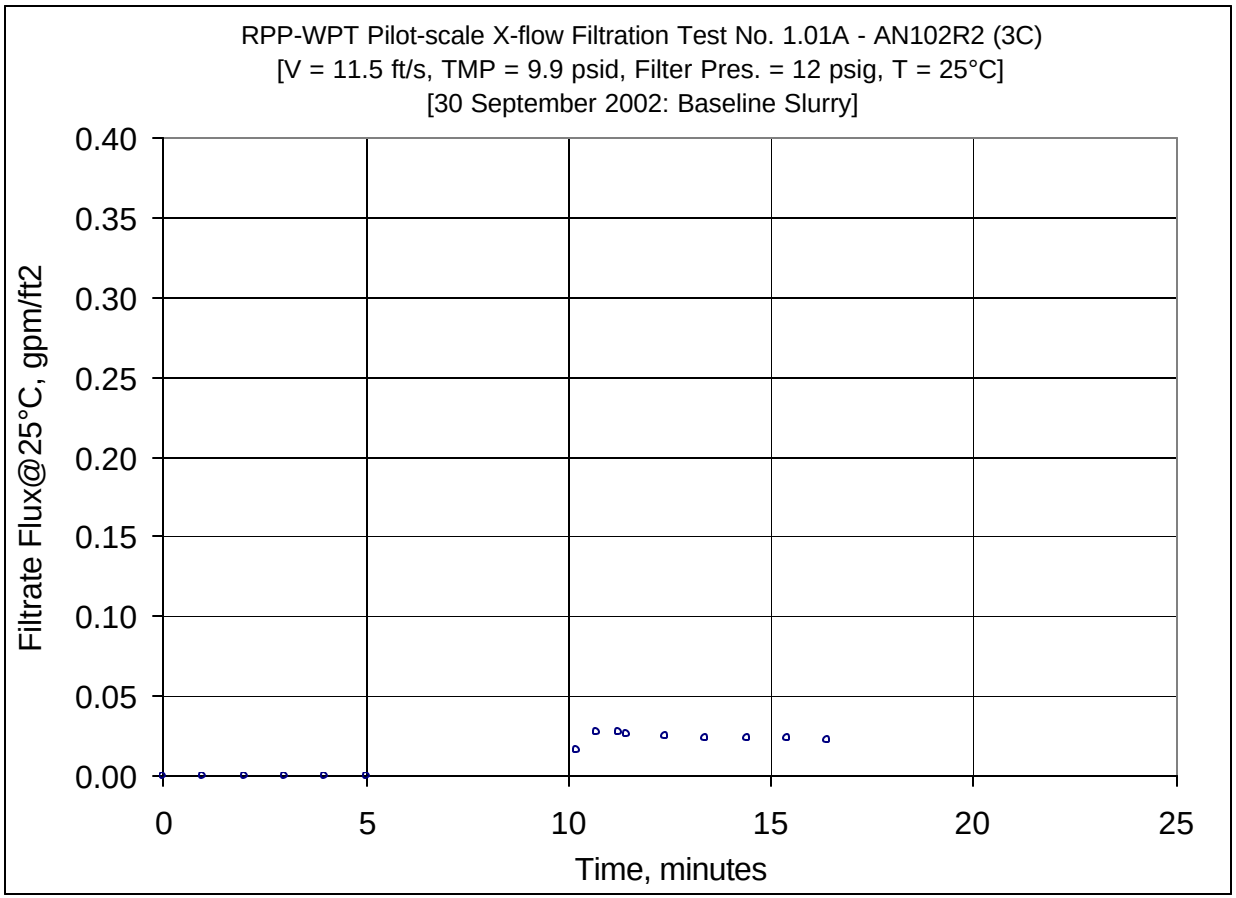


Figure B17: Run 1.01A – Baseline Slurry – Before Using Slurry AN-102R2 Batch 3C

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/30/2002	12:25:13 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0		Filter Surface	6.707	FT2						
9/30/2002	12:25:25 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/30/2002	12:25:26 PM	23.313	22.362	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.246	0.344	47.052	0.002	0.001	0										
9/30/2002	12:25:27 PM	23.303	22.362	22.226	23.129	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.214	0.002	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/30/2002	12:25:28 PM	23.308	22.357	22.231	23.119	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.153	0.002	0.001	0										
9/30/2002	12:25:29 PM	23.308	22.367	22.237	23.135	22.223	-0.119	0.011	-0.084	0.058	-0.266	0.341	47.233	0.002	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/30/2002	12:25:30 PM	23.308	22.357	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.249	0.341	47.207	0.002	0.001	0		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/30/2002	12:25:31 PM	23.308	22.357	22.231	23.119	22.223	-0.121	0.013	-0.084	0.058	-0.249	0.344	47.075	0.002	0.001	0							at 25C		x 1000	
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/30/2002	4:03:33 PM	23.149	23.087	23.243	25.007	22.737	2.996	13.216	4.575	-1.575	4.899	53.482	47.061	0.002	0.001	0	0	11.7	11.5	0.7	0.049	0.000	0.000	0.000	0.441	0.38
9/30/2002	4:04:33 PM	23.149	23.087	23.243	25.007	22.737	2.996	13.216	4.575	-1.575	4.899	53.482	47.061	0.002	0.001	0	1	11.7	11.5	0.7	0.049	0.000	0.000	0.000	0.441	0.38
9/30/2002	4:05:33 PM	23.227	23.08	23.958	24.904	22.75	7.7	12.953	4.575	3.381	-0.096	0.466	47.203	0.002	0.001	0	2	11.5	11.6	5.5	0.382	0.000	0.000	0.000	0.055	0.05
9/30/2002	4:06:33 PM	23.467	23.074	24.298	24.889	22.734	7.764	13.003	4.391	3.518	-0.064	0.495	47.14	0.002	0.001	0	3	11.5	11.6	5.6	0.389	0.000	0.000	0.000	0.027	0.02
9/30/2002	4:07:33 PM	23.812	23.073	24.367	25.013	22.738	7.837	13.294	4.727	3.147	-0.047	0.518	46.989	0.002	0.001	0	4	11.8	11.5	5.5	0.379	0.000	0.000	0.000	0.028	0.02
9/30/2002	4:08:33 PM	24.002	23.072	24.671	24.981	22.747	8.118	13.503	4.737	3.524	-0.041	0.55	47.042	0.002	0.001	0	5	12.0	11.5	5.8	0.401	0.000	0.000	0.000	0.052	0.04
9/30/2002	4:13:45 PM	24.808	23.076	25.291	24.92	22.831	9.551	13.17	4.652	4.853	-1.286	-1.249	47.1	0.112	0.001	0	10.20	11.7	11.5	7.2	0.497	0.017	0.017	0.002	2.300	1.96
9/30/2002	4:14:15 PM	24.813	23.061	25.076	24.93	22.846	12.669	13.245	4.581	8.23	-1.286	-4.399	47.233	0.186	0.001	0	10.70	11.8	11.6	10.4	0.720	0.028	0.028	0.003	2.648	2.25
9/30/2002	4:14:45 PM	24.858	23.086	25.031	24.921	22.862	12.594	12.88	4.542	8.351	-1.284	-4.523	47.205	0.181	0.001	0	11.20	11.4	11.6	10.5	0.722	0.027	0.027	0.003	2.575	2.19
9/30/2002	4:14:57 PM	24.863	23.086	25.051	24.901	22.862	12.921	13.211	4.706	8.329	-1.286	-4.552	47.037	0.176	0.001	0	11.40	11.7	11.5	10.6	0.733	0.026	0.026	0.002	2.466	2.10
9/30/2002	4:15:57 PM	24.868	23.086	24.826	24.961	22.872	12.658	13.181	4.697	8.148	-1.286	-4.39	47.079	0.168	0.001	0	12.40	11.7	11.5	10.4	0.717	0.025	0.025	0.002	2.420	2.06
9/30/2002	4:16:57 PM	24.864	23.097	24.887	24.901	22.888	12.414	13.032	4.539	8.247	-1.286	-4.164	46.995	0.162	0.001	0	13.40	11.6	11.5	10.3	0.712	0.024	0.024	0.002	2.345	2.00
9/30/2002	4:17:57 PM	24.864	23.103	24.667	24.927	22.933	12.113	13.199	4.512	7.667	-1.286	-3.97	47.117	0.158	0.001	0	14.40	11.7	11.5	9.9	0.682	0.024	0.024	0.002	2.404	2.05
9/30/2002	4:18:57 PM	24.846	23.114	24.708	24.873	22.96	12.101	13.278	4.433	7.772	-1.286	-3.791	47.123	0.155	0.001	0	15.40	11.8	11.5	9.9	0.685	0.023	0.023	0.002	2.345	2.00
9/30/2002	4:19:57 PM	24.842	23.125	24.594	24.879	22.996	11.933	13.108	4.586	7.45	-1.286	-3.672	47.209	0.152	0.001	0	16.40	11.6	11.6	9.7	0.668	0.023	0.023	0.002	2.365	2.01
	Averages	24.8	23.1	24.9	24.9	22.9	12.1	13.1	4.6	7.7	-1.3	-3.9	47.1	0.2	0.0	0.0		11.7	11.5	9.9	0.682	0.024	0.024	0.0024	2.4	2.1
	Maximum	24.9	23.1	25.3	25.0	23.0	12.9	13.3	4.7	8.4	-1.3	-1.2	47.2	0.2	0.0	0.0		11.8	11.6	10.6	0.733	0.028	0.028	0.0026	2.6	2.3
	Median	24.9	23.1	24.9	24.9	22.9	12.4	13.2	4.6	8.1	-1.3	-4.2	47.1	0.2	0.0	0.0		11.7	11.5	10.3	0.712	0.024	0.024	0.0024	2.4	2.0
	Minimum	24.8	23.1	24.6	24.9	22.8	9.6	12.9	4.4	4.9	-1.3	-4.6	47.0	0.1	0.0	0.0		11.4	11.5	7.2	0.497	0.017	0.017	0.0023	2.3	2.0
	2 x Std Dev	0.043	0.037	0.429	0.051	0.106	1.906	0.232	0.169	2.084	0.001	1.938	0.153	0.041	0.000	0.000		0.232	0.037	1.991	0.137	0.006	0.006	0.0002	0.217	0.185
Number of Points Used*		9	9	9	9	9	9	9	9	9	9	9	9	9	9	9		9	9	9	9	9	9	9	9	9
	* Backpulse points in box are not included																									

Figure B18: Run 1.01A – Baseline Slurry – Before Using Slurry AN-102R2 Batch 3C – Raw & Calculated Data

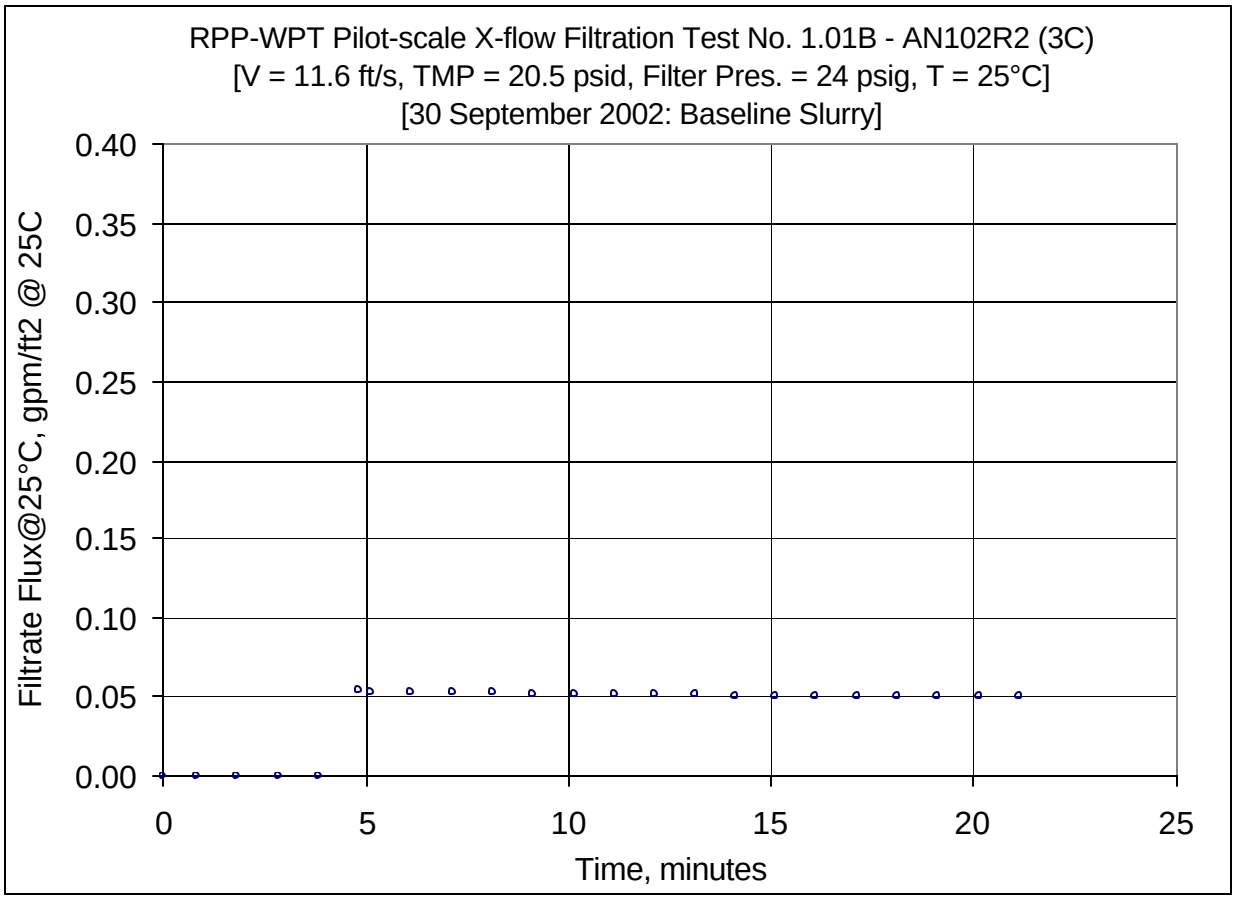


Figure B19: Run 1.01B – Baseline Slurry – Before Using Slurry AN-102R2 Batch 3C

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/30/2002	12:25:13 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0		Filter Surface	6.707	FT2						
9/30/2002	12:25:25 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/30/2002	12:25:26 PM	23.313	22.362	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.246	0.344	47.052	0.002	0.001	0										
9/30/2002	12:25:27 PM	23.303	22.362	22.226	23.129	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.214	0.002	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/30/2002	12:25:28 PM	23.308	22.357	22.231	23.119	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.153	0.002	0.001	0										
9/30/2002	12:25:29 PM	23.308	22.367	22.237	23.135	22.223	-0.119	0.011	-0.084	0.058	-0.266	0.341	47.233	0.002	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/30/2002	12:25:30 PM	23.308	22.357	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.249	0.341	47.207	0.002	0.001	0		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/30/2002	12:25:31 PM	23.308	22.357	22.231	23.119	22.223	-0.121	0.013	-0.084	0.058	-0.249	0.344	47.075	0.002	0.001	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/30/2002	4:29:39 PM	24.737	23.201	24.354	25.336	23.172	3.386	25.628	4.664	-1.287	16.992	65.892	47.027	0.002	0.001	0	0	24.2	11.5	1.0	0.072	0.000	0.000	0.000	0.289	0.25
9/30/2002	4:30:29 PM	24.743	23.222	24.15	25.342	23.184	3.294	25.525	4.708	-1.479	16.978	65.655	46.996	0.002	0.001	0	0.83	24.1	11.5	0.9	0.063	0.000	0.000	0.000	0.337	0.29
9/30/2002	4:31:29 PM	24.624	23.229	24.076	25.363	23.195	19.932	25.467	4.676	15.254	0.13	0.503	47.004	0.002	0.001	0	1.83	24.0	11.5	17.6	1.213	0.000	0.000	0.000	0.017	0.01
9/30/2002	4:32:29 PM	24.616	23.245	24.098	25.339	23.221	19.648	25.285	4.606	15.145	0.185	0.593	47.262	0.002	0.001	0	2.83	23.8	11.6	17.4	1.199	0.000	0.000	0.000	0.009	0.01
9/30/2002	4:33:29 PM	24.592	23.246	23.873	25.341	23.238	20.332	25.041	4.601	15.817	-0.581	-0.105	47.26	0.096	0.001	0	3.83	23.6	11.6	18.1	1.246	0.000	0.000	0.000	0.009	0.01
9/30/2002	4:34:29 PM	24.553	23.257	23.91	25.367	23.239	22.759	25.297	4.751	18.036	-1.284	-2.56	47.188	0.351	0.001	0	4.83	23.8	11.6	20.4	1.406	0.052	0.054	0.003	2.646	2.25
9/30/2002	4:34:46 PM	24.548	23.272	23.824	25.417	23.249	22.78	25.583	4.786	18.104	-1.281	-2.389	47.312	0.345	0.001	0	5.12	24.1	11.6	20.4	1.409	0.051	0.053	0.003	2.601	2.21
9/30/2002	4:35:46 PM	24.463	23.258	23.91	25.352	23.23	22.413	25.19	4.643	17.878	-1.286	-2.233	47.375	0.346	0.001	0	6.12	23.7	11.6	20.1	1.389	0.052	0.053	0.003	2.641	2.25
9/30/2002	4:36:46 PM	24.413	23.268	23.73	25.302	23.194	22.652	25.33	4.638	18.063	-1.284	-2.34	47.287	0.341	0.001	0	7.12	23.9	11.6	20.4	1.404	0.051	0.053	0.003	2.589	2.20
9/30/2002	4:37:46 PM	24.367	23.272	23.719	25.362	23.169	22.695	25.448	4.698	17.985	-1.284	-2.413	47.218	0.342	0.001	0	8.12	24.0	11.6	20.3	1.402	0.051	0.053	0.003	2.599	2.21
9/30/2002	4:38:46 PM	24.3	23.271	23.772	25.265	23.127	22.664	25.243	4.63	18.163	-1.284	-2.482	47.128	0.338	0.001	0	9.12	23.8	11.5	20.4	1.407	0.050	0.052	0.003	2.556	2.18
9/30/2002	4:39:46 PM	24.274	23.269	23.605	25.284	23.12	22.892	25.502	4.748	18.237	-1.284	-2.528	47.207	0.337	0.001	0	10.12	24.0	11.6	20.6	1.418	0.050	0.052	0.003	2.542	2.16
9/30/2002	4:40:46 PM	24.228	23.263	23.699	25.317	23.099	22.788	25.39	4.719	18.071	-1.284	-2.54	47.274	0.334	0.001	0	11.12	23.9	11.6	20.4	1.409	0.050	0.052	0.003	2.529	2.15
9/30/2002	4:41:46 PM	24.177	23.252	23.634	25.147	23.063	22.884	25.328	4.633	18.38	-1.286	-2.566	47.176	0.333	0.001	0	12.12	23.9	11.6	20.6	1.423	0.050	0.052	0.003	2.501	2.13
9/30/2002	4:42:46 PM	24.155	23.251	23.536	25.145	23.046	22.931	25.502	4.705	18.257	-1.284	-2.595	47.019	0.331	0.001	0	13.12	24.0	11.5	20.6	1.420	0.049	0.051	0.002	2.498	2.13
9/30/2002	4:43:46 PM	24.109	23.244	23.686	25.078	23.025	22.759	25.132	4.653	18.319	-1.286	-2.598	47.061	0.33	0.001	0	14.12	23.7	11.5	20.5	1.416	0.049	0.051	0.002	2.486	2.12
9/30/2002	4:44:46 PM	24.097	23.247	23.548	25.036	23.018	22.836	25.252	4.733	18.243	-1.286	-2.627	47.159	0.328	0.001	0	15.12	23.8	11.6	20.5	1.416	0.049	0.051	0.002	2.481	2.11
9/30/2002	4:45:46 PM	24.081	23.257	23.578	25.046	23.012	23.033	25.514	4.802	18.128	-1.284	-2.635	47.086	0.328	0.001	0	16.12	24.0	11.5	20.6	1.419	0.049	0.051	0.002	2.474	2.11
9/30/2002	4:46:46 PM	24.06	23.251	23.662	24.949	23.001	22.971	25.432	4.63	18.398	-1.286	-2.644	47.233	0.326	0.001	0	17.12	24.0	11.6	20.7	1.426	0.049	0.050	0.002	2.440	2.08
9/30/2002	4:47:46 PM	24.054	23.255	23.511	24.999	23.036	23.058	25.516	4.648	18.595	-1.284	-2.662	47.174	0.325	0.001	0	18.12	24.0	11.6	20.8	1.436	0.048	0.051	0.002	2.427	2.07
9/30/2002	4:48:46 PM	24.05	23.276	23.672	25.02	23.041	22.859	25.281	4.681	18.231	-1.284	-2.664	47.218	0.324	0.001	0	19.12	23.8	11.6	20.5	1.417	0.048	0.050	0.002	2.441	2.08
9/30/2002	4:49:46 PM	24.03	23.261	23.587	24.929	23.041	23.114	25.564	4.667	18.4	-1.284	-2.685	47.184	0.323	0.001	0	20.12	24.1	11.6	20.8	1.431	0.048	0.050	0.002	2.415	2.05
9/30/2002	4:50:46 PM	24.04	23.281	23.537	25.015	23.037	23.031	25.467	4.642	18.495	-1.281	-2.69	47.105	0.322	0.001	0	21.12	24.0	11.5	20.8	1.432	0.048	0.050	0.002	2.410	2.05
	Averages	24.2	23.3	23.7	25.2	23.1	22.8	25.4	4.7	18.2	-1.3	-2.5	47.2	0.3	0.0	0.0		23.9	11.6	20.5	1.416	0.050	0.051	0.0025	2.508	2.134
	Maximum	24.5	23.3	23.9	25.4	23.2	23.1	25.6	4.8	18.6	-1.3	-2.2	47.4	0.3	0.0	0.0		24.1	11.6	20.8	1.436	0.052	0.053	0.0026	2.641	2.247
	Median	24.2	23.3	23.7	25.1	23.0	22.9	25.4	4.7	18.2	-1.3	-2.6	47.2	0.3	0.0	0.0		24.0	11.6	20.5	1.417	0.049	0.051	0.0025	2.498	2.126
	Minimum	24.0	23.2	23.5	24.9	23.0	22.4	25.1	4.6	17.9	-1.3	-2.7	47.0	0.3	0.0	0.0		23.7	11.5	20.1	1.389	0.048	0.050	0.0024	2.410	2.051
	2 x Std Dev	0.319	0.021	0.213	0.312	0.154	0.346	0.266	0.108	0.363	0.003	0.259	0.181	0.015	0.000	0.000		0.266	0.044	0.336	0.023	0.002	0.002	0.0001	0.139	0.118
Number of Points Used*		17	17	17	17	17	17	17	17	17	17	17	17	17	17	17		17	17	17	17	17	17	17	17	17

Figure B20: Run 1.01B – Baseline Slurry – Before Using Slurry AN-102R2 Batch 3C – Raw & Calculated Data

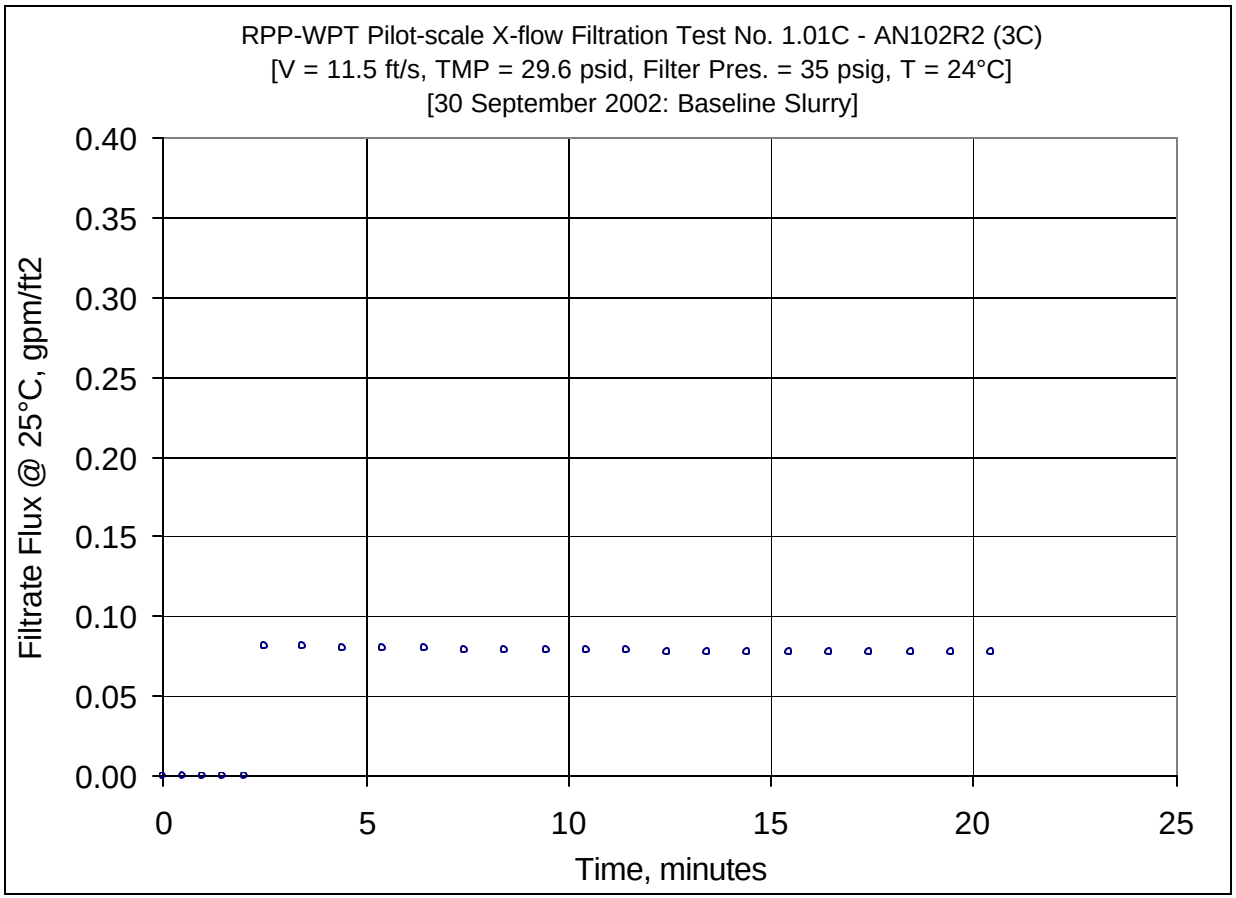


Figure B21: Run 1.01C – Baseline Slurry – Before Using Slurry AN-102R2 Batch 3C

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/30/2002	12:25:13 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0		Filter Surface	6.707	FT2						
9/30/2002	12:25:25 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/30/2002	12:25:26 PM	23.313	22.362	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.246	0.344	47.052	0.002	0.001	0										
9/30/2002	12:25:27 PM	23.303	22.362	22.226	23.129	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.214	0.002	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/30/2002	12:25:28 PM	23.308	22.357	22.231	23.119	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.153	0.002	0.001	0										
9/30/2002	12:25:29 PM	23.308	22.367	22.237	23.135	22.223	-0.119	0.011	-0.084	0.058	-0.266	0.341	47.233	0.002	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/30/2002	12:25:30 PM	23.308	22.357	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.249	0.341	47.207	0.002	0.001	0		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/30/2002	12:25:31 PM	23.308	22.357	22.231	23.119	22.223	-0.121	0.013	-0.084	0.058	-0.249	0.344	47.075	0.002	0.001	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/30/2002	4:54:26 PM	24.062	23.283	24.171	25.092	23.049	3.253	36.698	4.6	-1.051	28.569	76.634	46.7	0.002	0.001	0	0	35.2	11.4	1.1	0.076	0.000	0.000	0.000	0.277	0.24
9/30/2002	4:54:56 PM	24.063	23.289	23.996	25.163	23.049	-7.48	37.476	4.585	-18.569	57.545	64.638	45.25	0.002	0.001	1.337	0.50	36.0	11.1	-13.0	-0.898	0.000	0.000	0.000	-0.024	-0.02
9/30/2002	4:55:26 PM	24.198	23.294	23.971	25.193	23.059	30.951	36.768	4.732	26.313	0.526	0.515	47.067	0.002	0.001	0	1.00	35.3	11.5	28.6	1.974	0.000	0.000	0.000	0.011	0.01
9/30/2002	4:55:56 PM	24.289	23.305	24.047	25.159	23.065	30.911	36.717	4.699	26.308	0.529	0.593	46.97	0.003	0.001	0	1.50	35.2	11.5	28.6	1.973	0.000	0.000	0.000	0.005	0.00
9/30/2002	4:56:26 PM	24.304	23.3	23.881	25.184	23.065	30.727	36.599	4.576	26.208	0.604	0.662	47.046	0.002	0.001	0	2.00	35.1	11.5	28.5	1.963	0.000	0.000	0.000	0.005	0.00
9/30/2002	4:56:56 PM	24.294	23.305	23.791	25.239	23.075	31.57	36.868	4.66	26.939	-0.093	-0.047	46.922	0.525	0.001	0	2.50	35.4	11.5	29.3	2.017	0.078	0.081	0.003	2.769	2.36
9/30/2002	4:57:52 PM	24.279	23.315	23.841	25.229	23.075	31.496	37.093	4.679	26.788	0.02	0.101	47.006	0.527	0.001	0	3.43	35.6	11.5	29.1	2.009	0.079	0.081	0.003	2.786	2.37
9/30/2002	4:58:52 PM	24.23	23.32	23.777	25.244	23.101	31.632	36.775	4.549	27.299	-0.177	-0.116	46.924	0.522	0.001	0	4.43	35.3	11.5	29.5	2.032	0.078	0.081	0.003	2.734	2.33
9/30/2002	4:59:52 PM	24.225	23.331	23.637	25.31	23.112	31.475	36.589	4.548	26.976	-0.249	-0.189	46.939	0.518	0.001	0	5.43	35.1	11.5	29.2	2.015	0.077	0.080	0.003	2.746	2.34
9/30/2002	5:00:52 PM	24.191	23.342	23.758	25.266	23.113	31.477	36.477	4.539	27.091	-0.252	-0.197	46.809	0.516	0.001	0	6.43	35.0	11.5	29.3	2.019	0.077	0.080	0.003	2.721	2.32
9/30/2002	5:01:52 PM	24.173	23.359	23.639	25.317	23.139	31.906	36.975	4.605	27.42	-0.312	-0.247	46.901	0.512	0.001	0	7.43	35.5	11.5	29.7	2.045	0.076	0.079	0.003	2.674	2.28
9/30/2002	5:02:52 PM	24.169	23.38	23.651	25.339	23.15	31.655	36.543	4.536	27.283	-0.37	-0.255	46.899	0.511	0.001	0	8.43	35.1	11.5	29.5	2.032	0.076	0.079	0.003	2.686	2.29
9/30/2002	5:03:52 PM	24.134	23.38	23.741	25.319	23.151	31.879	36.94	4.614	27.389	-0.388	-0.279	46.723	0.508	0.001	0	9.43	35.5	11.5	29.6	2.043	0.076	0.078	0.003	2.648	2.25
9/30/2002	5:04:52 PM	24.116	23.397	23.563	25.371	23.183	31.611	36.533	4.557	27.129	-0.428	-0.316	46.696	0.506	0.001	0	10.43	35.1	11.4	29.4	2.025	0.075	0.079	0.003	2.675	2.28
9/30/2002	5:05:52 PM	24.092	23.393	23.634	25.307	23.189	31.669	36.826	4.527	27.138	-0.422	-0.313	46.746	0.505	0.001	0	11.43	35.4	11.5	29.4	2.027	0.075	0.078	0.003	2.661	2.26
9/30/2002	5:06:52 PM	24.053	23.394	23.62	25.328	23.2	31.98	36.963	4.571	27.475	-0.489	-0.342	46.87	0.503	0.001	0	12.43	35.5	11.5	29.7	2.050	0.075	0.078	0.003	2.623	2.23
9/30/2002	5:07:52 PM	24.064	23.416	23.501	25.419	23.226	31.978	36.843	4.578	27.57	-0.486	-0.357	46.687	0.502	0.001	0	13.43	35.4	11.4	29.8	2.053	0.075	0.078	0.003	2.623	2.23
9/30/2002	5:08:52 PM	24.04	23.417	23.627	25.366	23.263	32.017	37.008	4.682	27.381	-0.492	-0.365	46.754	0.501	0.001	0	14.43	35.5	11.5	29.7	2.048	0.075	0.078	0.003	2.615	2.23
9/30/2002	5:09:52 PM	24.011	23.423	23.523	25.386	23.278	32.136	37.11	4.601	27.619	-0.518	-0.386	46.775	0.499	0.001	0	15.43	35.6	11.5	29.9	2.060	0.074	0.078	0.003	2.596	2.21
9/30/2002	5:10:52 PM	24.012	23.439	23.504	25.438	23.3	31.854	36.659	4.606	27.301	-0.544	-0.409	46.565	0.499	0.001	0	16.43	35.2	11.4	29.6	2.039	0.074	0.078	0.003	2.624	2.23
9/30/2002	5:11:52 PM	23.994	23.451	23.636	25.434	23.347	31.843	36.659	4.555	27.33	-0.547	-0.397	46.681	0.498	0.001	0	17.43	35.2	11.4	29.6	2.040	0.074	0.077	0.003	2.608	2.22
9/30/2002	5:12:52 PM	23.995	23.467	23.462	25.511	23.378	31.93	36.915	4.515	27.545	-0.587	-0.426	46.528	0.497	0.001	0	18.43	35.4	11.4	29.7	2.050	0.074	0.077	0.003	2.603	2.21
9/30/2002	5:13:52 PM	23.987	23.474	23.534	25.498	23.4	32.113	36.911	4.528	27.774	-0.552	-0.423	46.461	0.497	0.001	0	19.43	35.4	11.4	29.9	2.064	0.074	0.077	0.003	2.579	2.20
9/30/2002	5:14:52 PM	23.968	23.49	23.595	25.569	23.371	32.169	36.922	4.518	27.811	-0.555	-0.432	46.593	0.496	0.001	0	20.43	35.4	11.4	30.0	2.068	0.074	0.077	0.003	2.566	2.18
	Averages	24.1	23.4	23.6	25.4	23.2	31.8	36.8	4.6	27.4	-0.4	-0.3	46.8	0.5	0.0	0.0		35.3	11.5	29.6	2.040	0.076	0.079	0.0027	2.654	2.258
	Maximum	24.3	23.5	23.8	25.6	23.4	32.2	37.1	4.7	27.8	0.0	0.1	47.0	0.5	0.0	0.0		35.6	11.5	30.0	2.068	0.079	0.081	0.0028	2.786	2.371
	Median	24.1	23.4	23.6	25.4	23.2	31.9	36.9	4.6	27.4	-0.5	-0.3	46.8	0.5	0.0	0.0		35.4	11.5	29.6	2.042	0.075	0.078	0.0026	2.636	2.243
	Minimum	24.0	23.3	23.5	25.2	23.1	31.5	36.5	4.5	26.8	-0.6	-0.4	46.5	0.5	0.0	0.0		35.0	11.4	29.1	2.009	0.074	0.077	0.0026	2.566	2.184
	2 x Std Dev	0.188	0.103	0.201	0.182	0.203	0.445	0.384	0.097	0.517	0.313	0.262	0.298	0.018	0.000	0.000		0.384	0.073	0.472	0.033	0.003	0.002	0.0001	0.120	0.102
Number of Points Used*		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18		18	18	18	18	18	18	18	18	18

Figure B22: Run 1.01C – Baseline Slurry – Before Using Slurry AN-102R2 Batch 3C – Raw & Calculated Data

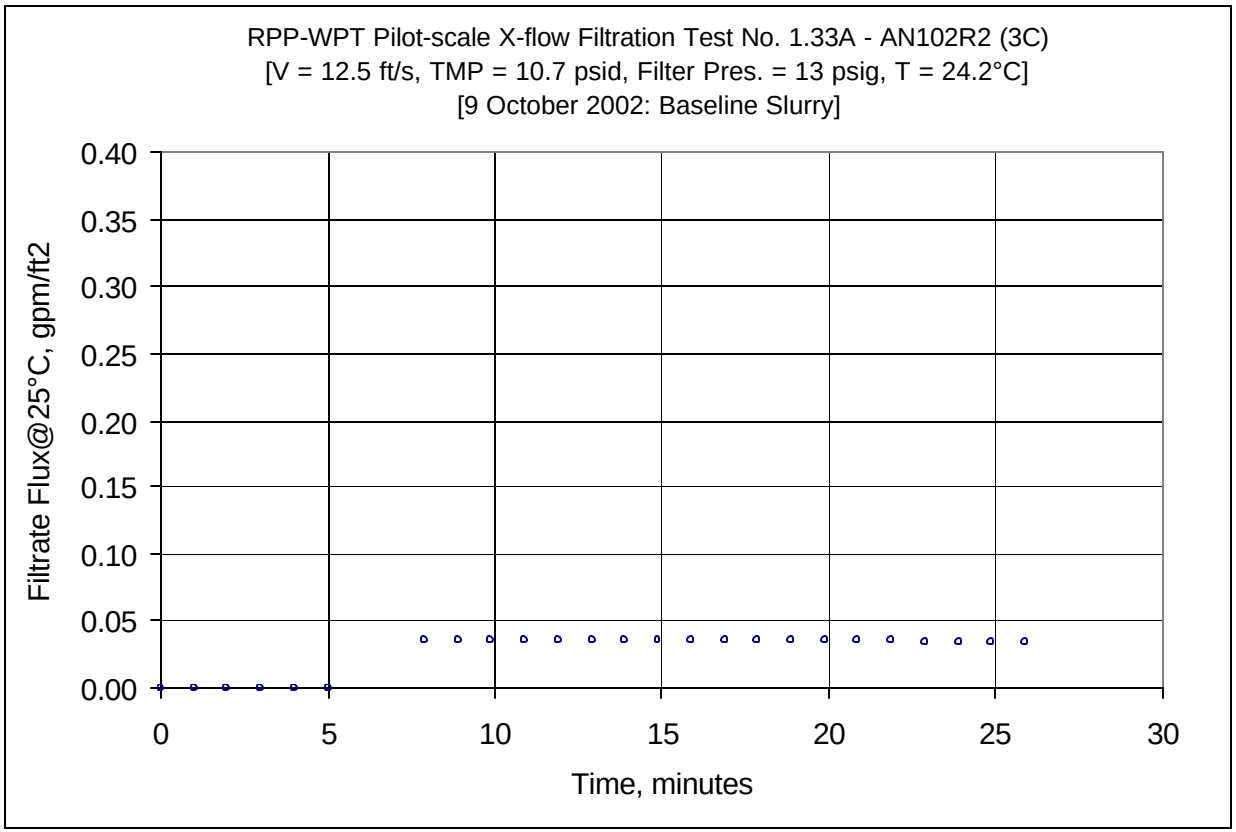


Figure B23: Run 1.33A – Baseline Slurry – After AN-102R2 Batch 3C and Before Batch 3B

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																			Filter Surface	6.707	FT2						
10/9/2002	1:32:33 PM	25.779	24.406	24.632	24.339	24.167	-0.125	0.104	-0.061	0.056	-0.249	0.321	47.518	0.771	0.001	0			Conversion		851	m3/m2/day/barg / gpm/ft2/barg					
10/9/2002	1:32:50 PM	25.779	24.406	24.632	24.339	24.167	-0.125	0.104	-0.061	0.056	-0.249	0.321	47.518	0.771	0.001	0											
10/9/2002	1:32:51 PM	25.693	24.395	24.555	24.378	24.166	-0.125	0.102	-0.061	0.054	-0.249	0.321	47.461	0.765	0.001	0											
10/9/2002	1:32:52 PM	25.698	24.395	24.565	24.383	24.156	-0.125	0.1	-0.061	0.054	-0.249	0.321	47.583	0.762	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
10/9/2002	1:32:53 PM	25.708	24.39	24.56	24.383	24.156	-0.125	0.102	-0.061	0.054	-0.252	0.318	47.547	0.764	0.001	0											
10/9/2002	1:32:54 PM	25.688	24.39	24.56	24.373	24.156	-0.125	0.1	-0.061	0.052	-0.249	0.318	47.574	0.772	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
10/9/2002	1:32:55 PM	25.692	24.389	24.559	24.377	24.15	-0.125	0.102	-0.061	0.054	-0.252	0.321	47.503	0.769	0.001	0			VVVV				< Filtrate Flux <<		PERMIABILITY >>		
10/9/2002	1:32:56 PM	25.698	24.4	24.575	24.398	24.156	-0.125	0.1	-0.061	0.056	-0.249	0.324	47.532	0.77	0.001	0							at 25C		x 1000		
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
10/9/2002	10:13:41 AM	24.462	22.588	23.819	23.361	23.565	3.667	14.324	5.341	-1.625	5.428	54.458	51.09	0.002	0.001	0	0	0	12.9	12.5	1.0	0.070	0.000	0.000	0.0003	0.302	0.26
10/9/2002	10:14:41 AM	24.412	22.644	24.075	23.341	23.63	8.831	14.219	5.528	3.452	-0.041	0.526	51.207	0.002	0.001	0	1.00	0.01667	12.7	12.5	6.1	0.423	0.000	0.000	0.0000	0.050	0.04
10/9/2002	10:15:41 AM	24.376	22.652	23.913	23.304	23.639	8.636	14.076	5.478	3.325	-0.047	0.558	51.148	0.002	0.001	0	2.00	0.03333	12.6	12.5	6.0	0.412	0.000	0.000	0.0000	0.026	0.02
10/9/2002	10:16:41 AM	24.347	22.674	24.08	23.306	23.681	8.688	14.002	5.589	3.311	0.02	0.57	51.461	0.002	0.001	0	3.00	0.05	12.5	12.6	6.0	0.414	0.000	0.000	0.0000	0.026	0.02
10/9/2002	10:17:41 AM	24.325	22.682	24.013	23.284	23.679	8.853	14.391	5.257	3.802	0.069	0.605	51.253	0.002	0.001	0	4.00	0.06667	12.9	12.6	6.3	0.436	0.000	0.000	0.0000	0.024	0.02
10/9/2002	10:18:41 AM	24.317	22.699	24.08	23.296	23.696	8.98	14.473	5.26	3.933	0.101	0.639	50.903	0.002	0.001	0	5.00	0.08333	13.0	12.5	6.5	0.445	0.000	0.000	0.0000	0.024	0.02
10/9/2002	10:21:34 AM	24.348	22.745	24.231	23.342	23.747	13.512	14.455	5.219	8.496	-1.289	-3.988	50.888	0.235	0.001	0	7.88	0.13139	13.0	12.5	11.0	0.759	0.035	0.036	0.0033	3.254	2.77
10/9/2002	10:22:34 AM	24.376	22.774	24.064	23.385	23.765	13.286	14.444	5.384	8.083	-1.292	-3.895	51.178	0.232	0.001	-0.001	8.88	0.14806	13.0	12.5	10.7	0.737	0.035	0.036	0.0033	3.324	2.83
10/9/2002	10:23:34 AM	24.378	22.811	24.272	23.387	23.802	13.093	13.89	5.359	8.101	-1.284	-3.912	51.048	0.233	0.001	0	9.88	0.16472	12.4	12.5	10.6	0.731	0.035	0.035	0.0033	3.346	2.85
10/9/2002	10:24:34 AM	24.406	22.819	24.084	23.385	23.795	13.439	14.554	5.23	8.329	-1.286	-3.912	50.915	0.233	0.001	0	10.88	0.18139	13.1	12.5	10.9	0.750	0.035	0.036	0.0033	3.275	2.79
10/9/2002	10:25:34 AM	24.368	22.816	24.196	23.362	23.817	13.248	14.238	5.341	8.169	-1.289	-3.909	50.712	0.233	0.001	0	11.88	0.19806	12.8	12.4	10.7	0.738	0.035	0.036	0.0033	3.318	2.82
10/9/2002	10:26:34 AM	24.41	22.838	24.103	23.389	23.804	13.342	14.385	5.568	7.929	-1.284	-3.933	50.718	0.232	0.001	0	12.88	0.21472	12.9	12.4	10.6	0.733	0.035	0.035	0.0033	3.336	2.84
10/9/2002	10:27:34 AM	24.388	22.841	24.181	23.397	23.822	13.209	14.254	5.244	8.263	-1.286	-3.936	50.903	0.232	0.001	0	13.88	0.23139	12.8	12.5	10.7	0.740	0.035	0.035	0.0033	3.297	2.81
10/9/2002	10:28:34 AM	24.435	22.853	24.148	23.384	23.819	13.151	14.281	5.275	8.021	-1.292	-3.941	50.754	0.232	0.001	0	14.88	0.24806	12.8	12.4	10.6	0.730	0.035	0.035	0.0033	3.347	2.85
10/9/2002	10:29:34 AM	24.412	22.865	24.175	23.406	23.836	13.124	14.134	5.073	8.308	-1.286	-3.962	50.712	0.231	0.001	0	15.88	0.26472	12.7	12.4	10.7	0.739	0.034	0.035	0.0033	3.290	2.80
10/9/2002	10:30:34 AM	24.439	22.872	24.247	23.368	23.843	13.425	14.517	5.249	8.372	-1.286	-3.953	50.957	0.233	0.001	0	16.88	0.28139	13.0	12.5	10.9	0.751	0.035	0.035	0.0033	3.256	2.77
10/9/2002	10:31:34 AM	24.436	22.884	24.154	23.38	23.875	13.487	14.535	5.356	8.353	-1.284	-3.97	50.832	0.23	0.001	0	17.88	0.29806	13.1	12.5	10.9	0.753	0.034	0.035	0.0032	3.216	2.74
10/9/2002	10:32:34 AM	24.453	22.891	24.311	23.352	23.877	13.329	14.118	5.227	8.369	-1.289	-3.97	50.926	0.231	0.001	0	18.88	0.31472	12.6	12.5	10.8	0.748	0.034	0.035	0.0032	3.237	2.75
10/9/2002	10:33:34 AM	24.465	22.898	24.143	23.439	23.884	13.217	14.287	5.645	7.762	-1.286	-3.976	50.867	0.23	0.001	0	19.88	0.33139	12.8	12.5	10.5	0.723	0.034	0.035	0.0033	3.349	2.85
10/9/2002	10:34:34 AM	24.457	22.915	24.321	23.421	23.886	13.045	13.956	5.426	7.866	-1.284	-3.97	50.756	0.23	0.001	0	20.88	0.34806	12.5	12.4	10.5	0.721	0.034	0.035	0.0033	3.343	2.85
10/9/2002	10:35:34 AM	24.474	22.916	24.131	23.427	23.882	13.553	14.529	5.33	8.349	-1.284	-3.976	50.75	0.23	0.001	0	21.88	0.36472	13.1	12.4	11.0	0.755	0.034	0.035	0.0032	3.209	2.73
10/9/2002	10:36:34 AM	24.471	22.939	24.31	23.44	23.9	13.155	14.18	5.461	7.94	-1.284	-3.996	51.115	0.229	0.001	0	22.88	0.38139	12.7	12.5	10.5	0.727	0.034	0.035	0.0033	3.301	2.81
10/9/2002	10:37:34 AM	24.503	22.936	24.146	23.507	23.887	13.574	14.529	5.22	8.607	-1.281	-4.002	51.108	0.227	0.001	0	23.88	0.39806	13.1	12.5	11.1	0.765	0.034	0.035	0.0031	3.126	2.66
10/9/2002	10:38:34 AM	24.465	22.943	24.273	23.519	23.909	13.132	14.093	5.412	8.005	-1.284	-3.991	50.991	0.228	0.001	0	24.88	0.41472	12.6	12.5	10.6	0.729	0.034	0.035	0.0033	3.283	2.79
10/9/2002	10:39:34 AM	24.507	22.945	24.165	23.531	23.926	13.06	13.963	5.382	7.815	-1.289	-4.017	51.052	0.227	0.001	0	25.88	0.43139	12.5	12.5	10.4	0.720	0.034	0.035	0.0033	3.320	2.83
	Averages	24.4	22.9	24.2	23.4	23.8	13.3	14.3	5.3	8.2	-1.3	-4.0	50.9	0.2	0.0	0.0		0.3	12.8	12.5	10.7	0.739	0.034	0.035	0.0033	3.286	2.796
	Maximum	24.5	22.9	24.3	23.5	23.9	13.6	14.6	5.6	8.6	-1.3	-3.9	51.2	0.2	0.0	0.0		0.4	13.1	12.5	11.1	0.765	0.035	0.036	0.0033	3.349	2.850
	Median	24.4	22.9	24.2	23.4	23.8	13.2	14.3	5.3	8.2	-1.3	-4.0	50.9	0.2	0.0	0.0		0.3	12.8	12.5	10.7	0.738	0.034	0.035	0.0033	3.297	2.806
	Minimum	24.3	22.7	24.1	23.3	23.7	13.0	13.9	5.1	7.8	-1.3	-4.0	50.7	0.2	0.0	0.0		0.1	12.4	12.4	10.4	0.720	0.034	0.035	0.0031	3.126	2.660
	2 x Std Dev	0.089	0.114	0.153	0.107	0.098	0.336	0.421	0.261	0.471	0.006	0.068	0.289	0.004	0.000	0.000		0.183	0.421	0.071	0.379	0.026	0.001	0.001	0.0001	0.114	0.097
Number of Points Used*		19	19	19	19	19	19	19	19	19	19	19	19	19	19	19		19	19	19	19	19	19	19	19	19	19

Figure B24: Run 1.33A – Baseline Slurry – After AN-102R2 Batch 3C and Before Batch 3B – Raw & Calculated Data

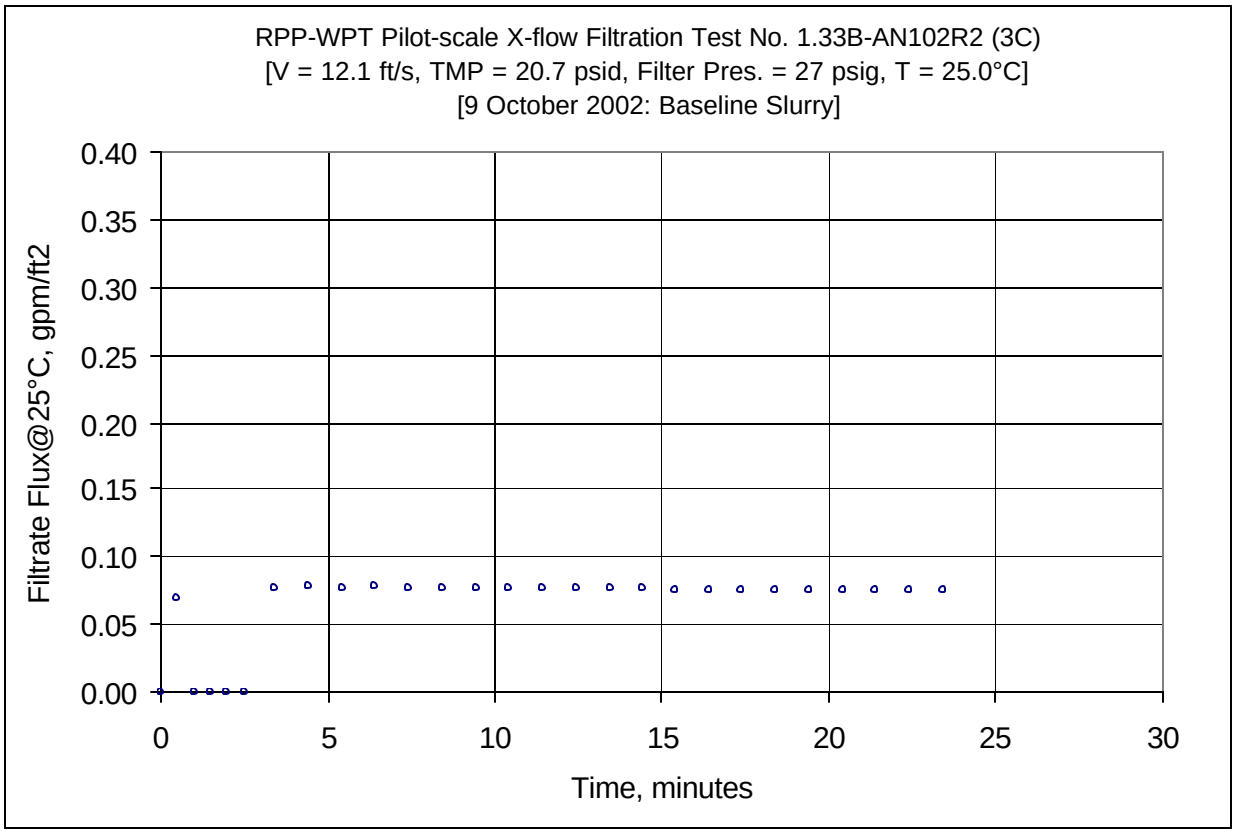


Figure B25: Run 1.33B – Baseline Slurry – After AN-102R2 Batch 3C and Before Batch 3B

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
10/9/2002	1:32:33 PM	25.779	24.406	24.632	24.339	24.167	-0.125	0.104	-0.061	0.056	-0.249	0.321	47.518	0.771	0.001	0			Filter Surface	6.707	FT2						
10/9/2002	1:32:50 PM	25.779	24.406	24.632	24.339	24.167	-0.125	0.104	-0.061	0.056	-0.249	0.321	47.518	0.771	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
10/9/2002	1:32:51 PM	25.693	24.395	24.555	24.378	24.166	-0.125	0.102	-0.061	0.054	-0.249	0.321	47.461	0.765	0.001	0											
10/9/2002	1:32:52 PM	25.698	24.395	24.565	24.383	24.156	-0.125	0.1	-0.061	0.054	-0.249	0.321	47.583	0.762	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
10/9/2002	1:32:53 PM	25.708	24.39	24.56	24.383	24.156	-0.125	0.102	-0.061	0.054	-0.252	0.318	47.547	0.764	0.001	0											
10/9/2002	1:32:54 PM	25.688	24.39	24.56	24.373	24.156	-0.125	0.1	-0.061	0.052	-0.249	0.318	47.574	0.772	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
10/9/2002	1:32:55 PM	25.692	24.389	24.559	24.377	24.15	-0.125	0.102	-0.061	0.054	-0.252	0.321	47.503	0.769	0.001	0			VVVV				< Filtrate Flux <<		PERMIABILITY >>		
10/9/2002	1:32:56 PM	25.698	24.4	24.575	24.398	24.156	-0.125	0.1	-0.061	0.056	-0.249	0.324	47.532	0.77	0.001	0								at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	/ft2	ft2/psi	ft2/psi	day/bar
10/9/2002	11:11:41 AM	25.154	23.402	24.957	24.104	24.237	3.41	28.03	5.264	-1.903	19.38	68.255	50.443	0.002	0.001	0	0	0	26.6	12.4	0.8	0.052	0.000	0.000	0.0004	0.396	0.34
10/9/2002	11:12:11 AM	25.059	23.423	25.068	24.079	24.238	3.794	28.02	5.257	-1.354	19.068	41.613	50.263	0.47	0.001	0	0.50	0.00833	26.5	12.3	1.2	0.084	0.070	0.070	0.0573	57.327	48.79
10/9/2002	11:12:41 AM	25.201	23.42	24.889	24.071	24.255	16.026	28.007	5.247	10.859	6.682	0.61	50.704	0.002	0.001	0	1.00	0.01667	26.5	12.4	13.4	0.927	0.000	0.000	0.0000	0.011	0.01
10/9/2002	11:13:11 AM	25.252	23.431	24.986	24.102	24.266	22.045	28.096	5.212	17.066	0.592	0.671	50.89	0.002	0.001	0	1.50	0.025	26.6	12.5	19.6	1.348	0.000	0.000	0.0000	0.008	0.01
10/9/2002	11:13:41 AM	25.278	23.432	25.107	24.073	24.262	22.138	28.105	5.278	17.053	0.523	0.654	50.628	0.002	0.001	0	2.00	0.03333	26.6	12.4	19.6	1.351	0.000	0.000	0.0000	0.008	0.01
10/9/2002	11:14:11 AM	25.284	23.433	24.902	24.073	24.267	22.19	27.833	5.205	17.256	0.271	0.356	50.899	0.533	0.001	0	2.50	0.04167	26.4	12.5	19.7	1.360	0.000	0.000	0.0000	0.008	0.01
10/9/2002	11:15:06 AM	25.3	23.448	25.053	24.104	24.283	22.596	28.096	5.042	17.733	-0.044	0.107	49.657	0.52	0.001	0	3.42	0.05694	26.6	12.2	20.2	1.390	0.078	0.077	0.0038	3.839	3.27
10/9/2002	11:16:06 AM	25.316	23.455	24.864	24.091	24.295	22.768	28.227	5.012	17.969	-0.009	0.112	49.695	0.522	0.001	0	4.42	0.07361	26.8	12.2	20.4	1.404	0.078	0.078	0.0038	3.836	3.26
10/9/2002	11:17:06 AM	25.338	23.482	25.087	24.138	24.317	22.89	28.297	5.099	18.024	-0.049	0.098	49.716	0.521	0.001	0	5.42	0.09028	26.8	12.2	20.5	1.410	0.078	0.077	0.0038	3.788	3.22
10/9/2002	11:18:06 AM	25.345	23.499	24.953	24.2	24.339	23.047	28.504	5.019	18.194	-0.047	0.069	49.653	0.52	0.001	0	6.42	0.10694	27.0	12.2	20.6	1.422	0.078	0.078	0.0038	3.765	3.20
10/9/2002	11:19:06 AM	25.372	23.531	24.955	24.167	24.34	22.768	28.071	5.001	17.975	-0.09	0.023	49.615	0.518	0.001	0	7.42	0.12361	26.6	12.2	20.4	1.405	0.077	0.077	0.0038	3.796	3.23
10/9/2002	11:20:06 AM	25.343	23.547	25.061	24.223	24.347	23.064	28.415	5.039	18.235	-0.096	0.005	49.611	0.516	0.001	0	8.42	0.14028	26.9	12.2	20.6	1.424	0.077	0.077	0.0037	3.719	3.17
10/9/2002	11:21:06 AM	25.375	23.564	24.913	24.255	24.369	23.19	28.562	5.037	18.355	-0.136	-0.015	49.428	0.514	0.001	0	9.42	0.15694	27.1	12.1	20.8	1.432	0.077	0.077	0.0037	3.698	3.15
10/9/2002	11:22:06 AM	25.367	23.586	25.1	24.257	24.391	22.968	28.326	5.066	18.071	-0.099	0.017	49.382	0.516	0.001	0	10.42	0.17361	26.9	12.1	20.5	1.415	0.077	0.077	0.0037	3.739	3.18
10/9/2002	11:23:06 AM	25.353	23.582	24.941	24.253	24.397	23.124	28.4	5.024	18.296	-0.162	-0.061	49.517	0.511	0.001	0	11.42	0.19028	26.9	12.1	20.7	1.428	0.076	0.076	0.0037	3.685	3.14
10/9/2002	11:24:06 AM	25.374	23.598	24.957	24.244	24.398	22.915	28.208	5.013	18.142	-0.159	-0.056	49.516	0.513	0.001	0	12.42	0.20694	26.7	12.1	20.5	1.415	0.076	0.077	0.0037	3.730	3.17
10/9/2002	11:25:06 AM	25.371	23.62	25.069	24.286	24.42	23.186	28.504	4.939	18.527	-0.153	-0.053	49.214	0.513	0.001	0	13.42	0.22361	27.0	12.1	20.9	1.438	0.076	0.076	0.0037	3.660	3.11
10/9/2002	11:26:06 AM	25.402	23.651	24.935	24.287	24.431	23.318	28.667	4.973	18.56	-0.156	-0.061	48.975	0.511	0.001	0	14.42	0.24028	27.2	12.0	20.9	1.444	0.076	0.076	0.0036	3.645	3.10
10/9/2002	11:27:06 AM	25.373	23.638	25.091	24.218	24.437	23.356	28.58	4.97	18.605	-0.171	-0.087	49.238	0.511	0.001	0	15.42	0.25694	27.1	12.1	21.0	1.447	0.076	0.076	0.0036	3.622	3.08
10/9/2002	11:28:06 AM	25.384	23.663	24.967	24.274	24.448	23.149	28.278	4.964	18.513	-0.179	-0.119	49.407	0.508	0.001	0	16.42	0.27361	26.8	12.1	20.8	1.436	0.076	0.076	0.0036	3.639	3.10
10/9/2002	11:29:06 AM	25.406	23.686	24.989	24.286	24.475	23.13	28.336	4.937	18.402	-0.179	-0.128	49.313	0.509	0.001	0	17.42	0.29028	26.9	12.1	20.8	1.432	0.076	0.076	0.0037	3.656	3.11
10/9/2002	11:30:06 AM	25.397	23.717	25.101	24.373	24.491	23.101	28.404	4.978	18.314	-0.246	-0.14	49.433	0.508	0.001	0	18.42	0.30694	26.9	12.1	20.7	1.428	0.076	0.076	0.0036	3.647	3.10
10/9/2002	11:31:06 AM	25.409	23.714	24.912	24.374	24.503	23.304	28.512	4.919	18.624	-0.315	-0.212	49.107	0.503	0.001	0	19.42	0.32361	27.0	12.0	21.0	1.445	0.075	0.075	0.0036	3.586	3.05
10/9/2002	11:32:06 AM	25.396	23.731	25.099	24.316	24.5	23.194	28.328	4.792	18.675	-0.231	-0.137	48.77	0.508	0.001	0	20.42	0.34028	26.9	12.0	20.9	1.443	0.076	0.076	0.0036	3.608	3.07
10/9/2002	11:33:06 AM	25.393	23.748	24.966	24.343	24.522	23.113	28.256	4.846	18.466	-0.255	-0.183	48.703	0.506	0.001	-0.001	21.42	0.35694	26.8	11.9	20.8	1.433	0.075	0.076	0.0036	3.632	3.09
10/9/2002	11:34:06 AM	25.41	23.754	24.973	24.32	24.509	23.132	28.293	4.822	18.589	-0.249	-0.18	48.736	0.507	0.001	0	22.42	0.37361	26.8	11.9	20.9	1.438	0.076	0.076	0.0036	3.626	3.09
10/9/2002	11:35:06 AM	25.387	23.772	25.06	24.422	24.526	23.352	28.562	4.883	18.644	-0.266	-0.189	48.524	0.506	0.001	0	23.42	0.39028	27.1	11.9	21.0	1.448	0.075	0.075	0.0036	3.587	3.05
	Averages	25.4	23.6	25.0	24.3	24.4	23.1	28.4	5.0	18.3	-0.2	-0.1	49.3	0.5	0.0	0.0		0.2	26.9	12.1	20.7	1.427	0.076	0.076	0.0037	3.691	3.141
	Maximum	25.4	23.8	25.1	24.4	24.5	23.4	28.7	5.1	18.7	0.0	0.1	49.7	0.5	0.0	0.0		0.4	27.2	12.2	21.0	1.448	0.078	0.078	0.0038	3.839	3.267
	Median	25.4	23.6	25.0	24.3	24.4	23.1	28.3	5.0	18.4	-0.2	-0.1	49.4	0.5	0.0	0.0		0.2	26.9	12.1	20.8	1.432	0.076	0.076	0.0037	3.660	3.115
	Minimum	25.3	23.4	24.9	24.1	24.3	22.6	28.1	4.8	17.7	-0.3	-0.2	48.5	0.5	0.0	0.0		0.1	26.6	11.9	20.2	1.390	0.075	0.075	0.0036	3.586	3.052
	2 x Std Dev	0.059	0.198	0.146	0.170	0.151	0.393	0.313	0.158	0.523	0.163	0.199	0.708	0.011	0.000	0.000		0.202	0.313	0.174	0.451	0.031	0.002	0.002	0.0002	0.153	0.130
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21	21

Figure B26: Run 1.33B – Baseline Slurry – After AN-102R2 Batch 3C and Before Batch 3B – Raw & Calculated Data

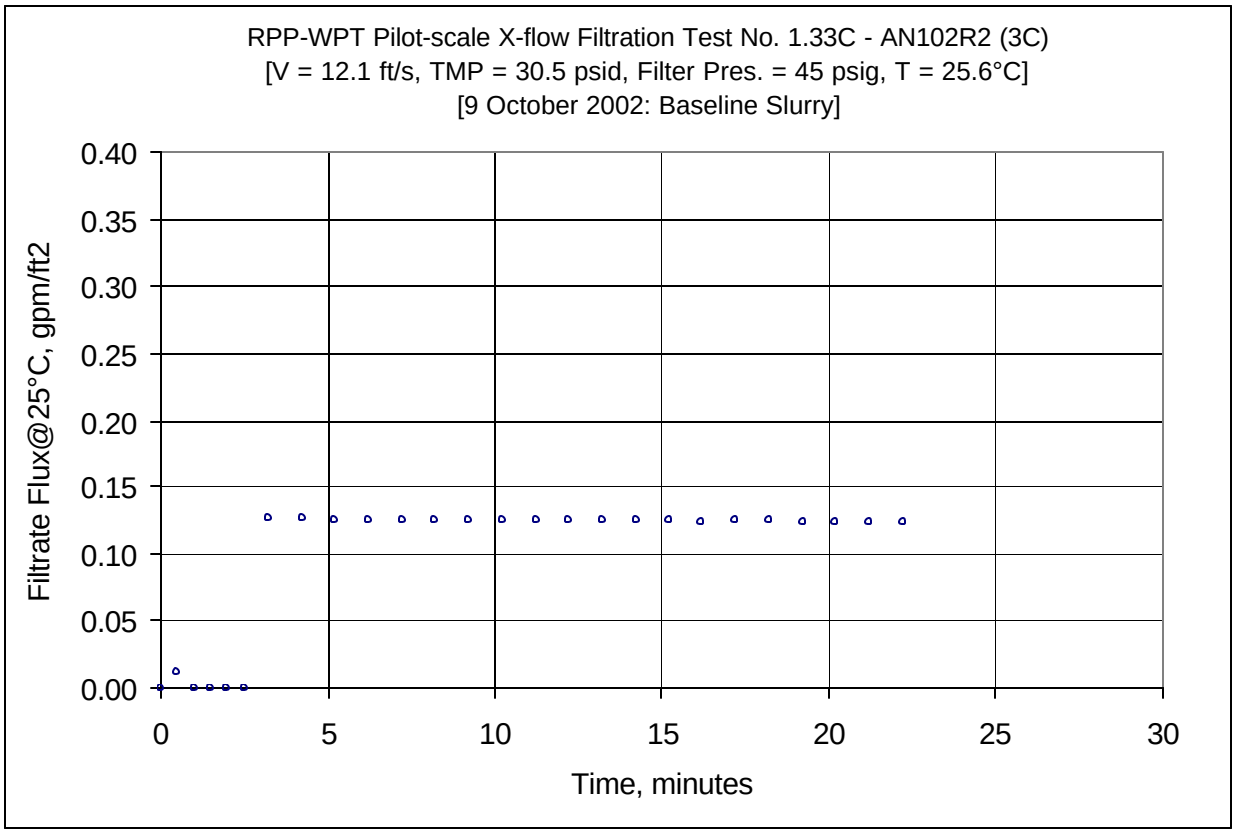


Figure B27: Run 1.33C – Baseline Slurry – After AN-102R2 Batch 3C and Before Batch 3B

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
10/9/2002	1:32:33 PM	25.779	24.406	24.632	24.339	24.167	-0.125	0.104	-0.061	0.056	-0.249	0.321	47.518	0.771	0.001	0			Filter Surface	6.707	FT2					
10/9/2002	1:32:50 PM	25.779	24.406	24.632	24.339	24.167	-0.125	0.104	-0.061	0.056	-0.249	0.321	47.518	0.771	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
10/9/2002	1:32:51 PM	25.693	24.395	24.555	24.378	24.166	-0.125	0.102	-0.061	0.054	-0.249	0.321	47.461	0.765	0.001	0										
10/9/2002	1:32:52 PM	25.698	24.395	24.565	24.383	24.156	-0.125	0.1	-0.061	0.054	-0.249	0.321	47.583	0.762	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig							
10/9/2002	1:32:53 PM	25.708	24.39	24.56	24.383	24.156	-0.125	0.102	-0.061	0.054	-0.252	0.318	47.547	0.764	0.001	0										
10/9/2002	1:32:54 PM	25.688	24.39	24.56	24.373	24.156	-0.125	0.1	-0.061	0.052	-0.249	0.318	47.574	0.772	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing							
10/9/2002	1:32:55 PM	25.692	24.389	24.559	24.377	24.15	-0.125	0.102	-0.061	0.054	-0.252	0.321	47.503	0.769	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY >>	
10/9/2002	1:32:56 PM	25.698	24.4	24.575	24.398	24.156	-0.125	0.1	-0.061	0.056	-0.249	0.324	47.532	0.77	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	/ft2	ft2/psi	ft2/psi	day/bar
10/9/2002	11:43:02 AM	26.022	23.871	25.725	24.803	24.636	3.166	46.446	4.975	-1.758	38.275	87.061	49.439	0.001	0.001	0	0	0	45.0	12.1	0.7	0.049	0.000	0.000	0.0002	0.208	0.18
10/9/2002	11:43:32 AM	25.862	23.892	25.891	24.843	24.631	3.742	46.752	4.899	-1.101	37.968	54.996	49.409	0.077	0.001	0	0.50	0.00833	45.3	12.1	1.3	0.091	0.011	0.011	0.0085	8.479	7.22
10/9/2002	11:44:02 AM	25.858	23.893	25.731	24.844	24.647	9.823	46.841	4.97	4.92	32.251	19.385	49.256	0.013	0.001	0	1.00	0.01667	45.4	12.1	7.4	0.508	0.000	0.000	0.0000	0.020	0.02
10/9/2002	11:44:32 AM	26.258	23.918	25.716	24.884	24.657	30.622	46.628	4.968	25.707	10.931	4.383	49.969	0.002	0.001	0	1.50	0.025	45.2	12.2	28.2	1.942	0.000	0.000	0.0000	0.005	0.00
10/9/2002	11:45:02 AM	26.295	23.919	25.838	24.866	24.669	37.852	46.014	4.978	33.117	2.91	1.656	49.969	0.002	0.001	0	2.00	0.03333	44.5	12.2	35.5	2.447	0.000	0.000	0.0000	0.004	0.00
10/9/2002	11:45:32 AM	26.316	23.926	25.689	24.912	24.69	32.21	46.233	4.994	27.285	8.833	8.173	49.814	0.863	0.001	0	2.50	0.04167	44.8	12.2	29.7	2.051	0.000	0.000	0.0000	0.005	0.00
10/9/2002	11:46:15 AM	26.287	23.947	25.686	24.974	24.707	32.343	46.368	5.037	27.369	8.711	8.081	49.716	0.861	0.001	0	3.22	0.05361	44.9	12.2	29.9	2.058	0.128	0.126	0.0042	4.218	3.59
10/9/2002	11:47:15 AM	26.289	23.964	25.587	24.98	24.723	32.541	46.641	4.976	27.608	8.659	8.046	49.523	0.86	0.001	0	4.22	0.07028	45.2	12.1	30.1	2.074	0.128	0.126	0.0042	4.194	3.57
10/9/2002	11:48:15 AM	26.23	23.96	25.698	24.951	24.729	32.456	46.289	4.916	27.643	8.639	8.005	49.493	0.859	0.001	0	5.22	0.08694	44.8	12.1	30.0	2.072	0.128	0.126	0.0042	4.179	3.56
10/9/2002	11:49:15 AM	26.221	23.981	25.539	25.053	24.74	32.517	46.479	4.913	27.77	8.535	7.907	49.382	0.855	0.001	0	6.22	0.10361	45.0	12.1	30.1	2.078	0.127	0.126	0.0042	4.165	3.54
10/9/2002	11:50:15 AM	26.228	24.009	25.572	25.075	24.767	32.896	46.761	4.911	28.083	8.524	7.916	49.477	0.855	0.001	0	7.22	0.12028	45.3	12.1	30.5	2.102	0.127	0.125	0.0041	4.114	3.50
10/9/2002	11:51:15 AM	26.19	24.02	25.683	25.116	24.789	32.881	46.632	4.873	28.118	8.466	7.843	49.495	0.853	0.001	0	8.22	0.13694	45.2	12.1	30.5	2.103	0.127	0.125	0.0041	4.091	3.48
10/9/2002	11:52:15 AM	26.197	24.047	25.5	25.138	24.806	32.659	46.266	4.89	27.93	8.472	7.835	49.275	0.851	0.001	0	9.22	0.15361	44.8	12.1	30.3	2.089	0.127	0.125	0.0041	4.130	3.51
10/9/2002	11:53:15 AM	26.193	24.054	25.582	25.07	24.828	33.213	47.054	4.911	28.376	8.472	7.855	49.139	0.853	0.001	0	10.22	0.17028	45.6	12.0	30.8	2.123	0.127	0.125	0.0041	4.063	3.46
10/9/2002	11:54:15 AM	26.191	24.091	25.689	25.102	24.85	33.01	46.771	4.905	28.194	8.373	7.791	49.309	0.851	0.001	0	11.22	0.18694	45.3	12.1	30.6	2.110	0.127	0.124	0.0041	4.067	3.46
10/9/2002	11:55:15 AM	26.182	24.098	25.47	25.114	24.851	32.875	46.498	4.911	28.014	8.301	7.713	49.242	0.849	0.001	0	12.22	0.20361	45.0	12.1	30.4	2.099	0.127	0.125	0.0041	4.103	3.49
10/9/2002	11:56:15 AM	26.174	24.099	25.602	25.13	24.868	33.032	46.672	4.86	28.276	8.37	7.762	49.194	0.851	0.001	0	13.22	0.22028	45.2	12.1	30.7	2.113	0.127	0.125	0.0041	4.070	3.46
10/9/2002	11:57:15 AM	26.166	24.131	25.609	25.162	24.895	32.877	46.531	4.792	28.294	8.266	7.69	49.166	0.848	0.001	0	14.22	0.23694	45.1	12.0	30.6	2.109	0.126	0.124	0.0041	4.064	3.46
10/9/2002	11:58:15 AM	26.187	24.143	25.471	25.174	24.902	32.979	46.508	4.88	28.198	8.246	7.675	49.238	0.848	0.001	0	15.22	0.25361	45.0	12.1	30.6	2.109	0.126	0.125	0.0041	4.079	3.47
10/9/2002	11:59:15 AM	26.169	24.159	25.647	25.175	24.918	32.974	46.603	4.87	28.206	8.289	7.699	49.254	0.847	0.001	0	16.22	0.27028	45.1	12.1	30.6	2.109	0.126	0.124	0.0041	4.054	3.45
10/9/2002	12:00:15 PM	26.155	24.171	25.554	25.187	24.93	33.097	46.566	4.815	28.39	8.183	7.589	48.864	0.846	0.001	0	17.22	0.28694	45.1	12.0	30.7	2.120	0.126	0.124	0.0040	4.039	3.44
10/9/2002	12:01:15 PM	26.183	24.199	25.497	25.22	24.968	33.14	46.659	4.84	28.472	8.194	7.606	49.194	0.845	0.001	0	18.22	0.30361	45.2	12.1	30.8	2.124	0.126	0.124	0.0040	4.033	3.43
10/9/2002	12:02:15 PM	26.165	24.221	25.684	25.262	24.99	32.918	46.456	4.783	28.212	8.226	7.649	49.292	0.845	0.001	0	19.22	0.32028	45.0	12.1	30.6	2.107	0.126	0.124	0.0040	4.043	3.44
10/9/2002	12:03:15 PM	26.161	24.227	25.509	25.208	25.001	33.148	46.486	4.839	28.513	8.139	7.574	49.284	0.844	0.001	0	20.22	0.33694	45.0	12.1	30.8	2.126	0.126	0.124	0.0040	4.023	3.42
10/9/2002	12:04:15 PM	26.178	24.244	25.546	25.209	25.017	33.076	46.547	4.891	28.2	8.18	7.6	49.252	0.845	0.001	0	21.22	0.35361	45.1	12.1	30.6	2.112	0.126	0.124	0.0040	4.049	3.45
10/9/2002	12:05:15 PM	26.16	24.271	25.683	25.247	25.039	33.113	46.49	4.851	28.456	8.162	7.568	49.202	0.843	0.001	0	22.22	0.37028	45.0	12.1	30.8	2.122	0.126	0.123	0.0040	4.005	3.41
	Averages	26.2	24.1	25.6	25.1	24.9	32.9	46.6	4.9	28.1	8.4	7.8	49.3	0.9	0.0	0.0		0.2	45.1	12.1	30.5	2.103	0.127	0.125	0.0041	4.089	3.480
	Maximum	26.3	24.3	25.7	25.3	25.0	33.2	47.1	5.0	28.5	8.7	8.1	49.7	0.9	0.0	0.0		0.4	45.6	12.2	30.8	2.126	0.128	0.126	0.0042	4.218	3.589
	Median	26.2	24.1	25.6	25.1	24.9	32.9	46.5	4.9	28.2	8.3	7.7	49.3	0.9	0.0	0.0		0.2	45.1	12.1	30.6	2.109	0.127	0.125	0.0041	4.068	3.462
	Minimum	26.2	23.9	25.5	25.0	24.7	32.3	46.3	4.8	27.4	8.1	7.6	48.9	0.8	0.0	0.0		0.1	44.8	12.0	29.9	2.058	0.126	0.123	0.0040	4.005	3.408
	2 x Std Dev	0.075	0.199	0.154	0.175	0.204	0.493	0.345	0.115	0.607	0.349	0.314	0.351	0.011	0.000	0.000		0.192	0.345	0.086	0.544	0.038	0.002	0.001	0.0001	0.117	0.099
Number of Points Used*		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		20	20	20	20	20	20	20	20	20	20

Figure B28: Run 1.33C – Baseline Slurry – After AN-102R2 Batch 3C and Before Batch 3B – Raw & Calculated Data

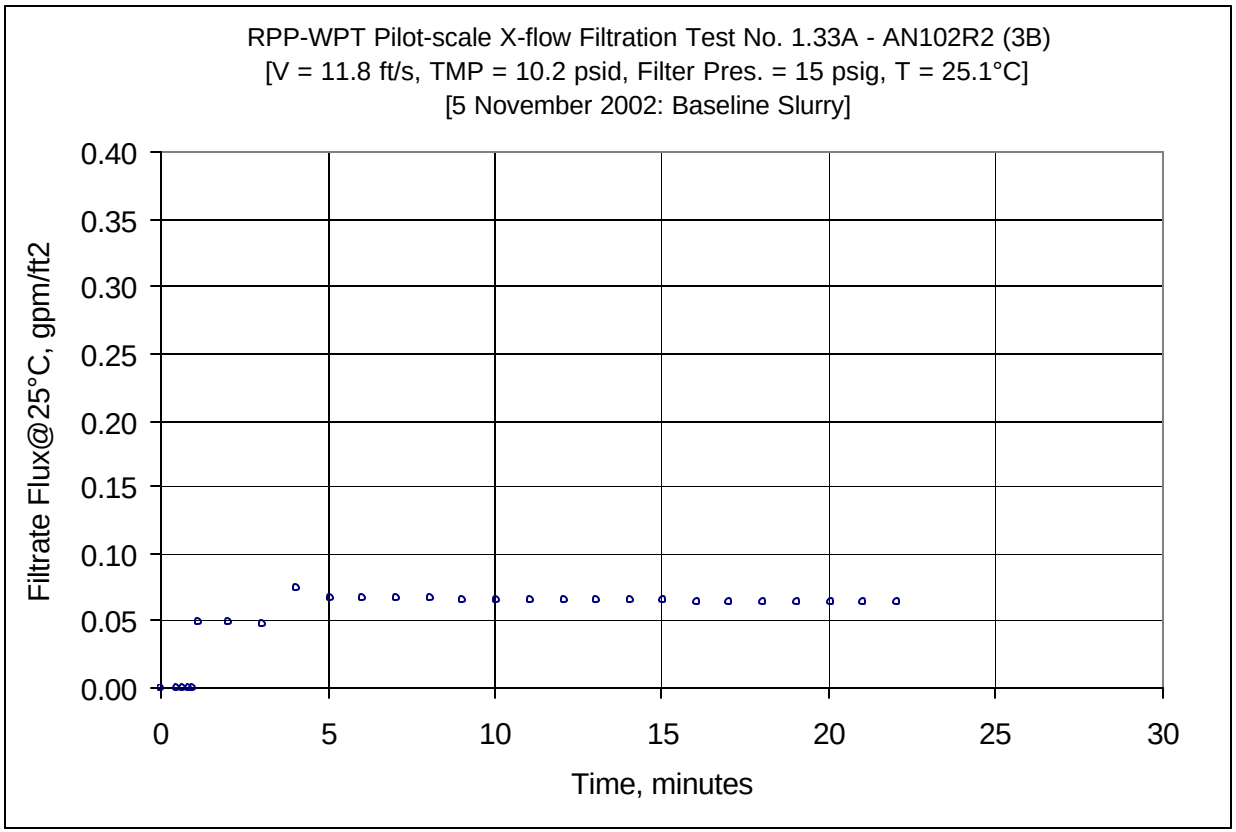


Figure B29: Run 1.33A – Baseline Slurry – After AN-102R2 Batch 3B and Before Batch 3A

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
11/5/2002	8:48:46 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Filter Surface	6.707	FT2						
11/5/2002	8:49:01 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
11/5/2002	8:49:02 AM	24.624	19.589	24.096	20.033	19.924	-0.11	-0.076	-0.048	0.067	-0.308	0.389	38.846	1.019	0.001	0											
11/5/2002	8:49:03 AM	24.629	19.594	24.091	20.033	19.914	-0.11	-0.078	-0.048	0.067	-0.331	0.389	38.779	1.018	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
11/5/2002	8:49:04 AM	24.629	19.594	24.091	20.033	19.919	-0.11	-0.078	-0.048	0.067	-0.36	0.389	38.833	1.017	0.001	0											
11/5/2002	8:49:05 AM	24.624	19.589	24.091	20.028	19.924	-0.11	-0.076	-0.048	0.069	-0.354	0.392	38.856	1.018	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
11/5/2002	8:49:06 AM	24.629	19.589	24.096	20.038	19.919	-0.11	-0.078	-0.048	0.069	-0.357	0.392	38.796	1.017	0.001	0			VVVV				< Filtrate Flux <<		PERMIABILITY >>		
11/5/2002	8:49:07 AM	24.629	19.589	24.096	20.038	19.924	-0.11	-0.076	-0.048	0.069	-0.351	0.389	38.772	1.018	0.001	0								at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	/ft2	ft2/psi	ft2/psi	day/bar
11/5/2002	8:58:55 AM	24.217	19.725	24.346	20.194	20.317	3.378	16.276	4.873	-1.419	7.693	56.365	48.272	0.001	0.001	0	0	0	14.8	11.8	1.0	0.068	0.000	0.000	0.0002	0.155	0.13
11/5/2002	8:59:24 AM	24.217	19.725	24.346	20.194	20.317	3.378	16.276	4.873	-1.419	7.693	56.365	48.272	0.001	0.001	0	0.48	0.00806	14.8	11.8	1.0	0.068	0.000	0.000	0.0002	0.155	0.13
11/5/2002	8:59:34 AM	24.139	19.732	24.518	20.125	20.349	3.063	15.87	4.884	-1.533	7.802	55.962	48.055	0.001	0.001	0	0.65	0.01083	14.4	11.8	0.8	0.053	0.000	0.000	0.0002	0.198	0.17
11/5/2002	8:59:44 AM	24.059	19.722	24.543	20.1	20.349	-7.527	16.47	4.914	-14.774	21.538	26.509	46.753	0.001	0.001	1.948	0.82	0.01361	15.0	11.5	-11.2	-0.769	0.000	0.000	0.0000	-0.014	-0.01
11/5/2002	8:59:54 AM	24.023	19.727	24.583	20.095	20.354	3.299	16.007	4.786	-1.394	7.62	5.592	48.164	0.001	0.001	0.002	0.98	0.01639	14.5	11.8	1.0	0.066	0.000	0.000	0.0002	0.158	0.13
11/5/2002	9:00:04 AM	24.014	19.728	24.64	20.091	20.371	6.702	16.094	4.692	2.135	4.311	0.461	48.297	0.322	0.001	0	1.15	0.01917	14.6	11.8	4.4	0.305	0.048	0.048	0.0110	10.976	9.34
11/5/2002	9:00:58 AM	24.472	19.749	24.611	20.092	20.397	9.776	15.906	4.631	5.39	0.932	0.543	48.295	0.329	0.001	0	2.05	0.03417	14.4	11.8	7.6	0.523	0.049	0.050	0.0065	6.540	5.57
11/5/2002	9:01:58 AM	24.658	19.77	24.682	20.002	20.428	9.821	16.069	4.768	5.294	0.981	0.635	48.2	0.319	0.001	0	3.05	0.05083	14.6	11.8	7.6	0.521	0.048	0.048	0.0063	6.350	5.40
11/5/2002	9:02:58 AM	24.755	19.782	24.889	19.958	20.465	11.022	16.239	4.822	6.434	0.056	-1.835	48.311	0.497	0.001	0	4.05	0.0675	14.8	11.8	8.7	0.602	0.074	0.074	0.0085	8.516	7.25
11/5/2002	9:03:58 AM	24.937	19.794	24.966	20.056	20.492	12.483	16.038	4.734	7.804	-1.285	-2.97	48.244	0.453	0.001	0	5.05	0.08417	14.6	11.8	10.1	0.699	0.068	0.068	0.0067	6.665	5.67
11/5/2002	9:04:58 AM	25.013	19.8	24.881	20.148	20.543	12.539	16.077	4.721	7.943	-1.282	-3.004	48.165	0.45	0.001	0	6.05	0.10083	14.6	11.8	10.2	0.706	0.067	0.067	0.0066	6.573	5.59
11/5/2002	9:05:58 AM	25.026	19.827	25.059	20.16	20.576	12.58	16.011	4.641	8.137	-1.282	-3.01	48.202	0.448	0.001	0	7.05	0.1175	14.5	11.8	10.4	0.714	0.067	0.067	0.0064	6.437	5.48
11/5/2002	9:06:58 AM	25.147	19.834	25.095	20.197	20.613	12.806	16.274	4.648	8.446	-1.285	-3.031	48.076	0.447	0.001	0	8.05	0.13417	14.8	11.8	10.6	0.733	0.067	0.066	0.0063	6.255	5.32
11/5/2002	9:07:58 AM	25.189	19.846	25.032	20.224	20.65	12.971	16.474	4.786	8.35	-1.285	-3.054	48.034	0.444	0.001	0	9.05	0.15083	15.0	11.8	10.7	0.735	0.066	0.066	0.0062	6.204	5.28
11/5/2002	9:08:58 AM	25.191	19.863	25.204	20.241	20.692	12.831	16.201	4.718	8.289	-1.285	-3.068	48.106	0.443	0.001	0	10.05	0.1675	14.7	11.8	10.6	0.728	0.066	0.066	0.0062	6.219	5.29
11/5/2002	9:09:58 AM	25.277	19.864	25.1	20.207	20.703	12.897	16.297	4.879	8.199	-1.291	-3.08	48.144	0.442	0.001	0	11.05	0.18417	14.8	11.8	10.5	0.727	0.066	0.066	0.0062	6.230	5.30
11/5/2002	9:10:58 AM	25.283	19.885	25.141	20.303	20.729	12.878	16.172	4.72	8.397	-1.285	-3.103	48.133	0.44	0.001	0	12.05	0.20083	14.7	11.8	10.6	0.733	0.066	0.065	0.0061	6.142	5.23
11/5/2002	9:11:58 AM	25.336	19.908	25.339	20.296	20.757	13.009	16.357	4.688	8.498	-1.285	-3.091	47.892	0.441	0.001	0	13.05	0.2175	14.9	11.7	10.8	0.741	0.066	0.065	0.0061	6.056	5.15
11/5/2002	9:12:58 AM	25.412	19.914	25.165	20.418	20.788	12.938	16.185	4.735	8.362	-1.285	-3.106	48.018	0.44	0.001	0	14.05	0.23417	14.7	11.8	10.7	0.734	0.066	0.065	0.0061	6.131	5.22
11/5/2002	9:13:58 AM	25.413	19.936	25.256	20.369	20.83	12.92	16.28	4.677	8.491	-1.282	-3.126	48.146	0.437	0.001	0	15.05	0.25083	14.8	11.8	10.7	0.738	0.065	0.065	0.0060	6.042	5.14
11/5/2002	9:14:58 AM	25.43	19.937	25.443	20.219	20.862	12.841	16.177	4.676	8.295	-1.285	-3.123	48.095	0.438	0.001	0	16.05	0.2675	14.7	11.8	10.6	0.729	0.065	0.064	0.0061	6.103	5.19
11/5/2002	9:15:58 AM	25.482	19.96	25.23	20.393	20.905	12.916	16.127	4.68	8.43	-1.285	-3.143	47.852	0.435	0.001	0	17.05	0.28417	14.7	11.7	10.7	0.736	0.065	0.064	0.0060	6.037	5.14
11/5/2002	9:16:58 AM	25.479	19.976	25.357	20.299	20.941	12.932	16.185	4.735	8.428	-1.285	-3.138	47.953	0.436	0.001	0	18.05	0.30083	14.7	11.8	10.7	0.736	0.065	0.064	0.0060	6.026	5.13
11/5/2002	9:17:58 AM	25.536	19.989	25.494	20.296	20.949	13.083	16.317	4.734	8.489	-1.285	-3.158	47.82	0.434	0.001	0	19.05	0.3175	14.8	11.7	10.8	0.744	0.065	0.064	0.0059	5.916	5.03
11/5/2002	9:18:58 AM	25.547	19.995	25.32	20.464	20.985	13.191	16.413	4.768	8.497	-1.285	-3.164	47.873	0.433	0.001	0	20.05	0.33417	14.9	11.7	10.8	0.748	0.065	0.064	0.0059	5.900	5.02
11/5/2002	9:19:58 AM	25.545	20.013	25.473	20.33	21.023	12.961	16.175	4.645	8.502	-1.285	-3.161	47.94	0.434	0.001	0	21.05	0.35083	14.7	11.7	10.7	0.740	0.065	0.064	0.0059	5.950	5.06
11/5/2002	9:20:58 AM	25.611	20.024	25.399	20.447	21.039	12.914	16.092	4.624	8.473	-1.282	-3.164	47.917	0.433	0.001	0	22.05	0.3675	14.6	11.7	10.7	0.737	0.065	0.064	0.0060	5.970	5.08
	Averages	25.2	19.9	25.1	20.2	20.7	12.5	16.2	4.7	8.0	-1.0	-2.7	48.1	0.4	0.0	0.0		0.2	14.7	11.8	10.2	0.705	0.064	0.064	0.0063	6.298	5.360
	Maximum	25.6	20.0	25.5	20.5	21.0	13.2	16.5	4.9	8.5	1.0	0.6	48.3	0.5	0.0	0.0		0.4	15.0	11.8	10.8	0.748	0.074	0.074	0.0085	8.516	7.248
	Median	25.3	19.9	25.2	20.2	20.7	12.9	16.2	4.7	8.4	-1.3	-3.1	48.1	0.4	0.0	0.0		0.2	14.7	11.8	10.6	0.733	0.066	0.065	0.0061	6.142	5.227
	Minimum	24.5	19.7	24.6	20.0	20.4	9.8	15.9	4.6	5.3	-1.3	-3.2	47.8	0.3	0.0	0.0		0.0	14.4	11.7	7.6	0.521	0.048	0.048	0.0059	5.900	5.021
	2 x Std Dev	0.617	0.166	0.480	0.275	0.393	1.943	0.269	0.128	1.915	1.396	2.193	0.289	0.075	0.000	0.000		0.202	0.269	0.071	1.927	0.133	0.011	0.011	0.0011	1.080	0.919
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21	21

Figure B30: Run 1.33A – Baseline Slurry – After AN-102R2 Batch 3B and Before Batch 3A – Raw & Calculated Data

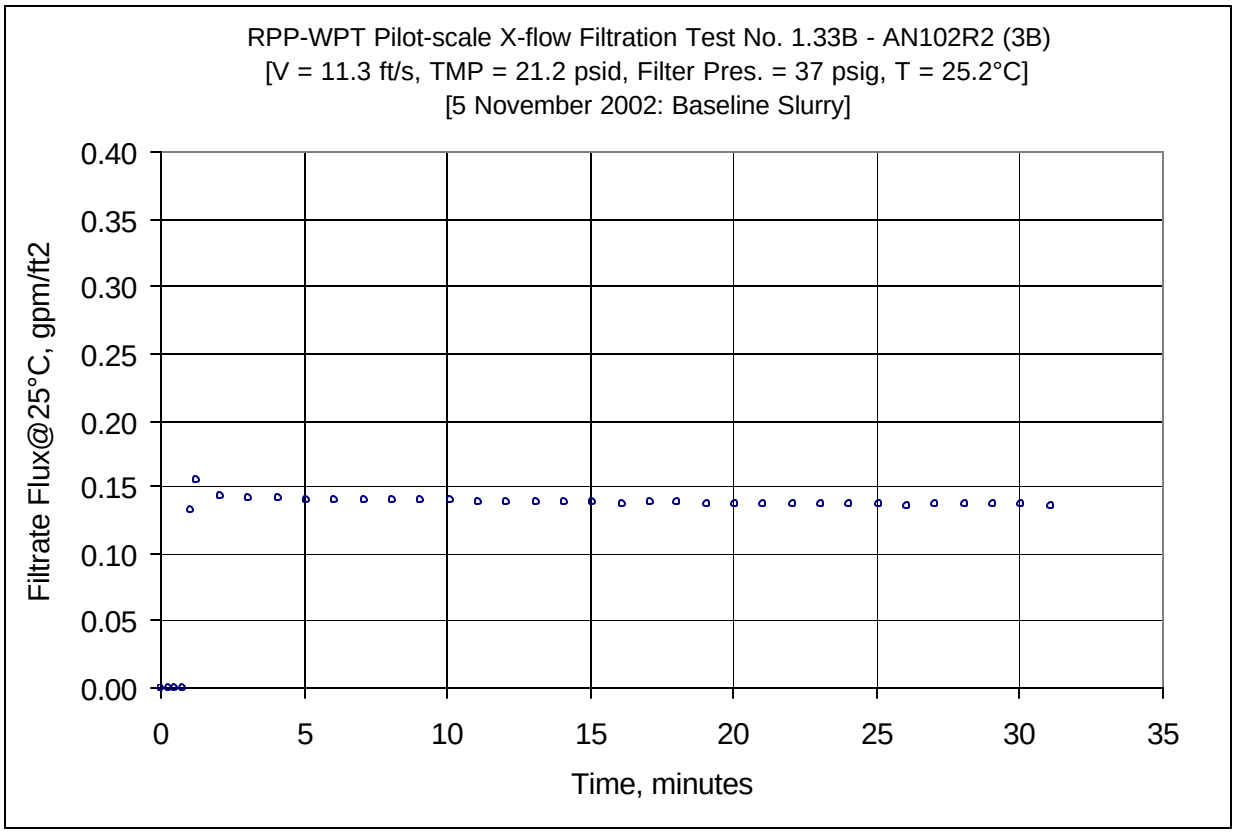


Figure B31: Run 1.33B – Baseline Slurry – After AN-102R2 Batch 3B and Before Batch 3A

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
11/5/2002	8:48:46 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Filter Surface	6.707	FT2						
11/5/2002	8:49:01 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
11/5/2002	8:49:02 AM	24.624	19.589	24.096	20.033	19.924	-0.11	-0.076	-0.048	0.067	-0.308	0.389	38.846	1.019	0.001	0											
11/5/2002	8:49:03 AM	24.629	19.594	24.091	20.033	19.914	-0.11	-0.078	-0.048	0.067	-0.331	0.389	38.779	1.018	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
11/5/2002	8:49:04 AM	24.629	19.594	24.091	20.033	19.919	-0.11	-0.078	-0.048	0.067	-0.36	0.389	38.833	1.017	0.001	0											
11/5/2002	8:49:05 AM	24.624	19.589	24.091	20.028	19.924	-0.11	-0.076	-0.048	0.069	-0.354	0.392	38.856	1.018	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
11/5/2002	8:49:06 AM	24.629	19.589	24.096	20.038	19.919	-0.11	-0.078	-0.048	0.069	-0.357	0.392	38.796	1.017	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY >>		
11/5/2002	8:49:07 AM	24.629	19.589	24.096	20.038	19.924	-0.11	-0.076	-0.048	0.069	-0.351	0.389	38.772	1.018	0.001	0								at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/5/2002	9:29:39 AM	25.895	20.138	25.733	20.819	21.209	3.084	37.652	4.571	-1.407	29.619	77.128	46.845	0.001	0.001	0	0	0	36.2	11.5	0.8	0.058	0.000	0.000	0.0002	0.174	0.15
11/5/2002	9:29:55 AM	24.924	20.139	25.633	20.865	21.21	-7.527	38.023	4.454	-13.497	42.724	46.998	45.13	0.001	0.001	1.966	0.27	0.00444	36.6	11.1	-10.5	-0.725	0.000	0.000	0.0000	-0.014	-0.01
11/5/2002	9:30:10 AM	25.326	20.15	25.539	20.947	21.231	3.251	37.752	4.519	-1.275	29.495	36.806	46.705	0.001	0.001	0	0.52	0.00861	36.3	11.4	1.0	0.068	0.000	0.000	0.0001	0.149	0.13
11/5/2002	9:30:25 AM	25.311	20.156	25.5	20.952	21.247	3.461	37.911	4.353	-0.729	29.457	0.461	46.388	0.001	0.001	0.001	0.77	0.01278	36.4	11.4	1.4	0.094	0.000	0.000	0.0001	0.108	0.09
11/5/2002	9:30:40 AM	25.617	20.171	25.525	20.963	21.242	19.028	37.884	4.399	14.862	13.887	0.522	46.657	0.899	0.001	0	1.02	0.01694	36.4	11.4	16.9	1.168	0.134	0.132	0.0078	7.794	6.63
11/5/2002	9:30:55 AM	25.843	20.172	25.571	20.963	21.248	22.911	37.64	4.423	18.584	9.548	0.603	46.74	1.056	0.001	0	1.27	0.02111	36.2	11.5	20.7	1.430	0.157	0.155	0.0075	7.468	6.36
11/5/2002	9:31:44 AM	25.98	20.179	25.362	20.985	21.275	22.285	37.897	4.404	18.127	10.516	3.342	46.524	0.967	0.001	0	2.08	0.03472	36.4	11.4	20.2	1.393	0.144	0.143	0.0071	7.063	6.01
11/5/2002	9:32:44 AM	25.937	20.207	25.51	21.008	21.292	22.404	37.832	4.399	18.223	10.372	3.259	46.692	0.959	0.001	0	3.08	0.05139	36.4	11.4	20.3	1.401	0.143	0.141	0.0069	6.938	5.90
11/5/2002	9:33:44 AM	25.89	20.21	25.273	21.006	21.3	22.447	37.551	4.344	18.395	10.109	3.12	46.529	0.951	0.001	0	4.08	0.06806	36.1	11.4	20.4	1.408	0.142	0.141	0.0069	6.890	5.86
11/5/2002	9:34:44 AM	25.868	20.233	25.286	21.024	21.324	22.505	37.853	4.397	18.185	10.115	3.105	46.357	0.95	0.001	0	5.08	0.08472	36.4	11.4	20.3	1.403	0.142	0.141	0.0069	6.906	5.88
11/5/2002	9:35:44 AM	25.796	20.246	25.334	21.052	21.337	23.17	38.345	4.411	18.858	9.993	3.05	46.063	0.949	0.001	0	6.08	0.10139	36.9	11.3	21.0	1.449	0.141	0.140	0.0067	6.670	5.68
11/5/2002	9:36:44 AM	25.778	20.253	25.141	21.085	21.354	22.795	37.77	4.331	18.637	9.869	3.001	46.008	0.945	0.001	0	7.08	0.11806	36.3	11.3	20.7	1.428	0.141	0.140	0.0068	6.774	5.76
11/5/2002	9:37:44 AM	25.746	20.276	25.304	21.067	21.367	23.023	38.06	4.329	18.856	9.878	2.983	46.019	0.942	0.001	0	8.08	0.13472	36.6	11.3	20.9	1.444	0.140	0.139	0.0067	6.650	5.66
11/5/2002	9:38:44 AM	25.708	20.283	25.181	21.221	21.384	23.095	38.068	4.398	18.897	9.73	2.911	46.206	0.939	0.001	0	9.08	0.15139	36.6	11.3	21.0	1.448	0.140	0.139	0.0066	6.634	5.65
11/5/2002	9:39:44 AM	25.705	20.296	25.103	21.198	21.396	23.244	38.137	4.385	18.977	9.661	2.899	46.164	0.937	0.001	0	10.08	0.16806	36.7	11.3	21.1	1.455	0.140	0.139	0.0066	6.598	5.62
11/5/2002	9:40:44 AM	25.673	20.323	25.276	21.311	21.419	23.153	37.841	4.362	18.954	9.623	2.824	46.092	0.933	0.001	0	11.08	0.18472	36.4	11.3	21.1	1.452	0.139	0.138	0.0066	6.556	5.58
11/5/2002	9:41:44 AM	25.675	20.336	25.098	21.333	21.431	23.298	37.971	4.327	19.192	9.545	2.81	45.857	0.932	0.001	0	12.08	0.20139	36.5	11.2	21.2	1.465	0.139	0.139	0.0065	6.522	5.55
11/5/2002	9:42:44 AM	25.656	20.337	25.214	21.309	21.427	23.131	37.975	4.373	18.776	9.606	2.818	46.01	0.931	0.001	0	13.08	0.21806	36.5	11.3	21.0	1.445	0.139	0.138	0.0066	6.585	5.60
11/5/2002	9:43:44 AM	25.648	20.369	25.181	21.337	21.455	23.358	38.091	4.401	19.083	9.435	2.798	46.04	0.933	0.001	0	14.08	0.23472	36.6	11.3	21.2	1.463	0.139	0.138	0.0065	6.522	5.55
11/5/2002	9:44:44 AM	25.66	20.371	25.088	21.238	21.461	23.497	37.948	4.34	19.351	9.45	2.769	45.987	0.928	0.001	0	15.08	0.25139	36.5	11.3	21.4	1.477	0.138	0.138	0.0064	6.442	5.48
11/5/2002	9:45:44 AM	25.642	20.393	25.28	21.265	21.474	23.215	37.743	4.367	18.95	9.409	2.752	46.019	0.929	0.001	0	16.08	0.26806	36.3	11.3	21.1	1.454	0.139	0.137	0.0065	6.518	5.55
11/5/2002	9:46:44 AM	25.643	20.399	25.101	21.371	21.489	23.623	38.242	4.289	19.452	9.409	2.769	45.646	0.929	0.001	0	17.08	0.28472	36.8	11.2	21.5	1.485	0.139	0.138	0.0064	6.413	5.46
11/5/2002	9:47:44 AM	25.649	20.415	25.212	21.403	21.506	23.458	37.921	4.275	19.394	9.427	2.772	45.828	0.929	0.001	0	18.08	0.30139	36.4	11.2	21.4	1.477	0.139	0.138	0.0064	6.426	5.47
11/5/2002	9:48:44 AM	25.634	20.436	25.182	21.459	21.511	23.582	38.033	4.244	19.54	9.372	2.717	45.767	0.926	0.001	0	19.08	0.31806	36.6	11.2	21.6	1.487	0.138	0.137	0.0064	6.370	5.42
11/5/2002	9:49:44 AM	25.671	20.452	25.098	21.379	21.543	23.559	37.988	4.223	19.636	9.305	2.7	45.73	0.925	0.001	0	20.08	0.33472	36.5	11.2	21.6	1.489	0.138	0.138	0.0064	6.368	5.42
11/5/2002	9:50:44 AM	25.637	20.459	25.27	21.361	21.564	23.574	38.002	4.288	19.458	9.308	2.703	45.767	0.924	0.001	0	21.08	0.35139	36.5	11.2	21.5	1.483	0.138	0.137	0.0064	6.354	5.41
11/5/2002	9:51:44 AM	25.649	20.481	25.117	21.428	21.591	23.603	37.992	4.271	19.476	9.274	2.65	45.799	0.922	0.001	0	22.08	0.36806	36.5	11.2	21.5	1.485	0.137	0.137	0.0064	6.361	5.41
11/5/2002	9:52:44 AM	25.671	20.503	25.224	21.394	21.588	23.646	38.037	4.277	19.507	9.291	2.659	45.763	0.923	0.001	0	23.08	0.38472	36.6	11.2	21.6	1.488	0.138	0.137	0.0063	6.338	5.39
11/5/2002	9:53:44 AM	25.637	20.509	25.195	21.431	21.609	23.696	38.046	4.245	19.595	9.207	2.645	45.771	0.923	0.001	0	24.08	0.40139	36.6	11.2	21.6	1.492	0.138	0.137	0.0063	6.323	5.38
11/5/2002	9:54:44 AM	25.674	20.536	25.102	21.468	21.637	23.653	37.888	4.247	19.56	9.204	2.648	45.868	0.921	0.001	0	25.08	0.41806	36.4	11.2	21.6	1.490	0.137	0.137	0.0063	6.337	5.39
11/5/2002	9:55:44 AM	25.651	20.538	25.299	21.455	21.643	23.729	37.944	4.241	19.738	9.201	2.616	45.727	0.92	0.001	0	26.08	0.43472	36.5	11.2	21.7	1.498	0.137	0.136	0.0063	6.258	5.33
11/5/2002	9:56:44 AM	25.668	20.561	25.131	21.538	21.651	23.711	37.934	4.307	19.546	9.149	2.61	45.853	0.92	0.001	0	27.08	0.45139	36.5	11.2	21.6	1.491	0.137	0.137	0.0063	6.318	5.38
11/5/2002	9:57:44 AM	25.669	20.572	25.217	21.499	21.662	23.686	37.957	4.253	19.589	9.161	2.61	45.838	0.919	0.001	0	28.08	0.46806	36.5	11.2	21.6	1.492	0.137	0.136	0.0063	6.294	5.36
11/5/2002	9:58:44 AM	25.641	20.569	25.21	21.511	21.684	23.808	38.19	4.308	19.687	9.089	2.587	45.815	0.919	0.001	0	29.08	0.48472	36.7	11.2	21.7	1.499	0.137	0.136	0.0063	6.263	5.33
11/5/2002	9:59:44 AM	25.683	20.601	25.111	21.528	21.701	23.572	37.841	4.234	19.433	9.08	2.595	45.734	0.919	0.001	0	30.08	0.50139	36.4	11.2	21.5	1.483	0.137	0.137	0.0064	6.352	5.41
11/5/2002	10:00:44 AM	25.67	20.613	25.314	21.55	21.714	23.87	38.105	4.273	19.779	9.039	2.595	45.794	0.918	0.001	0	31.08	0.51806	36.6	11.2	21.8	1.505	0.137	0.136	0.0062	6.216	5.29
	Averages	25.7	20.4	25.2	21.3	21.5	23.3	38.0	4.3	19.2	9.5	2.8	46.0	0.9	0.0	0.0		0.3	36.5	11.3	21.2	1.464	0.139	0.138	0.0065	6.509	5.539
	Maximum	26.0	20.6	25.5	21.6	21.7	23.9	38.3	4.4	19.8	10.5	3.3	46.7	1.0	0.0	0.0		0.5	36.9	11.4	21.8	1.505	0.144	0.143	0.0071	7.063	6.011
	Median	25.7	20.4	25.2	21.3	21.5	23.5	38.0	4.3	19.4	9.4	2.8	45.9	0.9	0.0	0.0		0.3	36.5	11.2	21.4	1.477	0.139	0.138	0.0064	6.434	5.475
	Minimum	25.6	20.2	25.1	21.0	21.3	22.3	37.6	4.2	18.1	9.0	2.6	45.6	0.9	0.0	0.0		0.0	36.1	11.2	20.2	1.393	0.137	0.136	0.0062	6.216	5.290
	2 x Std Dev	0.185	0.257	0.195	0.353	0.262	0.871	0.307	0.120	0.958	0.768	0.402	0.519	0.025	0.000	0.000		0.289	0.307	0.127	0.911	0.063	0.004	0.003	0.0004	0.441	0.375
Number of Points Used*		30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		30	30	30	30	30	30	30	30	30	30

Figure B32: Run 1.33B – Baseline Slurry – After AN-102R2 Batch 3B and Before Batch 3A – Raw & Calculated Data

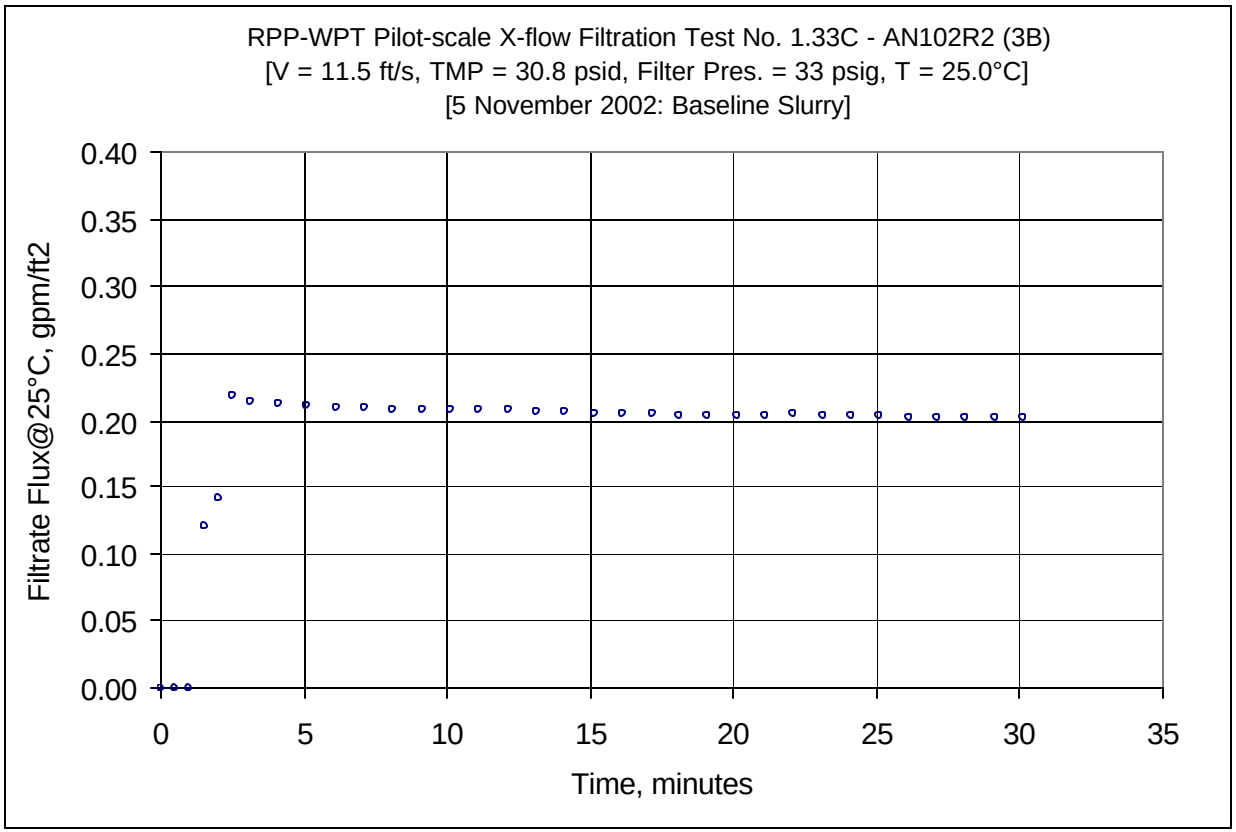


Figure B33: Run 1.33C – Baseline Slurry – After AN-102R2 Batch 3B and Before Batch 3A

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
11/5/2002	8:48:46 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Filter Surface	6.707	FT2					
11/5/2002	8:49:01 AM	24.608	19.589	24.171	19.997	19.909	-0.11	-0.076	-0.048	0.069	-0.325	0.389	38.718	1.02	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
11/5/2002	8:49:02 AM	24.624	19.589	24.096	20.033	19.924	-0.11	-0.076	-0.048	0.067	-0.308	0.389	38.846	1.019	0.001	0										
11/5/2002	8:49:03 AM	24.629	19.594	24.091	20.033	19.914	-0.11	-0.078	-0.048	0.067	-0.331	0.389	38.779	1.018	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig							
11/5/2002	8:49:04 AM	24.629	19.594	24.091	20.033	19.919	-0.11	-0.078	-0.048	0.067	-0.36	0.389	38.833	1.017	0.001	0										
11/5/2002	8:49:05 AM	24.624	19.589	24.091	20.028	19.924	-0.11	-0.076	-0.048	0.069	-0.354	0.392	38.856	1.018	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing							
11/5/2002	8:49:06 AM	24.629	19.589	24.096	20.038	19.919	-0.11	-0.078	-0.048	0.069	-0.357	0.392	38.796	1.017	0.001	0			VVVV				< Filtrate Flux <<		PERMIABILITY >>	
11/5/2002	8:49:07 AM	24.629	19.589	24.096	20.038	19.924	-0.11	-0.076	-0.048	0.069	-0.351	0.389	38.772	1.018	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	/ft2	ft2/psi	ft2/psi	day/bar
11/5/2002	10:08:00 AM	25.362	20.717	24.956	21.709	21.847	3.102	34.483	4.483	-1.251	26.483	74.491	46.206	0.001	0.001	0	0	0	33.0	11.3	0.9	0.064	0.000	0.000	0.0002	0.161	0.14
11/5/2002	10:08:30 AM	25.322	20.737	24.991	21.709	21.847	2.962	34.514	4.489	-1.515	26.486	73.932	46.42	0.001	0.001	0	0.50	0.00833	33.0	11.4	0.7	0.050	0.000	0.000	0.0002	0.206	0.18
11/5/2002	10:09:00 AM	25.083	20.743	25.106	21.609	21.863	3.479	34.531	4.558	-1.016	26.087	29.164	46.805	0.001	0.001	0.002	1.00	0.01667	33.1	11.5	1.2	0.085	0.000	0.000	0.0001	0.121	0.10
11/5/2002	10:09:30 AM	25.178	20.748	25.002	21.514	21.873	17.704	34.458	4.463	13.396	11.777	0.528	46.894	0.807	0.001	0	1.50	0.025	33.0	11.5	15.6	1.072	0.120	0.120	0.0077	7.737	6.58
11/5/2002	10:10:00 AM	25.394	20.769	24.932	21.59	21.894	21.745	34.433	4.525	17.401	7.502	0.644	47.154	0.943	0.001	0	2.00	0.03333	33.0	11.6	19.6	1.349	0.141	0.141	0.0072	7.197	6.12
11/5/2002	10:10:30 AM	25.45	20.775	25.033	21.575	21.91	32.519	34.208	4.524	28.291	-1.285	-1.884	47.632	0.002	1.463	0.001	2.50	0.04167	32.7	11.7	30.4	2.096	0.218	0.218	0.0072	7.167	6.10
11/5/2002	10:11:07 AM	25.486	20.78	25.019	21.551	21.9	32.6	34.262	4.578	28.324	-1.285	-1.858	47.46	0.001	1.441	0	3.12	0.05194	32.8	11.6	30.5	2.100	0.215	0.215	0.0070	7.049	6.00
11/5/2002	10:12:07 AM	25.467	20.802	25	21.562	21.937	32.687	34.206	4.467	28.627	-1.285	-1.858	47.334	0.001	1.426	0.001	4.12	0.06861	32.7	11.6	30.7	2.114	0.213	0.213	0.0069	6.935	5.90
11/5/2002	10:13:07 AM	25.482	20.807	24.895	21.491	21.937	32.967	34.584	4.567	28.658	-1.285	-1.864	47.34	0.001	1.417	0	5.12	0.08528	33.1	11.6	30.8	2.124	0.211	0.212	0.0069	6.877	5.85
11/5/2002	10:14:07 AM	25.437	20.822	25.05	21.663	21.977	32.453	33.925	4.429	28.41	-1.288	-1.867	47.305	0.001	1.412	0	6.12	0.10194	32.5	11.6	30.4	2.098	0.211	0.210	0.0069	6.908	5.88
11/5/2002	10:15:07 AM	25.457	20.842	24.88	21.658	21.992	32.975	34.593	4.515	28.715	-1.288	-1.867	47.162	0.001	1.405	0	7.12	0.11861	33.1	11.6	30.8	2.127	0.209	0.210	0.0068	6.814	5.80
11/5/2002	10:16:07 AM	25.471	20.871	25.074	21.596	22.001	32.704	34.258	4.508	28.527	-1.279	-1.864	47.164	0.001	1.402	0.002	8.12	0.13528	32.8	11.6	30.6	2.111	0.209	0.209	0.0068	6.813	5.80
11/5/2002	10:17:07 AM	25.441	20.877	24.929	21.748	22.047	32.718	34.285	4.436	28.615	-1.288	-1.869	47.156	0.001	1.397	0.002	9.12	0.15194	32.8	11.6	30.7	2.114	0.208	0.209	0.0068	6.805	5.79
11/5/2002	10:18:07 AM	25.476	20.902	24.944	21.828	22.067	32.826	34.386	4.508	28.645	-1.285	-1.869	47.166	0.001	1.394	0.002	10.12	0.16861	32.9	11.6	30.7	2.119	0.208	0.208	0.0068	6.773	5.76
11/5/2002	10:19:07 AM	25.425	20.911	24.994	21.888	22.066	33.008	34.506	4.536	28.768	-1.285	-1.869	47.315	0.001	1.395	0.001	11.12	0.18528	33.0	11.6	30.9	2.130	0.208	0.208	0.0067	6.735	5.73
11/5/2002	10:20:07 AM	25.46	20.926	24.863	21.863	22.066	32.925	34.44	4.507	28.692	-1.285	-1.872	47.143	0.001	1.388	0.001	12.12	0.20194	33.0	11.6	30.8	2.124	0.207	0.208	0.0067	6.743	5.74
11/5/2002	10:21:07 AM	25.43	20.942	25.064	21.848	22.076	33.006	34.477	4.443	28.873	-1.285	-1.875	47.057	0.001	1.385	0.002	13.12	0.21861	33.0	11.5	30.9	2.133	0.206	0.206	0.0067	6.662	5.67
11/5/2002	10:22:07 AM	25.44	20.952	24.878	21.878	22.096	32.958	34.409	4.472	28.801	-1.285	-1.875	46.977	0.001	1.379	0.002	14.12	0.23528	32.9	11.5	30.9	2.129	0.206	0.206	0.0067	6.681	5.69
11/5/2002	10:23:07 AM	25.461	20.977	25.019	21.813	22.087	32.911	34.429	4.507	28.703	-1.285	-1.875	47.003	0.001	1.382	0.001	15.12	0.25194	33.0	11.5	30.8	2.124	0.206	0.206	0.0067	6.685	5.69
11/5/2002	10:24:07 AM	25.432	20.983	24.955	21.919	22.118	32.768	34.251	4.445	28.649	-1.288	-1.881	47.682	0.001	1.372	0.001	16.12	0.26861	32.8	11.7	30.7	2.117	0.205	0.205	0.0067	6.670	5.68
11/5/2002	10:25:07 AM	25.472	21.003	24.92	21.909	22.143	32.873	34.285	4.435	28.801	-1.285	-1.878	47.166	0.001	1.371	0.001	17.12	0.28528	32.8	11.6	30.8	2.126	0.204	0.205	0.0066	6.643	5.65
11/5/2002	10:26:07 AM	25.433	21.014	25.036	21.895	22.169	32.817	34.241	4.495	28.559	-1.285	-1.878	47.03	0.001	1.371	0.001	18.12	0.30194	32.8	11.5	30.7	2.116	0.204	0.204	0.0067	6.654	5.66
11/5/2002	10:27:07 AM	25.459	21.021	24.872	21.826	22.165	33.143	34.421	4.433	29.118	-1.285	-1.881	46.856	0.001	1.364	0	19.12	0.31861	32.9	11.5	31.1	2.146	0.203	0.204	0.0066	6.556	5.58
11/5/2002	10:28:07 AM	25.45	21.037	25.083	21.797	22.156	33.041	34.504	4.437	28.832	-1.285	-1.878	46.931	0.001	1.366	0.001	20.12	0.33528	33.0	11.5	30.9	2.133	0.204	0.203	0.0066	6.568	5.59
11/5/2002	10:29:07 AM	25.441	21.043	24.914	21.823	22.172	32.911	34.309	4.378	28.799	-1.285	-1.881	46.633	0.001	1.368	0.002	21.12	0.35194	32.8	11.4	30.9	2.127	0.204	0.204	0.0066	6.626	5.64
11/5/2002	10:30:07 AM	25.466	21.058	24.959	21.838	22.173	32.971	34.438	4.423	28.807	-1.288	-1.884	46.585	0.001	1.37	0.001	22.12	0.36861	33.0	11.4	30.9	2.130	0.204	0.204	0.0066	6.620	5.63
11/5/2002	10:31:07 AM	25.437	21.089	24.995	21.96	22.188	33	34.33	4.309	29.016	-1.285	-1.881	46.531	0.001	1.366	0.003	23.12	0.38528	32.9	11.4	31.0	2.138	0.204	0.204	0.0066	6.569	5.59
11/5/2002	10:32:07 AM	25.462	21.085	24.88	21.89	22.189	33.13	34.593	4.437	28.903	-1.285	-1.881	46.505	0.001	1.364	0.001	24.12	0.40194	33.1	11.4	31.0	2.138	0.203	0.204	0.0066	6.579	5.60
11/5/2002	10:33:07 AM	25.429	21.106	25.052	21.911	22.205	33.045	34.423	4.459	28.789	-1.288	-1.887	46.52	0.001	1.364	0.002	25.12	0.41861	33.0	11.4	30.9	2.132	0.203	0.203	0.0066	6.568	5.59
11/5/2002	10:34:07 AM	25.45	21.117	24.898	21.958	22.226	32.865	34.253	4.346	28.809	-1.285	-1.881	46.547	0.001	1.357	0.001	26.12	0.43528	32.8	11.4	30.8	2.126	0.202	0.203	0.0066	6.580	5.60
11/5/2002	10:35:07 AM	25.466	21.138	25.059	21.924	22.228	32.911	34.299	4.409	28.692	-1.282	-1.881	46.44	0.001	1.363	0.003	27.12	0.45194	32.8	11.4	30.8	2.124	0.203	0.203	0.0066	6.587	5.61
11/5/2002	10:36:07 AM	25.437	21.145	24.955	21.95	22.259	32.88	34.15	4.336	28.875	-1.285	-1.881	46.445	0.001	1.355	0.002	28.12	0.46861	32.7	11.4	30.9	2.129	0.202	0.202	0.0066	6.551	5.57
11/5/2002	10:37:07 AM	25.479	21.151	24.927	21.901	22.271	33.093	34.415	4.351	29.004	-1.285	-1.887	46.533	0.001	1.356	0.002	29.12	0.48528	32.9	11.4	31.0	2.141	0.202	0.203	0.0065	6.525	5.55
11/5/2002	10:38:07 AM	25.44	21.163	25.038	21.953	22.292	33.188	34.506	4.456	28.977	-1.285	-1.881	46.484	0.001	1.353	0.002	30.12	0.50194	33.0	11.4	31.1	2.143	0.202	0.202	0.0065	6.483	5.52
	Averages	25.5	21.0	25.0	21.8	22.1	32.9	34.4	4.5	28.7	-1.3	-1.9	46.9	0.0	1.4	0.0		0.3	32.9	11.5	30.8	2.125	0.206	0.206	0.0067	6.688	5.691
	Maximum	25.5	21.2	25.1	22.0	22.3	33.2	34.6	4.6	29.1	-1.3	-1.9	47.7	0.0	1.4	0.0		0.5	33.1	11.7	31.1	2.146	0.215	0.215	0.0070	7.049	5.999
	Median	25.5	21.0	25.0	21.9	22.1	32.9	34.4	4.4	28.8	-1.3	-1.9	47.0	0.0	1.4	0.0		0.3	32.9	11.5	30.8	2.126	0.204	0.205	0.0067	6.658	5.666
	Minimum	25.4	20.8	24.9	21.5	21.9	32.5	33.9	4.3	28.3	-1.3	-1.9	46.4	0.0	1.4	0.0		0.1	32.5	11.4	30.4	2.098	0.202	0.202	0.0065	6.483	5.517
	2 x Std Dev	0.035	0.231	0.140	0.265	0.209	0.330	0.293	0.131	0.350	0.004	0.016	0.708	0.000	0.045	0.002		0.269	0.293	0.174	0.328	0.023	0.007	0.007	0.0003	0.275	0.234
Number of Points Used*		28	28	28	28	28	28	28	28	28	28	28	28	28	28	28		28	28	28	28	28	28	28	28	28	28

Figure B34: Run 1.33C – Baseline Slurry – After AN-102R2 Batch 3B and Before Batch 3A – Raw & Calculated Data

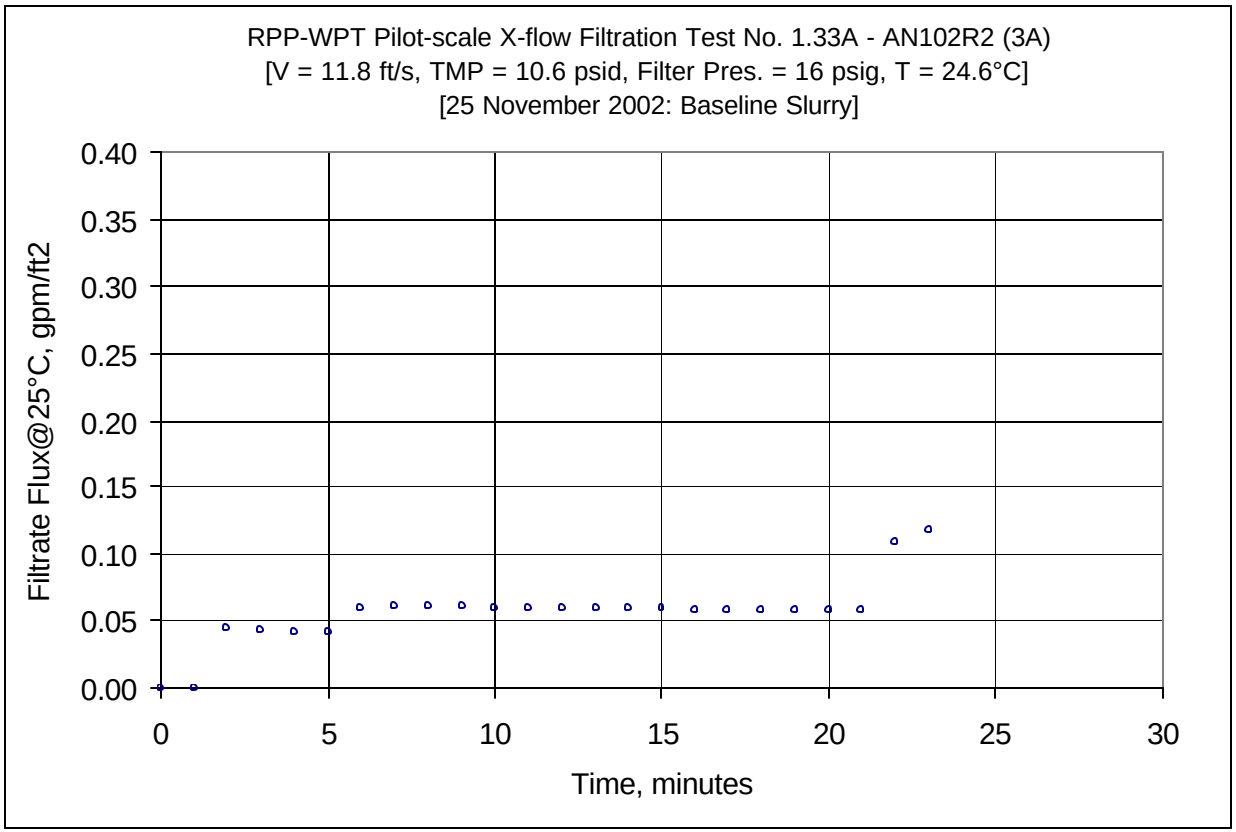


Figure B35: Run 1.33A – Baseline Slurry – After AN-102R2 Batch 3A and Before Batch 4A

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
11/25/2002	8:03:13 AM	21.491	17.89	14.224	21.68	16.888	-0.123	-0.066	-0.049	0.06	-0.376	0.205	-0.218	0.001	0.001	0			Filter Surface	6.707	FT2						
11/25/2002	8:03:26 AM	21.491	17.89	14.224	21.68	16.888	-0.123	-0.066	-0.049	0.06	-0.376	0.205	-0.218	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
11/25/2002	8:03:27 AM	21.507	17.9	14.245	21.701	16.893	-0.123	-0.068	-0.048	0.062	-0.382	0.208	-0.212	0.002	0.001	0											
11/25/2002	8:03:28 AM	21.512	17.905	14.245	21.701	16.893	-0.125	-0.064	-0.048	0.062	-0.376	0.211	-0.212	0.002	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
11/25/2002	8:03:29 AM	21.507	17.905	14.25	21.701	16.893	-0.123	-0.066	-0.048	0.062	-0.373	0.208	-0.212	0.002	0.001	0											
11/25/2002	8:03:30 AM	21.512	17.905	14.245	21.701	16.893	-0.123	-0.066	-0.048	0.062	-0.37	0.208	-0.21	0.002	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
11/25/2002	8:03:31 AM	21.507	17.905	14.25	21.696	16.883	-0.123	-0.066	-0.048	0.064	-0.367	0.208	-0.214	0.002	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY >>		
11/25/2002	8:03:32 AM	21.501	17.895	14.24	21.695	16.888	-0.121	-0.064	-0.048	0.062	-0.396	0.211	-0.21	0.002	0.001	0							at 25C		x 1000		
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/25/2002	2:15:42 PM	25.378	21.848	24.85	22.656	22.72	3.568	16.087	4.866	-0.965	7.11	55.885	48.489	0.002	0.001	0	0	0	14.6	11.9	1.3	0.090	0.000	0.000	0.0002	0.230	0.20
11/25/2002	2:16:42 PM	24.652	21.863	24.78	22.762	22.775	3.555	15.911	4.937	-1.086	6.893	32.238	48.464	0.001	0.001	0	1.00	0.01667	14.4	11.9	1.2	0.085	0.000	0.000	0.0001	0.122	0.10
11/25/2002	2:17:42 PM	24.972	21.878	24.554	22.812	22.825	9.663	15.924	4.986	4.951	0.714	0.5	48.579	0.298	0.001	0	2.00	0.03333	14.5	11.9	7.3	0.504	0.044	0.045	0.0062	6.157	5.24
11/25/2002	2:18:42 PM	24.983	21.899	24.47	22.813	22.846	9.554	15.835	4.865	5.031	0.714	0.584	48.472	0.289	0.001	0	3.00	0.05	14.4	11.9	7.3	0.503	0.043	0.044	0.0060	5.997	5.10
11/25/2002	2:19:42 PM	24.904	21.92	24.466	22.899	22.913	9.371	15.644	4.968	4.828	0.748	0.665	48.738	0.28	0.001	0	4.00	0.06667	14.2	11.9	7.1	0.489	0.042	0.042	0.0060	5.969	5.08
11/25/2002	2:20:42 PM	24.846	21.942	24.298	23.012	22.915	9.495	15.847	4.872	4.971	0.809	0.741	48.705	0.271	0.001	0	5.00	0.08333	14.4	11.9	7.2	0.499	0.040	0.041	0.0057	5.698	4.85
11/25/2002	2:21:42 PM	24.736	21.948	24.348	23.043	22.965	12.532	16.025	4.87	8.038	-1.289	-2.801	48.434	0.395	0.001	0	6.00	0.1	14.6	11.9	10.3	0.709	0.059	0.060	0.0058	5.832	4.96
11/25/2002	2:22:42 PM	24.657	21.964	24.264	23.019	23.007	12.459	15.922	4.946	7.764	-1.286	-3.018	48.556	0.398	0.001	0	7.00	0.11667	14.4	11.9	10.1	0.697	0.059	0.061	0.0060	5.992	5.10
11/25/2002	2:23:42 PM	24.588	21.98	24.17	22.994	23.038	12.563	15.771	4.882	7.923	-1.286	-3.078	48.183	0.398	0.001	0	8.00	0.13333	14.3	11.8	10.2	0.706	0.059	0.061	0.0059	5.930	5.05
11/25/2002	2:24:42 PM	24.524	21.996	24.266	22.98	23.054	12.716	15.979	5.021	8.089	-1.289	-3.125	48.111	0.398	0.001	0	9.00	0.15	14.5	11.8	10.4	0.717	0.059	0.061	0.0058	5.824	4.96
11/25/2002	2:25:42 PM	24.5	22.023	24.142	23.007	23.065	12.687	15.992	4.912	7.962	-1.286	-3.191	48.571	0.394	0.001	0	10.00	0.16667	14.5	11.9	10.3	0.712	0.059	0.060	0.0058	5.829	4.96
11/25/2002	2:26:42 PM	24.445	22.023	24.248	23.007	23.081	12.596	15.731	4.935	7.946	-1.286	-3.22	48.482	0.392	0.001	0	11.00	0.18333	14.3	11.9	10.3	0.708	0.058	0.060	0.0058	5.812	4.95
11/25/2002	2:27:42 PM	24.412	22.05	24.16	23.044	23.118	12.679	15.752	4.926	7.94	-1.286	-3.232	48.302	0.389	0.001	0	12.00	0.2	14.3	11.8	10.3	0.711	0.058	0.059	0.0058	5.761	4.90
11/25/2002	2:28:42 PM	24.398	22.056	24.341	23.01	23.209	12.637	15.798	5.054	7.839	-1.286	-3.252	48.388	0.389	0.001	0	13.00	0.21667	14.3	11.9	10.2	0.706	0.058	0.059	0.0058	5.771	4.91
11/25/2002	2:29:42 PM	24.416	22.044	24.609	22.852	23.207	12.64	15.665	5.107	7.847	-1.286	-3.258	48.243	0.39	0.001	0	14.00	0.23333	14.2	11.8	10.2	0.706	0.058	0.059	0.0057	5.739	4.88
11/25/2002	2:30:42 PM	24.541	22.064	24.629	22.797	23.172	12.83	15.857	4.844	8.241	-1.286	-3.261	48.143	0.391	0.001	0	15.00	0.25	14.4	11.8	10.5	0.726	0.058	0.059	0.0056	5.591	4.76
11/25/2002	2:31:42 PM	24.626	22.079	24.809	22.867	23.166	12.948	16.133	5.011	8.101	-1.286	-3.27	48.267	0.391	0.001	0	16.00	0.26667	14.7	11.8	10.5	0.726	0.058	0.059	0.0056	5.569	4.74
11/25/2002	2:32:42 PM	24.751	22.094	24.944	22.912	23.186	12.753	15.783	4.953	8.032	-1.286	-3.27	48.325	0.389	0.001	0	17.00	0.28333	14.3	11.8	10.4	0.717	0.058	0.058	0.0056	5.589	4.76
11/25/2002	2:33:42 PM	24.879	22.116	24.972	22.975	23.204	12.671	15.696	4.719	8.29	-1.289	-3.322	48.56	0.387	0.001	0	18.00	0.3	14.2	11.9	10.5	0.723	0.058	0.058	0.0055	5.510	4.69
11/25/2002	2:34:42 PM	24.976	22.163	25.179	23.022	23.231	12.667	15.713	5.042	7.899	-1.286	-3.304	48.338	0.388	0.001	0	19.00	0.31667	14.2	11.8	10.3	0.709	0.058	0.058	0.0056	5.597	4.76
11/25/2002	2:35:42 PM	25.058	22.181	25.086	23.079	23.233	12.795	15.69	4.858	8.185	-1.286	-3.304	48.361	0.385	0.001	0	20.00	0.33333	14.2	11.9	10.5	0.723	0.057	0.057	0.0055	5.459	4.65
11/25/2002	2:36:42 PM	25.115	22.213	25.303	23.086	23.311	12.609	15.673	5.029	7.751	-1.289	-3.319	48.489	0.388	0.001	0	21.00	0.35	14.2	11.9	10.2	0.702	0.058	0.057	0.0056	5.634	4.79
11/25/2002	2:37:42 PM	25.167	22.23	25.27	23.058	23.353	20.748	30.436	4.665	16.318	4.046	0.052	47.13	0.731	0.001	0	22.00	0.36667	29.0	11.5	18.5	1.278	0.109	0.108	0.0058	5.836	4.97
11/25/2002	2:38:42 PM	25.377	22.24	25.73	23.032	23.317	22.691	34.319	4.711	18.331	5.931	1.01	47.706	0.807	0.001	0	23.00	0.38333	32.8	11.7	20.5	1.414	0.120	0.118	0.0057	5.747	4.89
	Averages	24.8	22.1	24.6	23.0	23.1	12.9	17.3	4.9	8.3	-0.3	-2.2	48.3	0.4	0.0	0.0		0.2	15.9	11.8	10.6	0.731	0.061	0.061	0.0058	5.766	4.907
	Maximum	25.4	22.2	25.7	23.1	23.4	22.7	34.3	5.1	18.3	5.9	1.0	48.7	0.8	0.0	0.0		0.4	32.8	11.9	20.5	1.414	0.120	0.118	0.0062	6.157	5.240
	Median	24.7	22.0	24.5	23.0	23.1	12.7	15.8	4.9	7.9	-1.3	-3.2	48.4	0.4	0.0	0.0		0.2	14.3	11.9	10.3	0.709	0.058	0.059	0.0058	5.766	4.907
	Minimum	24.4	21.9	24.1	22.8	22.8	9.4	15.6	4.7	4.8	-1.3	-3.3	47.1	0.3	0.0	0.0		0.0	14.2	11.5	7.1	0.489	0.040	0.041	0.0055	5.459	4.645
	2 x Std Dev	0.547	0.209	0.878	0.177	0.296	6.093	9.594	0.223	6.207	3.757	3.400	0.682	0.245	0.000	0.000		0.211	9.594	0.167	6.148	0.424	0.036	0.035	0.0003	0.346	0.294
Number of Points Used*		22	22	22	22	22	22	22	22	22	22	22	22	22	22	22		22	22	22	22	22	22	22	22	22	22

Figure B36: Run 1.33A – Baseline Slurry – After AN-102R2 Batch 3A and Before Batch 4A – Raw & Calculated Data

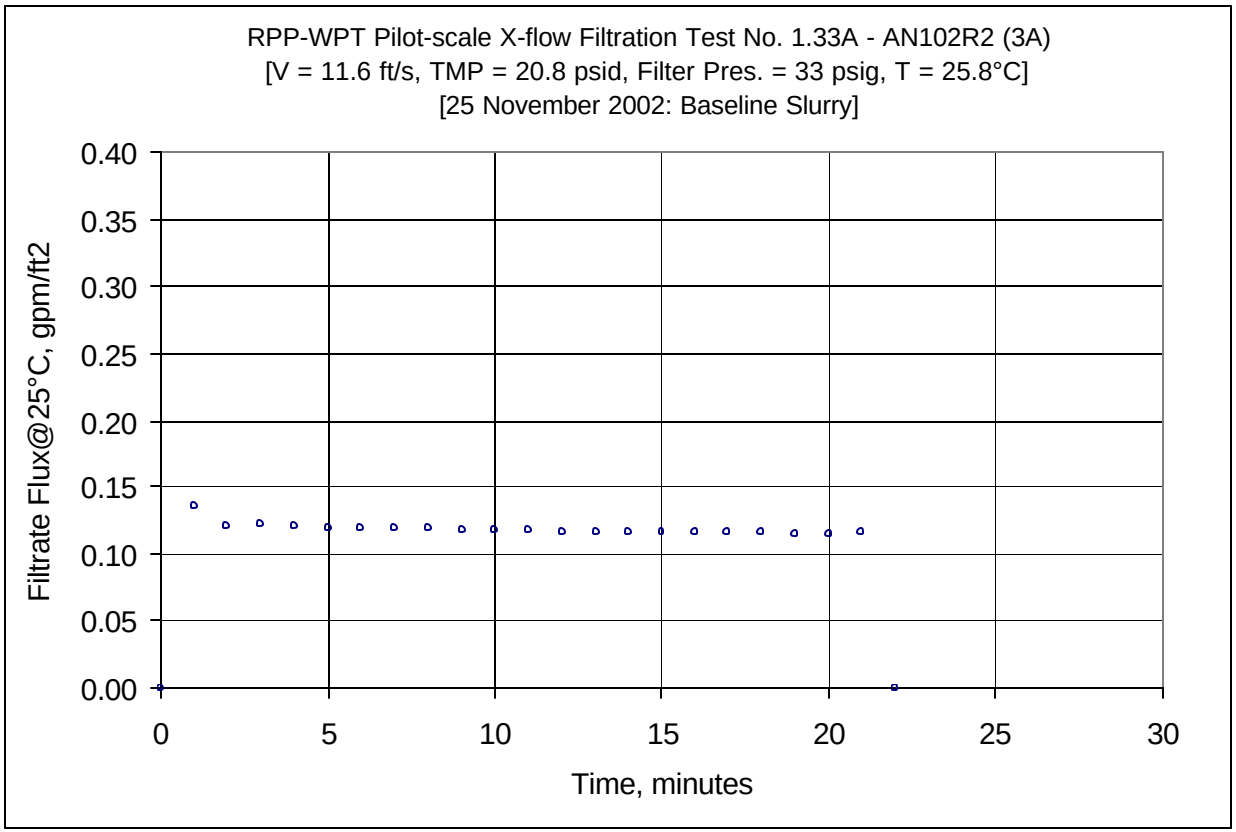


Figure B37: Run 1.33B – Baseline Slurry – After AN-102R2 Batch 3A and Before Batch 4A

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>			
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp
Zeros																
11/25/2002	8:03:13 AM	21.491	17.89	14.224	21.68	16.888	-0.123	-0.066	-0.049	0.06	-0.376	0.205	-0.218	0.001	0.001	0
11/25/2002	8:03:26 AM	21.491	17.89	14.224	21.68	16.888	-0.123	-0.066	-0.049	0.06	-0.376	0.205	-0.218	0.001	0.001	0
11/25/2002	8:03:27 AM	21.507	17.9	14.245	21.701	16.893	-0.123	-0.068	-0.048	0.062	-0.382	0.208	-0.212	0.002	0.001	0
11/25/2002	8:03:28 AM	21.512	17.905	14.245	21.701	16.893	-0.125	-0.064	-0.048	0.062	-0.376	0.211	-0.212	0.002	0.001	0
11/25/2002	8:03:29 AM	21.507	17.905	14.25	21.701	16.893	-0.123	-0.066	-0.048	0.062	-0.373	0.208	-0.212	0.002	0.001	0
11/25/2002	8:03:30 AM	21.512	17.905	14.245	21.701	16.893	-0.123	-0.066	-0.048	0.062	-0.37	0.208	-0.21	0.002	0.001	0
11/25/2002	8:03:31 AM	21.507	17.905	14.25	21.696	16.883	-0.123	-0.066	-0.048	0.064	-0.367	0.208	-0.214	0.002	0.001	0
11/25/2002	8:03:32 AM	21.501	17.895	14.24	21.695	16.888	-0.121	-0.064	-0.048	0.062	-0.396	0.211	-0.21	0.002	0.001	0
Data - Per Minute																
11/25/2002	2:41:57 PM	25.458	22.351	25.811	23.209	23.378	3.197	34.04	4.803	-1.365	25.748	74.715	47.641	0.002	0.001	0
11/25/2002	2:42:57 PM	25.331	22.39	25.939	23.218	23.386	21.923	34.478	4.702	17.604	6.966	0.564	47.922	0.927	0.001	0
11/25/2002	2:43:57 PM	25.89	22.418	25.912	23.246	23.395	21.796	34.331	4.673	17.446	6.925	1.554	47.627	0.832	0.001	0
11/25/2002	2:44:57 PM	25.972	22.445	25.779	23.238	23.391	22.167	34.251	4.722	17.727	6.463	1.282	47.629	0.831	0.001	0
11/25/2002	2:45:57 PM	25.989	22.463	25.752	23.27	23.394	22.362	34.245	4.625	18.151	6.272	1.207	47.392	0.824	0.001	0
11/25/2002	2:46:57 PM	26.017	22.511	25.905	23.369	23.412	22.571	34.284	4.724	18.151	6.151	1.14	47.606	0.818	0.001	0
11/25/2002	2:47:57 PM	26.014	22.528	25.802	23.396	23.419	22.776	34.412	4.693	18.433	6.052	1.05	47.618	0.812	0.001	0
11/25/2002	2:48:57 PM	26.048	22.566	25.755	23.404	23.437	22.832	34.482	4.669	18.49	5.911	1.007	47.761	0.81	0.001	0
11/25/2002	2:49:57 PM	26.045	22.589	25.853	23.381	23.47	22.85	34.524	4.633	18.585	5.997	1.039	47.065	0.814	0.001	0
11/25/2002	2:50:57 PM	26.046	22.626	25.909	23.423	23.521	22.997	34.47	4.576	18.771	5.885	0.975	47.193	0.807	0.001	0
11/25/2002	2:51:57 PM	26.073	22.667	25.815	23.389	23.528	22.946	34.187	4.586	18.773	5.815	0.94	47.172	0.806	0.001	0
11/25/2002	2:52:57 PM	26.089	22.693	25.801	23.38	23.544	23.219	34.625	4.644	18.884	5.763	0.929	47.119	0.804	0.001	0
11/25/2002	2:53:57 PM	26.093	22.732	25.955	23.409	23.568	23.114	34.522	4.639	18.748	5.7	0.909	47.046	0.803	0.001	0
11/25/2002	2:54:57 PM	26.105	22.765	25.888	23.472	23.55	23.176	34.547	4.605	18.861	5.682	0.891	46.935	0.801	0.001	0
11/25/2002	2:55:57 PM	26.123	22.793	25.796	23.49	23.569	23.209	34.385	4.597	18.949	5.601	0.859	46.826	0.799	0.001	0
11/25/2002	2:56:57 PM	26.125	22.816	25.868	23.522	23.566	23.188	34.435	4.551	18.965	5.598	0.83	46.945	0.796	0.001	0
11/25/2002	2:57:57 PM	26.114	22.839	25.947	23.551	23.58	23.2	34.414	4.587	18.957	5.564	0.816	46.901	0.796	0.001	0
11/25/2002	2:58:57 PM	26.137	22.878	25.855	23.62	23.608	23.428	34.528	4.629	19.105	5.483	0.793	46.685	0.792	0.001	0
11/25/2002	2:59:57 PM	26.14	22.88	25.788	23.602	23.59	23.294	34.259	4.551	19.092	5.48	0.767	46.832	0.792	0.001	0
11/25/2002	3:00:57 PM	26.133	22.909	25.921	23.661	23.609	23.499	34.512	4.53	19.354	5.454	0.767	46.861	0.793	0.001	0
11/25/2002	3:01:57 PM	26.131	22.921	25.863	23.708	23.601	23.463	34.452	4.529	19.295	5.434	0.738	46.748	0.79	0.001	0
11/25/2002	3:02:57 PM	26.083	22.934	25.596	23.806	23.614	23.613	34.422	4.56	19.446	5.33	0.706	46.813	0.787	0.001	0
11/25/2002	3:03:57 PM	25.96	22.946	25.408	23.869	23.616	32.744	33.93	5.143	27.916	-1.289	-4.732	50.173	0.002	1.104	0
	Averages	26.0	22.7	25.8	23.5	23.5	22.9	34.4	4.6	18.7	5.9	0.9	47.2	0.8	0.0	0.0
	Maximum	26.1	22.9	26.0	23.8	23.6	23.6	34.6	4.7	19.4	7.0	1.6	47.9	0.9	0.0	0.0
	Median	26.1	22.7	25.9	23.4	23.5	23.1	34.4	4.6	18.8	5.8	0.9	47.1	0.8	0.0	0.0
	Minimum	25.3	22.4	25.6	23.2	23.4	21.8	34.2	4.5	17.4	5.3	0.6	46.7	0.8	0.0	0.0
	2 x Std Dev	0.338	0.352	0.166	0.311	0.166	0.998	0.230	0.119	1.099	0.898	0.434	0.737	0.058	0.000	0.000
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21

<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
		Filter Surface	6.707	FT2						
		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
		Note: Gauge Pressure P1 is approximately 1.4 psig								
		Pressure P1is corrected for 40.88 inches of water tubing								
		VVVV				< Filtrate Flux	<< PERMIABILITY >>			
							at 25C		x 1000	
Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
0	0	32.6	11.7	0.9	0.063	0.000	0.000	0.0003	0.318	0.27
1.00	0.01667	33.0	11.7	19.8	1.363	0.138	0.135	0.0068	6.811	5.80
2.00	0.03333	32.9	11.7	19.6	1.353	0.124	0.121	0.0062	6.162	5.24
3.00	0.05	32.8	11.7	19.9	1.375	0.124	0.121	0.0061	6.077	5.17
4.00	0.06667	32.8	11.6	20.3	1.397	0.123	0.120	0.0059	5.938	5.05
5.00	0.08333	32.8	11.7	20.4	1.404	0.122	0.119	0.0058	5.839	4.97
6.00	0.1	32.9	11.7	20.6	1.421	0.121	0.118	0.0057	5.745	4.89
7.00	0.11667	33.0	11.7	20.7	1.425	0.121	0.118	0.0057	5.722	4.87
8.00	0.13333	33.1	11.5	20.7	1.428	0.121	0.118	0.0057	5.719	4.87
9.00	0.15	33.0	11.6	20.9	1.440	0.120	0.117	0.0056	5.616	4.78
10.00	0.16667	32.7	11.6	20.9	1.438	0.120	0.117	0.0056	5.630	4.79
11.00	0.18333	33.2	11.5	21.1	1.451	0.120	0.117	0.0056	5.567	4.74
12.00	0.2	33.0	11.5	20.9	1.443	0.120	0.117	0.0056	5.569	4.74
13.00	0.21667	33.1	11.5	21.0	1.449	0.119	0.116	0.0055	5.542	4.72
14.00	0.23333	32.9	11.5	21.1	1.453	0.119	0.116	0.0055	5.526	4.70
15.00	0.25	33.0	11.5	21.1	1.453	0.119	0.116	0.0055	5.495	4.68
16.00	0.26667	32.9	11.5	21.1	1.453	0.119	0.116	0.0055	5.483	4.67
17.00	0.28333	33.1	11.4	21.3	1.466	0.118	0.115	0.0054	5.421	4.61
18.00	0.3	32.8	11.5	21.2	1.461	0.118	0.115	0.0054	5.450	4.64
19.00	0.31667	33.0	11.5	21.4	1.477	0.118	0.115	0.0054	5.377	4.58
20.00	0.33333	33.0	11.5	21.4	1.474	0.118	0.115	0.0054	5.377	4.58
21.00	0.35	32.9	11.5	21.5	1.484	0.117	0.115	0.0054	5.359	4.56
22.00	0.36667	32.5	12.3	30.3	2.091	0.000	0.000	0.0000	0.010	0.01
	0.2	32.9	11.6	20.8	1.434	0.121	0.118	0.0057	5.687	4.840
	0.4	33.2	11.7	21.5	1.484	0.138	0.135	0.0068	6.811	5.796
	0.2	33.0	11.5	20.9	1.443	0.120	0.117	0.0056	5.569	4.739
	0.0	32.7	11.4	19.6	1.353	0.117	0.115	0.0054	5.359	4.561
	0.202	0.230	0.181	1.046	0.072	0.009	0.008	0.0007	0.665	0.566
	21	21	21	21	21	21	21	21	21	21

Figure B38: Run 1.33B – Baseline Slurry – After AN-102R2 Batch 3A and Before Batch 4A – Raw & Calculated Data

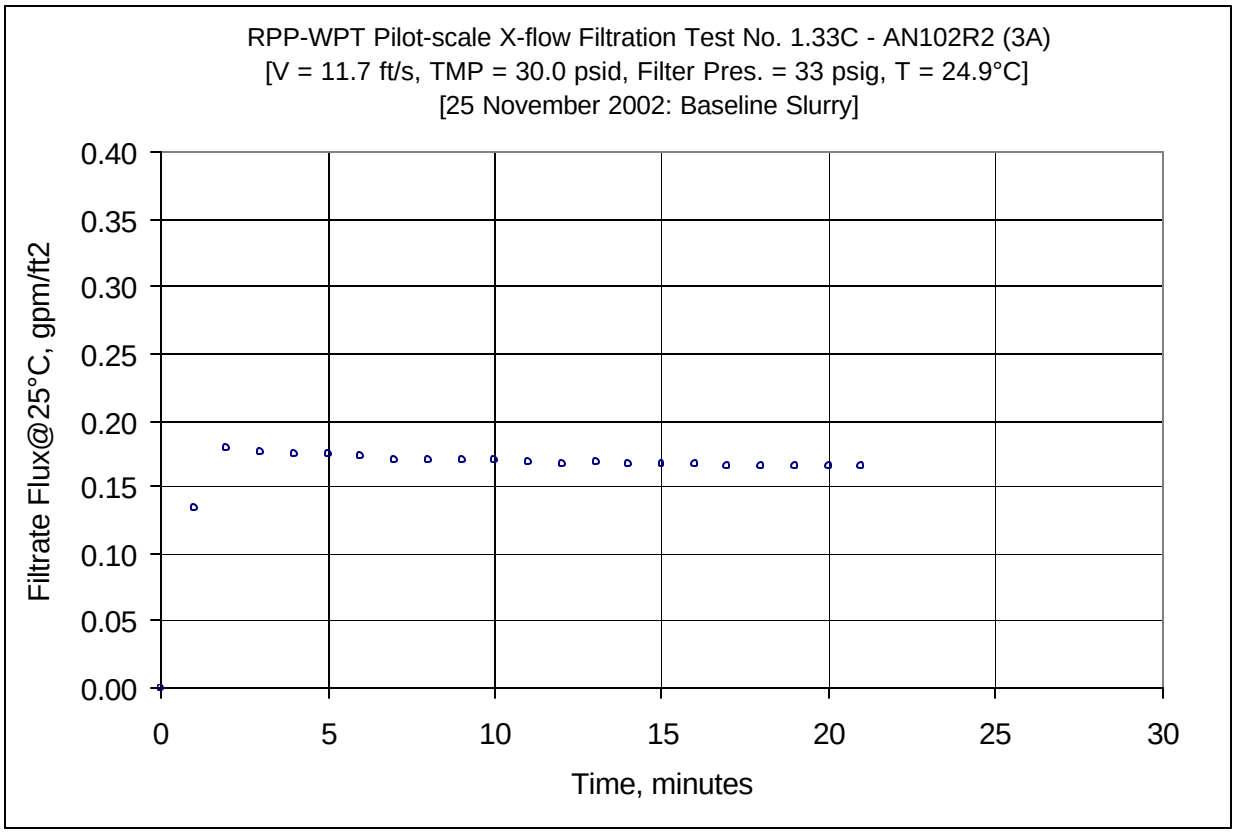


Figure B39: Run 1.33C – Baseline Slurry – After AN-102R2 Batch 3A and Before Batch 4A

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
11/25/2002	8:03:13 AM	21.491	17.89	14.224	21.68	16.888	-0.123	-0.066	-0.049	0.06	-0.376	0.205	-0.218	0.001	0.001	0			Filter Surface	6.707	FT2					
11/25/2002	8:03:26 AM	21.491	17.89	14.224	21.68	16.888	-0.123	-0.066	-0.049	0.06	-0.376	0.205	-0.218	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
11/25/2002	8:03:27 AM	21.507	17.9	14.245	21.701	16.893	-0.123	-0.068	-0.048	0.062	-0.382	0.208	-0.212	0.002	0.001	0										
11/25/2002	8:03:28 AM	21.512	17.905	14.245	21.701	16.893	-0.125	-0.064	-0.048	0.062	-0.376	0.211	-0.212	0.002	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig							
11/25/2002	8:03:29 AM	21.507	17.905	14.25	21.701	16.893	-0.123	-0.066	-0.048	0.062	-0.373	0.208	-0.212	0.002	0.001	0										
11/25/2002	8:03:30 AM	21.512	17.905	14.245	21.701	16.893	-0.123	-0.066	-0.048	0.062	-0.37	0.208	-0.21	0.002	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing							
11/25/2002	8:03:31 AM	21.507	17.905	14.25	21.696	16.883	-0.123	-0.066	-0.048	0.064	-0.367	0.208	-0.214	0.002	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY	>>
11/25/2002	8:03:32 AM	21.501	17.895	14.24	21.695	16.888	-0.121	-0.064	-0.048	0.062	-0.396	0.211	-0.21	0.002	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/25/2002	3:07:54 PM	25.716	23.027	25.088	23.789	23.702	3.377	34.042	4.832	-1.223	25.406	74.364	48	0.002	0.001	0	0	0	32.6	11.8	1.1	0.074	0.000	0.000	0.0003	0.276	0.24
11/25/2002	3:08:54 PM	25.534	23.051	25.037	23.797	23.715	21.508	33.698	4.839	17.057	6.795	0.555	48.558	0.894	0.001	0	1.00	0.01667	32.2	11.9	19.3	1.329	0.133	0.133	0.0069	6.905	5.88
11/25/2002	3:09:54 PM	25.501	23.068	25.114	23.814	23.737	32.312	33.825	4.816	27.836	-1.289	0.602	48.571	0.002	1.204	0	2.00	0.03333	32.4	11.9	30.1	2.073	0.180	0.179	0.0059	5.950	5.06
11/25/2002	3:10:54 PM	25.397	23.069	25.045	23.836	23.724	32.529	33.864	4.717	28.159	-1.286	0.596	48.082	0.002	1.177	0	3.00	0.05	32.4	11.8	30.3	2.092	0.175	0.175	0.0058	5.776	4.92
11/25/2002	3:11:54 PM	25.36	23.087	24.917	23.853	23.751	32.602	33.959	4.796	28.173	-1.289	0.593	48.04	0.001	1.168	0	4.00	0.06667	32.5	11.8	30.4	2.095	0.174	0.175	0.0057	5.744	4.89
11/25/2002	3:12:54 PM	25.327	23.094	24.884	23.87	23.788	32.655	33.965	4.702	28.241	-1.289	0.593	47.996	0.002	1.16	0	5.00	0.08333	32.5	11.8	30.4	2.099	0.173	0.174	0.0057	5.699	4.85
11/25/2002	3:13:54 PM	25.278	23.095	24.956	23.837	23.78	32.635	33.963	4.78	28.182	-1.289	0.59	47.941	0.001	1.153	0.001	6.00	0.1	32.5	11.7	30.4	2.097	0.172	0.172	0.0057	5.660	4.82
11/25/2002	3:14:54 PM	25.219	23.091	24.912	23.808	23.791	32.834	34.228	4.736	28.421	-1.289	0.587	47.866	0.001	1.137	0.001	7.00	0.11667	32.8	11.7	30.6	2.112	0.170	0.170	0.0055	5.549	4.72
11/25/2002	3:15:54 PM	25.217	23.119	24.814	23.8	23.794	32.622	33.872	4.723	28.212	-1.295	0.581	48.042	0.001	1.134	0.001	8.00	0.13333	32.4	11.8	30.4	2.097	0.169	0.170	0.0056	5.588	4.76
11/25/2002	3:16:54 PM	25.235	23.158	24.823	23.874	23.812	32.833	33.969	4.713	28.454	-1.286	0.587	47.971	0.001	1.13	0.001	9.00	0.15	32.5	11.8	30.6	2.113	0.168	0.169	0.0055	5.525	4.70
11/25/2002	3:17:54 PM	25.188	23.145	24.905	23.882	23.815	32.767	33.959	4.746	28.364	-1.289	0.587	47.99	0.001	1.132	0	10.00	0.16667	32.5	11.8	30.6	2.107	0.169	0.169	0.0055	5.536	4.71
11/25/2002	3:18:54 PM	25.155	23.153	24.873	23.919	23.817	32.767	33.955	4.749	28.378	-1.289	0.584	47.86	0.001	1.125	0.002	11.00	0.18333	32.5	11.7	30.6	2.108	0.168	0.168	0.0055	5.506	4.69
11/25/2002	3:19:54 PM	25.153	23.171	24.781	23.998	23.831	32.624	33.694	4.635	28.425	-1.289	0.584	47.738	0.002	1.115	0.002	12.00	0.2	32.2	11.7	30.5	2.105	0.166	0.167	0.0055	5.480	4.66
11/25/2002	3:20:54 PM	25.156	23.199	24.769	24.006	23.848	32.749	33.922	4.694	28.442	-1.286	0.581	47.629	0.001	1.116	0.002	13.00	0.21667	32.4	11.7	30.6	2.109	0.166	0.167	0.0055	5.474	4.66
11/25/2002	3:21:54 PM	25.134	23.212	24.862	23.998	23.861	32.707	33.833	4.633	28.497	-1.292	0.579	47.707	0.001	1.114	0.001	14.00	0.23333	32.4	11.7	30.6	2.110	0.166	0.167	0.0054	5.448	4.64
11/25/2002	3:22:54 PM	25.126	23.245	24.819	24.041	23.879	32.883	34.131	4.722	28.505	-1.289	0.581	47.562	0.001	1.115	0.003	15.00	0.25	32.7	11.7	30.7	2.116	0.166	0.167	0.0054	5.444	4.63
11/25/2002	3:23:54 PM	25.128	23.257	24.726	24.008	23.891	32.686	33.818	4.685	28.315	-1.289	0.581	47.549	0.001	1.105	0.002	16.00	0.26667	32.3	11.7	30.5	2.103	0.165	0.166	0.0054	5.443	4.63
11/25/2002	3:24:54 PM	25.131	23.284	24.744	24.031	23.879	32.877	34.038	4.7	28.501	-1.289	0.581	47.664	0.002	1.103	0.003	17.00	0.28333	32.6	11.7	30.7	2.116	0.164	0.166	0.0054	5.397	4.59
11/25/2002	3:25:54 PM	25.103	23.296	24.846	24.048	23.891	32.821	34.06	4.685	28.479	-1.289	0.576	47.776	0.001	1.098	0.002	18.00	0.3	32.6	11.7	30.7	2.113	0.164	0.164	0.0054	5.364	4.57
11/25/2002	3:26:54 PM	25.1	23.314	24.773	24.07	23.913	32.809	34.139	4.73	28.352	-1.289	0.579	47.642	0.001	1.097	0.002	19.00	0.31667	32.7	11.7	30.6	2.108	0.164	0.165	0.0054	5.383	4.58
11/25/2002	3:27:54 PM	25.091	23.324	24.688	24.051	23.923	32.881	33.957	4.596	28.657	-1.292	0.576	47.644	0.002	1.093	0.002	20.00	0.33333	32.5	11.7	30.8	2.121	0.163	0.164	0.0053	5.343	4.55
11/25/2002	3:28:54 PM	25.086	23.33	24.729	24.046	23.929	32.769	33.856	4.691	28.444	-1.289	0.579	47.746	0.001	1.094	0.002	21.00	0.35	32.4	11.7	30.6	2.110	0.163	0.164	0.0054	5.370	4.57
	Averages	25.2	23.2	24.9	23.9	23.8	32.2	33.9	4.7	27.8	-0.9	0.6	47.9	0.0	1.1	0.0		0.2	32.5	11.7	30.0	2.068	0.167	0.167	0.0056	5.599	4.765
	Maximum	25.5	23.3	25.1	24.1	23.9	32.9	34.2	4.8	28.7	6.8	0.6	48.6	0.9	1.2	0.0		0.4	32.8	11.9	30.8	2.121	0.180	0.179	0.0069	6.905	5.876
	Median	25.2	23.2	24.8	23.9	23.8	32.7	34.0	4.7	28.4	-1.3	0.6	47.9	0.0	1.1	0.0		0.2	32.5	11.7	30.6	2.108	0.166	0.167	0.0055	5.506	4.686
	Minimum	25.1	23.1	24.7	23.8	23.7	21.5	33.7	4.6	17.1	-1.3	0.6	47.5	0.0	0.0	0.0		0.0	32.2	11.7	19.3	1.329	0.133	0.133	0.0053	5.343	4.547
	2 x Std Dev	0.259	0.183	0.220	0.195	0.128	4.782	0.263	0.115	4.823	3.443	0.018	0.548	0.380	0.484	0.002		0.202	0.263	0.134	4.802	0.331	0.017	0.017	0.0007	0.659	0.560
Number of Points Used*		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		21	21	21	21	21	21	21	21	21	21

Figure B40: Run 1.33C – Baseline Slurry – After AN-102R2 Batch 3A and Before Batch 4A – Raw & Calculated Data

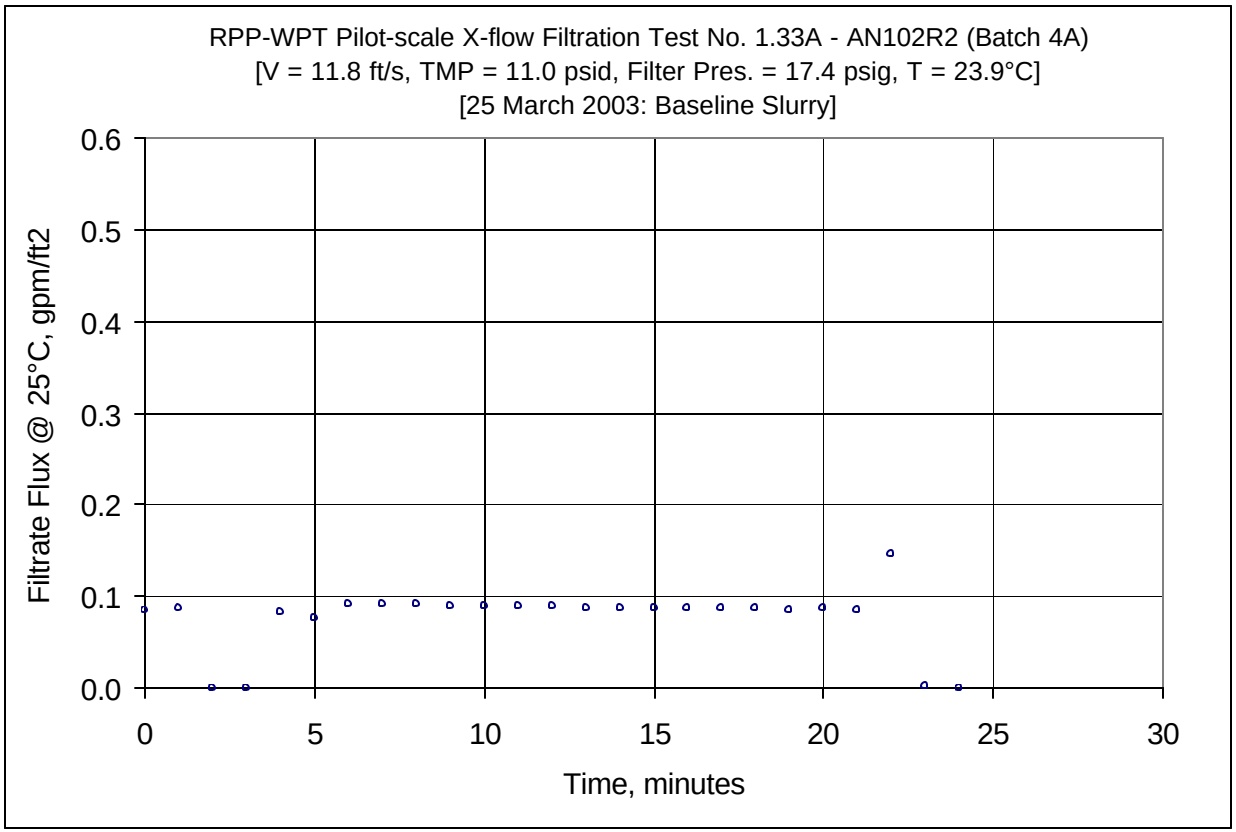


Figure B41: Run 1.33A – Baseline Slurry – After AN-102R2 Batch 4A

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
3/25/2003	9:00:50 AM	22.653	19.599	23.314	21.549	18.6	-0.123	-0.068	-0.062	0.06	-0.156	0.234	37.838	1.192	0.001	0.001			Filter Surface A	6.707	FT2					
3/25/2003	9:01:12 AM	22.653	19.599	23.314	21.549	18.6	-0.123	-0.068	-0.062	0.06	-0.156	0.234	37.838	1.192	0.001	0.001			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
3/25/2003	9:01:13 AM	22.91	19.594	23.544	21.529	18.595	-0.121	-0.07	-0.062	0.058	-0.179	0.228	37.979	1.192	0.001	0										
3/25/2003	9:01:14 AM	22.904	19.583	23.564	21.513	18.589	-0.123	-0.068	-0.062	0.058	-0.177	0.231	37.958	1.192	0.001	0.001			Note: Gauge Pressure P1 is approximately 1.4 psig							
3/25/2003	9:01:15 AM	22.924	19.573	23.538	21.508	18.584	-0.123	-0.068	-0.062	0.06	-0.179	0.231	37.912	1.192	0.001	0.001										
3/25/2003	9:01:16 AM	22.939	19.578	23.574	21.523	18.574	-0.123	-0.068	-0.062	0.06	-0.177	0.231	37.956	1.192	0.001	0.001			Pressure P1is corrected for 40.88 inches of water tubing							
3/25/2003	9:01:17 AM	22.974	19.583	23.609	21.538	18.574	-0.123	-0.068	-0.061	0.062	-0.177	0.234	38	1.192	0.001	0.001			VVVV				< Filtrate Flux	<< PERMIABILITY	>>	
3/25/2003	9:01:18 AM	22.984	19.578	23.614	21.533	18.574	-0.123	-0.068	-0.061	0.058	-0.174	0.231	37.977	1.192	0.001	0.002							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
3/25/2003	12:38:29 PM	25.058	22.835	24.536	24.108	22.374	12.573	16.927	5.161	7.366	-0.951	-1.998	49.108	0.567	0.001	0	0	0	15.5	12.0	10.0	0.687	0.085	0.086	0.0086	8.591	7.31
3/25/2003	12:39:29 PM	24.941	22.827	24.338	24.111	22.382	12.733	17.026	4.999	7.772	-0.94	-1.99	48.772	0.568	0.001	0	1.00	0.01667	15.6	12.0	10.3	0.707	0.085	0.086	0.0084	8.416	7.16
3/25/2003	12:40:29 PM	24.908	22.819	24.17	24.169	22.379	3.454	17.275	4.98	-1.545	8.648	18.177	48.019	0.002	0.001	0	2.00	0.03333	15.8	11.8	1.0	0.066	0.000	0.000	0.0003	0.320	0.27
3/25/2003	12:41:29 PM	24.881	22.823	24.027	24.167	22.362	3.276	17.072	4.945	-1.668	8.648	18.145	47.826	0.002	0.001	0	3.00	0.05	15.6	11.7	0.8	0.055	0.000	0.000	0.0004	0.381	0.32
3/25/2003	12:42:29 PM	24.748	22.8	23.889	24.199	22.38	10.579	17.043	4.997	5.649	1.28	0.367	48.317	0.533	0.001	0	4.00	0.06667	15.6	11.8	8.1	0.559	0.079	0.082	0.0101	10.106	8.60
3/25/2003	12:43:29 PM	24.511	22.804	23.758	24.238	22.408	10.645	17.113	5.005	5.641	1.205	0.489	48.191	0.497	0.001	0	5.00	0.08333	15.6	11.8	8.1	0.561	0.074	0.077	0.0094	9.425	8.02
3/25/2003	12:44:29 PM	24.355	22.808	23.672	24.343	22.443	12.302	17.248	4.945	7.385	-0.249	-1.521	48.243	0.592	0.001	0	6.00	0.1	15.8	11.8	9.8	0.679	0.088	0.092	0.0093	9.310	7.92
3/25/2003	12:45:29 PM	24.17	22.814	23.607	24.413	22.504	12.463	17.204	4.897	7.643	-0.495	-1.709	47.969	0.588	0.001	0	7.00	0.11667	15.7	11.8	10.1	0.693	0.088	0.091	0.0091	9.071	7.72
3/25/2003	12:46:29 PM	24.041	22.82	23.548	24.515	22.556	12.47	17.103	4.925	7.536	-0.607	-1.773	47.937	0.583	0.001	0	8.00	0.13333	15.6	11.7	10.0	0.690	0.087	0.091	0.0091	9.054	7.70
3/25/2003	12:47:29 PM	23.923	22.833	23.511	24.678	22.618	12.608	17.177	4.957	7.657	-0.648	-1.81	47.872	0.579	0.001	0	9.00	0.15	15.7	11.7	10.1	0.699	0.086	0.090	0.0089	8.886	7.56
3/25/2003	12:48:29 PM	23.84	22.845	23.473	24.85	22.661	12.644	17.122	4.857	7.856	-0.758	-1.859	47.943	0.574	0.001	0	10.00	0.16667	15.6	11.7	10.3	0.707	0.086	0.089	0.0087	8.718	7.42
3/25/2003	12:49:29 PM	23.738	22.843	23.411	24.969	22.724	12.739	17.225	4.902	7.815	-0.772	-1.888	47.91	0.572	0.001	0	11.00	0.18333	15.8	11.7	10.3	0.709	0.085	0.089	0.0087	8.680	7.39
3/25/2003	12:50:29 PM	23.675	22.855	23.397	25.021	22.756	12.795	17.213	4.932	7.895	-0.838	-1.932	48.086	0.569	0.001	0	12.00	0.2	15.7	11.8	10.3	0.713	0.085	0.089	0.0086	8.581	7.30
3/25/2003	12:51:29 PM	23.633	22.873	23.591	24.954	22.79	12.865	17.225	4.918	7.974	-0.885	-1.941	47.836	0.566	0.001	0	13.00	0.21667	15.8	11.7	10.4	0.718	0.084	0.088	0.0084	8.428	7.17
3/25/2003	12:52:29 PM	23.624	22.864	23.618	24.87	22.806	12.803	17.217	4.953	7.897	-0.888	-1.952	48.032	0.566	0.001	0	14.00	0.23333	15.7	11.8	10.4	0.714	0.084	0.088	0.0085	8.478	7.22
3/25/2003	12:53:29 PM	23.686	22.891	23.73	24.877	22.823	12.896	17.233	4.965	7.978	-0.882	-1.97	48.092	0.564	0.001	0	15.00	0.25	15.8	11.8	10.4	0.720	0.084	0.087	0.0084	8.351	7.11
3/25/2003	12:54:29 PM	23.717	22.892	23.846	24.802	22.834	12.961	17.279	4.955	8.021	-0.94	-1.981	47.937	0.563	0.001	0	16.00	0.26667	15.8	11.7	10.5	0.723	0.084	0.087	0.0083	8.266	7.03
3/25/2003	12:55:29 PM	23.773	22.919	23.903	24.784	22.86	12.874	17.179	4.902	7.981	-0.948	-1.998	48.04	0.561	0.001	0	17.00	0.28333	15.7	11.8	10.4	0.719	0.084	0.086	0.0083	8.274	7.04
3/25/2003	12:56:29 PM	23.819	22.908	23.903	24.764	22.87	13.004	17.297	4.881	8.187	-0.954	-2.013	48.038	0.559	0.001	0	18.00	0.3	15.8	11.8	10.6	0.731	0.083	0.086	0.0081	8.113	6.90
3/25/2003	12:57:29 PM	23.853	22.918	23.917	24.783	22.885	12.917	17.179	4.96	7.981	-1	-2.027	47.971	0.558	0.001	0	19.00	0.31667	15.7	11.8	10.4	0.720	0.083	0.086	0.0082	8.209	6.99
3/25/2003	12:58:29 PM	23.898	22.928	23.992	24.778	22.885	12.903	17.196	4.843	8.046	-0.948	-1.99	47.558	0.561	0.001	0	20.00	0.33333	15.7	11.7	10.5	0.722	0.084	0.086	0.0082	8.216	6.99
3/25/2003	12:59:29 PM	23.939	22.939	24.108	24.829	22.915	13.017	17.339	4.878	8.21	-0.948	-2.001	47.482	0.561	0.001	0	21.00	0.35	15.9	11.6	10.6	0.732	0.084	0.086	0.0081	8.082	6.88
3/25/2003	1:00:29 PM	24.045	22.929	24.39	24.754	22.906	18.924	31.595	4.16	14.812	7.443	3.153	43.652	0.959	0.001	0	22.00	0.36667	30.1	10.7	16.9	1.163	0.143	0.145	0.0086	8.623	7.34
3/25/2003	1:01:29 PM	24.347	22.93	24.681	24.82	22.902	35.617	39.576	4.554	31.371	-1.284	-5.221	46.813	0.015	0.976	0	23.00	0.38333	38.1	11.5	33.5	2.309	0.002	0.002	0.0001	0.067	0.06
3/25/2003	1:02:29 PM	24.692	22.935	24.976	24.84	22.902	22.652	23.433	5.384	17.404	-1.286	-5.184	51.417	0.002	1.121	0	24.00	0.4	22.0	12.6	20.0	1.381	0.000	0.000	0.0000	0.015	0.01
	Averages	24.2	22.9	23.9	24.6	22.7	13.4	18.9	4.9	8.5	0.4	-0.2	48.0	0.5	0.1	0.0	12.0	0.2	17.4	11.8	11.0	0.755	0.073	0.076	0.0073	7.306	6.2
	Maximum	25.1	22.9	25.0	25.0	22.9	35.6	39.6	5.4	31.4	8.6	18.2	51.4	1.0	1.1	0.0	24.0	0.4	38.1	12.6	33.5	2.309	0.143	0.145	0.0101	10.106	8.6
	Median	23.9	22.9	23.9	24.8	22.8	12.8	17.2	4.9	7.9	-0.9	-1.9	48.0	0.6	0.0	0.0	12.0	0.2	15.7	11.8	10.3	0.713	0.084	0.086	0.0084	8.428	7.2
	Minimum	23.6	22.8	23.4	24.1	22.4	3.3	16.9	4.2	-1.7	-1.3	-5.2	43.7	0.0	0.0	0.0	0.0	0.0	15.5	10.7	0.8	0.055	0.000	0.000	0.0000	0.015	0.0
	2 x Std Dev	0.928	0.094	0.805	0.599	0.416	11.558	10.390	0.406	11.809	5.932	11.237	2.351	0.452	0.570	0.000	14.422	0.240	10.390	0.576	11.682	0.805	0.067	0.069	0.0063	6.273	5.338
Number of Points Used*		25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25

Figure B42: Run 1.33A – Baseline Slurry – After AN-102R2 Batch 4A – Raw & Calculated Data

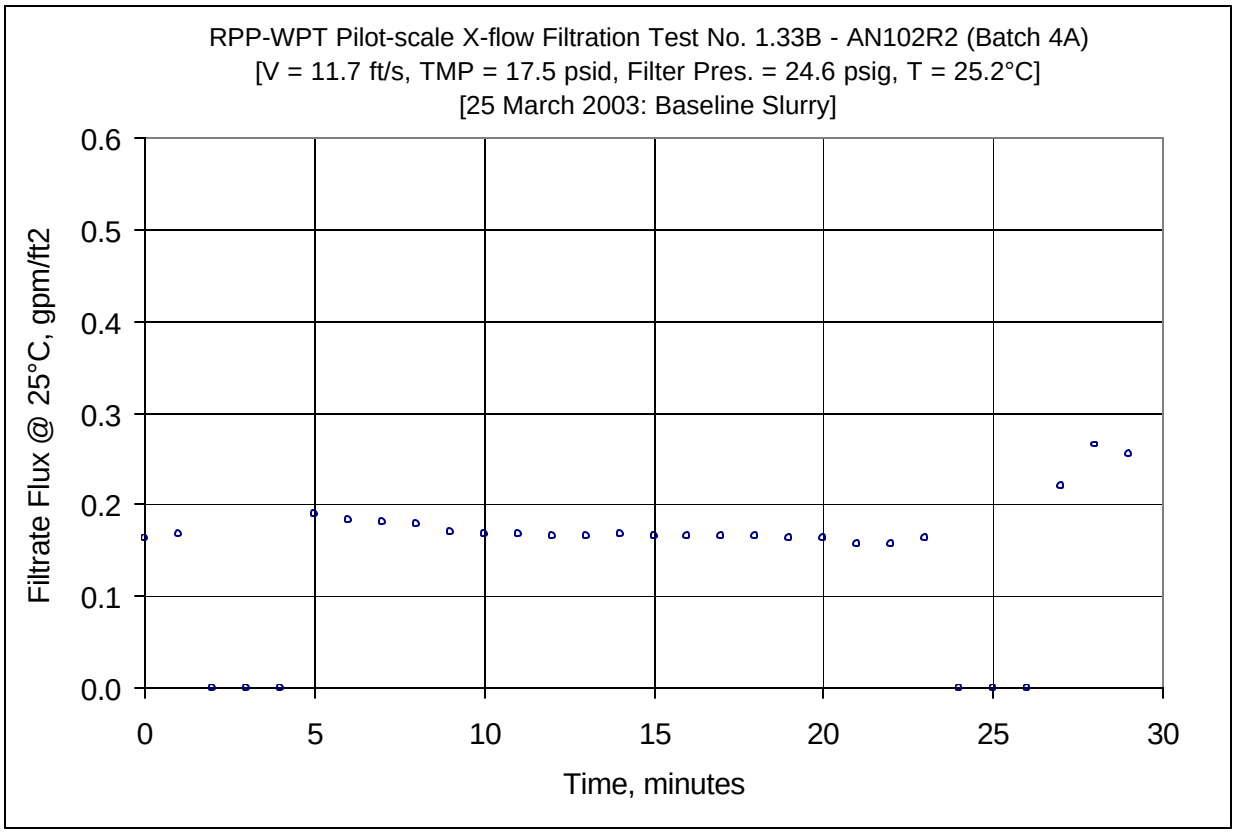


Figure B43: Run 1.33B – Baseline Slurry – After AN-102R2 Batch 4A

		<<<<<<<<< Temperature Measurements >>>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
3/25/2003	9:00:50 AM	22.653	19.599	23.314	21.549	18.6	-0.123	-0.068	-0.062	0.06	-0.156	0.234	37.838	1.192	0.001	0.001			Filter Surface A	6.707	FT2					
3/25/2003	9:01:12 AM	22.653	19.599	23.314	21.549	18.6	-0.123	-0.068	-0.062	0.06	-0.156	0.234	37.838	1.192	0.001	0.001			Conversion	851.01	m3/m2/day/barg / gpm/ft2/barg					
3/25/2003	9:01:13 AM	22.91	19.594	23.544	21.529	18.595	-0.121	-0.07	-0.062	0.058	-0.179	0.228	37.979	1.192	0.001	0										
3/25/2003	9:01:14 AM	22.904	19.583	23.564	21.513	18.589	-0.123	-0.068	-0.062	0.058	-0.177	0.231	37.958	1.192	0.001	0.001			Note: Gauge Pressure P1 is approximately 1.4 psig							
3/25/2003	9:01:15 AM	22.924	19.573	23.538	21.508	18.584	-0.123	-0.068	-0.062	0.06	-0.179	0.231	37.912	1.192	0.001	0.001										
3/25/2003	9:01:16 AM	22.939	19.578	23.574	21.523	18.574	-0.123	-0.068	-0.062	0.06	-0.177	0.231	37.956	1.192	0.001	0.001			Pressure P1is corrected for 40.88 inches of water tubing							
3/25/2003	9:01:17 AM	22.974	19.583	23.609	21.538	18.574	-0.123	-0.068	-0.061	0.062	-0.177	0.234	38	1.192	0.001	0.001			VVVV				< Filtrate Flux <<		PERMIABILITY >>	
3/25/2003	9:01:18 AM	22.984	19.578	23.614	21.533	18.574	-0.123	-0.068	-0.061	0.058	-0.174	0.231	37.977	1.192	0.001	0.002								at 25C		x 1000
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
3/25/2003	1:03:12 PM	24.798	22.92	25.096	24.765	22.912	22.917	23.77	4.992	17.971	-1.286	-5.192	49.126	0.002	1.097	0	0	0	22.3	12.0	20.4	1.410	0.164	0.163	0.0080	7.978	6.79
3/25/2003	1:04:12 PM	24.933	22.93	25.146	24.735	22.922	23.337	24.106	4.957	18.48	-1.289	-5.184	48.285	0.002	1.128	0.002	1.00	0.01667	22.6	11.8	20.9	1.442	0.168	0.167	0.0080	8.010	6.82
3/25/2003	1:05:12 PM	24.957	22.929	25.196	24.769	22.906	3.348	24.457	4.83	-1.434	15.992	21.432	47.197	0.002	0.001	0	2.00	0.03333	23.0	11.6	1.0	0.066	0.000	0.000	0.0002	0.155	0.13
3/25/2003	1:06:12 PM	24.892	22.924	25.23	24.729	22.9	3.197	24.312	4.862	-1.733	16.013	21.192	47.321	0.001	0.001	0	3.00	0.05	22.8	11.6	0.7	0.050	0.000	0.000	0.0002	0.202	0.17
3/25/2003	1:07:12 PM	24.149	22.938	25.33	24.753	22.905	3.39	24.534	4.808	-1.375	16.091	26.983	46.998	0.002	0.001	0.004	4.00	0.06667	23.1	11.5	1.0	0.069	0.000	0.000	0.0001	0.147	0.12
3/25/2003	1:08:12 PM	25.165	22.932	25.398	24.727	22.913	22.981	24.238	4.754	18.374	-1.289	0.483	47.927	0.002	1.28	0	5.00	0.08333	22.8	11.7	20.7	1.426	0.191	0.189	0.0091	9.127	7.77
3/25/2003	1:09:12 PM	25.274	22.93	25.452	24.775	22.912	23.01	24.066	4.72	18.536	-1.284	0.486	47.83	0.002	1.246	0	6.00	0.1	22.6	11.7	20.8	1.432	0.186	0.183	0.0088	8.830	7.51
3/25/2003	1:10:12 PM	25.343	22.925	25.461	24.835	22.927	23.113	24.151	4.787	18.456	-1.286	0.48	47.694	0.002	1.221	0	7.00	0.11667	22.7	11.7	20.8	1.433	0.182	0.180	0.0086	8.646	7.36
3/25/2003	1:11:12 PM	25.397	22.923	25.475	24.794	22.945	23.372	24.416	4.744	18.74	-1.286	0.468	47.423	0.001	1.208	0	8.00	0.13333	22.9	11.6	21.1	1.452	0.180	0.178	0.0084	8.440	7.18
3/25/2003	1:12:12 PM	25.446	22.927	25.509	24.722	22.924	22.792	23.7	5.053	17.84	-1.289	0.468	49.193	0.002	1.153	0	9.00	0.15	22.2	12.1	20.3	1.401	0.172	0.169	0.0083	8.341	7.10
3/25/2003	1:13:12 PM	25.49	22.932	25.553	24.767	22.948	22.828	23.682	5.001	17.989	-1.286	0.466	48.923	0.001	1.143	0	10.00	0.16667	22.2	12.0	20.4	1.407	0.170	0.168	0.0082	8.221	7.00
3/25/2003	1:14:12 PM	25.529	22.93	25.607	24.78	22.947	22.987	23.828	5.017	18.059	-1.286	0.468	48.961	0.002	1.137	0.001	11.00	0.18333	22.4	12.0	20.5	1.415	0.170	0.167	0.0081	8.120	6.91
3/25/2003	1:15:12 PM	25.553	22.92	25.676	24.785	22.957	23.103	23.895	4.942	18.231	-1.286	0.471	48.728	0.002	1.132	0.001	12.00	0.2	22.4	11.9	20.7	1.425	0.169	0.166	0.0080	8.013	6.82
3/25/2003	1:16:12 PM	25.583	22.924	25.696	24.789	22.976	23.039	23.831	4.874	18.312	-1.284	0.468	48.487	0.002	1.125	0.001	13.00	0.21667	22.4	11.9	20.7	1.426	0.168	0.164	0.0080	7.955	6.77
3/25/2003	1:17:12 PM	25.602	22.918	25.689	24.793	22.98	23.468	24.302	4.7	18.922	-1.284	0.471	47.545	0.001	1.14	0	14.00	0.23333	22.8	11.7	21.2	1.461	0.170	0.167	0.0079	7.865	6.69
3/25/2003	1:18:12 PM	25.627	22.923	25.689	24.788	22.985	23.55	24.37	4.586	19.06	-1.286	0.468	47.255	0.002	1.134	0.002	15.00	0.25	22.9	11.6	21.3	1.469	0.169	0.166	0.0078	7.784	6.62
3/25/2003	1:19:12 PM	25.655	22.921	25.693	24.751	22.989	23.391	24.209	4.712	18.759	-1.289	0.468	47.423	0.001	1.126	0.001	16.00	0.26667	22.7	11.6	21.1	1.453	0.168	0.165	0.0078	7.812	6.65
3/25/2003	1:20:12 PM	25.68	22.921	25.703	24.756	22.994	23.522	24.341	4.716	18.896	-1.286	0.471	47.188	0.001	1.128	0.001	17.00	0.28333	22.9	11.6	21.2	1.462	0.168	0.165	0.0078	7.774	6.62
3/25/2003	1:21:12 PM	25.685	22.916	25.613	24.801	22.988	23.482	24.296	4.684	18.984	-1.286	0.468	47.295	0.002	1.122	0.001	18.00	0.3	22.8	11.6	21.2	1.464	0.167	0.164	0.0077	7.744	6.59
3/25/2003	1:22:12 PM	25.593	22.899	25.401	24.925	22.987	23.459	24.255	4.703	18.906	-1.289	0.448	47.058	0.001	1.112	0	19.00	0.31667	22.8	11.5	21.2	1.460	0.166	0.164	0.0077	7.739	6.59
3/25/2003	1:23:12 PM	25.498	22.929	25.265	25.079	23.021	23.704	24.567	4.792	18.918	-1.286	0.451	47.232	0.002	1.102	0.002	20.00	0.33333	23.1	11.6	21.3	1.469	0.164	0.163	0.0077	7.652	6.51
3/25/2003	1:24:12 PM	25.331	22.912	25.039	25.098	23.02	22.842	24.548	4.695	18.255	-1.286	26.621	47.033	0.002	1.05	0.001	21.00	0.35	23.1	11.5	20.5	1.417	0.157	0.156	0.0076	7.610	6.48
3/25/2003	1:25:12 PM	25.185	22.916	24.852	25.132	23.044	23.024	24.693	4.669	18.558	-1.289	24.307	46.823	0.001	1.047	0.001	22.00	0.36667	23.2	11.5	20.8	1.433	0.156	0.157	0.0075	7.539	6.42
3/25/2003	1:26:12 PM	25.048	22.92	24.706	25.121	23.067	23.774	24.499	4.712	19.268	-1.286	27.524	47.006	0.002	1.083	0.002	23.00	0.38333	23.0	11.5	21.5	1.484	0.161	0.163	0.0076	7.565	6.44
3/25/2003	1:27:12 PM	24.395	22.919	24.544	25.22	23.076	3.313	24.72	4.616	-1.217	16.267	23.184	46.27	0.001	0.001	0.002	24.00	0.4	23.2	11.3	1.0	0.072	0.000	0.000	0.0001	0.144	0.12
3/25/2003	1:28:12 PM	24.555	22.907	24.423	25.263	23.065	3.326	24.728	4.624	-1.172	16.255	23.178	46.014	0.001	0.001	0.002	25.00	0.41667	23.3	11.3	1.1	0.074	0.000	0.000	0.0001	0.141	0.12
3/25/2003	1:29:12 PM	23.962	22.937	24.357	25.323	23.084	-5.288	24.873	4.611	-9.881	25.181	32.875	45.37	0.002	0.001	1.19	26.00	0.43333	23.4	11.1	-7.6	-0.523	0.000	0.000	0.0000	-0.020	-0.02
3/25/2003	1:30:12 PM	24.614	22.927	24.322	25.313	23.104	28.469	37.855	4.41	24.337	4.035	33.715	46.224	0.002	1.449	0.001	27.00	0.45	36.4	11.3	26.4	1.820	0.216	0.220	0.0083	8.340	7.10
3/25/2003	1:31:12 PM	24.588	22.931	24.501	25.402	23.134	34.236	45.463	5.709	28.822	5.818	33.735	53.158	0.002	1.75	0.002	28.00	0.46667	44.0	13.0	31.5	2.174	0.261	0.265	0.0084	8.392	7.14
3/25/2003	1:32:12 PM	24.681	22.959	24.634	25.465	23.227	33.459	44.311	4.877	28.82	5.48	33.636	48.266	0.002	1.688	0	29.00	0.48333	42.8	11.8	31.1	2.147	0.252	0.254	0.0082	8.166	6.95
	Averages	25.1	22.9	25.2	24.9	23.0	19.8	26.1	4.8	15.2	3.1	10.9	47.7	0.0	1.0	0.0	14.5	0.2	24.6	11.7	17.5	1.206	0.143	0.142	0.0065	6.481	5.5
	Maximum	25.7	23.0	25.7	25.5	23.2	34.2	45.5	5.7	28.8	25.2	33.7	53.2	0.0	1.8	1.2	29.0	0.5	44.0	13.0	31.5	2.174	0.261	0.265	0.0091	9.127	7.8
	Median	25.3	22.9	25.4	24.8	23.0	23.1	24.3	4.7	18.5	-1.3	0.5	47.4	0.0	1.1	0.0	14.5	0.2	22.9	11.6	20.8	1.433	0.168	0.165	0.0078	7.839	6.7
	Minimum	24.0	22.9	24.3	24.7	22.9	-5.3	23.7	4.4	-9.9	-1.3	-5.2	45.4	0.0	0.0	0.0	0.0	0.0	22.2	11.1	-7.6	-0.523	0.000	0.000	0.0000	-0.020	0.0
	2 x Std Dev	0.956	0.021	0.897	0.468	0.156	18.996	11.181	0.443	18.966	15.291	27.763	2.734	0.001	1.010	0.427	17.311	0.289	11.181	0.670	18.980	1.309	0.151	0.150	0.0064	6.394	5.441
Number of Points Used*		30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

Figure B44: Run 1.33B – Baseline Slurry – After AN-102R2 Batch 4A – Raw & Calculated Data

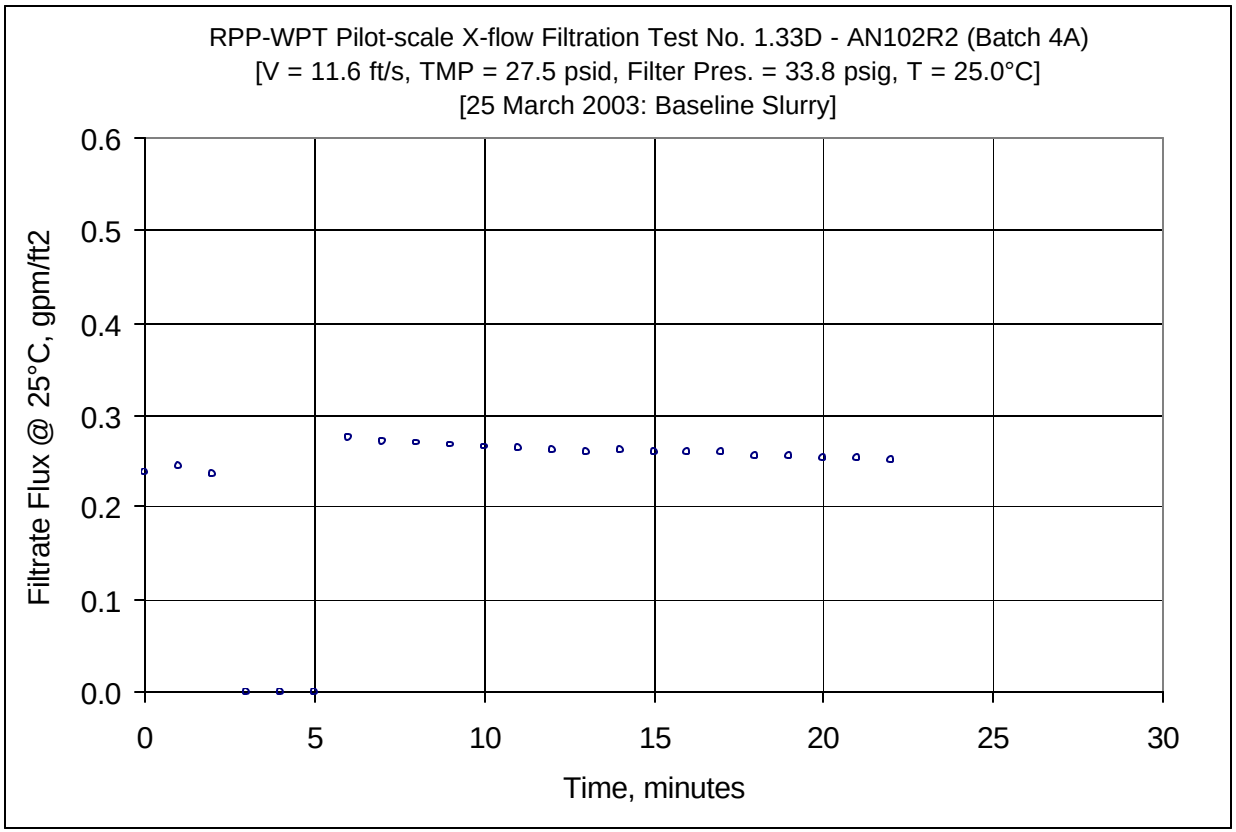


Figure B45: Run 1.33D – Baseline Slurry – After AN-102R2 Batch 4A (replaced 1.33C which had control problems)

		<<<<<<<<< Temperature Measurements >>>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
3/25/2003	9:00:50 AM	22.653	19.599	23.314	21.549	18.6	-0.123	-0.068	-0.062	0.06	-0.156	0.234	37.838	1.192	0.001	0.001			Filter Surface .	6.707	FT2					
3/25/2003	9:01:12 AM	22.653	19.599	23.314	21.549	18.6	-0.123	-0.068	-0.062	0.06	-0.156	0.234	37.838	1.192	0.001	0.001			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
3/25/2003	9:01:13 AM	22.91	19.594	23.544	21.529	18.595	-0.121	-0.07	-0.062	0.058	-0.179	0.228	37.979	1.192	0.001	0										
3/25/2003	9:01:14 AM	22.904	19.583	23.564	21.513	18.589	-0.123	-0.068	-0.062	0.058	-0.177	0.231	37.958	1.192	0.001	0.001			Note: Gauge Pressure P1 is approximately 1.4 psig							
3/25/2003	9:01:15 AM	22.924	19.573	23.538	21.508	18.584	-0.123	-0.068	-0.062	0.06	-0.179	0.231	37.912	1.192	0.001	0.001										
3/25/2003	9:01:16 AM	22.939	19.578	23.574	21.523	18.574	-0.123	-0.068	-0.062	0.06	-0.177	0.231	37.956	1.192	0.001	0.001			Pressure P1is corrected for 40.88 inches of water tubing							
3/25/2003	9:01:17 AM	22.974	19.583	23.609	21.538	18.574	-0.123	-0.068	-0.061	0.062	-0.177	0.234	38	1.192	0.001	0.001			VVVV				< Filtrate Flux <<		PERMIABILITY >>	
3/25/2003	9:01:18 AM	22.984	19.578	23.614	21.533	18.574	-0.123	-0.068	-0.061	0.058	-0.174	0.231	37.977	1.192	0.001	0.002								at 25C		x 1000
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
3/25/2003	1:54:37 PM	25.621	23.023	25.399	26.184	22.949	32.552	34.737	4.969	27.836	-1.286	-3.788	48.686	0.002	1.614	0	0	0	33.3	11.9	30.2	2.082	0.241	0.238	0.0079	7.881	6.71
3/25/2003	1:55:37 PM	25.54	23.016	25.288	26.308	22.958	33.231	35.434	4.552	29.029	-1.286	-3.773	46.637	0.002	1.656	0	1.00	0.01667	34.0	11.4	31.1	2.146	0.247	0.245	0.0079	7.867	6.70
3/25/2003	1:56:37 PM	25.47	23.016	25.247	26.268	22.973	32.334	34.329	5.171	27.439	-1.289	-3.779	49.751	0.002	1.583	0	2.00	0.03333	32.9	12.2	29.9	2.061	0.236	0.234	0.0078	7.842	6.67
3/25/2003	1:57:37 PM	25.443	23.015	25.176	26.186	22.987	3.332	35.18	5.079	-1.684	26.713	23.036	47.74	0.002	0.001	0	3.00	0.05	33.7	11.7	0.8	0.057	0.000	0.000	0.0002	0.180	0.15
3/25/2003	1:58:37 PM	25.433	23.01	25.13	26.106	23.001	3.348	35.554	4.824	-1.313	27.115	22.738	46.863	0.002	0.001	0	4.00	0.06667	34.1	11.5	1.0	0.070	0.000	0.000	0.0001	0.146	0.12
3/25/2003	1:59:37 PM	25.022	23.009	25.1	25.995	23.031	20.788	35.024	4.666	16.372	8.966	0.451	47.49	1.192	0.001	0	5.00	0.08333	33.6	11.6	18.6	1.281	0.000	0.000	0.0000	0.008	0.01
3/25/2003	2:00:37 PM	25.227	23.014	25.06	26	23.036	31.961	34.948	4.779	27.418	-1.286	0.602	47.918	0.002	1.863	0	6.00	0.1	33.5	11.7	29.7	2.047	0.278	0.277	0.0093	9.340	7.95
3/25/2003	2:01:37 PM	25.171	23.013	25.009	25.944	23.055	32.312	35.186	4.81	27.776	-1.284	0.602	47.897	0.002	1.82	0	7.00	0.11667	33.7	11.7	30.0	2.071	0.271	0.271	0.0090	9.029	7.68
3/25/2003	2:02:37 PM	25.137	23.03	24.975	25.946	23.112	32.28	35.142	4.708	27.723	-1.289	0.602	47.723	0.002	1.803	0	8.00	0.13333	33.7	11.7	30.0	2.068	0.269	0.269	0.0090	8.966	7.63
3/25/2003	2:03:37 PM	25.102	23.035	24.935	25.836	23.202	32.339	35.178	4.684	27.868	-1.286	0.602	47.572	0.002	1.79	0	9.00	0.15	33.7	11.7	30.1	2.076	0.267	0.267	0.0089	8.881	7.56
3/25/2003	2:04:37 PM	25.069	23.051	24.916	25.782	23.284	32.508	35.273	4.641	28.108	-1.286	0.599	47.356	0.002	1.77	0	10.00	0.16667	33.8	11.6	30.3	2.090	0.264	0.265	0.0087	8.728	7.43
3/25/2003	2:05:37 PM	25.034	23.056	24.906	25.757	23.284	32.548	35.182	4.655	28.159	-1.284	0.599	46.977	0.002	1.758	0	11.00	0.18333	33.7	11.5	30.4	2.093	0.262	0.263	0.0087	8.658	7.37
3/25/2003	2:06:37 PM	25.019	23.072	24.912	25.667	23.32	32.854	35.5	4.633	28.427	-1.286	0.587	47.069	0.002	1.747	0.001	12.00	0.2	34.0	11.5	30.6	2.113	0.260	0.261	0.0085	8.522	7.25
3/25/2003	2:07:37 PM	24.99	23.083	24.883	25.659	23.331	32.798	35.496	4.645	28.337	-1.286	0.584	46.979	0.001	1.737	0.001	13.00	0.21667	34.0	11.5	30.6	2.108	0.259	0.260	0.0085	8.500	7.23
3/25/2003	2:08:37 PM	24.987	23.104	24.88	25.785	23.322	33.024	35.593	4.495	28.771	-1.284	0.59	46.484	0.002	1.739	0.001	14.00	0.23333	34.1	11.4	30.9	2.130	0.259	0.260	0.0084	8.420	7.17
3/25/2003	2:09:37 PM	24.952	23.105	24.835	26.051	23.358	32.804	35.351	4.505	28.538	-1.286	0.587	46.484	0.002	1.731	0.002	15.00	0.25	33.9	11.4	30.7	2.115	0.258	0.259	0.0085	8.454	7.19
3/25/2003	2:10:37 PM	24.943	23.111	24.801	26.061	23.374	32.823	35.331	4.477	28.591	-1.284	0.587	46.45	0.002	1.722	0.002	16.00	0.26667	33.9	11.4	30.7	2.117	0.257	0.258	0.0084	8.408	7.16
3/25/2003	2:11:37 PM	24.919	23.117	24.772	26.103	23.405	33.25	35.689	4.558	28.941	-1.284	0.46	46.459	0.002	1.729	0.002	17.00	0.28333	34.2	11.4	31.1	2.144	0.258	0.259	0.0083	8.343	7.10
3/25/2003	2:12:37 PM	24.895	23.123	24.748	26.269	23.426	33.082	35.54	4.591	28.667	-1.289	0.497	46.373	0.001	1.7	0.001	18.00	0.3	34.1	11.4	30.9	2.129	0.253	0.255	0.0083	8.268	7.04
3/25/2003	2:13:37 PM	24.882	23.135	24.729	26.68	23.418	33.212	35.695	4.574	28.81	-1.289	0.495	46.542	0.001	1.694	0.001	19.00	0.31667	34.2	11.4	31.0	2.138	0.253	0.254	0.0082	8.207	6.98
3/25/2003	2:14:37 PM	24.879	23.157	24.762	26.698	23.44	33.237	35.637	4.458	29.029	-1.286	0.5	46.377	0.002	1.686	0.001	20.00	0.33333	34.2	11.4	31.1	2.147	0.251	0.253	0.0081	8.128	6.92
3/25/2003	2:15:37 PM	24.866	23.164	24.759	26.58	23.422	33.264	35.695	4.535	28.925	-1.286	0.5	46.242	0.002	1.681	0	21.00	0.35	34.2	11.3	31.1	2.144	0.251	0.252	0.0081	8.115	6.91
3/25/2003	2:16:37 PM	24.837	23.155	24.73	26.77	23.393	33.316	35.715	4.511	28.994	-1.292	0.495	46.307	0.001	1.673	0.001	22.00	0.36667	34.2	11.3	31.2	2.148	0.249	0.251	0.0081	8.067	6.87
	Averages	25.1	23.1	25.0	26.1	23.2	29.7	35.3	4.7	25.3	1.6	1.9	47.1	0.1	1.5	0.0	11.0	0.2	33.8	11.6	27.5	1.894	0.224	0.224	0.0073	7.346	6.3
	Maximum	25.6	23.2	25.4	26.8	23.4	33.3	35.7	5.2	29.0	27.1	23.0	49.8	1.2	1.9	0.0	22.0	0.4	34.2	12.2	31.2	2.148	0.278	0.277	0.0093	9.340	7.9
	Median	25.0	23.1	24.9	26.1	23.3	32.8	35.4	4.6	28.3	-1.3	0.6	47.0	0.0	1.7	0.0	11.0	0.2	33.9	11.5	30.6	2.108	0.257	0.258	0.0083	8.343	7.1
	Minimum	24.8	23.0	24.7	25.7	22.9	3.3	34.3	4.5	-1.7	-1.3	-3.8	46.2	0.0	0.0	0.0	0.0	0.0	32.9	11.3	0.8	0.057	0.000	0.000	0.0000	0.008	0.0
	2 x Std Dev	0.464	0.107	0.377	0.636	0.357	17.006	0.671	0.371	17.245	16.165	13.256	1.702	0.485	1.168	0.001	13.266	0.221	0.671	0.417	17.125	1.181	0.174	0.175	0.0057	5.654	4.811
Number of Points Used*		23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23

Figure B46: Run 1.33D – Baseline Slurry – After AN-102R2 Batch 4A (replaced 1.33C which had control problems) – Raw & Calculated Data

Appendix C: 2 M Nitric Acid Cleaning

As required by the RPP-WTP Test Specification each time the cross-flow filter experienced a slurry run the filter was to be cleaned with 2 M Nitric Acid. Those tests were noted in the test matrix as runs 1.31B and 1.31C, 1.31A was a water rinse that began the process of cleaning. (Note that prior to slurry testing the filter was preconditioned with an AN-107 simulant slurry during which the acid cleaning steps were referred to as 5B and 5C.) Since the slurries tested for this task were (in chronological order): an AN-107simulant slurry (to precondition the filter) and AN-102R2 simulant slurries, Batches 3C, 3B, 3C, and 4, the filter was cleaned with acid at least 5 times. This Appendix includes the following cleaning test runs

5B, 5C	After Preconditioning the filter with AN-107
Clean 1, Clean 2[†]	After AN-102R2, batch 3C (using the cleaning loop)
1.31B, 1.31C	After AN-102R2, batch 3B
1.31B, 1.31C	After AN-102R2, batch 3A
ACIDA & ACIDB[‡]	Before AN-102R2, batch 4A (4-day acid soak)
1.31B, 1.31C	After AN-102R2, batch 4A

The letter B and C (or numbers 1 and 2) simply indicate different cleaning cycle. When this task was done there was no set protocol for cleaning. The only requirement was to use a nitric acid with a concentration of 2 molar. While there were some exceptions, as shown in the data in this Appendix, in general, the filter was cleaned by the following method:

1. Rinse the filter once with water (test 1.31A).
2. Circulate 100 liters of 2 M HNO3 for 90 minutes at a circulation axial velocity of 11 to 12 ft/s and a transmembrane pressure of 20 psid, then discard the 100 liters.
3. Repeat step 2 once.
4. Rinse with water (test 1.32)

These cleaning steps were basically arbitrarily chosen. At the time of this task some bench top tests used two 90-minute steps, however, there seemed to be no set rule. For instance, some bench-top tests allowed the filter to soak for several days in acid to bring it to a very clean condition. For this test it was thought more important to clean the filter similar to how the actual plant may operate. To spend several days cleaning the filter did not seem practical. The exception is between slurry test AN-102R2, batch 3A and 4 during which the filter sat idle for almost 3 months. Just before batch 4 the filter was given a much more thorough cleaning by letting it soak over a 4-day period before use.

Each acid-cleaning test in this Appendix contains a graph of the filtrate flux with time and tables of the data taken and calculated. To better understand the presented information important aspects of the graphs and tables are explained below:

Graphs – Each graph contains time averages of some of the imporant parameters taken during the run at the top of the figures, i.e. Slurry velocity in the filter tube, V; transmembrane pressure, TMP; slurry pressure at the entrance of the filter tube, Filter Pres; and the slurry temperature, T.

Tables – Each table is divided into raw data (the first 17 columns) and calculations (the last 10 columns) which are based on the raw data. The raw data section is divided into three parts:

[†] Clean 1 and Clean 2 would have been called 1.31B and 1.31C, like the other test run cleaning, but a different nomenclature was given to those cleaning because the there were pump lining problems, which forced the use of the Test Rig cleaning loop. The cleaning loop had a much smaller pump then the Test Rig, therefore the nitric acid solution circulation velocity and transmembrane pressure could not meet the test specification requirements of 12 ft/s and 20 psid, respectively. The actual values used are listed in this Appendix.

[‡] Because the filter sat idle, submerged in inhibited water, for 3 months between test 3A and 4A it was more extensively cleaned.

Individual Entries – Raw Data

Temperature	Filtrate – from the filtrate loop at the exit of the filter bundle
	Cleaning – from the cleaning loop (this loop was not used, except for tests Clean 1 & 2)
	Slurry – from the slurry loop in the slurry reservoir
	Hi Amb. – outside ambient temperature at the top of the test rig
	Lo Amb. – inside ambient temperature at the bottom of the test rig
Pressure	BotTMP – differential pressure across the filter tube at the bottom of the vertical tube
	Filter – gauge pressure of the slurry at the entrance of the filter tube bundle
	Filter dP – differential pressure of the slurry along the height of the vertical 90-inch tube
	TopTMP – differential pressure across the filter tube at the top the vertical 90-inch tube
	Filtrate – gauge pressure of the filtrate at the exit of the filter tube housing
	Pulsepot – gauge pressure of the filtrate at the bottom of the pulsepot
Flow	Slurry – rate of slurry just before entering the seven-filter-tube bundle
	Filtrate – rate of slurry filtrate under normal flow (max. is 1.2 gpm)
	Hi Filtrate – rate of any liquid which has a high flowrate (water, acid, etc.) (max. 5 gpm)
	Backpulse – rate of filtrate in opposite direction from normal flow, i.e., backpulse

Individual Entries – Calculated Data

Time – Minutes after start of test, including the backpulse (based on raw data TIME column)
Press. – Internal filter pressure of slurry at the filter bundle entrance (based on raw data P1 column and corrected for a 40.9-inch water column that exists from the transducer to the point where P1 is measured.)
Vel. – Slurry velocity in filter tube (based on raw data Q1 column and i.d. of the tubes of 0.488 inches)
TMP – Filter transmembrane pressure (based on average of raw data columns dP2 and dP3) in psi.
TMP – Filter transmembrane pressure (based on average of raw data columns dP2 and dP3) in bar.
Filtrate Flux – Filtrate flow rate (raw data columns Q2/Q3) divided by inside filter surface area (6.707 ft2)[†]
Filtrate Flux @ 25°C – Same as Filtrate flux, but correct for temperature with the following multiplier:

T(corrected) = T x Exp[2500/((1/273+T))-(1/298)] as per Test Spec 24590-WTP-TSP-RT-01-029, Rev. 0

Permiability – Filterate flow rate per TMP (based on calculated columns Filtrate Flux @ 25°C and TMP)
Permiability x 1000 – Same as the above Permiability, but increase by 1000 to facilitate graphing
Permiability – Same as Permiability but in metric units, meter/day/bar

Statistics

At the bottom of the last individual entry there are six rows with some data statistics to better understand the data and their fluctuations. The columns are self explained with titles of Averages, Maximum, Median, and Minimum. The next row 2 xStd Dev, is two times the population standard deviation based on the number of data points used, which is the last row. The Number of Points used generally do not included the points taken during the backpulse sequence of each test. This is explained below.

Raw Data Table Layout

The raw data is generally made up of three sections:

Zeros – These eight rows include approximately 15 to 20 seconds of data taken with the pressure transducers placed in the "zero" mode to determine if any zero drift occurred from one test to the next.

Data-Per Minute – On most of the tables the first six rows of these data are contained in a box which indicate data taken during the backpulse. This is were the filtrate flow is reversed temporarily to knock the filtrate cake of the filter surface. During these first few minutes the filtrate flow is stopped, then reversed, then stopped again, then it is finally returned to normal operation. The data during the backpulse operation

[†] For the acid-cleaning tests during preconditioning it will be noticed that 6.87 ft2 was used. This was based on a tube inside diameter of 0.5 inch, which was based on the manufacturer's specification. After the tubes were measured the i.d. was changed to 0.488 inch and the area to 6.707 ft2. This means that absolute axial velocity and filtrate flux are low by 2.5% % for the preconditioning runs.

were taken with a separate log, therefore those data are marked with a box to note this fact. Most or all of those data points are not counted in the statistics at the bottom of the table. The tables of some of the later tests do not show the boxed data because separate logs of data were not taken, however since a backpulse for each run still occurred only those data were not included in the statistics at the bottom of the page.

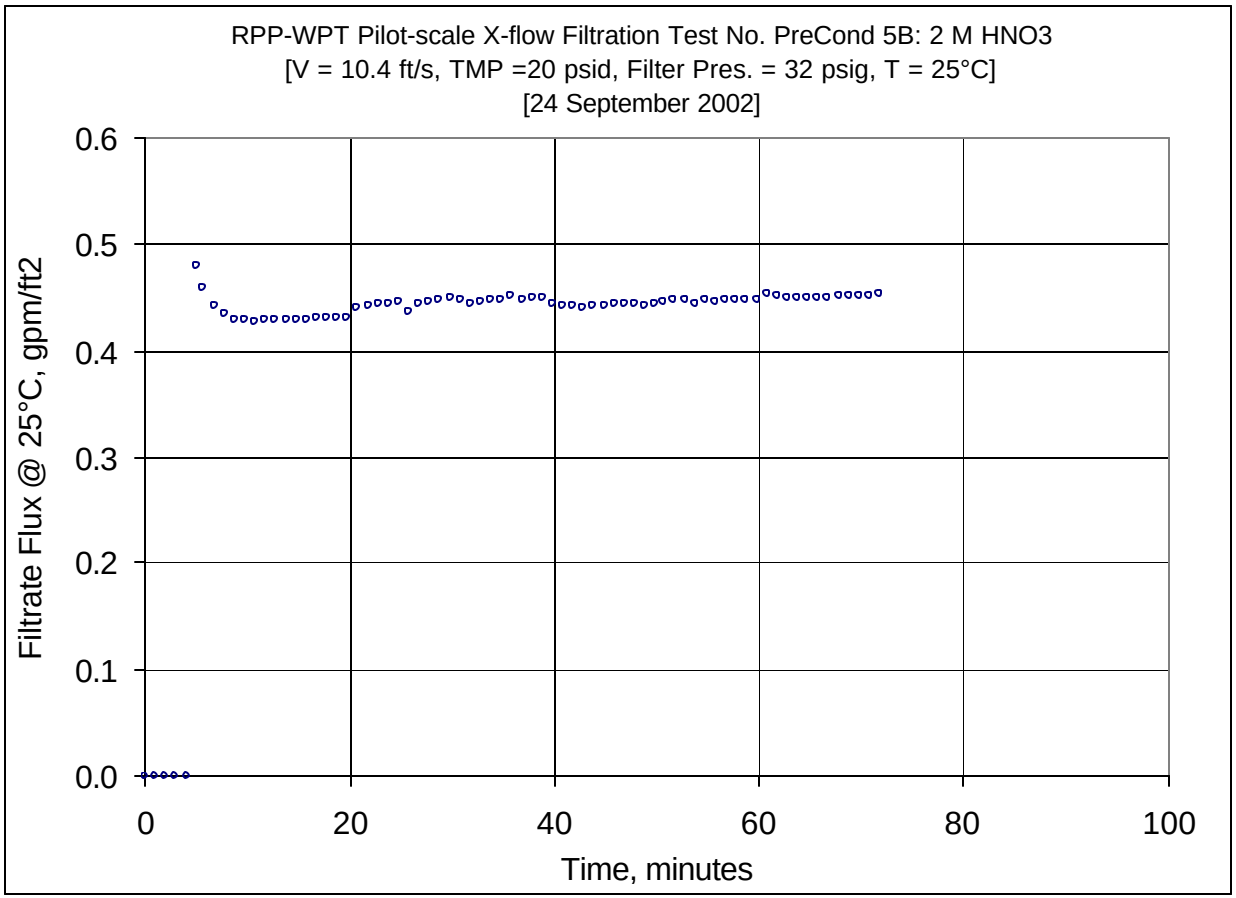


Figure C1: PreConditioning 5B – 2 M Nitric Acid Cleaning – FirstCleaning

		<< Temperature Measurements >>					<< Pressure Measurements >>						<< Flow Measurements >>				<< Calculated From Raw Data >>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/24/2002	7:33:13 AM	21.83	21.149	22.146	21.953	20.713	-0.109	-0.012	-0.049	0.072	-0.324	0.356	34.338	0.031	0.001	0		Filter Surface	6.87	FT2						
9/24/2002	7:33:28 AM	21.83	21.149	22.146	21.953	20.713	-0.109	-0.012	-0.049	0.072	-0.324	0.356	34.338	0.031	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/24/2002	7:33:29 AM	21.8	21.149	22.186	21.928	20.723	-0.109	-0.012	-0.05	0.072	-0.321	0.356	34.269	0.031	0.001	0										
9/24/2002	7:33:30 AM	21.799	21.144	22.186	21.918	20.717	-0.109	-0.012	-0.049	0.072	-0.35	0.358	34.313	0.031	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/24/2002	7:33:31 AM	21.8	21.149	22.201	21.923	20.723	-0.109	-0.012	-0.049	0.072	-0.31	0.356	34.399	0.029	0.001	0										
9/24/2002	7:33:32 AM	21.799	21.144	22.191	21.923	20.717	-0.109	-0.012	-0.049	0.072	-0.341	0.358	34.524	0.031	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/24/2002	7:33:33 AM	21.794	21.149	22.191	21.918	20.717	-0.111	-0.012	-0.049	0.072	-0.321	0.358	34.671	0.031	0.001	0		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/24/2002	7:33:34 AM	21.805	21.154	22.196	21.928	20.723	-0.111	-0.012	-0.049	0.072	-0.364	0.356	34.546	0.03	0.001	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/24/2002	10:21:26 AM	24.62	22.631	23.79	23.559	22.909	9.28	33.452	11.798	-2.042	18.998	73.16	44.441	0.002	0.001	0.002	0	32.0	10.4	3.6	0.250	0.000	0.000	0.000	0.042	0.04
9/24/2002	10:22:00 AM	24.62	22.631	23.79	23.559	22.909	9.28	33.452	11.798	-2.042	18.998	73.16	44.441	0.002	0.001	0.002	1	32.0	10.4	3.6	0.250	0.000	0.000	0.000	0.042	0.04
9/24/2002	10:22:26 AM	24.7	22.636	23.846	23.543	22.889	8.837	33.698	11.375	-2.042	19.666	16.486	43.728	0.332	0.001	0.007	2	32.2	10.2	3.4	0.234	0.000	0.000	0.000	0.044	0.04
9/24/2002	10:22:56 AM	24.474	22.646	23.956	23.549	22.874	13.226	34.015	11.43	2.234	15.177	13.799	44.493	0.934	0.001	0	3	32.5	10.4	7.7	0.533	0.000	0.000	0.000	0.019	0.02
9/24/2002	10:23:26 AM	24.509	22.651	23.951	23.533	22.889	13.182	33.407	11.36	2.349	14.868	13.533	44.237	1.071	0.001	0	4	31.9	10.3	7.8	0.535	0.000	0.000	0.000	0.019	0.02
9/24/2002	10:23:56 AM	24.524	22.651	23.976	23.508	22.884	23.345	33.223	11.525	13.367	3.647	-3.136	45.964	0.002	3.2	0	5	31.8	10.7	18.4	1.266	0.466	0.479	0.026	26.112	22.22
9/24/2002	10:24:41 AM	24.62	22.656	24.106	23.468	22.919	24.052	33.072	11.588	13.862	3.014	-3.125	45.366	0.002	3.082	0	5.75	31.6	10.6	19.0	1.307	0.448	0.460	0.024	24.262	20.65
9/24/2002	10:25:41 AM	24.685	22.661	24.116	23.468	22.909	24.735	33.175	11.757	14.333	2.303	-3.11	45.798	0.002	2.97	0	6.75	31.7	10.7	19.5	1.347	0.432	0.443	0.023	22.683	19.30
9/24/2002	10:26:41 AM	24.76	22.661	24.176	23.463	22.889	24.973	33.128	11.617	14.855	2.168	-3.11	45.523	0.002	2.922	0.002	7.75	31.7	10.6	19.9	1.373	0.425	0.435	0.022	21.854	18.60
9/24/2002	10:27:41 AM	24.805	22.666	24.302	23.458	22.914	25.342	33.278	11.615	15.211	1.933	-3.107	45.812	0.002	2.899	0	8.75	31.8	10.7	20.3	1.398	0.422	0.430	0.021	21.218	18.06
9/24/2002	10:28:41 AM	24.875	22.66	24.271	23.432	22.903	25.261	33.442	11.562	14.947	1.983	-3.107	45.536	0.002	2.893	0.022	9.75	32.0	10.6	20.1	1.386	0.421	0.430	0.021	21.375	18.19
9/24/2002	10:29:41 AM	24.935	22.66	24.386	23.392	22.883	25.392	33.392	11.673	14.974	1.928	-3.102	45.286	0.002	2.891	0.002	10.8	31.9	10.6	20.2	1.392	0.421	0.428	0.021	21.207	18.05
9/24/2002	10:30:41 AM	24.999	22.675	24.476	23.422	22.872	25.379	33.562	11.609	15.025	1.997	-3.096	44.944	0.002	2.902	0.001	11.8	32.1	10.5	20.2	1.393	0.422	0.429	0.021	21.214	18.05
9/24/2002	10:31:41 AM	25.079	22.674	24.49	23.426	22.872	25.238	33.425	11.462	15.033	1.968	-3.096	45.167	0.002	2.906	0.001	12.8	32.0	10.5	20.1	1.388	0.423	0.429	0.021	21.305	18.13
9/24/2002	10:32:41 AM	25.113	22.664	24.615	23.406	22.866	25.013	33.065	11.414	14.998	2.118	-3.096	46.505	0.002	2.92	0.001	13.8	31.6	10.9	20.0	1.379	0.425	0.430	0.021	21.471	18.27
9/24/2002	10:33:41 AM	25.184	22.669	24.606	23.436	22.867	25.129	33.076	11.513	15.017	2.069	-3.096	45.785	0.002	2.912	0.001	14.8	31.6	10.7	20.1	1.384	0.424	0.428	0.021	21.345	18.17
9/24/2002	10:34:41 AM	25.248	22.679	24.625	23.466	22.846	25.431	33.554	11.499	15.455	2.121	-3.093	45.76	0.002	2.921	0.001	15.8	32.1	10.7	20.4	1.409	0.425	0.430	0.021	21.013	17.88
9/24/2002	10:35:41 AM	25.197	22.672	24.418	23.696	22.855	25.075	33.268	11.454	14.849	2.075	-3.084	45.108	0.002	2.91	0.002	16.8	31.8	10.5	20.0	1.376	0.423	0.430	0.022	21.564	18.35
9/24/2002	10:36:41 AM	25.082	22.672	24.368	23.605	22.84	25.178	33.343	11.368	15.086	2.014	-3.09	43.336	0.001	2.91	0.001	17.8	31.9	10.1	20.1	1.388	0.423	0.431	0.021	21.412	18.22
9/24/2002	10:37:41 AM	24.987	22.677	24.243	23.675	22.865	25.083	33.084	11.379	15.059	1.983	-3.081	44.955	0.002	2.905	0.001	18.8	31.6	10.5	20.1	1.384	0.423	0.432	0.022	21.516	18.31
9/24/2002	10:38:41 AM	24.915	22.671	24.162	23.684	22.834	25.307	33.33	11.46	15.188	1.951	-3.078	45.148	0.002	2.9	0.001	19.8	31.9	10.5	20.2	1.396	0.422	0.432	0.021	21.340	18.16
9/24/2002	10:39:41 AM	24.826	22.677	24.147	23.635	22.849	24.951	33.219	10.869	15.516	2.248	-3.078	44.204	0.002	2.958	0.001	20.8	31.7	10.3	20.2	1.395	0.430	0.441	0.022	21.792	18.54
9/24/2002	10:40:41 AM	24.771	22.693	24.027	23.675	22.865	25.241	33.626	10.975	15.655	2.292	-3.073	44.103	0.002	2.957	0.001	21.8	32.2	10.3	20.4	1.410	0.430	0.442	0.022	21.629	18.41
9/24/2002	10:41:41 AM	24.721	22.693	24.007	23.61	22.855	25.193	33.527	10.95	15.551	2.393	-3.07	45.167	0.002	2.97	0	22.8	32.1	10.5	20.4	1.405	0.432	0.444	0.022	21.818	18.57
9/24/2002	10:42:41 AM	24.646	22.688	23.952	23.565	22.865	25.062	33.353	10.898	15.539	2.286	-3.076	43.946	0.001	2.959	0	23.8	31.9	10.3	20.3	1.400	0.431	0.444	0.022	21.847	18.59
9/24/2002	10:43:41 AM	24.611	22.693	23.867	23.67	22.855	25.325	33.798	11.021	15.7	2.364	-3.067	43.986	0.002	2.968	0.003	24.8	32.3	10.3	20.5	1.414	0.432	0.446	0.022	21.740	18.50
9/24/2002	10:44:41 AM	24.56	22.692	23.896	23.59	22.864	25.052	33.099	11.383	15.078	1.951	-3.067	44.625	0.002	2.905	0.002	25.8	31.6	10.4	20.1	1.383	0.423	0.436	0.022	21.735	18.50
9/24/2002	10:45:41 AM	24.525	22.691	23.826	23.594	22.879	25.189	33.638	11.098	15.467	2.292	-3.064	44.187	0.002	2.957	0.001	26.8	32.2	10.3	20.3	1.402	0.430	0.445	0.022	21.881	18.62
9/24/2002	10:46:41 AM	24.509	22.691	23.8	23.669	22.858	25.282	33.721	11.164	15.457	2.26	-3.061	44.179	0.002	2.959	0.002	27.8	32.2	10.3	20.4	1.404	0.431	0.445	0.022	21.867	18.61
9/24/2002	10:47:41 AM	24.458	22.69	23.819	23.608	22.853	25.205	33.574	11.081	15.563	2.338	-3.064	44.153	0.002	2.975	0	28.8	32.1	10.3	20.4	1.405	0.433	0.448	0.022	21.958	18.69
9/24/2002	10:48:41 AM	24.433	22.69	23.714	23.647	22.862	25.218	33.56	10.993	15.747	2.381	-3.058	43.994	0.002	2.976	0.002	29.8	32.1	10.3	20.5	1.412	0.433	0.449	0.022	21.925	18.66
9/24/2002	10:49:41 AM	24.428	22.695	23.874	23.547	22.857	25.396	33.953	11.164	15.579	2.405	-3.058	44.143	0.002	2.98	0.002	30.8	32.5	10.3	20.5	1.413	0.434	0.448	0.022	21.850	18.59
9/24/2002	10:50:41 AM	24.573	22.715	24.045	23.547	22.882	24.801	33.262	10.998	15.111	2.358	-3.058	44.07	0.002	2.978	0.002	31.8	31.8	10.3	20.0	1.376	0.433	0.445	0.022	22.308	18.98
9/24/2002	10:51:41 AM	24.652	22.699	24.139	23.471	22.861	25.102	33.622	11.182	15.231	2.474	-3.058	44.206	0.002	2.987	0.002	32.8	32.1	10.3	20.2	1.390	0.435	0.445	0.022	22.083	18.79
9/24/2002	10:52:41 AM	24.767	22.698	24.168	23.49	22.85	25.325	33.943	11.148	15.6	2.581	-3.061	43.816	0.002	3.012	0.002	33.8	32.5	10.2	20.5	1.411	0.438	0.449	0.022	21.928	18.66
9/24/2002	10:53:41 AM	24.846	22.692	24.338	23.419	22.845	24.928	33.56	10.81	15.627	2.668	-3.052	43.937	0.002	3.023	0.002	34.8	32.1	10.3	20.3	1.398	0.440	0.448	0.022	22.102	18.81
9/24/2002	10:54:41 AM	24.925	22.691	24.352	23.493	22.853	24.957	33.866	10.738	15.635	2.783	-3.047	43.636	0.002	3.044	0	35.8	32.4	10.2	20.3	1.399	0.443	0.451	0.022	22.227	18.92
9/24/2002	10:55:41 AM	25.01	22.69	24.411	23.488	22.858	24.76	33.558	10.874	15.174	2.67	-3.05	43.906	0.002	3.032	0.001	36.8	32.1	10.2	20.0	1.377	0.441	0.449	0.022	22.466	19.12
9/24/2002	10:56:41 AM	25.049	22.69	24.501	23.447	22.837	25.064	33.938	10.877	15.661	2.743	-3.05	43.74	0.002	3.044	0.002	37.8	32.5	10.2	20.4	1.404	0.443	0.449	0.022	22.061	18.77
9/24/2002	10:57:41 AM	25.119	22.689	24.49	23.486	22.842	24.965	33.895	10.81	15.465	2.751	-3.047	43.814	0.002	3.05	0.001	38.8	32.4	10.2	20.2	1.394	0.444	0.450	0.022	22.273	18.95
9/24/2002	10:58:41 AM	25.153	22.693	24.569	23.46	22.845	25.178	33.974	11.101	15.434	2.613	-3.047	44.221	0.002	3.02	0.002	39.8	32.5	10.3	20.3	1.400	0.439	0.445	0.022	21.906	18.64
9/24/2002	10:59:41 AM	25.178	22.693	24.559	23.555	22.83	25.149	33.678	11.192	15.387	2.5	-3.047	44.367	0.002	3.004	0	40.8	32.2	10.4	20.3	1.397	0.437	0.443	0.022	21.837	18.58
9/24/2002	11:00:41 AM	25.212	22.692	24.564	23.55	22.84	25.112	33.717	11.122	15.311	2.532	-3.044	45.07	0.002	3.008	0.002	41.8	32.2	10.5	20.2	1.394	0.438	0.443	0.022	21.924	18.66
9/24/2002	11:01:41 AM	25.233	22.699	24.665	23.486	22.891	24.928	33.585	11.076	15.262	2.535	-3.044	44.424	0.002	3.001	0.002	42.8	32.1	10.4	20.1	1.385	0.437	0.441	0.022	21.937	18.67
9/24/2002	11:02:41 AM	25.25	22.716	24.627	23.573	22.928	25.224	33.889	11.184	15.446	2.543	-3.038	44.325	0.002	3.007	0.002	43.8	32.4	10.3	20.3	1.402	0.438	0.442	0.022	21.745	18.51
9/24/2002	11:03:41 AM	25.298	22.734	24.685	23.591	22.976	24.965	33.698	11.255	15.021	2.564	-3.038	44.334	0.002	3.015	0	44.8	32.2	10.3	20.0	1.378	0.439	0.443	0.022	22.139	18.84

Figure C2a: PreConditioning 5B – 2 M Nitric Acid Cleaning – FirstCleaning (first 45 minutes) – Raw & Calculated Data

9/24/2002	11:04:41 AM	25.3	22.741	24.742	23.649	23.019	24.878	33.616	11.02	15.227	2.636	-3.032	44.372	0.002	3.026	0.002	45.8	32.1	10.4	20.1	1.383	0.440	0.444	0.022	22.119	18.82
9/24/2002	11:05:41 AM	25.334	22.755	24.701	23.727	23.063	25.052	33.698	11.041	15.401	2.575	-3.032	44.216	0.002	3.024	0.002	46.8	32.2	10.3	20.2	1.395	0.440	0.444	0.022	21.939	18.67
9/24/2002	11:06:41 AM	25.348	22.769	24.77	23.752	23.112	25.168	33.878	11.177	15.612	2.65	-3.029	44.401	0.001	3.028	0	47.8	32.4	10.4	20.4	1.406	0.441	0.443	0.022	21.750	18.51
9/24/2002	11:07:41 AM	25.363	22.794	24.8	23.852	23.167	25.118	33.829	11.117	15.539	2.627	-3.018	44.195	0.002	3.025	0.004	48.8	32.4	10.3	20.3	1.402	0.440	0.443	0.022	21.776	18.53
9/24/2002	11:08:41 AM	25.388	22.789	24.76	23.907	23.212	25.046	33.794	11.008	15.485	2.65	-3.018	44.183	0.002	3.03	0.002	49.8	32.3	10.3	20.3	1.397	0.441	0.444	0.022	21.904	18.64
9/24/2002	11:09:41 AM	25.409	22.82	24.861	23.948	23.279	25.052	34.023	11.12	15.428	2.775	-3.018	44.489	0.002	3.052	0.002	50.8	32.6	10.4	20.2	1.395	0.444	0.446	0.022	22.028	18.75
9/24/2002	11:10:41 AM	25.429	22.835	24.826	24.059	23.319	25.042	34.12	11.146	15.189	2.798	-3.015	44.63	0.002	3.06	0.002	51.8	32.6	10.4	20.1	1.387	0.445	0.447	0.022	22.244	18.93
9/24/2002	11:11:41 AM	25.444	22.82	24.811	24.023	23.328	25.006	33.876	11.058	15.428	2.815	-3.015	44.47	0.002	3.06	0	52.8	32.4	10.4	20.2	1.394	0.445	0.448	0.022	22.142	18.84
9/24/2002	11:12:41 AM	25.467	22.853	24.914	24.081	23.337	24.708	33.49	11.04	15.103	2.737	-3.012	44.583	0.002	3.05	0.002	53.8	32.0	10.4	19.9	1.372	0.444	0.445	0.022	22.350	19.02
9/24/2002	11:13:41 AM	25.485	22.856	24.837	24.039	23.345	25.104	34.048	11.098	15.496	2.827	-3.012	44.38	0.002	3.065	0.001	54.8	32.6	10.4	20.3	1.400	0.446	0.448	0.022	22.071	18.78
9/24/2002	11:14:41 AM	25.512	22.868	24.904	24.056	23.336	24.654	33.5	10.989	15.113	2.902	-3.012	44.351	0.002	3.064	0.003	55.8	32.0	10.4	19.9	1.371	0.446	0.447	0.022	22.484	19.13
9/24/2002	11:15:41 AM	25.508	22.864	24.91	24.032	23.343	24.853	33.814	11.087	15.207	2.91	-3.006	44.497	0.002	3.071	0.001	56.8	32.3	10.4	20.0	1.381	0.447	0.448	0.022	22.367	19.03
9/24/2002	11:16:41 AM	25.544	22.885	24.881	24.043	23.339	25.075	34.172	11.015	15.608	2.916	-3	44.468	0.002	3.071	0.003	57.8	32.7	10.4	20.3	1.402	0.447	0.448	0.022	22.042	18.76
9/24/2002	11:17:41 AM	25.545	22.871	24.928	23.995	23.35	25.357	34.211	11.095	15.897	2.957	-3.006	44.466	0.001	3.077	0.001	58.8	32.7	10.4	20.6	1.422	0.448	0.449	0.022	21.751	18.51
9/24/2002	11:18:41 AM	25.551	22.891	24.928	24.005	23.335	25	34.013	11.091	15.465	2.91	-3.003	44.388	0.002	3.076	0	59.8	32.5	10.4	20.2	1.395	0.448	0.449	0.022	22.168	18.86
9/24/2002	11:19:41 AM	25.581	22.902	24.938	24.02	23.345	25.06	34.241	11.024	15.446	3.026	-3.003	44.153	0.002	3.107	0	60.8	32.8	10.3	20.3	1.396	0.452	0.453	0.022	22.362	19.03
9/24/2002	11:20:41 AM	25.611	22.907	25.033	23.99	23.341	24.982	34.094	11.199	15.244	3.017	-3.006	44.286	0.001	3.102	0.001	61.8	32.6	10.3	20.1	1.387	0.451	0.451	0.022	22.421	19.08
9/24/2002	11:21:41 AM	25.641	22.922	24.988	24.02	23.321	25.031	34.214	11.173	15.344	2.983	-2.997	44.372	0.002	3.087	0.001	62.8	32.7	10.4	20.2	1.392	0.449	0.449	0.022	22.259	18.94
9/24/2002	11:22:41 AM	25.656	22.922	25.003	24.02	23.336	24.934	33.978	10.958	15.563	2.983	-2.997	44.651	0.002	3.088	0.001	63.8	32.5	10.4	20.2	1.396	0.449	0.449	0.022	22.190	18.88
9/24/2002	11:23:41 AM	25.646	22.927	25.048	24.03	23.301	24.888	34	11.13	15.287	3.069	-3	44.464	0.002	3.096	0.001	64.8	32.5	10.4	20.1	1.385	0.451	0.450	0.022	22.397	19.06
9/24/2002	11:24:41 AM	25.651	22.922	24.968	24.015	23.315	24.969	34.166	11.235	15.082	3.02	-2.997	44.573	0.002	3.095	0.001	65.8	32.7	10.4	20.0	1.381	0.450	0.451	0.023	22.510	19.16
9/24/2002	11:25:41 AM	25.665	22.926	25.027	23.989	23.309	24.613	33.715	11.074	14.971	3.023	-2.997	44.518	0.002	3.101	0	66.8	32.2	10.4	19.8	1.365	0.451	0.451	0.023	22.782	19.39
9/24/2002	11:26:41 AM	25.654	22.93	25.021	24.008	23.314	24.65	33.843	11.053	15.17	3.104	-2.997	44.535	0.002	3.11	0	67.8	32.4	10.4	19.9	1.373	0.453	0.452	0.023	22.716	19.33
9/24/2002	11:27:41 AM	25.669	22.935	24.976	23.998	23.299	24.758	33.821	11.028	15.299	3.066	-2.995	44.422	0.002	3.109	0.001	68.8	32.3	10.4	20.0	1.381	0.452	0.453	0.023	22.603	19.24
9/24/2002	11:28:41 AM	25.668	22.934	25.05	23.972	23.272	24.698	33.94	11.01	14.949	3.081	-2.995	44.42	0.002	3.113	0.001	69.8	32.5	10.4	19.8	1.367	0.453	0.452	0.023	22.819	19.42
9/24/2002	11:29:41 AM	25.663	22.934	25.015	23.991	23.277	24.882	34.18	11.07	15.346	3.092	-2.995	44.445	0.002	3.112	0.002	70.8	32.7	10.4	20.1	1.387	0.453	0.453	0.023	22.504	19.15
9/24/2002	11:30:41 AM	25.673	22.924	24.985	23.961	23.267	24.864	34.04	11.286	15.111	3.081	-2.995	44.386	0.001	3.118	0	71.8	32.6	10.4	20.0	1.378	0.454	0.454	0.023	22.709	19.33
	Averages	25.1	22.8	24.5	23.7	23.0	25.0	33.7	11.2	15.3	2.6	-3.0	44.5	0.0	3.0	0.0		32.2	10.4	20.2	1.4	0.438	0.444	0.022	22.0	18.7
	Maximum	25.7	22.9	25.1	24.1	23.4	25.4	34.2	11.8	15.9	3.1	-3.0	46.5	0.0	3.1	0.0		32.8	10.9	20.6	1.4	0.454	0.460	0.024	24.3	20.6
	Median	25.2	22.7	24.6	23.6	22.9	25.1	33.7	11.1	15.3	2.6	-3.0	44.4	0.0	3.0	0.0		32.2	10.4	20.2	1.4	0.439	0.445	0.022	21.9	18.7
	Minimum	24.4	22.7	23.7	23.4	22.8	24.1	33.1	10.7	13.9	1.9	-3.1	43.3	0.0	2.9	0.0		31.6	10.1	19.0	1.3	0.421	0.428	0.021	21.0	17.9
	2 x Std Dev	0.771	0.198	0.782	0.468	0.422	0.462	0.654	0.458	0.643	0.734	0.074	1.181	0.001	0.138	0.005		0.655	0.276	0.489	0.034	0.020	0.015	0.001	1.001	0.852
Number of Points Used*		67	67	67	67	67	67	67	67	67	67	67	67	67	67	67		67	67	67	67	67	67	67	67	67
	* Backpulse points in box are not included																									

Figure C2b: PreConditioning 5B – 2 M Nitric Acid Cleaning – FirstCleaning (remaining 22 minutes) – Raw & Calculated Data

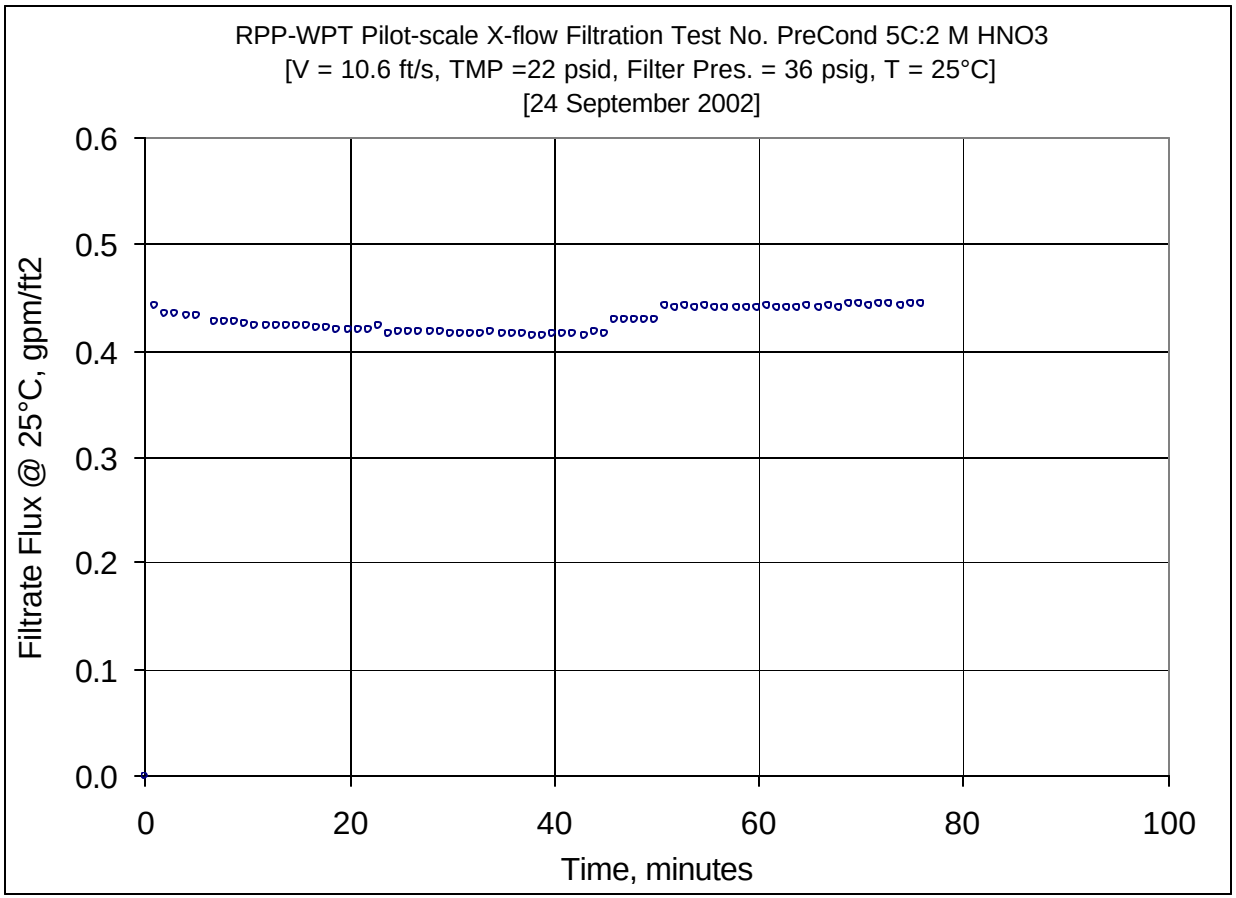


Figure C3: PreConditioning 5C – 2 M Nitric Acid Cleaning – Second Cleaning

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
9/24/2002	7:33:13 AM	21.83	21.149	22.146	21.953	20.713	-0.109	-0.012	-0.049	0.072	-0.324	0.356	34.338	0.031	0.001	0		Filter Surface	6.87	FT2						
9/24/2002	7:33:28 AM	21.83	21.149	22.146	21.953	20.713	-0.109	-0.012	-0.049	0.072	-0.324	0.356	34.338	0.031	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9/24/2002	7:33:29 AM	21.8	21.149	22.186	21.928	20.723	-0.109	-0.012	-0.05	0.072	-0.321	0.356	34.269	0.031	0.001	0										
9/24/2002	7:33:30 AM	21.799	21.144	22.186	21.918	20.717	-0.109	-0.012	-0.049	0.072	-0.35	0.358	34.313	0.031	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
9/24/2002	7:33:31 AM	21.8	21.149	22.201	21.923	20.723	-0.109	-0.012	-0.049	0.072	-0.31	0.356	34.399	0.029	0.001	0										
9/24/2002	7:33:32 AM	21.799	21.144	22.191	21.923	20.717	-0.109	-0.012	-0.049	0.072	-0.341	0.358	34.524	0.031	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing								
9/24/2002	7:33:33 AM	21.794	21.149	22.191	21.918	20.717	-0.111	-0.012	-0.049	0.072	-0.321	0.358	34.671	0.031	0.001	0		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
9/24/2002	7:33:34 AM	21.805	21.154	22.196	21.928	20.723	-0.111	-0.012	-0.049	0.072	-0.364	0.356	34.546	0.03	0.001	0							at 25C		x 1000	
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
9/24/2002	12:18:12 PM	28.88	23.092	25.922	24.55	23.154	14.682	38.273	17.415	-2.265	18.397	78.783	45.137	0.002	0.001	0.002	0	36.8	10.5	6.2	0.428	0.000	0.000	0.000	0.023	0.02
9/24/2002	12:19:12 PM	27.075	23.092	25.457	24.575	23.154	28.608	37.474	17.922	12.056	2.789	35.915	46.964	0.002	3.077	0.002	1	36.0	11.0	20.3	1.402	0.448	0.442	0.022	21.741	18.50
9/24/2002	12:20:12 PM	26.455	23.102	25.277	24.586	23.204	28.861	37.439	17.99	12.181	2.506	36.141	46.716	0.002	3.019	0.005	2	36.0	10.9	20.5	1.415	0.439	0.436	0.021	21.241	18.08
9/24/2002	12:21:12 PM	26.121	23.118	24.902	24.576	23.219	29.054	37.385	17.828	12.451	2.364	36.158	46.931	0.002	2.984	0.014	3	35.9	11.0	20.8	1.431	0.434	0.435	0.021	20.981	17.86
9/24/2002	12:22:12 PM	25.771	23.107	24.737	24.556	23.219	29.393	37.683	18.09	12.589	2.26	36.158	47.006	0.002	2.95	0.003	4	36.2	11.0	21.0	1.447	0.429	0.432	0.021	20.602	17.53
9/24/2002	12:23:12 PM	25.495	23.112	24.396	24.556	23.214	29.269	37.418	17.925	12.427	2.081	36.158	46.754	0.002	2.923	0.002	5	35.9	10.9	20.8	1.437	0.425	0.433	0.021	20.752	17.66
9/24/2002	12:25:00 PM	25.191	23.129	24.483	24.392	23.221	29.321	37.222	17.784	12.836	2.003	36.161	46.727	0.002	2.901	0.002	6.80	35.7	10.9	21.1	1.453	0.422	0.428	0.020	20.321	17.29
9/24/2002	12:26:00 PM	25.187	23.14	24.429	24.333	23.232	29.582	37.482	17.73	13.088	1.931	36.15	46.524	0.001	2.892	0.001	7.8	36.0	10.9	21.3	1.471	0.421	0.428	0.020	20.045	17.06
9/24/2002	12:27:00 PM	25.208	23.131	24.465	24.323	23.233	29.787	37.834	17.654	13.195	1.887	36.155	46.826	0.002	2.892	0.002	8.8	36.4	10.9	21.5	1.482	0.421	0.427	0.020	19.879	16.92
9/24/2002	12:28:00 PM	25.219	23.142	24.541	24.3	23.244	29.679	37.774	17.815	13.17	1.902	36.153	46.756	0.002	2.887	0.002	9.8	36.3	10.9	21.4	1.477	0.420	0.426	0.020	19.864	16.90
9/24/2002	12:29:00 PM	25.225	23.132	24.471	24.29	23.234	29.859	37.728	17.849	13.246	1.826	36.155	46.748	0.002	2.873	0.002	10.8	36.3	10.9	21.6	1.486	0.418	0.424	0.020	19.689	16.76
9/24/2002	12:30:00 PM	25.235	23.128	24.507	24.291	23.23	29.876	37.689	17.837	13.262	1.743	36.15	47.392	0.002	2.866	0.003	11.8	36.2	11.1	21.6	1.487	0.417	0.423	0.020	19.606	16.68
9/24/2002	12:31:00 PM	25.23	23.133	24.582	24.261	23.22	29.478	37.455	17.817	12.617	1.876	36.153	46.473	0.002	2.883	0.003	12.8	36.0	10.8	21.0	1.451	0.420	0.424	0.020	20.168	17.16
9/24/2002	12:32:00 PM	25.255	23.122	24.511	24.235	23.234	29.673	37.346	17.798	13.16	1.835	36.153	46.461	0.002	2.871	0.001	13.8	35.9	10.8	21.4	1.477	0.418	0.424	0.020	19.778	16.83
9/24/2002	12:33:00 PM	25.28	23.127	24.577	24.245	23.224	29.596	37.447	17.899	12.697	1.78	36.147	46.503	0.002	2.873	0.001	14.8	36.0	10.9	21.1	1.458	0.418	0.423	0.020	20.007	17.03
9/24/2002	12:34:00 PM	25.29	23.122	24.612	24.265	23.244	29.497	37.273	17.774	12.865	1.855	36.147	46.454	0.002	2.877	0.001	15.8	35.8	10.8	21.2	1.460	0.419	0.423	0.020	19.982	17.01
9/24/2002	12:35:00 PM	25.319	23.121	24.565	24.349	23.238	29.762	37.395	17.773	13.254	1.731	36.147	46.515	0.002	2.862	0.002	16.8	35.9	10.9	21.5	1.483	0.416	0.422	0.020	19.602	16.68
9/24/2002	12:36:00 PM	25.334	23.121	24.661	24.344	23.223	29.944	37.671	17.827	13.123	1.815	36.147	46.473	0.002	2.869	0.002	17.8	36.2	10.8	21.5	1.485	0.417	0.421	0.020	19.573	16.66
9/24/2002	12:37:00 PM	25.333	23.111	24.635	24.333	23.218	29.959	37.726	17.773	13.324	1.786	36.141	46.48	0.002	2.863	0.001	18.8	36.3	10.9	21.6	1.492	0.417	0.421	0.019	19.449	16.55
9/24/2002	12:38:00 PM	25.373	23.126	24.62	24.298	23.258	29.783	37.617	17.886	12.812	1.766	36.141	46.526	0.002	2.856	0.002	19.8	36.1	10.9	21.3	1.468	0.416	0.420	0.020	19.723	16.78
9/24/2002	12:39:00 PM	25.378	23.125	24.709	24.273	23.247	30.271	38.055	18.058	13.364	1.769	36.144	46.435	0.002	2.859	0.002	20.8	36.6	10.8	21.8	1.504	0.416	0.419	0.019	19.225	16.36
9/24/2002	12:40:00 PM	25.398	23.125	24.669	24.273	23.247	30.087	38.039	17.712	13.618	1.763	36.141	46.735	0.002	2.86	0.002	21.8	36.6	10.9	21.9	1.507	0.416	0.420	0.019	19.223	16.36
9/24/2002	12:41:00 PM	25.413	23.125	24.689	24.303	23.237	29.977	37.929	17.425	13.739	1.884	36.141	46.135	0.002	2.889	0.003	22.8	36.5	10.8	21.9	1.507	0.420	0.424	0.019	19.402	16.51
9/24/2002	12:42:00 PM	25.428	23.13	24.779	24.248	23.212	30.137	37.801	17.954	13.268	1.705	36.144	46.475	0.002	2.849	0.002	23.8	36.3	10.8	21.7	1.496	0.415	0.417	0.019	19.222	16.36
9/24/2002	12:43:00 PM	25.433	23.12	24.684	24.223	23.232	29.836	37.602	17.688	13.272	1.702	36.135	46.519	0.002	2.851	0.003	24.8	36.1	10.9	21.6	1.486	0.415	0.419	0.019	19.420	16.53
9/24/2002	12:44:00 PM	25.468	23.14	24.749	24.228	23.237	29.807	37.67	17.553	13.229	1.72	36.138	46.419	0.002	2.851	0.002	25.8	36.2	10.8	21.5	1.484	0.415	0.418	0.019	19.416	16.52
9/24/2002	12:45:00 PM	25.467	23.129	24.804	24.257	23.221	29.737	37.342	17.799	13.203	1.737	36.138	46.326	0.002	2.858	0.002	26.8	35.9	10.8	21.5	1.480	0.416	0.418	0.019	19.477	16.58
9/24/2002	12:46:00 PM	25.487	23.134	24.744	24.247	23.221	29.917	37.633	17.957	13.113	1.694	36.138	46.305	0.002	2.851	0.003	27.8	36.2	10.8	21.5	1.483	0.415	0.418	0.019	19.422	16.53
9/24/2002	12:47:00 PM	25.503	23.14	24.795	24.243	23.232	29.882	37.53	17.505	13.637	1.722	36.135	46.301	0.002	2.853	0.003	28.8	36.1	10.8	21.8	1.500	0.415	0.418	0.019	19.189	16.33
9/24/2002	12:48:00 PM	25.498	23.14	24.82	24.273	23.237	29.789	37.488	17.785	13.184	1.647	36.135	46.406	0.002	2.842	0.003	29.8	36.0	10.8	21.5	1.481	0.414	0.416	0.019	19.345	16.46
9/24/2002	12:49:00 PM	25.508	23.13	24.749	24.318	23.252	29.843	37.424	17.55	13.626	1.665	36.132	46.501	0.002	2.842	0.003	30.8	36.0	10.9	21.7	1.499	0.414	0.416	0.019	19.162	16.31
9/24/2002	12:50:00 PM	25.523	23.13	24.84	24.258	23.232	29.768	37.551	17.671	13.016	1.691	36.132	46.473	0.002	2.849	0.002	31.8	36.1	10.8	21.4	1.475	0.415	0.416	0.019	19.467	16.57
9/24/2002	12:51:00 PM	25.523	23.135	24.82	24.278	23.232	30.013	37.706	17.798	13.358	1.694	36.132	46.362	0.002	2.848	0.001	32.8	36.2	10.8	21.7	1.495	0.414	0.417	0.019	19.208	16.35
9/24/2002	12:52:00 PM	25.543	23.145	24.8	24.378	23.232	29.795	37.375	17.746	13.178	1.751	36.132	46.393	0.002	2.855	0.003	33.8	35.9	10.8	21.5	1.481	0.415	0.418	0.019	19.444	16.55
9/24/2002	12:53:00 PM	25.538	23.146	24.855	24.288	23.248	30.064	37.838	17.688	13.631	1.705	36.129	46.314	0.002	2.844	0.002	34.8	36.4	10.8	21.8	1.506	0.414	0.416	0.019	19.020	16.19
9/24/2002	12:54:00 PM	25.533	23.141	24.775	24.293	23.258	30.033	37.764	17.788	13.514	1.665	36.127	46.408	0.002	2.842	0.003	35.8	36.3	10.8	21.8	1.501	0.414	0.416	0.019	19.114	16.27
9/24/2002	12:55:00 PM	25.554	23.141	24.816	24.269	23.253	30.091	37.726	17.89	13.201	1.656	36.127	46.333	0.002	2.847	0.002	36.8	36.3	10.8	21.6	1.492	0.414	0.416	0.019	19.238	16.37
9/24/2002	12:56:00 PM	25.535	23.142	24.881	24.264	23.264	29.671	37.391	17.727	12.992	1.656	36.127	46.391	0.002	2.837	0.002	37.8	35.9	10.8	21.3	1.471	0.413	0.414	0.019	19.418	16.52
9/24/2002	12:57:00 PM	25.551	23.143	24.813	24.281	23.24	30.155	37.722	17.563	13.839	1.641	36.124	46.402	0.002	2.836	0.001	38.8	36.2	10.8	22.0	1.517	0.413	0.415	0.019	18.860	16.05
9/24/2002	12:58:00 PM	25.561	23.144	24.853	24.321	23.246	29.834	37.468	17.555	13.68	1.682	36.124	46.213	0.002	2.849	0.003	39.8	36.0	10.8	21.8	1.500	0.415	0.416	0.019	19.133	16.28
9/24/2002	12:59:00 PM	25.548	23.14	24.885	24.328	23.252	29.905	37.702	17.758	13.088	1.679	36.124	46.159	0.002	2.848	0.002	40.8	36.2	10.8	21.5	1.482	0.414	0.416	0.019	19.341	16.46
9/24/2002	1:00:00 PM	25.553	23.146	24.81	24.373	23.258	29.727	37.298	17.668	13.205	1.662	36.124	46.368	0.002	2.839	0.001	41.8	35.8	10.8	21.5	1.480	0.413	0.415	0.019	19.348	16.47
9/24/2002	1:01:00 PM	25.565	23.147	24.876	24.405	23.264	30.015	37.493	17.562	13.739	1.653	36.124	46.402	0.002	2.843	0.002	42.8	36.0	10.8	21.9	1.508	0.414	0.415	0.019	18.976	16.15
9/24/2002	1:02:00 PM	25.56	23.147	24.882	24.43	23.274	30.068	37.679	17.706	13.59	1.734	36.121	46.186	0.002	2.862	0.003	43.8	36.2	10.8	21.8	1.505	0.416	0.418	0.019	19.142	16.29
9/24/2002	1:03:00 PM	25.591	23.158	24.858	24.451	23.285	29.851	37.615	17.411	13.768	1.67	36.124	46.295	0.002	2.847	0.003	44.8	36.1	10.8	21.8	1.504	0.414	0.416	0.019	19.071	16.23
9/24/2002	1:04:00 PM	25.586	23.149	24.933	24.472	23.281	29.764	37.863	16.762	14.23	2.173	36.121	45.229	0.002	2.941	0.002	45.8	36.4	10.6	22.0	1.517	0.428	0.429	0.019	19.492	16.59

Figure C4a: PreConditioning 5C – 2 M Nitric Acid Cleaning – Second Cleaning (first 45 minutes) – Raw & Calculated Data

9/24/2002	1:05:00 PM	25.607	23.149	24.919	24.462	23.306	29.617	37.884	16.816	14.108	2.22	36.118	45.143	0.002	2.943	0.002	46.8	36.4	10.5	21.9	1.507	0.428	0.429	0.020	19.633	16.71
9/24/2002	1:06:00 PM	25.652	23.149	24.934	24.502	23.296	29.582	37.97	16.722	13.942	2.217	36.121	45.125	0.002	2.943	0.002	47.8	36.5	10.5	21.8	1.500	0.428	0.429	0.020	19.715	16.78
9/24/2002	1:07:00 PM	25.673	23.155	25.04	24.539	23.328	30.021	38.279	17.068	14.169	2.225	36.118	45.192	0.002	2.95	0.002	48.8	36.8	10.5	22.1	1.523	0.429	0.429	0.019	19.406	16.51
9/24/2002	1:08:00 PM	25.708	23.155	25.005	24.549	23.318	29.513	37.836	16.667	14.034	2.222	36.118	45.167	0.002	2.951	0.003	49.8	36.4	10.5	21.8	1.501	0.429	0.429	0.020	19.719	16.78
9/24/2002	1:09:00 PM	25.749	23.151	25.041	24.504	23.333	30.039	38.922	16.016	15.322	2.67	36.112	44.109	0.001	3.04	0.002	50.8	37.4	10.3	22.7	1.564	0.442	0.442	0.019	19.481	16.58
9/24/2002	1:10:00 PM	25.775	23.152	25.112	24.46	23.339	29.911	38.601	16.183	15.029	2.595	36.115	43.982	0.002	3.035	0.002	51.8	37.1	10.3	22.5	1.549	0.442	0.440	0.020	19.592	16.67
9/24/2002	1:11:00 PM	25.81	23.162	25.057	24.485	23.334	29.712	38.461	16.081	15.039	2.688	36.115	44.122	0.002	3.041	0.001	52.8	37.0	10.3	22.4	1.543	0.443	0.442	0.020	19.745	16.80
9/24/2002	1:12:00 PM	25.815	23.152	25.117	24.455	23.32	29.665	38.452	15.941	15.088	2.673	36.112	44.147	0.002	3.038	0.002	53.8	37.0	10.3	22.4	1.543	0.442	0.441	0.020	19.691	16.76
9/24/2002	1:13:00 PM	25.825	23.162	25.127	24.445	23.335	29.505	38.378	16.173	14.703	2.757	36.109	44.044	0.001	3.048	0.003	54.8	36.9	10.3	22.1	1.524	0.444	0.442	0.020	19.994	17.01
9/24/2002	1:14:00 PM	25.856	23.163	25.108	24.531	23.325	29.604	38.477	16.081	14.64	2.679	36.115	44.067	0.002	3.04	0.002	55.8	37.0	10.3	22.1	1.525	0.442	0.441	0.020	19.936	16.97
9/24/2002	1:15:00 PM	25.866	23.169	25.179	24.577	23.346	29.342	38.235	16.105	14.533	2.734	36.112	44.047	0.002	3.047	0.002	56.8	36.8	10.3	21.9	1.513	0.443	0.441	0.020	20.109	17.11
9/24/2002	1:16:00 PM	25.856	23.174	25.133	24.592	23.336	29.482	38.45	16.297	14.243	2.754	36.118	44.074	0.002	3.043	0.004	57.8	37.0	10.3	21.9	1.507	0.443	0.441	0.020	20.178	17.17
9/24/2002	1:17:00 PM	25.883	23.185	25.13	24.598	23.347	29.87	38.75	16.231	14.961	2.679	36.115	44.191	0.002	3.043	0.002	58.8	37.3	10.3	22.4	1.545	0.443	0.441	0.020	19.682	16.75
9/24/2002	1:18:00 PM	25.868	23.175	25.19	24.598	23.332	29.304	37.89	16.013	14.66	2.728	36.109	44.131	0.001	3.049	0.002	59.8	36.4	10.3	22.0	1.516	0.444	0.441	0.020	20.076	17.08
9/24/2002	1:19:00 PM	25.883	23.191	25.15	24.629	23.343	29.342	38.061	15.954	14.818	2.746	36.118	44.208	0.002	3.051	0.002	60.8	36.6	10.3	22.1	1.522	0.444	0.442	0.020	20.022	17.04
9/24/2002	1:20:00 PM	25.894	23.186	25.171	24.614	23.358	29.731	38.726	16.155	14.853	2.728	36.112	44.122	0.002	3.046	0.004	61.8	37.3	10.3	22.3	1.537	0.443	0.441	0.020	19.788	16.84
9/24/2002	1:21:00 PM	25.884	23.186	25.206	24.589	23.378	29.337	38.183	15.905	14.775	2.772	36.112	44.023	0.002	3.05	0.002	62.8	36.7	10.3	22.1	1.521	0.444	0.441	0.020	20.006	17.03
9/24/2002	1:22:00 PM	25.895	23.187	25.137	24.65	23.354	29.354	38.221	15.946	14.599	2.682	36.109	44.21	0.002	3.045	0.002	63.8	36.7	10.3	22.0	1.515	0.443	0.441	0.020	20.084	17.09
9/24/2002	1:23:00 PM	25.905	23.192	25.202	24.6	23.349	29.358	38.252	16.079	14.572	2.746	36.109	44.091	0.002	3.054	0.002	64.8	36.8	10.3	22.0	1.514	0.444	0.442	0.020	20.117	17.12
9/24/2002	1:24:00 PM	25.895	23.192	25.192	24.585	23.359	29.449	38.368	15.98	14.681	2.734	36.106	44.059	0.001	3.045	0.003	65.8	36.9	10.3	22.1	1.521	0.443	0.441	0.020	19.973	17.00
9/24/2002	1:25:00 PM	25.92	23.197	25.157	24.54	23.364	29.192	38.124	16.075	14.509	2.786	36.112	43.971	0.002	3.051	0.002	66.8	36.7	10.3	21.9	1.507	0.444	0.442	0.020	20.229	17.21
9/24/2002	1:26:00 PM	25.925	23.202	25.237	24.53	23.384	29.17	37.888	16.01	14.556	2.743	36.109	43.969	0.002	3.043	0.003	67.8	36.4	10.3	21.9	1.507	0.443	0.440	0.020	20.119	17.12
9/24/2002	1:27:00 PM	25.93	23.207	25.197	24.585	23.374	29.435	38.531	15.718	14.974	2.893	36.109	43.885	0.002	3.067	0.002	68.8	37.1	10.2	22.2	1.531	0.446	0.444	0.020	19.988	17.01
9/24/2002	1:28:00 PM	25.95	23.212	25.217	24.586	23.37	29.518	38.496	16.005	14.802	2.861	36.109	43.824	0.002	3.071	0.002	69.8	37.0	10.2	22.2	1.528	0.447	0.444	0.020	20.043	17.06
9/24/2002	1:29:00 PM	25.966	23.218	25.303	24.556	23.395	29.188	38.074	15.915	14.378	2.91	36.109	43.893	0.002	3.072	0.003	70.8	36.6	10.2	21.8	1.502	0.447	0.443	0.020	20.347	17.32
9/24/2002	1:30:00 PM	25.981	23.214	25.254	24.617	23.411	29.143	38.022	15.863	14.556	2.922	36.109	43.709	0.002	3.079	0.003	71.8	36.5	10.2	21.8	1.506	0.448	0.445	0.020	20.360	17.33
9/24/2002	1:31:00 PM	26.031	23.224	25.304	24.657	23.416	29.257	38.246	15.921	14.701	2.936	36.109	43.717	0.002	3.08	0.003	72.8	36.8	10.2	22.0	1.515	0.448	0.444	0.020	20.218	17.21
9/24/2002	1:32:00 PM	26.052	23.239	25.399	24.572	23.407	29.327	38.301	15.744	14.922	2.977	36.106	43.789	0.002	3.08	0.002	73.8	36.8	10.2	22.1	1.525	0.448	0.443	0.020	20.031	17.05
9/24/2002	1:33:00 PM	26.077	23.234	25.334	24.532	23.417	29.238	38.268	15.446	15.234	2.983	36.103	43.751	0.002	3.083	0.003	74.8	36.8	10.2	22.2	1.533	0.449	0.444	0.020	19.987	17.01
9/24/2002	1:34:00 PM	26.113	23.245	25.395	24.558	23.412	29.186	38.113	15.775	14.924	2.968	36.103	43.537	0.001	3.088	0.002	75.8	36.6	10.2	22.1	1.521	0.449	0.444	0.020	20.149	17.15
	Averages	25.6	23.2	24.9	24.4	23.3	29.7	37.9	17.0	13.9	2.2	36.1	45.5	0.0	2.9	0.0		36.4	10.6	21.8	1.5	0.428	0.429	0.020	19.7	16.7
	Maximum	26.1	23.2	25.4	24.7	23.4	30.3	38.9	18.1	15.3	3.0	36.2	47.4	0.0	3.1	0.0		37.4	11.1	22.7	1.6	0.449	0.445	0.020	20.4	17.3
	Median	25.6	23.1	24.9	24.4	23.3	29.7	37.8	17.6	13.7	1.9	36.1	46.3	0.0	2.9	0.0		36.4	10.8	21.8	1.5	0.420	0.425	0.020	19.7	16.8
	Minimum	25.2	23.1	24.4	24.2	23.2	29.1	37.2	15.4	12.6	1.6	36.1	43.5	0.0	2.8	0.0		35.7	10.2	21.0	1.5	0.413	0.414	0.019	18.9	16.0
	2 x Std Dev	0.513	0.065	0.516	0.275	0.125	0.570	0.813	1.687	1.520	0.992	0.031	2.376	0.001	0.187	0.001		0.813	0.555	0.681	0.047	0.027	0.022	0.001	0.769	0.654
Number of Points Used*		70	70	70	70	70	70	70	70	70	70	70	70	70	70	70		70	70	70	70	70	70	70	70	70
	* Backpulse points in box are not included																										

Figure C4b: PreConditioning 5C – 2 M Nitric Acid Cleaning – Second Cleaning (remaining 36 minutes) – Raw & Calculated Data

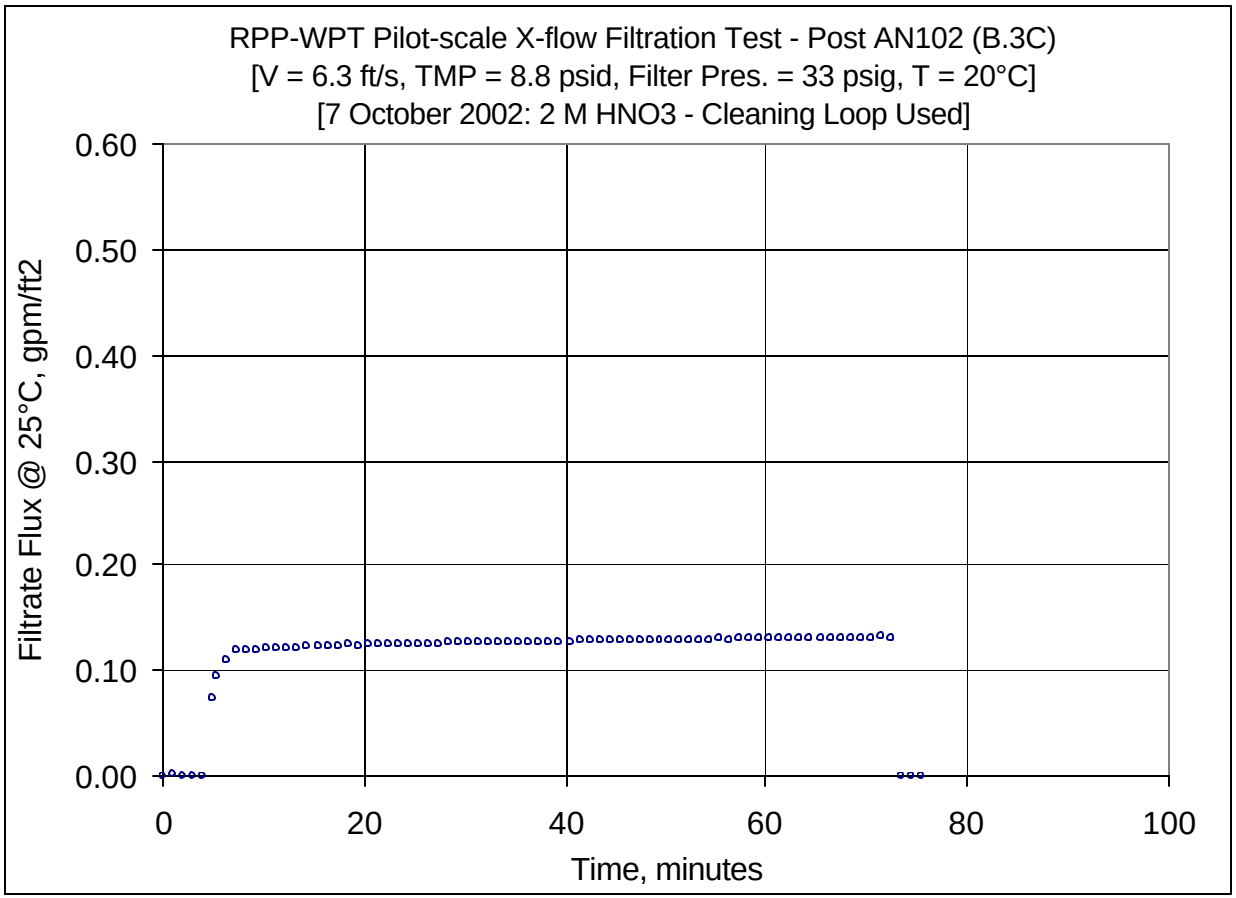


Figure C5: Clean 1: After AN-102R2, Batch 3C – 2 M Nitric Acid Cleaning – First Cleaning

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>									
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
10/7/2002	1:45:42 PM	21.713	26.318	19.883	23.756	19.783	-0.119	-0.027	-0.061	0.064	-0.289	0.341	16.431	0.002	0.001	0		Filter Surface	6.707	FT2						
10/7/2002	1:46:03 PM	21.713	26.318	19.883	23.756	19.783	-0.119	-0.027	-0.061	0.064	-0.289	0.341	16.431	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
10/7/2002	1:46:04 PM	21.729	26.384	19.883	23.712	19.794	-0.121	-0.026	-0.061	0.064	-0.272	0.338	16.485	0.002	0.001	0										
10/7/2002	1:46:05 PM	21.729	26.384	19.878	23.712	19.794	-0.119	-0.026	-0.061	0.064	-0.246	0.335	15.935	0.001	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig								
10/7/2002	1:46:06 PM	21.734	26.384	19.884	23.712	19.799	-0.119	-0.026	-0.061	0.064	-0.272	0.338	17.764	0.002	0.001	0										
10/7/2002	1:46:07 PM	21.729	26.414	19.889	23.707	19.799	-0.119	-0.026	-0.061	0.062	-0.278	0.338	15.852	0.002	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing								
10/7/2002	1:46:08 PM	21.734	26.389	19.889	23.712	19.799	-0.119	-0.026	-0.061	0.064	-0.252	0.341	12.036	0.002	0.001	0		VVVV				< Filtrate Flux		<< PERMIABILITY >>		
10/7/2002	1:46:09 PM	21.729	26.384	19.878	23.697	19.794	-0.119	-0.027	-0.061	0.064	-0.249	0.338	12.112	0.002	0.001	0						at 25C		x 1000		
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
10/7/2002	3:04:12 PM	24.069	24.745	19.912	24.658	20.387	1.186	34.923	1.605	-0.19	28.618	74.292	24.96	0.002	0.001	0	0	33.4	6.1	0.5	0.034	0.000	0.000	0.001	0.693	0.59
10/7/2002	3:05:12 PM	23.732	24.915	19.921	24.552	20.397	-3.607	12.446	0.281	-3.647	11.411	20.418	10.455	0.012	0.001	0.001	1.00	11.0	2.6	-3.6	-0.250	0.002	0.002	-0.001	-0.571	-0.49
10/7/2002	3:06:12 PM	23.741	24.152	19.92	24.511	20.391	-1.084	17.972	0.444	-1.498	14.036	14.987	16.625	0.002	0.001	0.002	2.00	16.5	4.1	-1.3	-0.089	0.000	0.000	0.000	-0.267	-0.23
10/7/2002	3:07:12 PM	23.721	24.497	19.935	24.51	20.405	-0.579	13.884	0.587	-1.068	9.596	2.591	11.13	0.002	0.001	0	3.00	12.4	2.7	-0.8	-0.057	0.000	0.000	0.000	-0.419	-0.36
10/7/2002	3:08:12 PM	24.558	24.838	19.92	24.27	20.411	6.484	14.709	0.583	6.105	3.09	2.988	13.205	0.003	0.001	0	4.00	13.2	3.2	6.3	0.434	0.000	0.001	0.000	0.082	0.07
10/7/2002	3:09:12 PM	24.738	23.97	19.924	24.099	20.41	14.995	31.208	1.465	13.792	9.769	10.406	19.597	0.425	0.001	0	5.00	29.7	4.8	14.4	0.992	0.063	0.073	0.005	5.091	4.33
10/7/2002	3:09:35 PM	24.623	24.066	19.915	24.084	20.405	5.939	23.888	1.142	4.92	12.781	12.583	19.579	0.547	0.001	0	5.38	22.4	4.8	5.4	0.374	0.082	0.094	0.017	17.375	14.79
10/7/2002	3:10:35 PM	24.478	24.487	19.92	24.074	20.405	9.943	31.526	1.542	8.543	16.212	15.916	23.522	0.642	0.001	0	6.38	30.1	5.8	9.2	0.637	0.096	0.111	0.012	11.977	10.19
10/7/2002	3:11:35 PM	24.609	24.929	19.925	24.005	20.421	9.866	33.212	1.521	8.625	18.198	17.81	25.147	0.692	0.001	0	7.38	31.7	6.2	9.2	0.637	0.103	0.119	0.013	12.905	10.98
10/7/2002	3:12:35 PM	24.714	24.086	19.889	23.944	20.4	10.985	34.474	1.712	9.395	18.192	17.824	25.357	0.692	0.001	0	8.38	33.0	6.2	10.2	0.703	0.103	0.119	0.012	11.721	9.97
10/7/2002	3:13:35 PM	24.523	24.447	19.879	24.059	20.395	10.655	34.294	1.788	8.883	18.357	17.949	24.254	0.696	0.001	0	9.38	32.8	5.9	9.8	0.674	0.104	0.120	0.012	12.300	10.47
10/7/2002	3:14:35 PM	24.584	24.869	19.885	24.015	20.396	10.96	34.662	1.684	9.436	18.415	18.021	25.648	0.698	0.001	0	10.38	33.2	6.3	10.2	0.703	0.104	0.120	0.012	11.815	10.05
10/7/2002	3:15:35 PM	24.824	24.317	19.894	24.149	20.385	10.995	34.631	1.626	9.493	18.339	17.946	25.607	0.7	0.001	0	11.38	33.2	6.3	10.2	0.706	0.104	0.121	0.012	11.792	10.04
10/7/2002	3:16:35 PM	24.588	24.382	19.874	24.279	20.37	10.827	34.412	1.747	9.149	18.394	17.96	25.825	0.703	0.001	0	12.38	32.9	6.3	10.0	0.689	0.105	0.121	0.012	12.153	10.34
10/7/2002	3:17:35 PM	24.583	24.783	19.859	24.184	20.38	10.68	34.392	1.734	9.283	18.472	18.079	25.862	0.704	0.001	0	13.38	32.9	6.3	10.0	0.688	0.105	0.122	0.012	12.184	10.37
10/7/2002	3:18:35 PM	24.789	25.234	19.864	24.089	20.385	10.515	34.406	1.729	8.867	18.588	18.186	25.867	0.709	0.001	0	14.38	32.9	6.3	9.7	0.668	0.106	0.122	0.013	12.636	10.75
10/7/2002	3:19:35 PM	24.888	24.352	19.854	23.913	20.38	10.365	34.245	1.708	8.873	18.701	18.198	25.913	0.709	0.001	0	15.38	32.8	6.4	9.6	0.663	0.106	0.122	0.013	12.735	10.84
10/7/2002	3:20:35 PM	24.714	24.733	19.849	23.869	20.385	10.434	34.303	1.681	9.01	18.654	18.244	25.814	0.71	0.001	0	16.38	32.8	6.3	9.7	0.670	0.106	0.123	0.013	12.619	10.74
10/7/2002	3:21:35 PM	24.784	25.144	19.819	23.959	20.391	10.167	34.139	1.67	8.648	18.871	18.415	26.022	0.714	0.001	0	17.38	32.7	6.4	9.4	0.649	0.106	0.123	0.013	13.126	11.17
10/7/2002	3:22:35 PM	25.051	25.501	19.83	23.92	20.402	10.123	34.137	1.683	8.55	18.871	18.473	25.911	0.718	0.001	0	18.38	32.7	6.3	9.3	0.644	0.107	0.124	0.013	13.296	11.32
10/7/2002	3:23:35 PM	25.016	24.69	19.82	23.905	20.392	10.405	34.501	1.744	8.803	18.813	18.397	25.932	0.715	0.001	0	19.38	33.0	6.4	9.6	0.662	0.107	0.124	0.013	12.875	10.96
10/7/2002	3:24:35 PM	24.915	25.055	19.81	24.09	20.386	9.904	34.017	1.695	8.284	18.92	18.481	25.957	0.717	0.001	0	20.38	32.5	6.4	9.1	0.627	0.107	0.124	0.014	13.639	11.61
10/7/2002	3:25:35 PM	25.05	25.48	19.815	24.196	20.396	10.556	34.809	1.717	9.023	19.013	18.539	25.982	0.72	0.001	0	21.38	33.3	6.4	9.8	0.675	0.107	0.125	0.013	12.722	10.83
10/7/2002	3:26:35 PM	25.32	24.843	19.819	24.24	20.395	9.928	34.141	1.689	8.353	19.157	18.684	26.112	0.721	0.001	0	22.38	32.7	6.4	9.1	0.630	0.107	0.125	0.014	13.642	11.61
10/7/2002	3:27:35 PM	25.084	24.999	19.824	24.24	20.405	10.305	34.658	1.67	8.943	19.114	18.684	26.043	0.725	0.001	0	23.38	33.2	6.4	9.6	0.664	0.108	0.125	0.013	13.027	11.09
10/7/2002	3:28:35 PM	25.088	25.433	19.808	24.304	20.404	10.017	34.505	1.755	8.37	19.218	18.713	26.039	0.726	0.001	0	24.38	33.0	6.4	9.2	0.634	0.108	0.126	0.014	13.662	11.63
10/7/2002	3:29:35 PM	25.279	25.634	19.828	24.369	20.409	9.798	34.311	1.73	8.261	19.256	18.869	26.101	0.727	0.001	0	25.38	32.8	6.4	9.0	0.623	0.108	0.126	0.014	13.921	11.85
10/7/2002	3:30:35 PM	25.268	24.802	19.832	24.258	20.404	9.903	34.16	1.64	8.445	19.152	18.649	25.927	0.724	0.001	0	26.38	32.7	6.4	9.2	0.633	0.108	0.125	0.014	13.644	11.61
10/7/2002	3:31:35 PM	25.133	25.193	19.833	24.224	20.404	10.129	34.582	1.674	8.695	19.25	18.756	26.081	0.728	0.001	0	27.38	33.1	6.4	9.4	0.649	0.109	0.126	0.013	13.372	11.38
10/7/2002	3:32:35 PM	25.26	25.64	19.839	24.064	20.405	9.593	34.133	1.703	8.024	19.386	18.904	26.164	0.731	0.001	0	28.38	32.7	6.4	8.8	0.607	0.109	0.126	0.014	14.344	12.21
10/7/2002	3:33:35 PM	25.411	24.814	19.82	23.834	20.417	9.827	34.267	1.648	8.283	19.27	18.811	26.034	0.728	0.001	0	29.38	32.8	6.4	9.1	0.624	0.109	0.126	0.014	13.904	11.83
10/7/2002	3:34:35 PM	25.202	25.146	19.811	23.75	20.403	9.742	34.253	1.706	8.177	19.276	18.794	26.141	0.728	0.001	0	30.38	32.8	6.4	9.0	0.618	0.109	0.126	0.014	14.056	11.96
10/7/2002	3:35:35 PM	25.223	25.543	19.802	23.666	20.399	9.821	34.406	1.705	8.374	19.446	18.895	26.152	0.731	0.001	0	31.38	32.9	6.4	9.1	0.627	0.109	0.126	0.014	13.904	11.83
10/7/2002	3:36:35 PM	25.429	25.188	19.782	23.631	20.404	9.46	34.112	1.698	7.831	19.496	18.962	26.131	0.731	0.001	0	32.38	32.6	6.4	8.6	0.596	0.109	0.127	0.015	14.639	12.46
10/7/2002	3:37:35 PM	25.268	25.047	19.772	23.546	20.404	10.044	34.816	1.77	8.48	19.458	18.988	26.215	0.731	0.001	0	33.38	33.3	6.4	9.3	0.639	0.109	0.127	0.014	13.669	11.63
10/7/2002	3:38:35 PM	25.223	25.453	19.771	23.791	20.378	9.667	34.356	1.754	8.079	19.452	18.968	26.083	0.732	0.001	0	34.38	32.9	6.4	8.9	0.612	0.109	0.127	0.014	14.288	12.16
10/7/2002	3:39:35 PM	25.382	25.707	19.755	23.996	20.377	9.5	34.274	1.74	7.987	19.568	19.081	26.091	0.735	0.001	0	35.38	32.8	6.4	8.7	0.603	0.110	0.127	0.015	14.566	12.40
10/7/2002	3:40:35 PM	25.326	24.94	19.755	23.955	20.362	9.701	34.474	1.785	8.083	19.481	18.962	26.026	0.732	0.001	0	36.38	33.0	6.4	8.9	0.613	0.109	0.127	0.014	14.264	12.14
10/7/2002	3:41:35 PM	25.2	25.325	19.749	24.02	20.366	9.645	34.402	1.794	8.021	19.458	18.942	26.076	0.734	0.001	0	37.38	32.9	6.4	8.8	0.609	0.109	0.127	0.014	14.401	12.26
10/7/2002	3:42:35 PM	25.33	25.755	19.749	24.05	20.381	9.699	34.563	1.742	8.179	19.582	19.115	26.064	0.736	0.001	0	38.38	33.1	6.4	8.9	0.616	0.110	0.128	0.014	14.269	12.14
10/7/2002	3:43:35 PM	25.409	24.873	19.748	24.139	20.375	9.228	34.036	1.778	7.53	19.62	19.063	26.028	0.735	0.001	0	39.38	32.6	6.4	8.4	0.578	0.110	0.127	0.015	15.202	12.94
10/7/2002	3:44:35 PM	25.239	25.354	19.788	24.294	20.38	9.344	34.162	1.725	7.88	19.629	19.101	26.059	0.737	0.001	0	40.38	32.7	6.4	8.6	0.594	0.110	0.128	0.015	14.814	12.61
10/7/2002	3:45:35 PM	25.264	25.774	19.767	24.269	20.374	9.379	34.379	1.771	7.698	19.704	19.127	26.122	0.739	0.001	0	41.38	32.9	6.4	8.5	0.589	0.110	0.128	0.015	14.991	12.76
10/7/2002	3:46:35 PM	25.499	25.929	19.767	24.133	20.394	9.415	34.404	1.748	7.833	19.857	19.344	26.188	0.741	0.001	0	42.38	32.9	6.4	8.6	0.595	0.110	0.128	0.015	14.883	12.67
10/7/2002	3:47:35 PM	25.414	25.263	19.737	23.898	20.404	9.377	34.284	1.801	7.643	19.582	19.084	26.06	0.738	0.001	0	43.38	32.8	6.4	8.5	0.587	0.110	0.128	0.015	15.034	12.79
10/7/2002	3:48:35 PM	25.319	25.674	19.763	24.129	20.405	9.158	33.994	1.718	7.522	19.692	19.139	25.997	0.739	0.001	0	44.38	32.5	6.4	8.3	0.575	0.110	0.128	0.015	15.350	13.06
10/7/2002	3:49:35 PM	25.455	26.095	19.753	24.004	20.421	9.027	34.108	1.678	7.585	19.871	19.37	26.118	0.742	0.001	0	45.38	32.6	6.4	8.3	0.573	0.111	0.129	0.015	15.480	13.17

Figure C6a: Clean 1: After AN-102R2, Batch 3C – 2 M Nitric Acid Cleaning – First Cleaning (first 45 minutes) – Raw & Calculated Data

10/7/2002	3:50:35 PM	25.736	25.4	19.779	23.904	20.411	9.425	34.383	1.613	8.066	19.724	19.24	26.049	0.741	0.001	0	46.38	32.9	6.4	8.7	0.603	0.110	0.128	0.015	14.671	12.49
10/7/2002	3:51:35 PM	25.465	25.549	19.743	23.959	20.395	9.017	34.079	1.756	7.379	19.808	19.336	26.164	0.743	0.001	0	47.38	32.6	6.4	8.2	0.565	0.111	0.129	0.016	15.709	13.37
10/7/2002	3:52:35 PM	25.471	25.941	19.749	23.91	20.412	9.172	34.288	1.708	7.624	19.92	19.472	26.16	0.745	0.001	0	48.38	32.8	6.4	8.4	0.579	0.111	0.129	0.015	15.374	13.08
10/7/2002	3:53:35 PM	25.662	26.257	19.74	23.886	20.433	8.945	34.135	1.674	7.389	20.004	19.503	26.2	0.746	0.001	0	49.38	32.7	6.4	8.2	0.563	0.111	0.129	0.016	15.834	13.48
10/7/2002	3:54:35 PM	25.632	25.406	19.735	24.001	20.422	8.884	34.127	1.786	7.137	19.932	19.466	26.139	0.744	0.001	0	50.38	32.7	6.4	8.0	0.552	0.111	0.129	0.016	16.103	13.70
10/7/2002	3:55:35 PM	25.491	25.776	19.724	24.156	20.422	9.032	34.185	1.69	7.555	19.923	19.472	26.101	0.745	0.001	0	51.38	32.7	6.4	8.3	0.572	0.111	0.129	0.016	15.579	13.26
10/7/2002	3:56:35 PM	25.622	26.207	19.73	24.207	20.448	9.125	34.414	1.839	7.385	19.958	19.448	26.141	0.745	0.001	0	52.38	32.9	6.4	8.3	0.569	0.111	0.129	0.016	15.649	13.32
10/7/2002	3:57:35 PM	25.812	25.416	19.75	24.252	20.448	9.172	34.452	1.724	7.653	20.042	19.538	26.213	0.748	0.001	0	53.38	33.0	6.4	8.4	0.580	0.112	0.130	0.015	15.409	13.11
10/7/2002	3:58:35 PM	25.592	25.681	19.75	24.462	20.442	8.891	34.141	1.67	7.454	20.036	19.59	26.171	0.746	0.001	0	54.38	32.7	6.4	8.2	0.563	0.111	0.129	0.016	15.819	13.46
10/7/2002	3:59:35 PM	25.585	26.085	19.764	24.456	20.451	8.963	34.441	1.717	7.481	20.169	19.706	26.252	0.75	0.001	0	55.38	33.0	6.4	8.2	0.567	0.112	0.130	0.016	15.801	13.45
10/7/2002	4:00:35 PM	25.8	25.839	19.763	24.46	20.45	9.139	34.551	1.785	7.555	20.103	19.64	26.099	0.748	0.001	0	56.38	33.1	6.4	8.3	0.575	0.112	0.130	0.016	15.524	13.21
10/7/2002	4:01:35 PM	25.639	25.568	19.757	24.354	20.455	8.646	33.974	1.652	7.188	20.16	19.645	26.217	0.751	0.001	0	57.38	32.5	6.4	7.9	0.546	0.112	0.130	0.016	16.435	13.99
10/7/2002	4:02:35 PM	25.558	25.948	19.746	24.429	20.459	8.837	34.228	1.707	7.473	20.204	19.706	26.192	0.75	0.001	0	58.38	32.8	6.4	8.2	0.562	0.112	0.130	0.016	15.940	13.56
10/7/2002	4:03:35 PM	25.728	26.323	19.736	24.499	20.459	8.561	34.011	1.646	7.131	20.204	19.75	26.166	0.752	0.001	0	59.38	32.5	6.4	7.8	0.541	0.112	0.130	0.017	16.616	14.14
10/7/2002	4:04:35 PM	25.703	25.447	19.736	24.433	20.464	9.204	34.582	1.718	7.774	20.131	19.628	26.06	0.75	0.001	0	60.38	33.1	6.4	8.5	0.585	0.112	0.130	0.015	15.317	13.03
10/7/2002	4:05:35 PM	25.567	25.832	19.75	24.598	20.463	8.715	34.044	1.588	7.418	20.207	19.695	26.236	0.75	0.001	0	61.38	32.6	6.4	8.1	0.556	0.112	0.130	0.016	16.113	13.71
10/7/2002	4:06:35 PM	25.682	26.252	19.75	24.623	20.473	8.965	34.596	1.725	7.516	20.348	19.79	26.206	0.754	0.001	0	62.38	33.1	6.4	8.2	0.568	0.112	0.131	0.016	15.857	13.49
10/7/2002	4:07:35 PM	25.826	25.411	19.744	24.567	20.467	8.646	34.129	1.784	6.953	20.204	19.732	26.12	0.752	0.001	0	63.38	32.7	6.4	7.8	0.538	0.112	0.130	0.017	16.712	14.22
10/7/2002	4:08:35 PM	25.617	25.717	19.75	24.527	20.473	8.541	34.123	1.669	7.182	20.418	19.865	26.232	0.755	0.001	0	64.38	32.6	6.4	7.9	0.542	0.113	0.131	0.017	16.643	14.16
10/7/2002	4:09:35 PM	25.617	26.122	19.745	24.387	20.458	8.549	34.139	1.7	7.084	20.432	19.819	26.232	0.755	0.001	0	65.38	32.7	6.4	7.8	0.539	0.113	0.131	0.017	16.741	14.25
10/7/2002	4:10:35 PM	25.823	25.853	19.746	24.373	20.479	8.52	34.06	1.661	7.135	20.374	19.828	26.124	0.754	0.001	0	66.38	32.6	6.4	7.8	0.540	0.112	0.131	0.017	16.695	14.21
10/7/2002	4:11:35 PM	25.668	25.597	19.731	24.428	20.484	8.831	34.371	1.643	7.547	20.345	19.79	26.164	0.755	0.001	0	67.38	32.9	6.4	8.2	0.565	0.113	0.131	0.016	15.986	13.60
10/7/2002	4:12:35 PM	25.608	25.998	19.751	24.644	20.484	8.468	34.029	1.666	7.135	20.403	19.906	26.227	0.755	0.001	0	68.38	32.6	6.4	7.8	0.538	0.113	0.131	0.017	16.771	14.27
10/7/2002	4:13:35 PM	25.748	26.383	19.721	24.739	20.479	8.719	34.48	1.717	7.284	20.435	19.891	26.167	0.756	0.001	0	69.38	33.0	6.4	8.0	0.552	0.113	0.131	0.016	16.387	13.95
10/7/2002	4:14:35 PM	25.748	25.497	19.731	24.619	20.484	8.63	34.257	1.718	7.194	20.38	19.86	26.164	0.756	0.001	0	70.38	32.8	6.4	7.9	0.546	0.113	0.131	0.017	16.568	14.10
10/7/2002	4:15:35 PM	25.602	25.882	19.745	24.718	20.473	8.418	34.019	1.657	7.094	20.484	19.92	26.154	0.759	0.001	0	71.38	32.5	6.4	7.8	0.535	0.113	0.132	0.017	16.961	14.43
10/7/2002	4:16:35 PM	25.702	26.297	19.735	24.758	20.478	8.483	34.172	1.727	6.998	20.449	19.964	26.101	0.757	0.001	0	72.38	32.7	6.4	7.7	0.534	0.113	0.131	0.017	16.955	14.43
10/7/2002	4:17:35 PM	25.883	25.487	19.74	24.678	20.478	11.022	34.172	1.668	9.665	17.845	17.045	26.114	0.002	1.032	0	73.38	32.7	6.4	10.3	0.713	0.000	0.000	0.000	0.034	0.03
10/7/2002	4:18:35 PM	25.627	25.767	19.735	24.673	20.483	10.9	34.135	1.656	9.581	17.912	17.039	26.085	0.002	1.035	0	74.38	32.7	6.4	10.2	0.706	0.000	0.000	0.000	0.034	0.03
10/7/2002	4:19:35 PM	25.667	26.162	19.735	24.588	20.489	10.579	33.76	1.618	9.295	17.961	17.071	26.041	0.002	1.035	0	75.38	32.3	6.4	9.9	0.685	0.000	0.000	0.000	0.035	0.03
	Averages	25.3	25.4	19.8	24.2	20.4	9.5	34.1	1.7	8.0	19.3	18.9	25.9	0.7	0.0	0.0		32.6	6.3	8.8	0.605	0.104	0.121	0.0140	14.0	11.9
	Maximum	25.9	26.4	19.9	24.8	20.5	11.0	34.8	1.8	9.7	20.5	20.0	26.3	0.8	1.0	0.0		33.3	6.4	10.3	0.713	0.113	0.132	0.0174	17.4	14.8
	Median	25.4	25.5	19.8	24.2	20.4	9.5	34.3	1.7	8.0	19.6	19.1	26.1	0.7	0.0	0.0		32.8	6.4	8.7	0.603	0.110	0.127	0.0146	14.6	12.5
	Minimum	24.5	24.1	19.7	23.5	20.4	5.9	23.9	1.1	4.9	12.8	12.6	19.6	0.0	0.0	0.0		22.4	4.8	5.4	0.374	0.000	0.000	0.0000	0.0	0.0
	2 x Std Dev	0.760	1.127	0.109	0.576	0.074	1.710	2.570	0.175	1.647	2.253	2.199	1.718	0.299	0.416	0.000		2.570	0.421	1.7	0.115	0.045	0.052	0.0066	6.602	5.619
Number of Points Used*		71	71	71	71	71	71	71	71	71	71	71	71	71	71	71		71	71	71	71	71	71	71	71	71
	* Backpulse points in box are not included																									

Figure C6b: Clean 1: After AN-102R2, Batch 3C – 2 M Nitric Acid Cleaning – First Cleaning (remaining 30 minutes) – Raw & Calculated Data

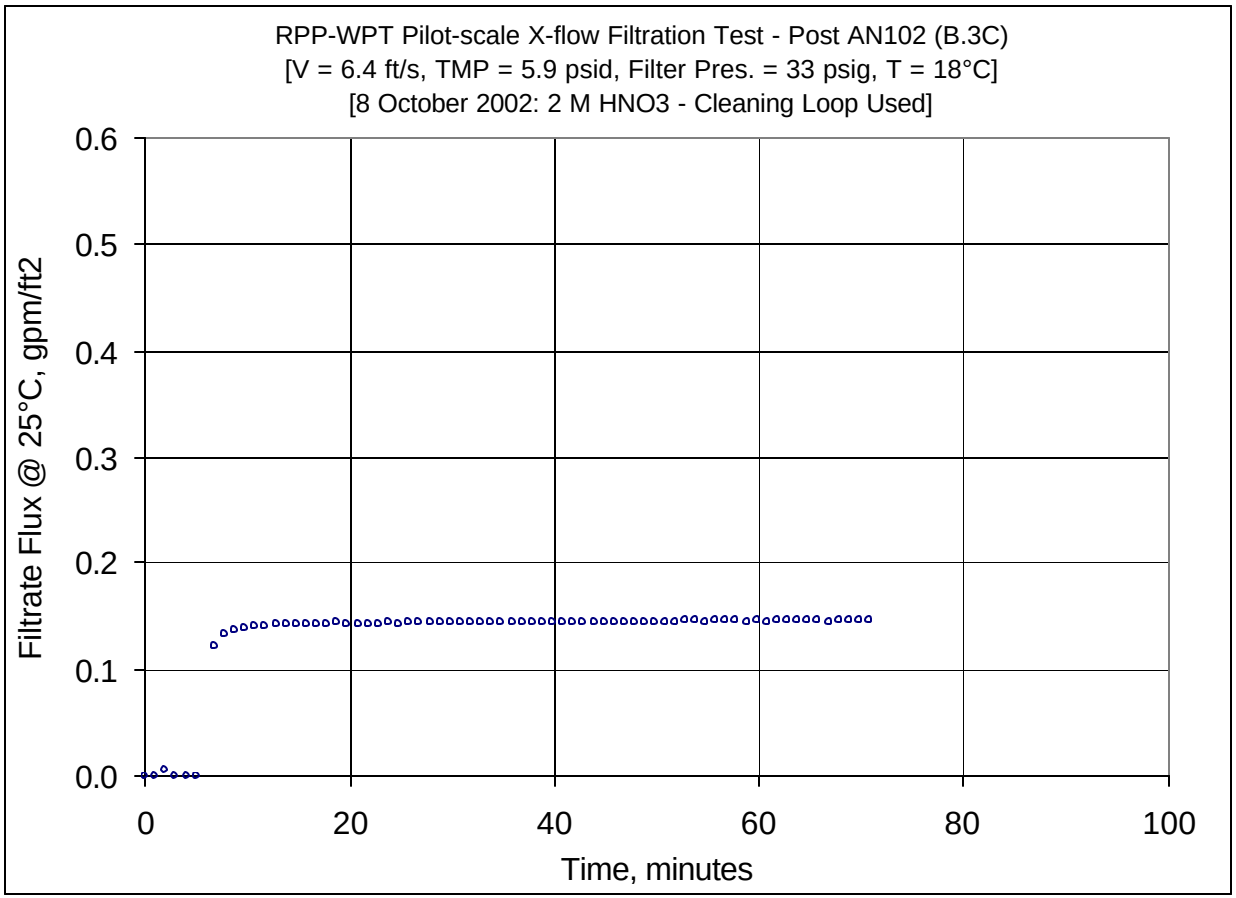


Figure C7: Clean 2: After AN-102R2, Batch 3C – 2 M Nitric Acid Cleaning – Second Cleaning

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>											
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse												
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm												
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp												
Zeros																												
10/8/2002	1:48:18 PM	20.364	19.99	22.834	18.589	18.567	-0.119	-0.082	-0.059	0.072	-0.246	0.385	-0.216	0.001	0.001	0.003		Filter Surface	6.707	FT2								
10/8/2002	1:48:42 PM	20.364	19.99	22.834	18.589	18.567	-0.119	-0.082	-0.059	0.072	-0.246	0.385	-0.216	0.001	0.001	0.003		Conversion	851	m3/m2/day/barg / gpm/ft2/barg								
10/8/2002	1:48:43 PM	20.36	19.99	22.814	18.619	18.582	-0.121	-0.082	-0.06	0.072	-0.246	0.382	-0.218	0.002	0.001	0.003												
10/8/2002	1:48:44 PM	20.355	19.99	22.814	18.619	18.582	-0.121	-0.082	-0.06	0.072	-0.243	0.385	-0.214	0.001	0.001	0.002		Note: Gauge Pressure P1 is approximately 1.4 psig										
10/8/2002	1:48:45 PM	20.355	20.001	22.82	18.635	18.588	-0.121	-0.082	-0.06	0.07	-0.243	0.385	-0.218	0.002	0.001	0.002												
10/8/2002	1:48:46 PM	20.35	19.99	22.814	18.629	18.582	-0.121	-0.08	-0.059	0.072	-0.243	0.385	-0.214	0.002	0.001	0.001		Pressure P1is corrected for 40.88 inches of water tubing										
10/8/2002	1:48:47 PM	20.355	19.99	22.814	18.629	18.582	-0.121	-0.082	-0.06	0.072	-0.243	0.387	-0.216	0.002	0.001	0.003		VVVV					< Filtrate Flux << PERMIABILITY >>					
10/8/2002	1:48:48 PM	20.35	19.99	22.809	18.635	18.582	-0.119	-0.082	-0.059	0.074	-0.243	0.387	-0.214	0.002	0.001	0.001						at 25C		x 1000				
																	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter	
Data - Per Minute																	Min.	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar	
10/8/2002	10:04:15 AM	24.158	25.17	18.091	19.206	18.497	0.737	34.919	1.685	-0.785	29.083	15.595	25.479	0.001	0.001	0	0	33.4	6.2	0.0	-0.002	0.000	0.000	-0.008	-7.681	-6.45	
10/8/2002	10:05:15 AM	24.397	25.604	18.114	19.184	18.521	0.679	34.818	1.659	-0.8	29.124	80.606	25.521	0.002	0.001	0	1.00	33.3	6.3	-0.1	-0.004	0.000	0.000	-0.006	-6.010	-5.11	
10/8/2002	10:06:15 AM	23.724	24.867	18.088	19.173	18.53	1.269	35.608	1.707	-0.247	29.022	32.999	25.562	0.035	0.001	0.002	2.00	34.1	6.3	0.5	0.035	0.005	0.006	0.012	12.463	10.61	
10/8/2002	10:07:15 AM	23.582	24.885	18.102	19.258	18.528	0.086	19.614	0.712	-0.472	14.489	12.323	16.625	0.002	0.001	0.002	3.00	18.1	4.1	-0.2	-0.013	0.000	0.000	-0.002	-1.885	-1.60	
10/8/2002	10:08:15 AM	24.439	25.23	18.096	19.226	18.542	-1.796	18.843	0.477	-2.218	16.088	17.259	18.886	0.002	0.001	0	4.00	17.4	4.6	-2.0	-0.138	0.000	0.000	0.000	-0.181	-0.15	
10/8/2002	10:09:15 AM	24.888	25.549	18.104	19.2	18.536	6.904	15.229	0.355	6.711	3.223	3.005	13.326	0.003	0.001	0	5.00	13.8	3.3	6.8	0.469	0.000	0.001	0.000	0.080	0.07	
10/8/2002	10:11:02 AM	24.736	24.786	18.108	19.259	18.55	7.633	30.122	1.355	6.634	17.414	17.132	23.262	0.67	0.001	0	6.78	28.6	5.7	7.1	0.492	0.100	0.122	0.017	17.080	14.54	
10/8/2002	10:12:02 AM	24.736	25.152	18.103	19.218	18.58	8.033	33.419	1.689	6.386	20.1	19.686	25.086	0.734	0.001	0	7.78	31.9	6.1	7.2	0.497	0.109	0.133	0.019	18.517	15.76	
10/8/2002	10:13:02 AM	24.936	25.537	18.117	19.207	18.599	7.712	33.849	1.65	6.337	20.981	20.471	25.399	0.755	0.001	0	8.78	32.4	6.2	7.0	0.484	0.113	0.137	0.020	19.540	16.63	
10/8/2002	10:14:02 AM	25.187	24.981	18.123	19.233	18.645	7.176	33.74	1.488	5.894	21.481	20.96	25.565	0.765	0.001	0	9.78	32.3	6.3	6.5	0.451	0.114	0.139	0.021	21.278	18.11	
10/8/2002	10:15:02 AM	24.901	24.956	18.128	19.375	18.665	7.414	34.133	1.642	6.161	21.614	21.067	25.705	0.77	0.001	0	10.78	32.7	6.3	6.8	0.468	0.115	0.140	0.021	20.617	17.55	
10/8/2002	10:16:02 AM	24.876	25.302	18.133	19.405	18.706	7.431	34.665	1.701	5.864	22.022	21.464	25.858	0.777	0.001	0	11.78	33.2	6.3	6.6	0.458	0.116	0.141	0.021	21.240	18.08	
10/8/2002	10:17:02 AM	25.088	25.679	18.134	19.432	18.753	7.292	34.545	1.627	5.917	22.187	21.692	25.873	0.781	0.001	0	12.78	33.1	6.3	6.6	0.455	0.116	0.142	0.021	21.488	18.29	
10/8/2002	10:18:02 AM	25.229	24.868	18.156	19.463	18.794	7.083	34.367	1.626	5.858	22.262	21.724	25.909	0.783	0.001	0	13.78	32.9	6.3	6.5	0.446	0.117	0.142	0.022	21.975	18.70	
10/8/2002	10:19:02 AM	24.96	25.105	18.162	19.621	18.826	7.022	34.414	1.696	5.577	22.253	21.698	25.825	0.784	0.001	0	14.78	32.9	6.3	6.3	0.434	0.117	0.142	0.023	22.596	19.23	
10/8/2002	10:20:02 AM	24.986	25.462	18.158	19.622	18.883	7.058	34.723	1.688	5.604	22.464	21.941	25.95	0.787	0.001	0	15.78	33.2	6.4	6.3	0.437	0.117	0.143	0.023	22.572	19.21	
10/8/2002	10:21:02 AM	25.184	25.844	18.19	19.629	18.935	6.797	34.439	1.657	5.477	22.502	21.953	25.978	0.79	0.001	0	16.78	33.0	6.4	6.1	0.423	0.118	0.143	0.023	23.352	19.87	
10/8/2002	10:22:02 AM	25.175	24.909	18.201	19.736	18.968	7.219	35.047	1.693	5.792	22.455	21.956	25.965	0.788	0.001	0	17.78	33.6	6.4	6.5	0.449	0.117	0.143	0.022	21.967	18.69	
10/8/2002	10:23:02 AM	25.001	25.261	18.219	19.819	18.999	6.95	34.638	1.656	5.553	22.609	22.008	26.062	0.792	0.001	0	18.78	33.2	6.4	6.3	0.431	0.118	0.144	0.023	22.963	19.54	
10/8/2002	10:24:02 AM	25.108	25.654	18.256	19.821	19.026	7.091	34.985	1.73	5.575	22.64	22.104	26.118	0.792	0.001	0	19.78	33.5	6.4	6.3	0.437	0.118	0.143	0.023	22.643	19.27	
10/8/2002	10:25:02 AM	25.321	25.35	18.243	19.752	19.053	6.637	34.363	1.703	5.145	22.64	22.072	26.047	0.791	0.001	0	20.78	32.9	6.4	5.9	0.406	0.118	0.143	0.024	24.320	20.70	
10/8/2002	10:26:02 AM	25.092	25.071	18.254	19.824	19.06	6.898	34.768	1.721	5.405	22.603	22.104	26.137	0.792	0.001	0	21.78	33.3	6.4	6.2	0.424	0.118	0.143	0.023	23.312	19.84	
10/8/2002	10:27:02 AM	25.038	25.423	18.261	19.79	19.071	6.917	34.811	1.678	5.504	22.649	22.075	26.133	0.792	0.001	0	22.78	33.3	6.4	6.2	0.428	0.118	0.143	0.023	23.086	19.65	
10/8/2002	10:28:02 AM	25.179	25.805	18.262	19.736	19.088	6.743	34.646	1.667	5.387	22.822	22.196	26.152	0.794	0.001	0	23.78	33.2	6.4	6.1	0.418	0.118	0.144	0.024	23.699	20.17	
10/8/2002	10:29:02 AM	25.345	24.949	18.263	19.711	19.083	6.702	34.464	1.678	5.246	22.637	22.089	26.154	0.79	0.001	0	24.78	33.0	6.4	6.0	0.412	0.118	0.143	0.024	23.938	20.37	
10/8/2002	10:30:02 AM	25.07	25.205	18.263	19.737	19.068	6.958	34.865	1.652	5.702	22.808	22.251	26.261	0.793	0.001	0	25.78	33.4	6.4	6.3	0.436	0.118	0.144	0.023	22.677	19.30	
10/8/2002	10:31:02 AM	25.101	25.577	18.279	19.703	19.085	6.726	34.667	1.683	5.243	22.828	22.269	26.188	0.793	0.001	0	26.78	33.2	6.4	6.0	0.413	0.118	0.143	0.024	23.971	20.40	
10/8/2002	10:32:02 AM	25.292	25.932	18.284	19.632	19.069	6.434	34.441	1.64	5.094	22.973	22.396	26.244	0.797	0.001	0	27.78	33.0	6.4	5.8	0.397	0.119	0.144	0.025	25.014	21.29	
10/8/2002	10:33:02 AM	25.252	24.991	18.27	19.673	19.065	6.73	34.621	1.64	5.42	22.863	22.266	26.257	0.794	0.001	0	28.78	33.1	6.4	6.1	0.419	0.118	0.144	0.024	23.654	20.13	
10/8/2002	10:34:02 AM	25.067	25.322	18.26	19.668	19.055	6.934	34.998	1.699	5.506	22.903	22.286	26.225	0.796	0.001	0	29.78	33.5	6.4	6.2	0.429	0.119	0.144	0.023	23.168	19.72	
10/8/2002	10:35:02 AM	25.157	25.693	18.245	19.613	19.055	6.851	34.816	1.634	5.628	22.84	22.251	26.135	0.795	0.001	0	30.78	33.3	6.4	6.2	0.430	0.119	0.144	0.023	23.077	19.64	
10/8/2002	10:36:02 AM	25.393	25.553	18.275	19.587	19.05	6.66	34.783	1.615	5.469	23.048	22.425	26.318	0.796	0.001	0	31.78	33.3	6.4	6.1	0.418	0.119	0.144	0.024	23.751	20.21	
10/8/2002	10:37:02 AM	25.192	25.117	18.275	19.653	19.04	6.846	34.977	1.688	5.418	22.987	22.376	26.28	0.799	0.001	0	32.78	33.5	6.4	6.1	0.423	0.119	0.145	0.024	23.579	20.07	
10/8/2002	10:38:02 AM	25.087	25.442	18.255	19.597	19.02	6.708	34.838	1.738	5.248	22.996	22.327	26.188	0.798	0.001	0	33.78	33.4	6.4	6.0	0.412	0.119	0.144	0.024	24.170	20.57	
10/8/2002	10:39:02 AM	25.263	25.833	18.271	19.558	19.025	6.503	34.648	1.723	5.094	22.981	22.373	26.192	0.797	0.001	0	34.78	33.2	6.4	5.8	0.400	0.119	0.144	0.025	24.875	21.17	
10/8/2002	10:40:02 AM	25.433	25.082	18.265	19.532	19.015	6.677	34.758	1.707	5.319	22.929	22.344	26.166	0.797	0.001	0	35.78	33.3	6.4	6.0	0.414	0.119	0.144	0.024	24.052	20.47	
10/8/2002	10:41:02 AM	25.162	25.252	18.28	19.562	19.005	6.604	34.671	1.685	5.106	22.932	22.324	26.166	0.799	0.001	0	36.78	33.2	6.4	5.9	0.404	0.119	0.145	0.025	24.690	21.01	
10/8/2002	10:42:02 AM	25.137	25.608	18.28	19.542	18.995	6.389	34.369	1.589	5.108	23.033	22.358	26.162	0.797	0.001	0	37.78	32.9	6.4	5.7	0.396	0.119	0.144	0.025	25.085	21.35	
10/8/2002	10:43:02 AM	25.312	26.012	18.28	19.496	18.994	6.323	34.518	1.653	4.848	23.054	22.532	26.274	0.8	0.001	0	38.78	33.0	6.4	5.8	0.385	0.119	0.145	0.026	25.914	22.05	
10/8/2002	10:44:02 AM	25.357	25.081	18.269	19.531	18.989	6.424	34.489	1.69	5.037	23.002	22.367	26.166	0.798	0.001	0	39.78	33.0	6.4	5.7	0.395	0.119	0.144	0.025	25.203	21.45	
10/8/2002	10:45:02 AM	25.126	25.411	18.284	19.556	18.973	6.55	34.801	1.667	5.166	23.091	22.486	26.252	0.799	0.001	0	40.78	33.3	6.4	5.9	0.404	0.119	0.145	0.025	24.675	21.00	
10/8/2002	10:46:02 AM	25.181	25.791	18.284	19.49	18.988	6.609	34.621	1.65	5.244	23.077	22.451	26.238	0.8	0.001	0	41.78	33.1	6.4	5.9	0.405	0.119	0.145	0.025	24.628	20.96	
10/8/2002	10:47:02 AM	25.407	25.962	18.279	19.46	18.968	6.273	34.47	1.637	4.836	23.094	22.521	26.204	0.8	0.001	0	42.78	33.0	6.4	5.6	0.383	0.119	0.145	0.026	26.059	22.18	
10/8/2002	10:48:02 AM	25.291	25.215	18.273	19.56	18.957	6.399	34.536	1.64	5.027	23.045	22.425	26.179	0.8	0.001	0	43.78	33.1	6.4	5.7	0.394	0.119	0.145	0.025	25.341	21.57	
10/8/2002	10:49:02 AM	25.13	25.57	18.283	19.57	18.942	6.217	34.344	1.664	4.789	23.048	22.523	26.179	0.8	0.001	0	44.78	32.9	6.4	5.5	0.379	0.119	0.145	0.026	26.300	22.38	

Figure C8a: Clean 2: After AN-102R2, Batch 3C – 2 M Nitric Acid Cleaning – Second Cleaning (first 45 minutes) – Raw & Calculated Data

10/8/2002	10:50:02 AM	25.256	25.966	18.288	19.515	18.957	6.411	34.627	1.683	5.024	23.21	22.538	26.16	0.801	0.001	0	45.78	33.2	6.4	5.7	0.394	0.119	0.145	0.025	25.341	21.57
10/8/2002	10:51:02 AM	25.496	25.511	18.293	19.484	18.952	6.496	34.7	1.695	5.031	23.065	22.434	26.171	0.8	0.001	0	46.78	33.2	6.4	5.8	0.397	0.119	0.145	0.025	25.104	21.36
10/8/2002	10:52:02 AM	25.235	25.394	18.272	19.569	18.936	6.171	34.404	1.674	4.732	23.135	22.495	26.177	0.801	0.001	0	47.78	32.9	6.4	5.5	0.376	0.119	0.145	0.027	26.591	22.63
10/8/2002	10:53:02 AM	25.159	25.76	18.282	19.574	18.921	6.246	34.435	1.671	4.787	23.094	22.495	26.215	0.801	0.001	0	48.78	33.0	6.4	5.5	0.380	0.119	0.145	0.026	26.269	22.36
10/8/2002	10:54:02 AM	25.31	26.125	18.257	19.504	18.926	6.235	34.555	1.693	4.865	23.204	22.683	26.219	0.802	0.001	0	49.78	33.1	6.4	5.6	0.383	0.120	0.145	0.026	26.163	22.26
10/8/2002	10:55:02 AM	25.505	25.334	18.277	19.549	18.936	6.368	34.708	1.754	4.875	23.172	22.538	26.242	0.803	0.001	0	50.78	33.2	6.4	5.6	0.388	0.120	0.145	0.026	25.847	22.00
10/8/2002	10:56:02 AM	25.199	25.619	18.272	19.609	18.925	6.457	34.745	1.689	5.18	23.1	22.555	26.152	0.8	0.001	0	51.78	33.3	6.4	5.8	0.401	0.119	0.145	0.025	24.882	21.18
10/8/2002	10:57:02 AM	25.205	26.005	18.262	19.559	18.936	6.184	34.35	1.64	4.799	23.103	22.521	26.217	0.803	0.001	0	52.78	32.9	6.4	5.5	0.379	0.120	0.145	0.026	26.471	22.53
10/8/2002	10:58:02 AM	25.395	26.38	18.282	19.529	18.936	6.509	34.975	1.736	5.026	23.256	22.654	26.263	0.804	0.001	0	53.78	33.5	6.4	5.8	0.398	0.120	0.145	0.025	25.220	21.46
10/8/2002	10:59:02 AM	25.449	25.419	18.256	19.564	18.92	6.484	34.849	1.715	5.082	23.1	22.509	26.206	0.801	0.001	0	54.78	33.4	6.4	5.8	0.399	0.119	0.145	0.025	25.078	21.34
10/8/2002	11:00:02 AM	25.199	25.724	18.241	19.553	18.915	6.412	34.772	1.761	4.902	23.27	22.555	26.25	0.804	0.001	0	55.78	33.3	6.4	5.7	0.390	0.120	0.146	0.026	25.744	21.91
10/8/2002	11:01:02 AM	25.254	26.099	18.266	19.558	18.91	6.302	34.648	1.638	5.022	23.346	22.668	26.32	0.806	0.001	0	56.78	33.2	6.5	5.7	0.390	0.120	0.146	0.026	25.766	21.93
10/8/2002	11:02:02 AM	25.443	26.309	18.266	19.492	18.909	6.42	34.878	1.751	4.861	23.233	22.581	26.146	0.805	0.001	0	57.78	33.4	6.4	5.6	0.389	0.120	0.146	0.026	25.832	21.98
10/8/2002	11:03:02 AM	25.393	25.488	18.285	19.562	18.894	6.32	34.547	1.62	5.041	23.221	22.59	26.179	0.802	0.001	0	58.78	33.1	6.4	5.7	0.392	0.120	0.145	0.026	25.541	21.74
10/8/2002	11:04:02 AM	25.217	25.822	18.26	19.526	18.888	6.258	34.532	1.654	4.803	23.181	22.59	26.133	0.803	0.001	0	59.78	33.1	6.4	5.5	0.381	0.120	0.145	0.026	26.285	22.37
10/8/2002	11:05:02 AM	25.327	26.183	18.254	19.466	18.898	6.283	34.536	1.647	4.986	23.181	22.561	26.2	0.802	0.001	0	60.78	33.1	6.4	5.6	0.388	0.120	0.145	0.026	25.773	21.93
10/8/2002	11:06:02 AM	25.532	25.918	18.265	19.451	18.898	5.991	34.383	1.639	4.691	23.363	22.709	26.24	0.805	0.001	0	61.78	32.9	6.4	5.3	0.368	0.120	0.146	0.027	27.282	23.22
10/8/2002	11:07:02 AM	25.331	25.556	18.253	19.53	18.877	6.097	34.408	1.665	4.715	23.221	22.605	26.179	0.804	0.001	0	62.78	32.9	6.4	5.4	0.373	0.120	0.146	0.027	26.930	22.92
10/8/2002	11:08:02 AM	25.252	25.902	18.279	19.556	18.903	6.167	34.561	1.719	4.711	23.296	22.648	26.267	0.806	0.001	0	63.78	33.1	6.4	5.4	0.375	0.120	0.146	0.027	26.812	22.82
10/8/2002	11:09:02 AM	25.367	26.267	18.249	19.485	18.923	6.31	34.636	1.639	5.076	23.285	22.668	26.208	0.805	0.001	0	64.78	33.2	6.4	5.7	0.393	0.120	0.146	0.026	25.607	21.79
10/8/2002	11:10:02 AM	25.583	25.577	18.265	19.491	18.944	6.242	34.652	1.693	4.871	23.325	22.683	26.286	0.806	0.001	0	65.78	33.2	6.4	5.6	0.383	0.120	0.146	0.026	26.256	22.34
10/8/2002	11:11:02 AM	25.338	25.653	18.275	19.638	18.974	6.209	34.503	1.585	4.949	23.221	22.668	26.141	0.803	0.001	0	66.78	33.0	6.4	5.6	0.385	0.120	0.145	0.026	26.045	22.17
10/8/2002	11:12:02 AM	25.288	26.014	18.271	19.674	19	6.221	34.623	1.648	4.857	23.296	22.694	26.21	0.806	0.001	0	67.78	33.1	6.4	5.5	0.382	0.120	0.146	0.026	26.335	22.41
10/8/2002	11:13:02 AM	25.449	26.364	18.251	19.624	19.031	6.03	34.507	1.676	4.683	23.357	22.796	26.278	0.805	0.001	0	68.78	33.0	6.4	5.4	0.369	0.120	0.146	0.027	27.214	23.16
10/8/2002	11:14:02 AM	25.529	25.429	18.272	19.725	19.072	6.246	34.687	1.683	4.779	23.285	22.689	26.227	0.805	0.001	0	69.78	33.2	6.4	5.5	0.380	0.120	0.146	0.026	26.428	22.49
10/8/2002	11:15:02 AM	25.301	25.771	18.283	19.818	19.119	6.405	35.039	1.658	5.09	23.464	22.842	26.303	0.807	0.001	0	70.78	33.6	6.4	5.7	0.396	0.120	0.146	0.025	25.402	21.62
	Averages	25.2	25.6	18.2	19.6	18.9	6.6	34.5	1.7	5.2	22.8	22.2	26.1	0.8	0.0	0.0		33.0	6.4	5.9	0.409	0.118	0.144	0.0243	24.343	20.716
	Maximum	25.6	26.4	18.3	19.8	19.1	8.0	35.0	1.8	6.6	23.5	22.8	26.3	0.8	0.0	0.0		33.6	6.5	7.2	0.497	0.120	0.146	0.0273	27.282	23.217
	Median	25.2	25.6	18.3	19.6	19.0	6.5	34.6	1.7	5.1	23.0	22.4	26.2	0.8	0.0	0.0		33.1	6.4	5.8	0.400	0.119	0.145	0.0249	24.882	21.175
	Minimum	24.7	24.8	18.1	19.2	18.6	6.0	30.1	1.4	4.7	17.4	17.1	23.3	0.7	0.0	0.0		28.6	5.7	5.3	0.368	0.100	0.122	0.0171	17.080	14.535
	2 x Std Dev	0.359	0.791	0.103	0.271	0.251	0.860	1.234	0.117	0.882	1.764	1.661	0.822	0.040	0.000	0.000		1.234	0.202	0.865	0.060	0.006	0.007	0.0042	4.151	3.533
Number of Points Used*		65	65	65	65	65	65	65	65	65	65	65	65	65	65	65		65	65	65	65	65	65	65	65	65
	* Backpulse points in box are not included																											

Figure C8b: Clean 2: After AN-102R2, Batch 3C – 2 M Nitric Acid Cleaning – Second Cleaning (remaining 25 minutes) – Raw & Calculated Data

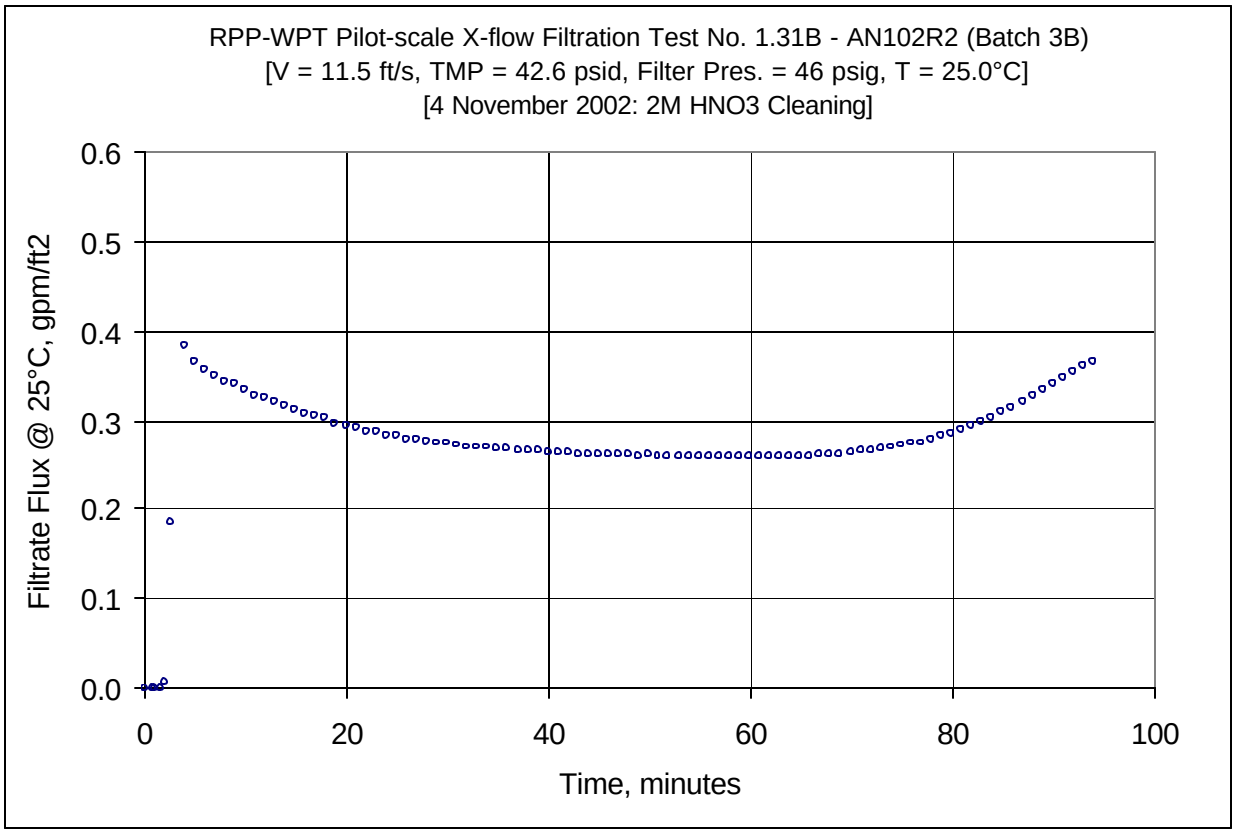


Figure C9: 1.31B: After AN-102R2, Batch 3B – 2 M Nitric Acid Cleaning – First Cleaning

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
11/4/2002	8:21:21 AM	18.233	17.946	16.1	17.566	17.396	-0.114	-0.131	-0.047	0.072	-0.366	0.409	-0.22	0.001	0.001	0.001			Filter Surface	6.707	FT2					
11/4/2002	8:21:38 AM	18.233	17.946	16.1	17.566	17.396	-0.114	-0.131	-0.047	0.072	-0.366	0.409	-0.22	0.001	0.001	0.001			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
11/4/2002	8:21:39 AM	18.243	17.946	16.111	17.556	17.396	-0.116	-0.131	-0.047	0.071	-0.351	0.406	-0.224	0.001	0.001	0.002										
11/4/2002	8:21:40 AM	18.238	17.946	16.111	17.561	17.396	-0.116	-0.131	-0.047	0.071	-0.325	0.406	-0.222	0.001	0.001	0.001			Note: Gauge Pressure P1 is approximately 1.4 psig							
11/4/2002	8:21:41 AM	18.233	17.951	16.105	17.561	17.396	-0.116	-0.131	-0.047	0.071	-0.363	0.406	-0.224	0.001	0.001	0.002										
11/4/2002	8:21:42 AM	18.233	17.946	16.105	17.561	17.396	-0.116	-0.131	-0.047	0.071	-0.308	0.406	-0.222	0.001	0.001	0.001			Pressure P1is corrected for 40.88 inches of water tubing							
11/4/2002	8:21:43 AM	18.233	17.946	16.1	17.556	17.396	-0.116	-0.131	-0.047	0.071	-0.369	0.406	-0.222	0.001	0.001	0.002			VVVV				< Filtrate Flux		<< PERMIABILITY >>	
11/4/2002	8:21:44 AM	18.228	17.946	16.1	17.561	17.406	-0.114	-0.131	-0.047	0.071	-0.363	0.406	-0.222	0.001	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/4/2002	10:26:48 AM	25.569	18.956	23.873	20.612	19.917	3.017	47.82	4.682	-1.364	39.88	88.592	46.86	0.001	0.001	0	0	0	46.3	11.5	0.8	0.057	0.000	0.000	0.0002	0.186	0.16
11/4/2002	10:27:36 AM	25.569	18.956	23.873	20.612	19.917	3.017	47.82	4.682	-1.364	39.88	88.592	46.86	0.001	0.001	0	0.80	0.01333	46.3	11.5	0.8	0.057	0.000	0.000	0.0002	0.186	0.16
11/4/2002	10:27:48 AM	25.102	18.975	23.661	20.63	19.956	-7.473	48.925	4.483	-18.519	55.072	81.605	45.937	0.003	0.001	0.404	1.00	0.01667	47.5	11.3	-13.0	-0.896	0.000	0.000	0.0000	-0.036	-0.03
11/4/2002	10:28:18 AM	24.121	18.992	23.698	20.521	19.984	3.158	48.211	4.638	-1.2	40.042	48.64	46.281	0.001	0.001	0.001	1.50	0.025	46.7	11.3	1.0	0.067	0.000	0.000	0.0002	0.158	0.13
11/4/2002	10:28:48 AM	24.148	19.008	23.675	20.533	19.995	3.398	47.876	4.561	-0.852	39.649	0.516	46.296	0.046	0.001	0	2.00	0.03333	46.4	11.3	1.3	0.088	0.007	0.007	0.0056	5.593	4.76
11/4/2002	10:29:18 AM	24.631	19.021	23.506	20.601	20.022	20.84	48.002	4.649	16.715	21.798	0.696	47.489	1.192	0.001	0	2.50	0.04167	46.5	11.6	18.8	1.295	0.178	0.185	0.0099	9.873	8.40
11/4/2002	10:30:40 AM	24.275	19.056	23.446	20.61	20.078	41.676	47.411	4.63	37.862	-0.135	-4.904	48.112	0.001	2.461	0	3.87	0.06444	45.9	11.8	39.8	2.742	0.367	0.383	0.0096	9.641	8.20
11/4/2002	10:31:40 AM	24.118	19.079	23.459	20.573	20.116	42.332	47.438	4.61	38.553	-0.609	-4.965	48.131	0.001	2.342	0	4.87	0.08111	46.0	11.8	40.4	2.788	0.349	0.365	0.0090	9.019	7.67
11/4/2002	10:32:40 AM	24.036	19.093	23.252	20.622	20.16	42.581	47.434	4.58	38.82	-0.883	-4.988	47.963	0.001	2.276	0	5.87	0.09778	46.0	11.8	40.7	2.806	0.339	0.357	0.0088	8.760	7.46
11/4/2002	10:33:40 AM	23.994	19.131	23.275	20.59	20.199	42.664	47.374	4.541	38.934	-1.077	-4.997	48.016	0.001	2.231	0	6.87	0.11444	45.9	11.8	40.8	2.813	0.333	0.349	0.0086	8.561	7.29
11/4/2002	10:34:40 AM	23.897	19.145	23.264	20.589	20.228	43.14	47.539	4.609	39.333	-1.282	-5.011	47.89	0.001	2.19	0.001	7.87	0.13111	46.1	11.7	41.2	2.843	0.327	0.343	0.0083	8.317	7.08
11/4/2002	10:35:40 AM	23.85	19.158	23.071	20.637	20.256	43.459	47.773	4.541	39.653	-1.288	-4.988	47.282	0.001	2.161	0.001	8.87	0.14778	46.3	11.6	41.6	2.865	0.322	0.340	0.0082	8.189	6.97
11/4/2002	10:36:40 AM	23.808	19.187	23.134	20.671	20.294	43.486	47.729	4.5	39.639	-1.285	-4.997	47.246	0.001	2.125	0.001	9.87	0.16444	46.3	11.6	41.6	2.866	0.317	0.334	0.0080	8.037	6.84
11/4/2002	10:37:40 AM	23.752	19.216	23.093	20.725	20.329	43.704	47.86	4.528	39.812	-1.285	-5.011	47.063	0.001	2.09	0.002	10.87	0.18111	46.4	11.5	41.8	2.879	0.312	0.329	0.0079	7.876	6.70
11/4/2002	10:38:40 AM	23.746	19.245	22.992	20.729	20.368	43.917	47.959	4.506	40.058	-1.282	-5.017	47.776	0.001	2.058	0.001	11.87	0.19778	46.5	11.7	42.0	2.895	0.307	0.325	0.0077	7.736	6.58
11/4/2002	10:39:40 AM	23.698	19.258	23.085	20.757	20.385	44.054	47.901	4.493	40.265	-1.282	-5.02	47.04	0.001	2.035	0.004	12.87	0.21444	46.4	11.5	42.2	2.907	0.303	0.320	0.0076	7.598	6.47
11/4/2002	10:40:40 AM	23.661	19.281	22.982	20.77	20.419	44.13	47.777	4.529	40.39	-1.282	-5.026	47.017	0.001	2.005	0.002	13.87	0.23111	46.3	11.5	42.3	2.914	0.299	0.317	0.0075	7.490	6.37
11/4/2002	10:41:40 AM	23.669	19.305	22.94	20.748	20.452	44.066	47.547	4.421	40.449	-1.282	-5.031	47.024	0.001	1.982	0.001	14.87	0.24778	46.1	11.5	42.3	2.914	0.295	0.313	0.0074	7.413	6.31
11/4/2002	10:42:40 AM	23.622	19.318	23.039	20.776	20.486	44.362	47.94	4.499	40.507	-1.285	-5.04	46.847	0.001	1.958	0	15.87	0.26444	46.5	11.5	42.4	2.926	0.292	0.309	0.0073	7.272	6.19
11/4/2002	10:43:40 AM	23.601	19.337	22.882	20.79	20.525	44.184	47.589	4.505	40.244	-1.288	-5.046	46.44	0.001	1.936	0.001	16.87	0.28111	46.1	11.4	42.2	2.911	0.289	0.307	0.0073	7.261	6.18
11/4/2002	10:44:40 AM	23.639	19.36	23.171	20.616	20.558	44.271	47.779	4.432	40.492	-1.282	-5.046	46.709	0.001	1.926	0.001	17.87	0.29778	46.3	11.4	42.4	2.922	0.287	0.302	0.0071	7.136	6.07
11/4/2002	10:45:40 AM	23.858	19.388	23.636	20.594	20.591	44.814	48.122	4.495	41.026	-1.282	-5.049	46.866	0.001	1.919	0.001	18.87	0.31444	46.6	11.5	42.9	2.959	0.286	0.297	0.0069	6.928	5.90
11/4/2002	10:46:40 AM	24.122	19.402	23.71	20.618	20.63	44.431	47.785	4.453	40.631	-1.285	-5.043	46.742	0.001	1.908	0.002	19.87	0.33111	46.3	11.5	42.5	2.932	0.284	0.295	0.0069	6.937	5.90
11/4/2002	10:47:40 AM	24.346	19.405	24.033	20.52	20.653	44.389	47.8	4.468	40.57	-1.285	-5.049	46.656	0.001	1.903	0.003	20.87	0.34778	46.3	11.4	42.5	2.929	0.284	0.292	0.0069	6.864	5.84
11/4/2002	10:48:40 AM	24.524	19.443	24.137	20.644	20.672	44.515	47.822	4.458	40.672	-1.282	-5.052	46.841	0.001	1.889	0.001	21.87	0.36444	46.3	11.5	42.6	2.937	0.282	0.289	0.0068	6.775	5.77
11/4/2002	10:49:40 AM	24.738	19.461	24.29	20.637	20.699	44.54	47.794	4.363	40.867	-1.285	-5.052	46.65	0.001	1.885	0	22.87	0.38111	46.3	11.4	42.7	2.944	0.281	0.287	0.0067	6.714	5.71
11/4/2002	10:50:40 AM	24.845	19.458	24.473	20.664	20.717	44.834	47.969	4.45	41.057	-1.285	-5.054	47.066	0.001	1.878	0.001	23.87	0.39778	46.5	11.5	42.9	2.961	0.280	0.284	0.0066	6.617	5.63
11/4/2002	10:51:40 AM	25.013	19.486	24.48	20.707	20.75	44.882	47.839	4.464	41.106	-1.285	-5.057	46.738	0.001	1.867	0.001	24.87	0.41444	46.4	11.5	43.0	2.964	0.278	0.282	0.0066	6.570	5.59
11/4/2002	10:52:40 AM	25.141	19.529	24.758	20.685	20.777	44.801	48.031	4.469	40.965	-1.282	-5.054	46.847	0.001	1.864	0.002	25.87	0.43111	46.6	11.5	42.9	2.957	0.278	0.280	0.0065	6.525	5.55
11/4/2002	10:53:40 AM	25.223	19.532	24.751	20.702	20.805	44.816	47.777	4.436	41.035	-1.288	-5.063	46.872	0.001	1.853	0	26.87	0.44778	46.3	11.5	42.9	2.960	0.276	0.278	0.0065	6.481	5.52
11/4/2002	10:54:40 AM	25.356	19.555	24.794	20.68	20.838	45.182	48.317	4.49	41.323	-1.282	-5.06	46.663	0.001	1.849	0.001	27.87	0.46444	46.8	11.4	43.3	2.982	0.276	0.277	0.0064	6.411	5.46
11/4/2002	10:55:40 AM	25.404	19.583	25.012	20.723	20.871	44.853	47.984	4.484	40.928	-1.282	-5.06	46.807	0.001	1.842	0.002	28.87	0.48111	46.5	11.5	42.9	2.957	0.275	0.275	0.0064	6.401	5.45
11/4/2002	10:56:40 AM	25.497	19.606	24.964	20.847	20.899	44.731	47.733	4.494	40.805	-1.282	-5.063	46.822	0.001	1.834	0.002	29.87	0.49778	46.3	11.5	42.8	2.949	0.273	0.274	0.0064	6.400	5.45
11/4/2002	10:57:40 AM	25.575	19.613	25.042	20.819	20.922	45.068	48.087	4.487	41.166	-1.285	-5.066	46.833	0.001	1.834	0.001	30.87	0.51444	46.6	11.5	43.1	2.973	0.273	0.273	0.0063	6.334	5.39
11/4/2002	10:58:40 AM	25.602	19.636	25.145	20.847	20.96	45.06	47.98	4.43	41.301	-1.285	-5.063	46.839	0.001	1.825	0.001	31.87	0.53111	46.5	11.5	43.2	2.977	0.272	0.271	0.0063	6.276	5.34
11/4/2002	10:59:40 AM	25.675	19.649	25.067	20.854	20.987	45.073	48.046	4.451	41.246	-1.285	-5.066	46.772	0.001	1.819	0.001	32.87	0.54778	46.6	11.5	43.2	2.976	0.271	0.271	0.0063	6.272	5.34
11/4/2002	11:00:40 AM	25.732	19.672	25.22	20.862	21.01	44.698	47.671	4.384	40.963	-1.285	-5.118	46.419	0.001	1.818	0.001	33.87	0.56444	46.2	11.4	42.8	2.953	0.271	0.269	0.0063	6.289	5.35
11/4/2002	11:01:40 AM	25.75	19.689	25.228	20.819	21.043	45.236	48.106	4.403	41.573	-1.285	-5.127	46.839	0.001	1.811	0	34.87	0.58111	46.6	11.5	43.4	2.993	0.270	0.268	0.0062	6.181	5.26
11/4/2002	11:02:40 AM	25.812	19.707	25.175	20.892	21.066	45.184	48.044	4.409	41.467	-1.285	-5.13	46.635	0.001	1.806	0.001	35.87	0.59778	46.6	11.4	43.3	2.987	0.269	0.268	0.0062	6.184	5.26
11/4/2002	11:03:40 AM	25.839	19.719	25.342	20.798	21.088	45	47.901	4.454	41.198	-1.288	-5.136	46.74	0.001	1.802	0	36.87	0.61444	46.4	11.5	43.1	2.972	0.269	0.266	0.0062	6.174	5.25
11/4/2002	11:04:40 AM	25.852	19.742	25.275	20.887	21.111	44.984	47.742	4.397	41.305	-1.291	-5.133	46.678	0.001	1.796	0.001	37.87	0.63111	46.3	11.4	43.1	2.975	0.268	0.266	0.0062	6.158	5.24
11/4/2002	11:05:40 AM	25.915	19.77	25.268	20.89	21.139	45.305	48.205	4.412	41.548	-1.285	-5.124	46.799	0.001	1.793	0.002	38.87	0.64778	46.7	11.5	43.4	2.994	0.267	0.265	0.0061	6.109	5.20
11/4/2002	11:06:40 AM	25.906	19.787	25.419	20.836	21.16	44.954	47.642	4.409	41.233	-1.285	-5.121	46.812	0.001	1.791	0.001	39.87	0.66444	46.2	11.5	43.1	2.971	0.267	0.264	0.0061	6.124	5.21
11/4/2002	11:07:40 AM	25.929	19.804	25.291	20.949	21.198	45.172	47.961	4.458	41.305	-1.291	-5.121	46.745	0.001	1.784	0.002	40.87	0.68111	46.5	11.5	43.2	2.981	0.266	0.264	0.0061	6.101	5.19
11/4/2002	11:08:40 AM	25.97	19.821	25.338	20.961	21.22	45.118	47.889	4.44	41.309	-1.285	-5.112	46.81	0.001	1.781	0.002	41.87	0.69778	46.4	11.5	43.2	2.979	0.266	0.263	0.0061	6.087	5.18
11/4/2002	11:09:40 AM	25.967	19.848	25.46	20.928	21.252	44.988	47.856	4.392	41.182	-1.285	-5.112	47.118	0.001	1.779	0.002	42.87	0.71444	46.4	11.5	43.1	2.971	0.265	0.262	0.0061	6.077	5.17
11/4/2002	11:10:40 AM	25.999	19.865	25.352	21.116	21.274	44.961	47.696	4.396	41.178	-1.285	-5.107	46.782	0.001	1.772	0	43.87	0.73111	46.2	11.5	43.1	2.969	0.264	0.262	0.0061	6.074	5.17
11/4/2002	11:11:40 AM	26.031	19.888	25.419	21.007	21.301	45.077	48.009	4.452	41.248	-1.285	-5.101	47.512	0.001	1.776	0.002	44.87	0.74778	46.5	11.6	43.2	2.976	0.265	0.262	0.0061	6.063	5.16

Figure C10a: 1.31B: After AN-102R2, Batch 3B – 2 M Nitric Acid Cleaning – First Cleaning (first 45 minutes) – Raw & Calculated Data

11/4/2002	11:12:40 AM	26.013	19.91	25.481	21.085	21.324	44.859	47.626	4.421	41.014	-1.285	-5.098	46.721	0.001	1.77	0.001	45.87	0.76444	46.2	11.4	42.9	2.960	0.264	0.260	0.0061	6.064	5.16
11/4/2002	11:13:40 AM	26.055	19.932	25.368	21.147	21.356	45.207	48.038	4.443	41.411	-1.285	-5.092	49.289	0.001	1.768	0.002	46.87	0.78111	46.6	12.1	43.3	2.986	0.264	0.261	0.0060	6.024	5.13
11/4/2002	11:14:40 AM	26.057	19.944	25.485	21.113	21.357	45.128	47.843	4.397	41.34	-1.285	-5.086	46.791	0.001	1.771	0	47.87	0.79778	46.4	11.5	43.2	2.981	0.264	0.260	0.0060	6.025	5.13
11/4/2002	11:15:40 AM	26.044	19.961	25.477	21.146	21.395	45.168	47.709	4.386	41.54	-1.285	-5.086	46.61	0.001	1.765	0.001	48.87	0.81444	46.2	11.4	43.4	2.989	0.263	0.260	0.0060	5.989	5.10
11/4/2002	11:16:40 AM	26.086	19.983	25.394	21.188	21.417	45.174	47.913	4.376	41.514	-1.285	-5.083	46.726	0.001	1.763	0	49.87	0.83111	46.4	11.5	43.3	2.988	0.263	0.260	0.0060	5.997	5.10
11/4/2002	11:17:40 AM	26.087	20.005	25.535	21.074	21.433	45.412	48.224	4.456	41.522	-1.285	-5.078	46.828	0.001	1.765	0.001	50.87	0.84778	46.8	11.5	43.5	2.997	0.263	0.259	0.0060	5.964	5.08
11/4/2002	11:18:40 AM	26.075	20.018	25.463	21.122	21.451	45.282	47.909	4.396	41.579	-1.288	-5.078	46.696	0.001	1.76	0	51.87	0.86444	46.4	11.4	43.4	2.994	0.262	0.259	0.0060	5.964	5.08
11/4/2002	11:19:40 AM	26.106	20.034	25.409	21.173	21.483	45.199	47.986	4.399	41.456	-1.285	-5.069	46.77	0.001	1.759	0.001	52.87	0.88111	46.5	11.5	43.3	2.987	0.262	0.259	0.0060	5.984	5.09
11/4/2002	11:20:40 AM	26.097	20.055	25.565	21.144	21.504	45.097	47.783	4.442	41.28	-1.288	-5.063	46.789	0.001	1.761	0.002	53.87	0.89778	46.3	11.5	43.2	2.978	0.263	0.258	0.0060	5.983	5.09
11/4/2002	11:21:40 AM	26.105	20.073	25.458	21.131	21.536	45.164	47.847	4.407	41.393	-1.291	-5.063	46.629	0.001	1.755	0	54.87	0.91444	46.4	11.4	43.3	2.984	0.262	0.258	0.0060	5.969	5.08
11/4/2002	11:22:40 AM	26.146	20.104	25.459	21.137	21.568	45.149	48.048	4.498	41.147	-1.285	-5.054	46.757	0.001	1.758	0	55.87	0.93111	46.6	11.5	43.1	2.975	0.262	0.259	0.0060	5.997	5.10
11/4/2002	11:23:40 AM	26.117	20.111	25.58	21.089	21.579	45.166	47.611	4.4	41.385	-1.288	-5.052	46.803	0.001	1.757	0.001	56.87	0.94778	46.1	11.5	43.3	2.984	0.262	0.258	0.0060	5.955	5.07
11/4/2002	11:24:40 AM	26.128	20.132	25.466	21.226	21.606	45.042	47.642	4.394	41.293	-1.291	-5.052	46.738	0.001	1.755	0.001	57.87	0.96444	46.2	11.5	43.2	2.976	0.262	0.258	0.0060	5.983	5.09
11/4/2002	11:25:40 AM	26.16	20.158	25.503	21.227	21.632	45.263	47.92	4.438	41.395	-1.282	-5.043	46.698	0.001	1.756	0.001	58.87	0.98111	46.4	11.4	43.3	2.987	0.262	0.258	0.0060	5.957	5.07
11/4/2002	11:26:40 AM	26.136	20.17	25.604	21.294	21.654	45.474	48.495	4.476	41.546	-1.285	-5.037	46.77	0.001	1.759	0.001	59.87	0.99778	47.0	11.5	43.5	3.000	0.262	0.258	0.0059	5.926	5.04
11/4/2002	11:27:40 AM	26.162	20.197	25.48	21.376	21.665	45.325	48.218	4.424	41.46	-1.285	-5.037	46.822	0.001	1.755	0.001	60.87	1.01444	46.7	11.5	43.4	2.992	0.262	0.258	0.0059	5.949	5.06
11/4/2002	11:28:40 AM	26.184	20.213	25.547	21.352	21.692	45.168	47.841	4.41	41.391	-1.285	-5.028	46.726	0.001	1.761	0	61.87	1.03111	46.4	11.5	43.3	2.984	0.263	0.259	0.0060	5.974	5.08
11/4/2002	11:29:40 AM	26.17	20.235	25.608	21.353	21.713	45.087	47.814	4.364	41.411	-1.285	-5.026	46.703	0.001	1.762	0.001	62.87	1.04778	46.3	11.4	43.2	2.982	0.263	0.258	0.0060	5.971	5.08
11/4/2002	11:30:40 AM	26.192	20.252	25.495	21.451	21.745	45.122	47.965	4.406	41.28	-1.285	-5.023	46.759	0.001	1.764	0.001	63.87	1.06444	46.5	11.5	43.2	2.979	0.263	0.259	0.0060	6.004	5.11
11/4/2002	11:31:40 AM	26.214	20.273	25.597	21.443	21.767	45.193	47.907	4.405	41.44	-1.285	-5.017	46.78	0.001	1.772	0.001	64.87	1.08111	46.4	11.5	43.3	2.987	0.264	0.260	0.0060	5.998	5.10
11/4/2002	11:32:40 AM	26.195	20.3	25.603	21.414	21.794	45.147	47.876	4.382	41.419	-1.285	-5.014	46.675	0.001	1.77	0	65.87	1.09778	46.4	11.4	43.3	2.984	0.264	0.259	0.0060	5.994	5.10
11/4/2002	11:33:40 AM	26.222	20.327	25.51	21.486	21.81	45.004	48.004	4.434	41.08	-1.288	-5.005	46.594	0.001	1.775	0.001	66.87	1.11444	46.5	11.4	43.0	2.968	0.265	0.261	0.0061	6.061	5.16
11/4/2002	11:34:40 AM	26.214	20.334	25.627	21.432	21.827	45.385	48.112	4.394	41.657	-1.285	-5.002	46.715	0.001	1.786	0.001	67.87	1.13111	46.6	11.4	43.5	3.001	0.266	0.262	0.0060	6.012	5.12
11/4/2002	11:35:40 AM	26.205	20.371	25.613	21.424	21.849	45.017	47.839	4.366	41.395	-1.282	-4.994	46.684	0.001	1.786	0.001	68.87	1.14778	46.4	11.4	43.2	2.979	0.266	0.262	0.0061	6.058	5.16
11/4/2002	11:36:40 AM	26.242	20.383	25.525	21.446	21.871	45.042	47.961	4.368	41.233	-1.285	-4.991	46.721	0.001	1.795	0.002	69.87	1.16444	46.5	11.4	43.1	2.974	0.268	0.264	0.0061	6.113	5.20
11/4/2002	11:37:40 AM	26.219	20.395	25.662	21.412	21.888	45.01	47.969	4.433	41.121	-1.288	-4.988	46.682	0.001	1.808	0.002	70.87	1.18111	46.5	11.4	43.1	2.969	0.270	0.265	0.0061	6.144	5.23
11/4/2002	11:38:40 AM	26.21	20.421	25.583	21.519	21.899	45.12	48.025	4.419	41.348	-1.285	-4.979	46.77	0.001	1.814	0.002	71.87	1.19778	46.6	11.5	43.2	2.981	0.270	0.266	0.0062	6.154	5.24
11/4/2002	11:39:40 AM	26.241	20.433	25.53	21.546	21.936	44.998	48.067	4.407	41.164	-1.285	-4.973	46.661	0.001	1.823	0.001	72.87	1.21444	46.6	11.4	43.1	2.970	0.272	0.268	0.0062	6.216	5.29
11/4/2002	11:40:40 AM	26.233	20.465	25.686	21.503	21.943	44.963	47.994	4.338	41.286	-1.282	-4.968	46.453	0.001	1.838	0.001	73.87	1.23111	46.5	11.4	43.1	2.973	0.274	0.269	0.0062	6.233	5.30
11/4/2002	11:41:40 AM	26.234	20.476	25.568	21.539	21.964	44.733	47.808	4.417	41.016	-1.282	-4.968	46.912	0.001	1.848	0	74.87	1.24778	46.3	11.5	42.9	2.956	0.276	0.271	0.0063	6.324	5.38
11/4/2002	11:42:40 AM	26.26	20.492	25.563	21.53	21.97	44.72	47.752	4.443	40.94	-1.285	-4.956	46.721	0.001	1.865	0.001	75.87	1.26444	46.3	11.4	42.8	2.953	0.278	0.274	0.0064	6.390	5.44
11/4/2002	11:43:40 AM	26.232	20.509	25.68	21.657	22.006	44.716	48.005	4.416	40.881	-1.285	-4.953	46.69	0.001	1.883	0	76.87	1.28111	46.5	11.4	42.8	2.951	0.281	0.275	0.0064	6.435	5.48
11/4/2002	11:44:40 AM	26.237	20.529	25.535	21.587	22.012	44.756	48.16	4.438	40.969	-1.285	-4.944	46.795	0.001	1.901	0.001	77.87	1.29778	46.7	11.5	42.9	2.955	0.283	0.279	0.0065	6.514	5.54
11/4/2002	11:45:40 AM	26.259	20.541	25.572	21.539	22.024	44.213	47.568	4.356	40.525	-1.291	-4.942	46.745	0.001	1.925	0.001	78.87	1.31444	46.1	11.5	42.4	2.921	0.287	0.282	0.0067	6.666	5.67
11/4/2002	11:46:40 AM	26.235	20.568	25.663	21.504	22.07	44.443	48.019	4.443	40.65	-1.291	-4.93	46.843	0.001	1.951	0	79.87	1.33111	46.5	11.5	42.5	2.933	0.291	0.286	0.0067	6.711	5.71
11/4/2002	11:47:40 AM	26.251	20.579	25.534	21.677	22.092	44.368	47.903	4.352	40.756	-1.288	-4.918	46.732	0.001	1.974	0	80.87	1.34778	46.4	11.5	42.6	2.935	0.294	0.290	0.0068	6.812	5.80
11/4/2002	11:48:40 AM	26.272	20.605	25.636	21.658	22.103	44.109	47.86	4.363	40.484	-1.285	-4.907	46.866	0.001	2.012	0	81.87	1.36444	46.4	11.5	42.3	2.916	0.300	0.295	0.0070	6.967	5.93
11/4/2002	11:49:40 AM	26.264	20.632	25.672	21.69	22.145	44.163	48.013	4.411	40.429	-1.282	-4.895	46.791	0.001	2.039	0.002	82.87	1.38111	46.5	11.5	42.3	2.916	0.304	0.298	0.0071	7.053	6.00
11/4/2002	11:50:40 AM	26.274	20.637	25.542	21.7	22.16	44.025	47.876	4.336	40.414	-1.285	-4.892	46.914	0.001	2.068	0.001	83.87	1.39778	46.4	11.5	42.2	2.911	0.308	0.304	0.0072	7.192	6.12
11/4/2002	11:51:40 AM	26.291	20.665	25.665	21.556	22.172	44.039	48.137	4.411	40.421	-1.288	-4.887	46.872	0.001	2.115	0.001	84.87	1.41444	46.7	11.5	42.2	2.912	0.315	0.309	0.0073	7.329	6.24
11/4/2002	11:52:40 AM	26.267	20.686	25.646	21.708	22.183	43.927	48.276	4.453	40.169	-1.285	-4.872	46.862	0.001	2.148	0	85.87	1.43111	46.8	11.5	42.0	2.899	0.320	0.314	0.0075	7.479	6.36
11/4/2002	11:53:40 AM	26.309	20.702	25.567	21.8	22.195	43.505	47.901	4.391	39.886	-1.282	-4.86	46.856	0.001	2.193	0.001	86.87	1.44778	46.4	11.5	41.7	2.875	0.327	0.322	0.0077	7.718	6.57
11/4/2002	11:54:40 AM	26.295	20.714	25.704	21.676	22.222	43.248	47.816	4.365	39.694	-1.094	-4.852	46.994	0.001	2.241	0.001	87.87	1.46444	46.3	11.5	41.5	2.859	0.334	0.328	0.0079	7.899	6.72
11/4/2002	11:55:40 AM	26.286	20.73	25.635	21.768	22.233	42.946	47.771	4.399	39.295	-0.898	-4.837	46.982	0.001	2.282	0.001	88.87	1.48111	46.3	11.5	41.1	2.835	0.340	0.334	0.0081	8.128	6.92
11/4/2002	11:56:40 AM	26.318	20.747	25.586	21.759	22.264	42.958	48.079	4.367	39.37	-0.771	-4.829	47.015	0.001	2.327	0	89.87	1.49778	46.6	11.5	41.2	2.838	0.347	0.341	0.0083	8.290	7.06
11/4/2002	11:57:40 AM	26.294	20.768	25.732	21.755	22.265	42.525	47.816	4.402	38.922	-0.545	-4.814	47.026	0.001	2.38	0	90.87	1.51444	46.3	11.5	40.7	2.808	0.355	0.348	0.0085	8.536	7.26
11/4/2002	11:58:40 AM	26.295	20.779	25.603	21.811	22.292	42.453	47.93	4.428	38.764	-0.406	-4.811	47.082	0.001	2.412	0	91.87	1.53111	46.5	11.5	40.6	2.800	0.360	0.354	0.0087	8.707	7.41
11/4/2002	11:59:40 AM	26.321	20.79	25.589	21.833	22.303	42.129	47.957	4.441	38.41	-0.155	-4.794	47.101	0.001	2.465	0.002	92.87	1.54778	46.5	11.5	40.3	2.776	0.368	0.361	0.0090	8.976	7.64
11/4/2002	12:00:40 PM	26.312	20.832	25.751	21.829	22.304	41.641	47.56	4.389	38.175	0.065	-4.779	47.137	0.001	2.511	0	93.87	1.56444	46.1	11.6	39.9	2.752	0.374	0.367	0.0092	9.185	7.82
	Averages	25.6	20.0	25.0	21.1	21.3	44.5	47.9	4.4	40.7	-1.2	-5.0	46.9	0.0	1.9	0.0		0.8	46.4	11.5	42.6	2.937	0.287	0.288	0.0068	6.774	5.764
	Maximum	26.3	20.8	25.8	21.8	22.3	45.5	48.5	4.6	41.7	0.1	-4.8	49.3	0.0	2.5	0.0		1.6	47.0	12.1	43.5	3.001	0.374	0.383	0.0096	9.641	8.205
	Median	26.1	20.0	25.5	21.1	21.4	44.9	47.9	4.4	41.0	-1.3	-5.0	46.8	0.0	1.8	0.0		0.8	46.4	11.5	42.9	2.960	0.275	0.274	0.0064	6.390	5.438
	Minimum	23.6	19.1	22.9	20.5	20.1	41.6	47.4	4.3	37.9	-1.3	-5.1	46.4	0.0	1.8	0.0		0.1	45.9	11.4	39.8	2.742	0.262	0.258	0.0059	5.926	5.043
	2 x Std Dev	1.839	1.027	1.829	0.794	1.296	1.814	0.407	0.118	1.753	0.523	0.170	0.838	0.000	0.395	0.002		0.876	0.407	0.205	1.781	0.123	0.059	0.065	0.0019	1.864	1.586
Number of Points Used*		91	91	91	91	91	91	91	91	91	91	91	91	91	91	91		91	91	91	91	91	91	91	91	91	91
	* Backpulse points in box are not included																											

Figure C10b: 1.31B: After AN-102R2, Batch 3B – 2 M Nitric Acid Cleaning – First Cleaning (Remaining 45 minutes) – Raw & Calculated Data

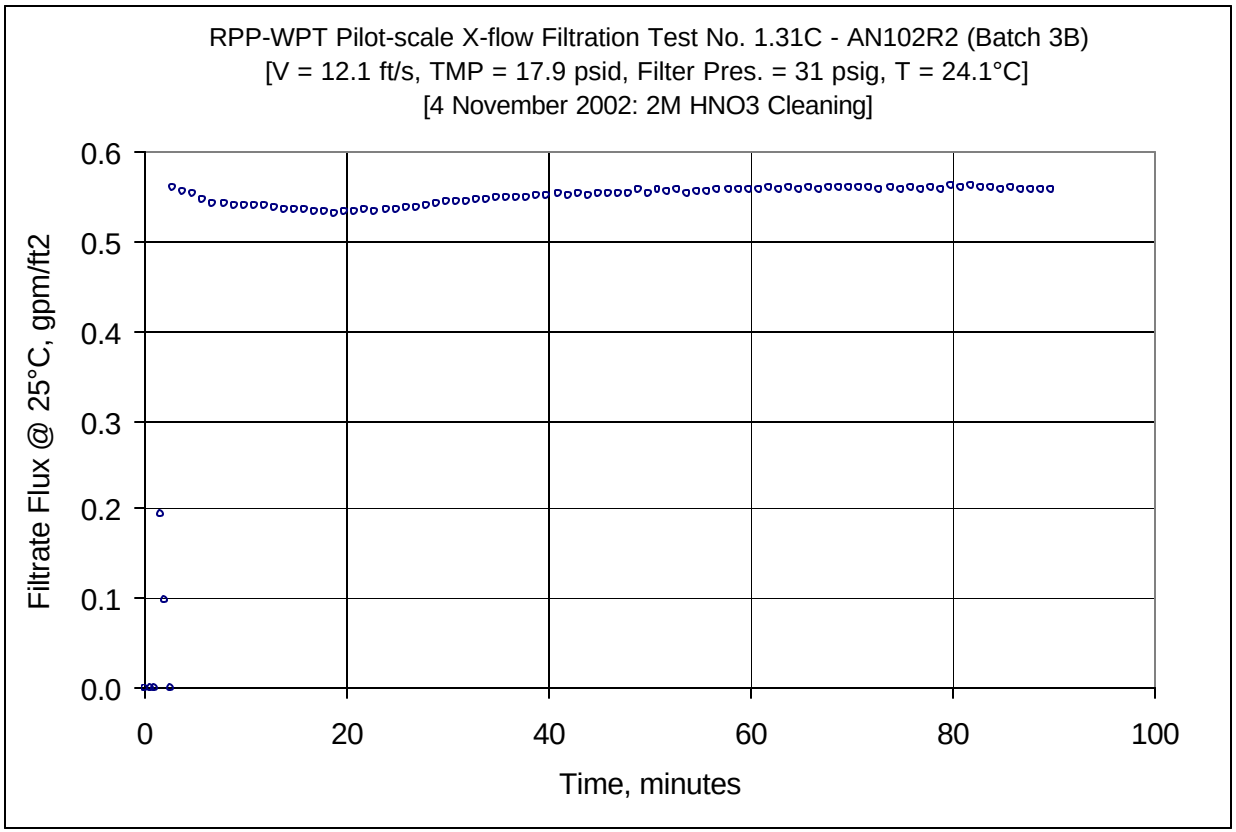


Figure C11: 1.31C: After AN-102R2, Batch 3B – 2 M Nitric Acid Cleaning – Second Cleaning

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
11/4/2002	8:21:21 AM	18.233	17.946	16.1	17.566	17.396	-0.114	-0.131	-0.047	0.072	-0.366	0.409	-0.22	0.001	0.001	0.001			Filter Surface	6.707	FT2					
11/4/2002	8:21:38 AM	18.233	17.946	16.1	17.566	17.396	-0.114	-0.131	-0.047	0.072	-0.366	0.409	-0.22	0.001	0.001	0.001			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
11/4/2002	8:21:39 AM	18.243	17.946	16.111	17.556	17.396	-0.116	-0.131	-0.047	0.071	-0.351	0.406	-0.224	0.001	0.001	0.002										
11/4/2002	8:21:40 AM	18.238	17.946	16.111	17.561	17.396	-0.116	-0.131	-0.047	0.071	-0.325	0.406	-0.222	0.001	0.001	0.001			Note: Gauge Pressure P1 is approximately 1.4 psig							
11/4/2002	8:21:41 AM	18.233	17.951	16.105	17.561	17.396	-0.116	-0.131	-0.047	0.071	-0.363	0.406	-0.224	0.001	0.001	0.002										
11/4/2002	8:21:42 AM	18.233	17.946	16.105	17.561	17.396	-0.116	-0.131	-0.047	0.071	-0.308	0.406	-0.222	0.001	0.001	0.001			Pressure P1is corrected for 40.88 inches of water tubing							
11/4/2002	8:21:43 AM	18.233	17.946	16.1	17.556	17.396	-0.116	-0.131	-0.047	0.071	-0.369	0.406	-0.222	0.001	0.001	0.002			VVVV			< Filtrate Flux <<		PERMIABILITY >>		
11/4/2002	8:21:44 AM	18.228	17.946	16.1	17.561	17.406	-0.114	-0.131	-0.047	0.071	-0.363	0.406	-0.222	0.001	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/4/2002	1:12:29 PM	24.025	21.413	22.423	22.389	22.28	2.972	32.776	4.634	-1.433	24.627	71.957	46.856	0.001	0.001	0	0	0	31.3	11.5	0.8	0.053	0.000	0.000	0.0002	0.208	0.18
11/4/2002	1:12:59 PM	24.021	21.413	22.418	22.309	22.286	3.038	33.037	4.665	-1.361	24.662	71.002	46.453	0.002	0.001	0	0.50	0.00833	31.6	11.4	0.8	0.058	0.000	0.000	0.0004	0.383	0.33
11/4/2002	1:13:29 PM	23.394	21.424	22.253	22.289	22.316	2.926	32.778	4.668	-1.464	24.665	0.557	46.256	0.001	0.001	0.002	1.00	0.01667	31.3	11.3	0.7	0.050	0.000	0.000	0.0002	0.221	0.19
11/4/2002	1:13:59 PM	23.459	21.429	22.092	22.37	22.316	10.111	32.503	4.717	5.799	16.994	0.592	47.388	1.192	0.001	0	1.50	0.025	31.0	11.6	8.0	0.548	0.178	0.193	0.0243	24.266	20.65
11/4/2002	1:14:29 PM	23.057	21.444	22.127	22.37	22.327	21.565	32.069	4.7	18.469	4.103	-0.454	49.129	0.609	3.086	0	2.00	0.03333	30.6	12.0	20.0	1.380	0.091	0.099	0.0049	4.922	4.19
11/4/2002	1:14:59 PM	22.878	21.435	21.993	22.296	22.328	20.482	31.934	4.728	17.1	5.279	-4.658	48.876	0.002	3.453	0	2.50	0.04167	30.5	12.0	18.8	1.296	0.000	0.000	0.0000	0.017	0.01
11/4/2002	1:15:18 PM	22.792	21.445	21.892	22.346	22.338	20.627	32.11	4.748	17.202	5.172	-4.664	49.083	0.002	3.438	0	2.82	0.04694	30.6	12.0	18.9	1.304	0.513	0.560	0.0296	29.605	25.19
11/4/2002	1:16:18 PM	22.557	21.452	21.858	22.362	22.319	20.906	32.133	4.615	17.72	4.912	-4.669	48.953	0.002	3.405	0	3.82	0.06361	30.7	12.0	19.3	1.332	0.508	0.555	0.0287	28.744	24.46
11/4/2002	1:17:18 PM	22.392	21.457	21.698	22.312	22.339	20.887	31.959	4.701	17.462	4.796	-4.664	48.643	0.002	3.375	0	4.82	0.08028	30.5	11.9	19.2	1.322	0.503	0.553	0.0288	28.829	24.53
11/4/2002	1:18:18 PM	22.393	21.474	21.916	22.042	22.371	20.935	31.719	4.685	17.556	4.724	-4.661	48.951	0.001	3.362	0	5.82	0.09694	30.2	12.0	19.2	1.327	0.501	0.547	0.0284	28.433	24.20
11/4/2002	1:19:18 PM	22.586	21.47	22.199	21.928	22.393	20.887	31.848	4.685	17.394	4.689	-4.652	48.947	0.001	3.363	0	6.82	0.11361	30.4	12.0	19.1	1.320	0.501	0.543	0.0284	28.366	24.14
11/4/2002	1:20:18 PM	22.682	21.476	22.18	21.969	22.389	21.144	31.998	4.682	17.71	4.715	-4.649	48.959	0.001	3.36	0	7.82	0.13028	30.5	12.0	19.4	1.339	0.501	0.543	0.0279	27.938	23.78
11/4/2002	1:21:18 PM	22.829	21.487	22.452	21.92	22.349	20.985	31.982	4.689	17.617	4.692	-4.638	49.075	0.002	3.364	0	8.82	0.14694	30.5	12.0	19.3	1.331	0.502	0.539	0.0279	27.935	23.77
11/4/2002	1:22:18 PM	22.91	21.488	22.387	21.89	22.375	21.192	32.154	4.697	17.798	4.707	-4.638	49.047	0.002	3.365	0	9.82	0.16361	30.7	12.0	19.5	1.344	0.502	0.540	0.0277	27.717	23.59
11/4/2002	1:23:18 PM	23.031	21.499	22.614	21.831	22.386	20.989	31.827	4.618	17.783	4.791	-4.617	49.01	0.001	3.378	0.001	10.82	0.18028	30.4	12.0	19.4	1.337	0.504	0.539	0.0278	27.799	23.66
11/4/2002	1:24:18 PM	23.073	21.495	22.565	21.842	22.397	20.946	32.027	4.668	17.593	4.791	-4.62	48.955	0.001	3.384	0	11.82	0.19694	30.6	12.0	19.3	1.329	0.505	0.541	0.0281	28.056	23.88
11/4/2002	1:25:18 PM	23.22	21.521	22.893	21.813	22.419	20.761	31.816	4.715	17.28	4.895	-4.6	49.125	0.001	3.392	0	12.82	0.21361	30.3	12.0	19.0	1.311	0.506	0.537	0.0282	28.225	24.02
11/4/2002	1:26:18 PM	23.482	21.507	23.241	21.683	22.44	20.805	32.176	4.697	17.358	5.002	-4.594	49.052	0.001	3.415	0.002	13.82	0.23028	30.7	12.0	19.1	1.316	0.509	0.535	0.0280	28.046	23.87
11/4/2002	1:27:18 PM	23.784	21.518	23.316	21.638	22.425	20.827	32.269	4.738	17.312	5.059	-4.585	49.224	0.001	3.429	0.002	14.82	0.24694	30.8	12.1	19.1	1.315	0.511	0.536	0.0281	28.118	23.93
11/4/2002	1:28:18 PM	23.889	21.523	23.557	21.694	22.405	20.455	31.713	4.637	17.218	5.146	-4.58	49.112	0.001	3.44	0.001	15.82	0.26361	30.2	12.0	18.8	1.299	0.513	0.534	0.0284	28.362	24.14
11/4/2002	1:29:18 PM	24.17	21.543	23.783	21.669	22.385	20.595	32.04	4.675	17.282	5.241	-4.568	49.182	0.001	3.453	0.002	16.82	0.28028	30.6	12.1	18.9	1.306	0.515	0.533	0.0281	28.135	23.94
11/4/2002	1:30:18 PM	24.24	21.533	23.828	21.734	22.435	20.587	32.104	4.716	17.247	5.291	-4.556	49.226	0.001	3.464	0	17.82	0.29694	30.6	12.1	18.9	1.304	0.516	0.534	0.0282	28.220	24.02
11/4/2002	1:31:18 PM	24.432	21.539	24.095	21.645	22.477	20.161	31.86	4.679	16.809	5.357	-4.554	49.146	0.001	3.478	0	18.82	0.31361	30.4	12.0	18.5	1.274	0.519	0.532	0.0288	28.778	24.49
11/4/2002	1:32:18 PM	24.506	21.549	24.049	21.684	22.421	20.252	31.895	4.687	16.893	5.389	-4.539	49.094	0.001	3.488	0.001	19.82	0.33028	30.4	12.0	18.6	1.281	0.520	0.534	0.0288	28.762	24.48
11/4/2002	1:33:18 PM	24.632	21.544	24.271	21.619	22.411	20.102	31.941	4.649	16.864	5.47	-4.542	49.232	0.001	3.505	0.001	20.82	0.34694	30.5	12.1	18.5	1.274	0.523	0.533	0.0289	28.860	24.56
11/4/2002	1:34:18 PM	24.703	21.555	24.201	21.701	22.417	20.142	32.005	4.672	16.84	5.542	-4.527	49.205	0.001	3.511	0	21.82	0.36361	30.5	12.1	18.5	1.275	0.523	0.535	0.0290	28.955	24.64
11/4/2002	1:35:18 PM	24.814	21.571	24.452	21.716	22.408	20.132	31.978	4.676	16.895	5.507	-4.519	49.169	0.001	3.524	0	22.82	0.38028	30.5	12.0	18.5	1.276	0.525	0.534	0.0288	28.821	24.53
11/4/2002	1:36:18 PM	24.828	21.56	24.321	21.756	22.402	19.993	32.009	4.653	16.735	5.611	-4.516	49.666	0.001	3.528	0	23.82	0.39694	30.5	12.2	18.4	1.266	0.526	0.536	0.0292	29.197	24.85
11/4/2002	1:37:18 PM	24.934	21.576	24.527	21.736	22.398	19.943	31.905	4.643	16.743	5.684	-4.501	49.356	0.001	3.541	0	24.82	0.41361	30.4	12.1	18.3	1.265	0.528	0.535	0.0292	29.168	24.82
11/4/2002	1:38:18 PM	24.944	21.576	24.437	21.736	22.388	19.957	32.063	4.668	16.688	5.747	-4.496	49.308	0.001	3.542	0	25.82	0.43028	30.6	12.1	18.3	1.263	0.528	0.537	0.0293	29.283	24.92
11/4/2002	1:39:18 PM	25.039	21.586	24.593	21.716	22.367	19.999	32.193	4.729	16.618	5.733	-4.49	49.417	0.001	3.561	0	26.82	0.44694	30.7	12.1	18.3	1.262	0.531	0.537	0.0293	29.333	24.96
11/4/2002	1:40:18 PM	25.008	21.569	24.506	21.699	22.23	19.811	32.09	4.644	16.555	5.843	-4.49	49.268	0.001	3.567	0	27.82	0.46361	30.6	12.1	18.2	1.254	0.532	0.539	0.0297	29.658	25.24
11/4/2002	1:41:18 PM	25.073	21.464	24.496	21.519	21.793	19.858	32.102	4.688	16.641	5.898	-4.478	49.215	0.001	3.58	0	28.82	0.48028	30.6	12.1	18.2	1.258	0.534	0.541	0.0297	29.666	25.25
11/4/2002	1:42:18 PM	25.018	21.373	24.406	21.378	21.219	19.562	31.74	4.637	16.43	6.019	-4.478	49.215	0.001	3.583	0	29.82	0.49694	30.3	12.1	18.0	1.241	0.534	0.543	0.0302	30.186	25.69
11/4/2002	1:43:18 PM	25.106	21.25	24.388	21.189	20.854	19.61	32.027	4.628	16.444	5.961	-4.47	49.28	0.001	3.594	0	30.82	0.51361	30.6	12.1	18.0	1.243	0.536	0.545	0.0302	30.242	25.74
11/4/2002	1:44:18 PM	25.052	21.176	24.4	21.09	20.669	19.839	32.191	4.672	16.639	6.039	-4.467	49.28	0.001	3.593	0	31.82	0.53028	30.7	12.1	18.2	1.258	0.536	0.545	0.0299	29.872	25.42
11/4/2002	1:45:18 PM	25.14	21.093	24.388	21.032	20.394	19.5	31.814	4.641	16.418	6.057	-4.464	49.27	0.001	3.603	0	32.82	0.54694	30.3	12.1	18.0	1.238	0.537	0.547	0.0304	30.432	25.90
11/4/2002	1:46:18 PM	25.056	20.978	24.419	20.953	20.128	19.57	31.986	4.653	16.418	6.071	-4.458	49.173	0.001	3.603	0	33.82	0.56361	30.5	12.1	18.0	1.241	0.537	0.546	0.0303	30.346	25.83
11/4/2002	1:47:18 PM	25.133	20.864	24.365	20.894	19.902	19.351	31.81	4.678	16.068	6.132	-4.455	49.171	0.001	3.614	0	34.82	0.58028	30.3	12.1	17.7	1.221	0.539	0.549	0.0310	30.975	26.36
11/4/2002	1:48:18 PM	25.057	20.727	24.404	20.837	19.391	19.214	31.759	4.631	16.037	6.152	-4.449	49.389	0.001	3.619	0	35.82	0.59694	30.3	12.1	17.6	1.215	0.540	0.549	0.0311	31.132	26.49
11/4/2002	1:49:18 PM	25.156	20.604	24.337	20.79	19.076	19.355	31.848	4.62	16.195	6.207	-4.446	49.241	0.001	3.619	0	36.82	0.61361	30.4	12.1	17.8	1.226	0.540	0.550	0.0309	30.928	26.32
11/4/2002	1:50:18 PM	25.104	20.502	24.446	20.723	18.873	19.365	31.901	4.612	16.244	6.155	-4.438	49.207	0.001	3.626	0	37.82	0.63028	30.4	12.1	17.8	1.228	0.541	0.549	0.0308	30.842	26.25
11/4/2002	1:51:18 PM	25.206	20.408	24.427	20.71	18.662	19.311	31.934	4.702	15.996	6.259	-4.432	49.241	0.001	3.634	0	38.82	0.64694	30.5	12.1	17.7	1.217	0.542	0.551	0.0312	31.191	26.54
11/4/2002	1:52:18 PM	25.124	20.28	24.501	20.668	18.478	19.409	32.09	4.675	16.182	6.282	-4.429	49.249	0.001	3.637	0	39.82	0.66361	30.6	12.1	17.8	1.227	0.542	0.550	0.0309	30.903	26.30
11/4/2002	1:53:18 PM	25.18	20.119	24.386	20.628	18.155	19.028	31.705	4.6	15.845	6.351	-4.429	49.241	0.001	3.64	0	40.82	0.68028	30.2	12.1	17.4	1.202	0.543	0.552	0.0317	31.668	26.95
11/4/2002	1:54:18 PM	25.1	19.979	24.477	20.568	17.862	18.999	31.721	4.674	15.726	6.38	-4.423	49.731	0.002	3.642	0	41.82	0.69694	30.2	12.2	17.4	1.197	0.543	0.551	0.0317	31.738	27.01
11/4/2002	1:55:18 PM	25.191	19.888	24.382	20.554	17.746	19.121	31.713	4.581	16.107	6.346	-4.423	49.251	0.001	3.651	0	42.82	0.71361	30.2	12.1	17.6	1.214	0.544	0.554	0.0314	31.447	26.76
11/4/2002	1:56:18 PM	25.155	19.832	24.572	20.563	17.77	19.071	31.821	4.691	15.783	6.389	-4.412	48.932	0.001	3.652	0	43.82	0.73028	30.3	12.0	17.4	1.202	0.544	0.551	0.0316	31.623	26.91
11/4/2002	1:57:18 PM	25.19	19.741	24.441	20.548	17.629	18.968	31.643	4.568	15.939	6.421	-4.415	49.23	0.001	3.657	0	44.82	0.74694	30.2	12.1	17.5	1.203	0.545	0.554	0.0317	31.735	27.01

Figure C12a: 1.31C: After AN-102R2, Batch 3B – 2 M Nitric Acid Cleaning – First Cleaning (first 45 minutes) – Raw & Calculated Data

11/4/2002	1:58:18 PM	25.124	19.613	24.565	20.541	17.455	19.168	31.941	4.605	16.135	6.429	-4.406	49.308	0.001	3.665	0	45.82	0.76361	30.5	12.1	17.7	1.217	0.546	0.553	0.0313	31.338	26.67
11/4/2002	1:59:18 PM	25.157	19.531	24.429	20.515	17.342	19.129	32.013	4.66	15.875	6.424	-4.409	49.253	0.002	3.658	0	46.82	0.78028	30.5	12.1	17.5	1.207	0.545	0.554	0.0317	31.667	26.95
11/4/2002	2:00:18 PM	25.116	19.423	24.577	20.483	17.214	19.067	31.864	4.637	15.906	6.49	-4.403	49.073	0.001	3.664	0	47.82	0.79694	30.4	12.0	17.5	1.206	0.546	0.553	0.0316	31.614	26.90
11/4/2002	2:01:18 PM	25.116	19.298	24.387	20.463	17.103	19.336	32.087	4.665	16.264	6.461	-4.397	49.163	0.001	3.67	0	48.82	0.81361	30.6	12.0	17.8	1.227	0.547	0.557	0.0313	31.276	26.62
11/4/2002	2:02:18 PM	25.12	19.241	24.587	20.472	17.061	19.144	31.996	4.71	15.92	6.505	-4.391	49.391	0.002	3.672	0	49.82	0.83028	30.5	12.1	17.5	1.209	0.547	0.554	0.0316	31.592	26.89
11/4/2002	2:03:18 PM	25.111	19.151	24.403	20.438	16.961	19.197	32.092	4.641	16.041	6.507	-4.391	49.253	0.001	3.673	0	50.82	0.84694	30.6	12.1	17.6	1.215	0.548	0.557	0.0316	31.609	26.90
11/4/2002	2:04:18 PM	25.131	19.096	24.603	20.398	16.946	19.113	32.04	4.633	16.01	6.548	-4.388	49.324	0.001	3.68	0	51.82	0.86361	30.6	12.1	17.6	1.211	0.549	0.555	0.0316	31.594	26.89
11/4/2002	2:05:18 PM	25.111	19.04	24.452	20.377	16.89	19.21	32.131	4.638	16.164	6.531	-4.38	49.278	0.001	3.678	0	52.82	0.88028	30.7	12.1	17.7	1.219	0.548	0.557	0.0315	31.486	26.80
11/4/2002	2:06:18 PM	25.164	19.023	24.641	20.391	17.015	19.057	31.941	4.611	15.986	6.574	-4.386	49.312	0.001	3.677	0	53.82	0.89694	30.5	12.1	17.5	1.208	0.548	0.554	0.0316	31.606	26.90
11/4/2002	2:07:18 PM	25.126	19.019	24.537	20.427	17.168	18.858	31.725	4.624	15.767	6.536	-4.374	49.236	0.001	3.682	0	54.82	0.91361	30.3	12.1	17.3	1.194	0.549	0.556	0.0321	32.125	27.34
11/4/2002	2:08:18 PM	25.145	18.953	24.596	20.411	17.076	18.967	31.889	4.591	15.865	6.536	-4.38	49.213	0.001	3.679	0	55.82	0.93028	30.4	12.1	17.4	1.201	0.549	0.555	0.0319	31.855	27.11
11/4/2002	2:09:18 PM	25.098	18.91	24.519	20.455	17.044	18.833	31.713	4.657	15.609	6.536	-4.365	49.694	0.001	3.683	0	56.82	0.94694	30.2	12.2	17.2	1.187	0.549	0.557	0.0323	32.321	27.51
11/4/2002	2:10:18 PM	25.166	18.873	24.562	20.448	16.981	19.009	32.058	4.597	15.9	6.577	-4.36	49.278	0.002	3.687	0	57.82	0.96361	30.6	12.1	17.5	1.203	0.550	0.557	0.0319	31.885	27.13
11/4/2002	2:11:18 PM	25.076	18.787	24.513	20.458	16.844	18.984	31.988	4.674	15.771	6.554	-4.36	49.287	0.002	3.683	0	58.82	0.98028	30.5	12.1	17.4	1.198	0.549	0.557	0.0320	32.035	27.26
11/4/2002	2:12:18 PM	25.146	18.711	24.467	20.438	16.697	19.094	32.123	4.689	15.927	6.583	-4.36	49.234	0.001	3.688	0	59.82	0.99694	30.7	12.1	17.5	1.207	0.550	0.558	0.0319	31.877	27.13
11/4/2002	2:13:18 PM	25.056	18.645	24.497	20.387	16.605	19.075	32.201	4.653	15.894	6.591	-4.351	49.268	0.001	3.69	0	60.82	1.01361	30.7	12.1	17.5	1.205	0.550	0.558	0.0319	31.914	27.16
11/4/2002	2:14:18 PM	25.12	18.578	24.416	20.336	16.503	19.119	32.025	4.646	16.064	6.542	-4.354	49.22	0.001	3.688	0	61.82	1.03028	30.6	12.1	17.6	1.213	0.550	0.559	0.0318	31.776	27.04
11/4/2002	2:15:18 PM	25.043	18.506	24.474	20.284	16.415	19.073	32.098	4.662	15.929	6.586	-4.354	49.234	0.001	3.688	0	62.82	1.04694	30.6	12.1	17.5	1.207	0.550	0.558	0.0319	31.888	27.14
11/4/2002	2:16:18 PM	25.138	18.46	24.409	20.273	16.369	18.967	31.885	4.61	15.935	6.597	-4.348	49.182	0.002	3.688	0	63.82	1.06361	30.4	12.1	17.5	1.203	0.550	0.559	0.0320	32.038	27.26
11/4/2002	2:17:18 PM	25.041	18.388	24.482	20.201	16.291	19.119	32.145	4.63	16.056	6.612	-4.345	49.303	0.001	3.69	0	64.82	1.08028	30.7	12.1	17.6	1.213	0.550	0.558	0.0317	31.741	27.01
11/4/2002	2:18:18 PM	25.126	18.341	24.401	20.185	16.24	18.939	31.883	4.665	15.791	6.554	-4.336	49.148	0.001	3.69	0	65.82	1.09694	30.4	12.0	17.4	1.197	0.550	0.560	0.0322	32.221	27.42
11/4/2002	2:19:18 PM	25.055	18.275	24.506	20.175	16.123	18.897	31.866	4.611	15.861	6.597	-4.336	49.289	0.001	3.691	0	66.82	1.11361	30.4	12.1	17.4	1.198	0.550	0.558	0.0321	32.109	27.32
11/4/2002	2:20:18 PM	25.11	18.204	24.381	20.155	16.052	18.901	31.878	4.578	15.81	6.588	-4.331	49.23	0.001	3.689	0	67.82	1.13028	30.4	12.1	17.4	1.197	0.550	0.560	0.0322	32.248	27.44
11/4/2002	2:21:18 PM	25.051	18.144	24.522	20.125	16.016	18.912	31.974	4.649	15.726	6.724	-4.331	49.194	0.001	3.702	0	68.82	1.14694	30.5	12.1	17.3	1.194	0.552	0.559	0.0323	32.301	27.49
11/4/2002	2:22:18 PM	25.098	18.05	24.384	20.122	15.938	18.81	31.792	4.673	15.548	6.646	-4.322	49.215	0.002	3.697	0	69.82	1.16361	30.3	12.1	17.2	1.184	0.551	0.561	0.0326	32.648	27.78
11/4/2002	2:23:18 PM	25.041	17.968	24.492	20.065	15.921	18.835	31.701	4.59	15.851	6.635	-4.319	49.014	0.001	3.701	0	70.82	1.18028	30.2	12.0	17.3	1.196	0.552	0.560	0.0323	32.275	27.47
11/4/2002	2:24:18 PM	25.104	17.945	24.379	20.027	16.009	18.833	31.891	4.57	15.738	6.666	-4.319	48.865	0.001	3.697	0	71.82	1.19694	30.4	12.0	17.3	1.192	0.551	0.561	0.0325	32.451	27.62
11/4/2002	2:25:18 PM	25.073	17.929	24.574	20.041	16.13	19.094	32.166	4.659	15.881	6.612	-4.316	49.05	0.001	3.699	0	72.82	1.21361	30.7	12.0	17.5	1.206	0.551	0.558	0.0319	31.917	27.16
11/4/2002	2:26:18 PM	25.109	17.92	24.46	20.053	16.259	18.916	31.992	4.588	15.816	6.62	-4.307	49.113	0.001	3.702	0	73.82	1.23028	30.5	12.0	17.4	1.197	0.552	0.560	0.0323	32.270	27.46
11/4/2002	2:27:18 PM	25.081	17.902	24.627	20.03	16.388	18.806	31.825	4.643	15.632	6.727	-4.307	49.177	0.001	3.704	0	74.82	1.24694	30.4	12.1	17.2	1.187	0.552	0.558	0.0324	32.410	27.58
11/4/2002	2:28:18 PM	25.082	17.877	24.458	20.036	16.358	18.909	31.976	4.624	15.798	6.718	-4.302	48.934	0.001	3.696	0	75.82	1.26361	30.5	12.0	17.4	1.196	0.551	0.560	0.0322	32.243	27.44
11/4/2002	2:29:18 PM	25.06	17.83	24.591	20.008	16.275	18.874	31.916	4.658	15.697	6.721	-4.299	49.066	0.001	3.703	0	76.82	1.28028	30.4	12.0	17.3	1.192	0.552	0.558	0.0323	32.310	27.50
11/4/2002	2:30:18 PM	25.077	17.771	24.428	19.995	16.211	18.994	32.096	4.621	15.881	6.727	-4.296	49.127	0.001	3.698	0	77.82	1.29694	30.6	12.0	17.4	1.202	0.551	0.560	0.0321	32.132	27.35
11/4/2002	2:31:18 PM	25.058	17.726	24.569	19.941	16.166	18.802	31.928	4.63	15.622	6.606	-4.299	49.146	0.001	3.701	0	78.82	1.31361	30.5	12.0	17.2	1.187	0.552	0.559	0.0325	32.450	27.62
11/4/2002	2:32:18 PM	25.076	17.698	24.421	19.953	16.138	18.854	31.908	4.566	15.812	6.695	-4.293	49.108	0.001	3.704	0	79.82	1.33028	30.4	12.0	17.3	1.195	0.552	0.561	0.0324	32.385	27.56
11/4/2002	2:33:18 PM	25.064	17.615	24.565	19.921	16.004	18.928	32.025	4.58	15.869	6.632	-4.284	49.121	0.001	3.705	0	80.82	1.34694	30.6	12.0	17.4	1.200	0.552	0.559	0.0321	32.141	27.35
11/4/2002	2:34:18 PM	25.074	17.585	24.404	19.901	16.02	18.794	31.908	4.6	15.728	6.727	-4.284	49.295	0.001	3.705	0	81.82	1.36361	30.4	12.1	17.3	1.190	0.552	0.562	0.0325	32.544	27.70
11/4/2002	2:35:18 PM	25.096	17.547	24.597	19.867	16.001	18.705	31.897	4.547	15.636	6.802	-4.284	49.117	0.001	3.707	0	82.82	1.38028	30.4	12.0	17.2	1.184	0.553	0.559	0.0326	32.556	27.71
11/4/2002	2:36:18 PM	25.079	17.524	24.43	19.876	16.025	18.876	31.881	4.605	15.812	6.646	-4.276	49.115	0.001	3.702	0	83.82	1.39694	30.4	12.0	17.3	1.196	0.552	0.561	0.0323	32.339	27.52
11/4/2002	2:37:18 PM	25.12	17.526	24.646	19.923	16.143	18.963	32.17	4.611	15.853	6.785	-4.273	49.1	0.001	3.709	0	84.82	1.41361	30.7	12.0	17.4	1.200	0.553	0.559	0.0321	32.084	27.30
11/4/2002	2:38:18 PM	25.098	17.528	24.508	19.94	16.308	18.957	31.938	4.654	15.808	6.658	-4.267	49.177	0.001	3.701	0	85.82	1.43028	30.5	12.1	17.4	1.198	0.552	0.559	0.0322	32.187	27.39
11/4/2002	2:39:18 PM	25.142	17.538	24.698	19.959	16.51	19.075	32.265	4.689	15.847	6.684	-4.27	49.092	0.001	3.709	0	86.82	1.44694	30.8	12.0	17.5	1.204	0.553	0.558	0.0319	31.940	27.18
11/4/2002	2:40:18 PM	25.107	17.563	24.573	20.096	16.713	19.073	32.108	4.653	15.943	6.684	-4.261	49.136	0.001	3.702	0	87.82	1.46361	30.6	12.0	17.5	1.207	0.552	0.559	0.0319	31.907	27.15
11/4/2002	2:41:18 PM	25.154	17.585	24.685	20.178	16.897	18.704	31.823	4.595	15.597	6.811	-4.255	49.263	0.001	3.713	0	88.82	1.48028	30.4	12.1	17.2	1.182	0.554	0.559	0.0326	32.565	27.71
11/4/2002	2:42:18 PM	25.116	17.633	24.627	20.317	17.118	18.854	31.899	4.648	15.718	6.635	-4.252	49.018	0.001	3.703	0	89.82	1.49694	30.4	12.0	17.3	1.192	0.552	0.558	0.0323	32.276	27.47
	Averages	24.7	19.7	24.1	20.8	18.8	19.5	32.0	4.6	16.3	6.1	-4.4	49.2	0.0	3.6	0.0		0.8	30.5	12.1	17.9	1.235	0.538	0.551	0.0308	30.800	26.211
	Maximum	25.2	21.6	24.7	22.4	22.5	21.2	32.3	4.7	17.8	6.8	-4.3	49.7	0.0	3.7	0.0		1.5	30.8	12.2	19.5	1.344	0.554	0.562	0.0326	32.648	27.784
	Median	25.1	19.6	24.4	20.5	17.4	19.1	32.0	4.6	16.0	6.4	-4.4	49.2	0.0	3.7	0.0		0.8	30.5	12.1	17.6	1.213	0.546	0.554	0.0316	31.600	26.892
	Minimum	22.4	17.5	21.7	19.9	15.9	18.7	31.6	4.5	15.5	4.7	-4.7	48.6	0.0	3.4	0.0		0.0	30.2	11.9	17.2	1.182	0.501	0.532	0.0277	27.717	23.587
	2 x Std Dev	1.596	3.085	1.536	1.485	5.260	1.471	0.291	0.083	1.288	1.328	0.237	0.319	0.001	0.226	0.001		0.847	0.291	0.078	1.377	0.095	0.034	0.019	0.0031	3.143	2.675
Number of Points Used*		88	88	88	88	88	88	88	88	88	88	88	88	88	88	88		88	88	88	88	88	88	88	88	88	88
	* Backpulse points in box are not included																											

Figure C12b: 1.31C: After AN-102R2, Batch 3B – 2 M Nitric Acid Cleaning – Second Cleaning (remaining 45 minutes) – Raw & Calculated Data

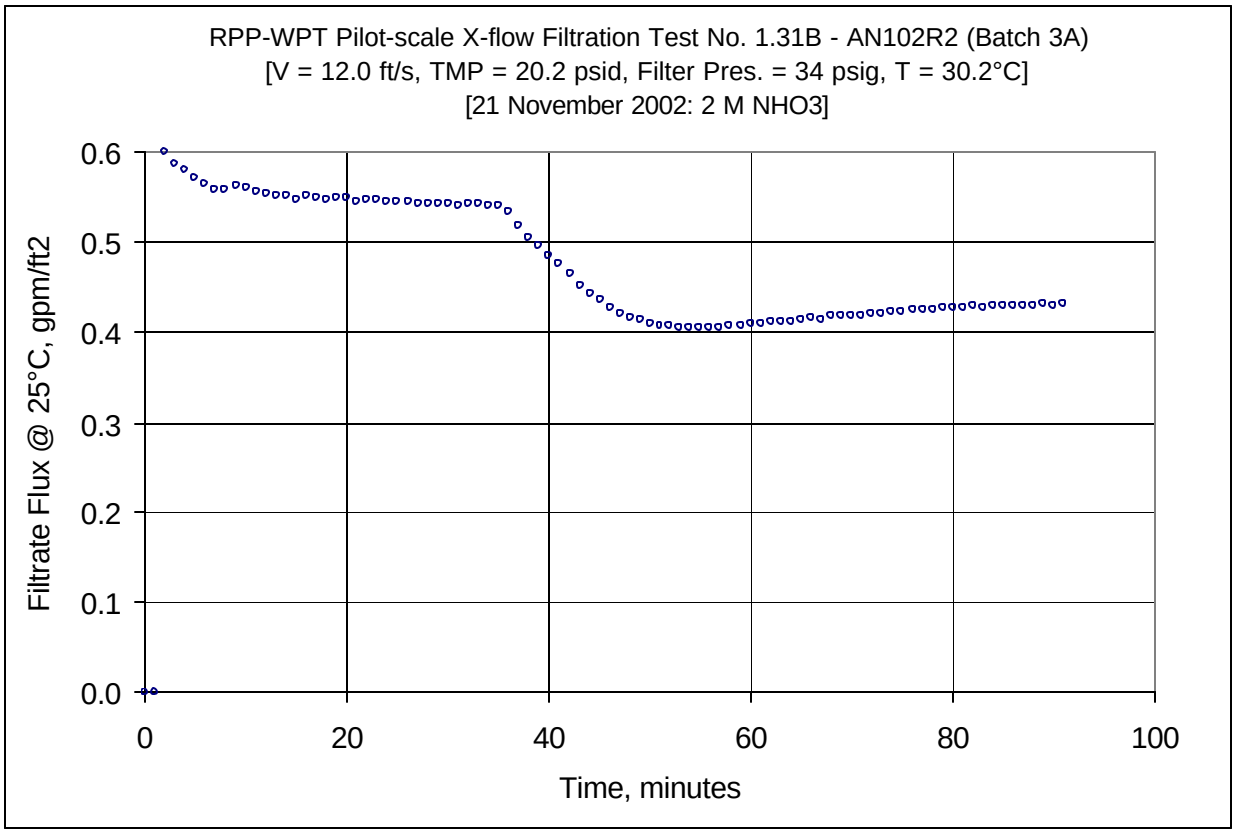


Figure C13: 1.31B: After AN-102R2, Batch 3A – 2 M Nitric Acid Cleaning – First Cleaning

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
11/21/2002	7:54:33 AM	19.434	19.034	16.285	18.952	18.045	-0.121	-0.074	-0.045	0.058	-0.376	0.251	-0.214	0.001	0.001	0.002			Filter Surface	6.707	FT2					
11/21/2002	7:54:46 AM	19.434	19.034	16.285	18.952	18.045	-0.121	-0.074	-0.045	0.058	-0.376	0.251	-0.214	0.001	0.001	0.002			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
11/21/2002	7:54:47 AM	19.429	19.029	16.284	18.982	18.044	-0.123	-0.072	-0.045	0.056	-0.376	0.251	-0.221	0.001	0.001	0.001										
11/21/2002	7:54:48 AM	19.429	19.029	16.29	18.987	18.045	-0.123	-0.072	-0.045	0.058	-0.405	0.251	-0.216	0.001	0.001	0.002			Note: Gauge Pressure P1 is approximately 1.4 psig							
11/21/2002	7:54:49 AM	19.429	19.024	16.289	18.987	18.044	-0.123	-0.074	-0.045	0.058	-0.416	0.251	-0.218	0.001	0.001	0.001										
11/21/2002	7:54:50 AM	19.439	19.029	16.285	18.992	18.05	-0.123	-0.072	-0.044	0.058	-0.388	0.251	-0.218	0.001	0.001	0.002			Pressure P1is corrected for 40.88 inches of water tubing							
11/21/2002	7:54:51 AM	19.439	19.029	16.29	18.997	18.05	-0.123	-0.074	-0.045	0.056	-0.388	0.251	-0.218	0.002	0.001	0			VVVV					< Filtrate Flux <<	PERMIABILITY >>	
11/21/2002	7:54:52 AM	19.429	19.029	16.279	18.987	18.044	-0.121	-0.072	-0.045	0.056	-0.408	0.248	-0.22	0.001	0.001	0.001								at 25C		x 1000
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/21/2002	1:23:21 PM	26.081	21.438	26.183	22.714	22.31	3.178	36.487	4.754	-1.219	27.91	77.338	46.221	0.001	0.001	0	0	0	35.0	11.3	1.0	0.068	0.000	0.000	0.0001	0.147	0.13
11/21/2002	1:24:21 PM	26.606	21.453	26.708	22.568	22.33	2.878	36.135	4.684	-1.373	27.947	34.328	46.301	0.001	0.001	0.001	1.00	0.01667	34.7	11.3	0.8	0.052	0.000	0.000	0.0002	0.189	0.16
11/21/2002	1:25:21 PM	26.945	21.467	27.187	22.432	22.355	17.443	34.919	4.696	14.943	10.579	1.288	49.646	0.003	4.284	0	2.00	0.03333	33.4	12.2	16.2	1.116	0.639	0.601	0.0371	37.105	31.58
11/21/2002	1:26:21 PM	27.577	21.481	27.653	22.36	22.373	17.859	34.878	4.69	15.34	10.281	1.282	49.722	0.002	4.241	0	3.00	0.05	33.4	12.2	16.6	1.144	0.632	0.587	0.0354	35.373	30.10
11/21/2002	1:27:21 PM	28.074	21.494	28.14	22.328	22.406	17.888	34.849	4.641	15.375	10.266	1.276	49.651	0.002	4.241	0	4.00	0.06667	33.4	12.2	16.6	1.147	0.632	0.579	0.0348	34.834	29.64
11/21/2002	1:28:21 PM	28.536	21.497	28.576	22.295	22.389	18.134	35.144	4.709	15.557	10.067	1.273	49.785	0.002	4.236	0	5.00	0.08333	33.7	12.2	16.8	1.161	0.632	0.572	0.0339	33.941	28.88
11/21/2002	1:29:21 PM	28.992	21.51	29.043	22.274	22.423	18.01	35.176	4.726	15.405	10.258	1.271	49.883	0.001	4.245	0	6.00	0.1	33.7	12.2	16.7	1.152	0.633	0.566	0.0339	33.857	28.81
11/21/2002	1:30:21 PM	29.443	21.523	29.508	22.251	22.451	17.973	35.016	4.687	15.348	10.162	1.273	49.655	0.001	4.246	0	7.00	0.11667	33.5	12.2	16.7	1.149	0.633	0.559	0.0335	33.531	28.54
11/21/2002	1:31:21 PM	29.859	21.541	29.556	22.249	22.484	18.058	35.153	4.739	15.438	10.229	1.268	49.892	0.002	4.246	0	8.00	0.13333	33.7	12.2	16.7	1.155	0.633	0.558	0.0333	33.312	28.35
11/21/2002	1:32:21 PM	29.622	21.549	29.195	22.272	22.517	18.074	34.993	4.666	15.555	10.079	1.265	49.577	0.001	4.231	0	9.00	0.15	33.5	12.1	16.8	1.159	0.631	0.561	0.0334	33.391	28.42
11/21/2002	1:33:21 PM	29.479	21.544	29.211	22.288	22.517	18.277	35.205	4.687	15.631	9.92	1.262	50.028	0.001	4.223	0	10.00	0.16667	33.7	12.3	17.0	1.169	0.630	0.560	0.0330	33.040	28.12
11/21/2002	1:34:21 PM	29.573	21.544	29.424	22.287	22.517	18.313	35.105	4.633	15.713	9.899	1.256	49.791	0.001	4.207	0	11.00	0.18333	33.6	12.2	17.0	1.173	0.627	0.555	0.0326	32.610	27.75
11/21/2002	1:35:21 PM	29.763	21.586	29.456	22.42	22.574	18.435	35.324	4.682	15.807	9.931	1.259	49.554	0.001	4.201	0	12.00	0.2	33.9	12.1	17.1	1.180	0.626	0.554	0.0323	32.329	27.51
11/21/2002	1:36:21 PM	29.864	21.607	29.725	22.521	22.625	18.358	35.132	4.707	15.68	9.986	1.265	49.59	0.002	4.22	0	13.00	0.21667	33.7	12.2	17.0	1.173	0.629	0.552	0.0324	32.431	27.60
11/21/2002	1:37:21 PM	29.961	21.635	29.703	22.574	22.668	18.439	35.248	4.68	15.874	9.868	1.256	49.745	0.001	4.205	0	14.00	0.23333	33.8	12.2	17.2	1.183	0.627	0.550	0.0321	32.076	27.30
11/21/2002	1:38:21 PM	30.098	21.658	29.88	22.632	22.716	18.348	35.178	4.66	15.784	9.972	1.256	49.756	0.001	4.205	0.001	15.00	0.25	33.7	12.2	17.1	1.177	0.627	0.548	0.0321	32.091	27.31
11/21/2002	1:39:21 PM	30.126	21.686	29.938	22.726	22.759	18.36	35.134	4.715	15.811	9.986	1.256	49.732	0.001	4.233	0.002	16.00	0.26667	33.7	12.2	17.1	1.178	0.631	0.550	0.0322	32.217	27.42
11/21/2002	1:40:21 PM	30.243	21.714	29.931	22.804	22.793	18.172	35.109	4.671	15.58	10.055	1.259	49.77	0.001	4.228	0.002	17.00	0.28333	33.6	12.2	16.9	1.164	0.630	0.550	0.0326	32.585	27.73
11/21/2002	1:41:21 PM	30.302	21.738	30.128	22.889	22.822	18.167	35.051	4.694	15.493	10.067	1.256	49.68	0.001	4.232	0	18.00	0.3	33.6	12.2	16.8	1.160	0.631	0.547	0.0325	32.530	27.68
11/21/2002	1:42:21 PM	30.32	21.762	30.102	22.887	22.86	18.049	34.929	4.643	15.459	10.064	1.253	49.707	0.001	4.236	0	19.00	0.31667	33.5	12.2	16.8	1.155	0.632	0.548	0.0327	32.731	27.85
11/21/2002	1:43:21 PM	30.409	21.776	30.071	22.876	22.914	18.068	35.095	4.689	15.45	10.093	1.253	49.682	0.002	4.243	0.001	20.00	0.33333	33.6	12.2	16.8	1.155	0.633	0.550	0.0328	32.803	27.92
11/21/2002	1:44:21 PM	30.477	21.831	30.304	22.986	22.964	18.114	35.033	4.626	15.647	10.073	1.253	49.733	0.001	4.228	0.001	21.00	0.35	33.6	12.2	16.9	1.164	0.630	0.544	0.0322	32.247	27.44
11/21/2002	1:45:21 PM	30.471	21.844	30.228	23.01	22.998	18.313	35.229	4.642	15.77	10.009	1.25	49.856	0.001	4.242	0	22.00	0.36667	33.8	12.2	17.0	1.175	0.632	0.547	0.0321	32.114	27.33
11/21/2002	1:46:21 PM	30.571	21.89	30.228	23.11	23.043	18.11	35.097	4.678	15.467	10.064	1.253	49.686	0.001	4.232	0.001	23.00	0.38333	33.6	12.2	16.8	1.158	0.631	0.546	0.0325	32.521	27.68
11/21/2002	1:47:21 PM	30.584	21.898	30.375	23.169	23.061	18.29	35.215	4.65	15.817	10.006	1.253	49.732	0.001	4.234	0	24.00	0.4	33.7	12.2	17.1	1.176	0.631	0.544	0.0319	31.903	27.15
11/21/2002	1:48:21 PM	30.563	21.922	30.325	23.188	23.131	18.267	35.291	4.685	15.588	10.018	1.25	49.605	0.001	4.231	0.002	25.00	0.41667	33.8	12.2	16.9	1.167	0.631	0.544	0.0322	32.162	27.37
11/21/2002	1:49:21 PM	30.648	21.968	30.3	23.248	23.166	18.377	35.236	4.719	15.688	10.012	1.25	49.613	0.001	4.23	0.001	26.00	0.43333	33.8	12.2	17.0	1.174	0.631	0.545	0.0320	31.978	27.21
11/21/2002	1:50:21 PM	30.682	22.002	30.449	23.283	23.201	18.344	35.174	4.679	15.719	9.969	1.253	49.55	0.001	4.233	0	27.00	0.45	33.7	12.1	17.0	1.174	0.631	0.543	0.0319	31.873	27.12
11/21/2002	1:51:21 PM	30.651	22.011	30.423	23.312	23.245	18.215	35.101	4.677	15.514	9.937	1.25	49.691	0.001	4.225	0.001	28.00	0.46667	33.6	12.2	16.9	1.163	0.630	0.542	0.0322	32.151	27.36
11/21/2002	1:52:21 PM	30.7	22.046	30.363	23.316	23.259	18.215	35.111	4.649	15.647	10.053	1.253	50.028	0.002	4.225	0.001	29.00	0.48333	33.6	12.3	16.9	1.167	0.630	0.543	0.0321	32.076	27.30
11/21/2002	1:53:21 PM	30.728	22.059	30.44	23.314	23.283	18.449	35.171	4.654	15.985	9.957	1.247	49.733	0.001	4.221	0.001	30.00	0.5	33.7	12.2	17.2	1.187	0.629	0.541	0.0314	31.448	26.76
11/21/2002	1:54:21 PM	30.703	22.089	30.489	23.364	23.322	18.236	35.029	4.662	15.612	9.94	1.25	49.707	0.001	4.225	0.001	31.00	0.51667	33.6	12.2	16.9	1.167	0.630	0.541	0.0320	31.980	27.22
11/21/2002	1:55:21 PM	30.742	22.129	30.434	23.474	23.357	18.232	35.062	4.607	15.7	9.989	1.256	48.604	0.002	4.222	0.001	32.00	0.53333	33.6	11.9	17.0	1.170	0.629	0.542	0.0319	31.926	27.17
11/21/2002	1:56:21 PM	30.795	22.147	30.442	23.467	23.38	18.414	35.12	4.667	15.893	9.934	1.247	49.581	0.001	4.222	0	33.00	0.55	33.6	12.2	17.2	1.183	0.629	0.542	0.0316	31.570	26.87
11/21/2002	1:57:21 PM	30.779	22.181	30.565	23.496	23.399	18.294	35.025	4.594	15.813	9.94	1.25	49.598	0.001	4.22	0	34.00	0.56667	33.6	12.2	17.1	1.176	0.629	0.539	0.0316	31.634	26.92
11/21/2002	1:58:21 PM	30.756	22.194	30.449	23.434	23.372	18.457	35.312	4.699	15.889	9.925	1.25	49.684	0.001	4.219	0.001	35.00	0.58333	33.8	12.2	17.2	1.184	0.629	0.541	0.0315	31.506	26.81
11/21/2002	1:59:21 PM	30.81	22.228	30.398	23.377	23.365	18.797	35.196	4.661	16.138	9.509	1.242	49.586	0.001	4.154	0.002	36.00	0.6	33.7	12.2	17.5	1.204	0.619	0.533	0.0305	30.540	25.99
11/21/2002	2:00:21 PM	30.758	22.255	30.525	23.34	23.348	19.684	35.043	4.61	17.023	8.671	1.23	49.472	0.001	4.04	0.001	37.00	0.61667	33.6	12.1	18.4	1.265	0.602	0.517	0.0282	28.170	23.97
11/21/2002	2:01:21 PM	30.726	22.283	30.423	23.332	23.331	20.661	35.548	4.704	17.717	7.948	1.221	49.363	0.001	3.938	0.001	38.00	0.63333	34.1	12.1	19.2	1.323	0.587	0.505	0.0263	26.336	22.41
11/21/2002	2:02:21 PM	30.743	22.296	30.341	23.36	23.313	21.334	35.655	4.695	18.409	7.428	1.213	49.284	0.001	3.854	0.001	39.00	0.65	34.2	12.1	19.9	1.370	0.575	0.496	0.0249	24.945	21.23
11/21/2002	2:03:21 PM	30.741	22.324	30.443	23.307	23.311	21.483	34.96	4.599	18.724	6.934	1.207	49.254	0.001	3.78	0	40.00	0.66667	33.5	12.1	20.1	1.386	0.564	0.485	0.0241	24.117	20.52
11/21/2002	2:04:21 PM	30.713	22.367	30.456	23.39	23.308	22.047	35.2	4.613	19.174	6.445	1.201	49.168	0.001	3.708	0.001	41.00	0.68333	33.7	12.0	20.6	1.421	0.553	0.475	0.0231	23.067	19.63
11/21/2002	2:05:21 PM	30.742	22.405	30.375	23.439	23.297	22.83	35.415	4.65	19.831	5.914	1.192	49.275	0.001	3.622	0	42.00	0.7	33.9	12.1	21.3	1.471	0.540	0.465	0.0218	21.820	18.57
11/21/2002	2:06:21 PM	30.769	22.433	30.427	23.451	23.299	23.565	35.538	4.666	20.474	5.356	1.181	49.177	0.001	3.519	0	43.00	0.71667	34.1	12.1	22.0	1.518	0.525	0.452	0.0205	20.507	17.45
11/21/2002	2:07:21 PM	30.706	22.445	30.478	23.383	23.296	23.915	35.415	4.627	20.9	4.928	1.172	49.512	0.001	3.45	0	44.00	0.73333	33.9	12.1	22.4	1.545	0.514	0.442	0.0197	19.729	16.79
11/21/2002	2:08:21 PM	30.719	22.473	30.377	23.376	23.289	24.456	35.618	4.625	21.391	4.526	1.166	48.957	0.001	3.392	0	45.00	0.75	34.1	12.0	22.9	1.580	0.506	0.436	0.0190	19.013	16.18

Figure C14a: 1.31B: After AN-102R2, Batch 3A – 2 M Nitric Acid Cleaning – First Cleaning (first 45 minutes) – Raw & Calculated Data

11/21/2002	2:09:21 PM	30.757	22.511	30.375	23.329	23.307	24.845	35.523	4.633	21.819	4.127	1.158	48.923	0.001	3.32	0	46.00	0.76667	34.1	12.0	23.3	1.609	0.495	0.427	0.0183	18.285	15.56
11/21/2002	2:10:21 PM	30.719	22.533	30.491	23.296	23.294	25.021	35.48	4.561	21.907	3.968	1.155	48.866	0.001	3.288	0.001	47.00	0.78333	34.0	12.0	23.5	1.618	0.490	0.421	0.0179	17.950	15.28
11/21/2002	2:11:21 PM	30.708	22.562	30.415	23.289	23.312	25.102	35.453	4.622	21.913	3.679	1.152	48.923	0.001	3.243	0	48.00	0.8	34.0	12.0	23.5	1.621	0.484	0.416	0.0177	17.708	15.07
11/21/2002	2:12:21 PM	30.76	22.59	30.378	23.342	23.335	25.524	35.744	4.677	22.239	3.468	1.149	48.801	0.001	3.214	0	49.00	0.81667	34.3	12.0	23.9	1.647	0.479	0.413	0.0173	17.292	14.72
11/21/2002	2:13:21 PM	30.753	22.598	30.53	23.37	23.364	25.373	35.358	4.584	22.175	3.442	1.146	48.808	0.001	3.195	0	50.00	0.83333	33.9	12.0	23.8	1.639	0.476	0.409	0.0172	17.197	14.63
11/21/2002	2:14:21 PM	30.731	22.611	30.468	23.388	23.386	25.794	35.811	4.683	22.411	3.344	1.143	48.585	0.001	3.178	0	51.00	0.85	34.3	11.9	24.1	1.662	0.474	0.407	0.0169	16.900	14.38
11/21/2002	2:15:21 PM	30.789	22.644	30.432	23.507	23.425	25.932	35.747	4.694	22.581	3.303	1.146	48.701	0.001	3.171	0.001	52.00	0.86667	34.3	11.9	24.3	1.672	0.473	0.407	0.0168	16.772	14.27
11/21/2002	2:16:21 PM	30.821	22.667	30.534	23.51	23.448	25.864	35.682	4.668	22.652	3.249	1.14	48.791	0.001	3.168	0	53.00	0.88333	34.2	12.0	24.3	1.673	0.472	0.405	0.0167	16.709	14.22
11/21/2002	2:17:21 PM	30.8	22.69	30.567	23.528	23.496	25.665	35.411	4.661	22.439	3.202	1.146	48.77	0.001	3.165	0.001	54.00	0.9	33.9	12.0	24.1	1.658	0.472	0.405	0.0168	16.821	14.32
11/21/2002	2:18:21 PM	30.827	22.708	30.49	23.566	23.509	26.005	35.705	4.676	22.691	3.254	1.146	48.73	0.002	3.161	0.001	55.00	0.91667	34.2	11.9	24.3	1.679	0.471	0.405	0.0166	16.631	14.15
11/21/2002	2:19:21 PM	30.865	22.726	30.508	23.599	23.522	25.535	35.19	4.591	22.407	3.301	1.146	48.703	0.001	3.17	0.001	56.00	0.93333	33.7	11.9	24.0	1.653	0.473	0.406	0.0169	16.932	14.41
11/21/2002	2:20:21 PM	30.831	22.742	30.608	23.589	23.532	25.68	35.544	4.643	22.468	3.315	1.149	48.789	0.001	3.17	0	57.00	0.95	34.1	12.0	24.1	1.660	0.473	0.405	0.0168	16.814	14.31
11/21/2002	2:21:21 PM	30.836	22.747	30.509	23.56	23.513	25.711	35.455	4.625	22.564	3.37	1.143	48.732	0.001	3.178	0.001	58.00	0.96667	34.0	11.9	24.1	1.664	0.474	0.407	0.0169	16.857	14.35
11/21/2002	2:22:21 PM	30.875	22.756	30.473	23.443	23.482	25.663	35.432	4.623	22.581	3.341	1.146	48.768	0.001	3.184	0.001	59.00	0.98333	34.0	12.0	24.1	1.663	0.475	0.408	0.0169	16.916	14.40
11/21/2002	2:23:21 PM	30.86	22.771	30.617	23.338	23.471	25.514	35.676	4.63	22.269	3.445	1.149	48.663	0.001	3.2	0	60.00	1	34.2	11.9	23.9	1.647	0.477	0.409	0.0171	17.098	14.55
11/21/2002	2:24:21 PM	30.837	22.769	30.53	23.209	23.419	25.402	35.362	4.556	22.329	3.457	1.146	48.789	0.002	3.195	0	61.00	1.01667	33.9	12.0	23.9	1.645	0.476	0.409	0.0171	17.131	14.58
11/21/2002	2:25:21 PM	30.865	22.767	30.454	23.137	23.396	25.406	35.291	4.624	22.241	3.468	1.143	48.755	0.001	3.206	0.001	62.00	1.03333	33.8	11.9	23.8	1.643	0.478	0.411	0.0173	17.255	14.68
11/21/2002	2:26:21 PM	30.882	22.784	30.595	23.084	23.364	25.381	35.554	4.624	22.159	3.598	1.152	48.806	0.002	3.226	0	63.00	1.05	34.1	12.0	23.8	1.639	0.481	0.412	0.0173	17.336	14.75
11/21/2002	2:27:21 PM	30.85	22.781	30.562	23.041	23.326	25.359	35.535	4.716	22.018	3.506	1.149	48.776	0.001	3.224	0.001	64.00	1.06667	34.1	12.0	23.7	1.633	0.481	0.412	0.0174	17.400	14.81
11/21/2002	2:28:21 PM	30.876	22.778	30.47	23.018	23.327	25.294	35.411	4.617	22.118	3.645	1.146	48.715	0.001	3.23	0	65.00	1.08333	33.9	11.9	23.7	1.634	0.482	0.414	0.0175	17.463	14.86
11/21/2002	2:29:21 PM	30.884	22.781	30.522	23.016	23.33	25.236	35.449	4.569	22.108	3.751	1.149	48.692	0.001	3.246	0	66.00	1.1	34.0	11.9	23.7	1.632	0.484	0.415	0.0176	17.550	14.94
11/21/2002	2:30:21 PM	30.858	22.784	30.585	23.064	23.344	25.11	35.43	4.599	21.942	3.749	1.149	48.833	0.002	3.249	0	67.00	1.11667	34.0	12.0	23.5	1.622	0.484	0.415	0.0176	17.645	15.02
11/21/2002	2:31:21 PM	30.851	22.783	30.474	23.148	23.347	25.332	35.701	4.685	22.145	3.778	1.152	49.491	0.001	3.259	0.002	68.00	1.13333	34.2	12.1	23.7	1.637	0.486	0.418	0.0176	17.594	14.97
11/21/2002	2:32:21 PM	30.885	22.792	30.479	23.203	23.387	25.06	35.345	4.598	21.997	3.858	1.155	48.785	0.001	3.265	0.001	69.00	1.15	33.9	12.0	23.5	1.622	0.487	0.418	0.0178	17.781	15.13
11/21/2002	2:33:21 PM	30.861	22.808	30.618	23.218	23.397	25.317	35.823	4.637	22.102	3.83	1.155	48.921	0.001	3.271	0	70.00	1.16667	34.4	12.0	23.7	1.635	0.488	0.418	0.0176	17.611	14.99
11/21/2002	2:34:21 PM	30.866	22.828	30.539	23.289	23.412	24.893	35.335	4.61	21.809	3.879	1.155	49.095	0.002	3.276	0.001	71.00	1.18333	33.9	12.0	23.4	1.610	0.488	0.419	0.0179	17.948	15.27
11/21/2002	2:35:21 PM	30.887	22.818	30.47	23.299	23.448	25.114	35.769	4.664	21.932	4.003	1.155	48.74	0.002	3.289	0	72.00	1.2	34.3	11.9	23.5	1.622	0.490	0.422	0.0179	17.921	15.25
11/21/2002	2:36:21 PM	30.877	22.829	30.615	23.32	23.454	24.93	35.492	4.643	21.741	3.98	1.158	48.862	0.002	3.3	0	73.00	1.21667	34.0	12.0	23.3	1.609	0.492	0.421	0.0181	18.054	15.36
11/21/2002	2:37:21 PM	30.86	22.847	30.573	23.373	23.497	24.772	35.393	4.58	21.684	4.11	1.155	48.875	0.001	3.309	0	74.00	1.23333	33.9	12.0	23.2	1.601	0.493	0.423	0.0182	18.208	15.49
11/21/2002	2:38:21 PM	30.881	22.853	30.489	23.434	23.523	24.704	35.138	4.542	21.79	4.087	1.158	48.589	0.001	3.308	0	75.00	1.25	33.7	11.9	23.2	1.603	0.493	0.424	0.0182	18.229	15.51
11/21/2002	2:39:21 PM	30.882	22.844	30.54	23.455	23.554	24.959	35.713	4.682	21.809	4.121	1.158	48.948	0.001	3.319	0	76.00	1.26667	34.2	12.0	23.4	1.612	0.495	0.425	0.0182	18.157	15.45
11/21/2002	2:40:21 PM	30.859	22.876	30.602	23.588	23.601	24.799	35.544	4.706	21.52	4.119	1.163	48.948	0.001	3.328	0.002	77.00	1.28333	34.1	12.0	23.2	1.597	0.496	0.425	0.0184	18.352	15.62
11/21/2002	2:41:21 PM	30.87	22.877	30.514	23.589	23.638	24.543	35.223	4.65	21.383	4.185	1.161	48.889	0.001	3.324	0.001	78.00	1.3	33.8	12.0	23.0	1.583	0.496	0.426	0.0185	18.531	15.77
11/21/2002	2:42:21 PM	30.916	22.899	30.525	23.596	23.654	24.644	35.48	4.663	21.541	4.295	1.163	48.908	0.002	3.338	0.001	79.00	1.31667	34.0	12.0	23.1	1.592	0.498	0.427	0.0185	18.499	15.74
11/21/2002	2:43:21 PM	30.878	22.905	30.65	23.552	23.681	24.64	35.533	4.647	21.573	4.33	1.163	48.915	0.001	3.346	0	80.00	1.33333	34.1	12.0	23.1	1.593	0.499	0.427	0.0185	18.469	15.72
11/21/2002	2:44:21 PM	30.886	22.928	30.573	23.645	23.708	24.76	35.72	4.634	21.641	4.298	1.163	48.927	0.001	3.346	0.001	81.00	1.35	34.2	12.0	23.2	1.600	0.499	0.428	0.0184	18.433	15.69
11/21/2002	2:45:21 PM	30.902	22.934	30.5	23.611	23.72	24.439	35.269	4.608	21.379	4.338	1.163	48.906	0.001	3.348	0.002	82.00	1.36667	33.8	12.0	22.9	1.579	0.499	0.429	0.0187	18.716	15.93
11/21/2002	2:46:21 PM	30.905	22.952	30.642	23.609	23.742	24.81	35.747	4.649	21.653	4.358	1.166	48.843	0.001	3.358	0	83.00	1.38333	34.3	12.0	23.2	1.602	0.501	0.428	0.0184	18.440	15.69
11/21/2002	2:47:21 PM	30.882	22.979	30.629	23.606	23.77	24.582	35.488	4.653	21.5	4.361	1.169	48.915	0.002	3.359	0	84.00	1.4	34.0	12.0	23.0	1.589	0.501	0.429	0.0186	18.604	15.83
11/21/2002	2:48:21 PM	30.899	22.986	30.537	23.603	23.797	24.628	35.556	4.645	21.565	4.376	1.169	48.894	0.001	3.358	0	85.00	1.41667	34.1	12.0	23.1	1.592	0.501	0.430	0.0186	18.601	15.83
11/21/2002	2:49:21 PM	30.926	22.998	30.598	23.575	23.814	24.259	35.113	4.557	21.273	4.434	1.166	48.912	0.001	3.363	0	86.00	1.43333	33.6	12.0	22.8	1.570	0.501	0.430	0.0189	18.867	16.06
11/21/2002	2:50:21 PM	30.889	23.017	30.666	23.628	23.842	24.367	35.353	4.614	21.356	4.37	1.169	48.929	0.001	3.367	0	87.00	1.45	33.9	12.0	22.9	1.576	0.502	0.429	0.0188	18.776	15.98
11/21/2002	2:51:21 PM	30.895	23.023	30.568	23.65	23.854	24.609	35.62	4.622	21.574	4.367	1.169	48.917	0.001	3.366	0	88.00	1.46667	34.1	12.0	23.1	1.592	0.502	0.430	0.0186	18.633	15.86
11/21/2002	2:52:21 PM	30.938	23.046	30.551	23.692	23.887	24.483	35.335	4.608	21.533	4.411	1.166	48.975	0.001	3.372	0	89.00	1.48333	33.9	12.0	23.0	1.586	0.503	0.431	0.0187	18.743	15.95
11/21/2002	2:53:21 PM	30.895	23.058	30.672	23.734	23.903	24.288	35.463	4.676	21.129	4.434	1.169	49.032	0.001	3.377	0	90.00	1.5	34.0	12.0	22.7	1.566	0.503	0.430	0.0190	18.956	16.13
11/21/2002	2:54:21 PM	30.877	23.065	30.589	23.721	23.92	24.445	35.505	4.618	21.313	4.489	1.166	48.613	0.001	3.379	0	91.00	1.51667	34.0	11.9	22.9	1.577	0.504	0.432	0.0189	18.868	16.06
	Averages	30.4	22.3	30.2	23.2	23.2	21.7	35.4	4.7	18.8	7.0	2.4	49.1	0.0	3.6	0.0		0.8	33.9	12.0	20.2	1.396	0.538	0.466	0.0236	23.588	20.074
	Maximum	30.9	23.1	30.7	23.7	23.9	26.0	36.5	4.8	22.7	27.9	77.3	50.0	0.0	4.3	0.0		1.5	35.0	12.3	24.3	1.679	0.639	0.601	0.0371	37.105	31.577
	Median	30.8	22.5	30.5	23.3	23.3	24.3	35.3	4.7	21.2	4.5	1.2	49.0	0.0	3.4	0.0		0.8	33.9	12.0	22.7	1.568	0.503	0.431	0.0189	18.868	16.057
	Minimum	26.1	21.4	26.2	22.2	22.3	2.9	34.8	4.5	-1.4	3.2	1.1	46.2	0.0	0.0	0.0		0.0	33.4	11.3	0.8	0.052	0.000	0.000	0.0001	0.147	0.125
	2 x Std Dev	1.867	1.047	1.660	0.836	0.840	8.555	0.562	0.086	8.444	8.539	17.150	1.215	0.001	1.405	0.001		0.885	0.562	0.298	8.493	0.586	0.209	0.188	0.0157	15.673	13.338
Number of Points Used*		92	92	92	92	92	92	92	92	92	92	92	92	92	92	92		92	92	92	92	92	92	92	92	92	92
	* Backpulse points in box are not included																											

Figure C14b: 1.31B: After AN-102R2, Batch 3A – 2 M Nitric Acid Cleaning – First Cleaning (remaining 45 minutes) – Raw & Calculated Data

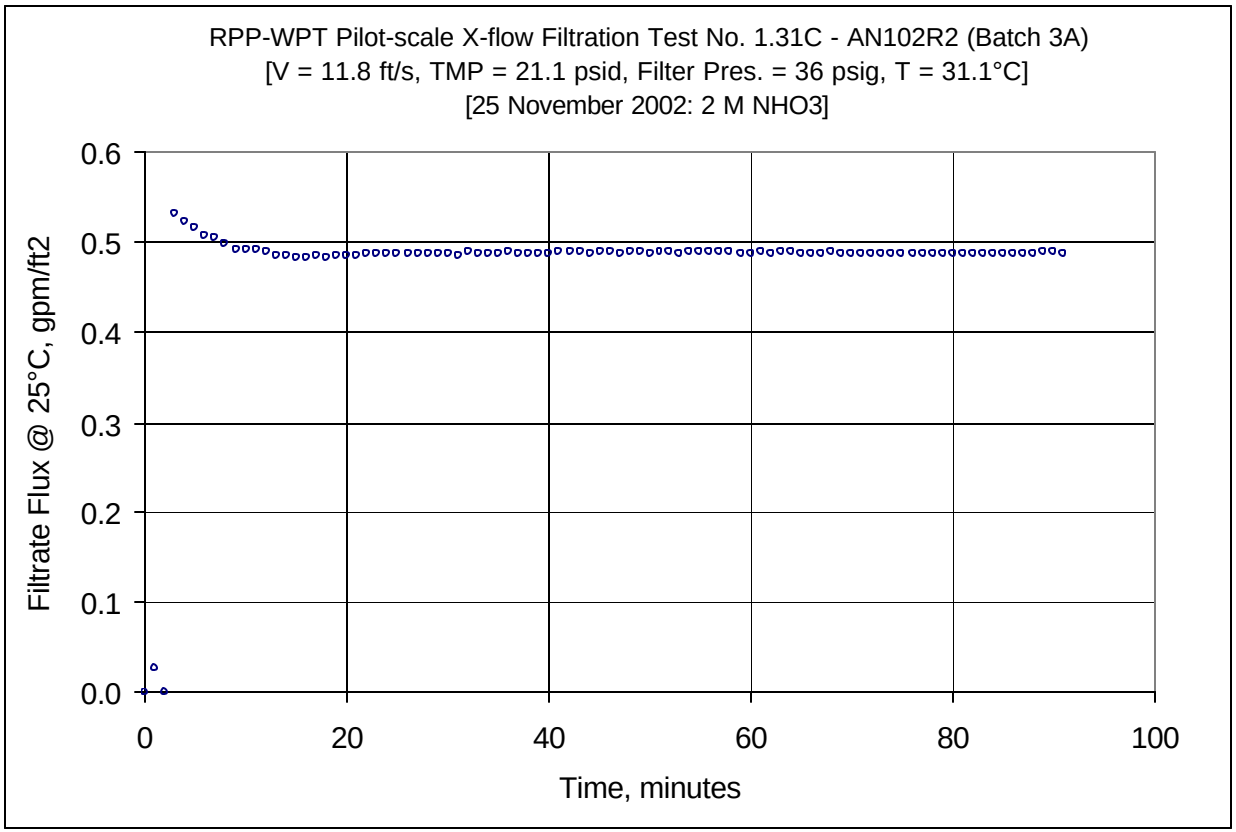


Figure C15: 1.31C: After AN-102R2, Batch 3A – 2 M Nitric Acid Cleaning – Second Cleaning

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
11/25/2002	8:03:13 AM	21.491	17.89	14.224	21.68	16.888	-0.123	-0.066	-0.049	0.06	-0.376	0.205	-0.218	0.001	0.001	0			Filter Surface	6.707	FT2						
11/25/2002	8:03:26 AM	21.491	17.89	14.224	21.68	16.888	-0.123	-0.066	-0.049	0.06	-0.376	0.205	-0.218	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
11/25/2002	8:03:27 AM	21.507	17.9	14.245	21.701	16.893	-0.123	-0.068	-0.048	0.062	-0.382	0.208	-0.212	0.002	0.001	0											
11/25/2002	8:03:28 AM	21.512	17.905	14.245	21.701	16.893	-0.125	-0.064	-0.048	0.062	-0.376	0.211	-0.212	0.002	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
11/25/2002	8:03:29 AM	21.507	17.905	14.25	21.701	16.893	-0.123	-0.066	-0.048	0.062	-0.373	0.208	-0.212	0.002	0.001	0											
11/25/2002	8:03:30 AM	21.512	17.905	14.245	21.701	16.893	-0.123	-0.066	-0.048	0.062	-0.37	0.208	-0.21	0.002	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
11/25/2002	8:03:31 AM	21.507	17.905	14.25	21.696	16.883	-0.123	-0.066	-0.048	0.064	-0.367	0.208	-0.214	0.002	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY >>		
11/25/2002	8:03:32 AM	21.501	17.895	14.24	21.695	16.888	-0.121	-0.064	-0.048	0.062	-0.396	0.211	-0.21	0.002	0.001	0							at 25C		x 1000		
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
11/25/2002	8:39:33 AM	32.324	18.38	31.84	22.308	18.842	2.764	38.105	4.478	-1.328	30.051	78.823	45.768	0.002	0.001	0	0	0	36.6	11.2	0.7	0.050	0.000	0.000	0.0002	0.172	0.15
11/25/2002	8:40:33 AM	28.937	18.416	31.762	22.253	18.898	4.11	37.869	4.43	0.163	29.384	0.605	45.89	0.12	0.218	0	1.00	0.01667	36.4	11.2	2.1	0.147	0.033	0.027	0.0126	12.629	10.75
11/25/2002	8:41:33 AM	31.929	18.442	31.634	22.189	18.959	7.735	38.041	4.479	3.71	24.721	10.328	46.824	1.192	0.001	0	2.00	0.03333	36.6	11.5	5.7	0.395	0.000	0.000	0.0000	0.022	0.02
11/25/2002	8:42:33 AM	31.919	18.463	31.798	22.149	19.016	19.824	36.928	4.397	17.553	10.35	-2.798	49.003	0.002	4.289	0	3.00	0.05	35.5	12.0	18.7	1.289	0.639	0.530	0.0284	28.377	24.15
11/25/2002	8:43:33 AM	31.866	18.489	31.704	22.12	19.077	20.292	36.746	4.465	17.786	9.885	-2.789	48.904	0.002	4.207	0	4.00	0.06667	35.3	12.0	19.0	1.313	0.627	0.522	0.0274	27.392	23.31
11/25/2002	8:44:33 AM	31.931	18.515	31.661	22.055	19.144	20.99	37.095	4.479	18.378	9.313	-2.812	48.912	0.002	4.148	0	5.00	0.08333	35.6	12.0	19.7	1.357	0.618	0.515	0.0262	26.153	22.26
11/25/2002	8:45:33 AM	31.912	18.536	31.83	22.046	19.19	21.486	37.207	4.486	18.922	8.946	-2.835	48.669	0.002	4.103	0	6.00	0.1	35.7	11.9	20.2	1.393	0.612	0.507	0.0251	25.089	21.35
11/25/2002	8:46:33 AM	31.898	18.562	31.737	22.017	19.251	21.691	37.151	4.441	19.107	8.81	-2.858	48.705	0.002	4.067	0	7.00	0.11667	35.7	11.9	20.4	1.406	0.606	0.504	0.0247	24.693	21.01
11/25/2002	8:47:33 AM	31.953	18.603	31.688	22.032	19.302	21.916	37.029	4.533	19.238	8.451	-2.87	48.747	0.002	4.013	0	8.00	0.13333	35.6	11.9	20.6	1.419	0.598	0.498	0.0242	24.186	20.58
11/25/2002	8:48:33 AM	31.939	18.624	31.838	21.978	19.369	22.476	37.157	4.435	19.878	8.099	-2.893	48.571	0.002	3.973	0	9.00	0.15	35.7	11.9	21.2	1.460	0.592	0.491	0.0232	23.173	19.72
11/25/2002	8:49:33 AM	31.911	18.651	31.755	22.004	19.431	22.865	37.712	4.501	20.153	8.067	-2.902	48.734	0.002	3.963	0	10.00	0.16667	36.2	11.9	21.5	1.483	0.591	0.491	0.0228	22.809	19.41
11/25/2002	8:50:33 AM	31.941	18.677	31.676	21.955	19.492	22.548	37.164	4.482	19.911	8.076	-2.908	48.612	0.001	3.96	0	11.00	0.18333	35.7	11.9	21.2	1.464	0.590	0.491	0.0231	23.141	19.69
11/25/2002	8:51:33 AM	31.942	18.708	31.83	21.905	19.523	22.56	37.12	4.408	20.022	7.974	-2.913	48.506	0.002	3.958	0	12.00	0.2	35.7	11.9	21.3	1.468	0.590	0.489	0.0230	22.967	19.54
11/25/2002	8:52:33 AM	31.917	18.734	31.781	21.8	19.564	22.722	37.199	4.464	20.009	7.824	-2.922	48.602	0.002	3.926	0	13.00	0.21667	35.7	11.9	21.4	1.473	0.585	0.486	0.0227	22.732	19.34
11/25/2002	8:53:33 AM	31.962	18.754	31.697	21.679	19.599	22.712	37.044	4.454	19.971	7.755	-2.928	48.573	0.002	3.912	0	14.00	0.23333	35.6	11.9	21.3	1.471	0.583	0.485	0.0227	22.727	19.34
11/25/2002	8:54:33 AM	31.966	18.773	31.81	21.567	19.629	22.78	36.977	4.444	20.089	7.625	-2.931	48.573	0.002	3.903	0	15.00	0.25	35.5	11.9	21.4	1.478	0.582	0.482	0.0225	22.508	19.15
11/25/2002	8:55:33 AM	31.92	18.787	31.779	21.486	19.643	22.826	37.037	4.46	20.114	7.584	-2.94	48.52	0.002	3.899	0	16.00	0.26667	35.6	11.9	21.5	1.480	0.581	0.482	0.0225	22.467	19.12
11/25/2002	8:56:33 AM	31.964	18.816	31.699	21.414	19.657	22.819	36.893	4.433	20.155	7.668	-2.94	48.596	0.001	3.907	0	17.00	0.28333	35.4	11.9	21.5	1.481	0.582	0.484	0.0225	22.543	19.18
11/25/2002	8:57:33 AM	31.973	18.83	31.822	21.413	19.681	22.848	37.066	4.529	20.01	7.625	-2.945	48.531	0.001	3.904	0	18.00	0.3	35.6	11.9	21.4	1.477	0.582	0.482	0.0225	22.512	19.16
11/25/2002	8:58:33 AM	31.942	18.86	31.642	21.361	19.715	23.109	37.265	4.473	20.382	7.596	-2.948	48.474	0.001	3.899	0	19.00	0.31667	35.8	11.9	21.7	1.499	0.581	0.484	0.0223	22.264	18.95
11/25/2002	8:59:33 AM	31.801	18.888	31.616	21.34	19.734	23.145	37.282	4.497	20.37	7.648	-2.948	48.273	0.002	3.897	0	20.00	0.33333	35.8	11.8	21.8	1.500	0.581	0.484	0.0223	22.256	18.94
11/25/2002	9:00:33 AM	31.676	18.887	31.386	21.247	19.763	23.405	37.418	4.499	20.662	7.486	-2.954	48.602	0.002	3.882	0	21.00	0.35	35.9	11.9	22.0	1.519	0.579	0.485	0.0220	22.029	18.75
11/25/2002	9:01:33 AM	31.615	18.915	31.251	21.17	19.801	23.198	37.466	4.511	20.317	7.567	-2.954	48.21	0.002	3.877	0	22.00	0.36667	36.0	11.8	21.8	1.500	0.578	0.487	0.0224	22.361	19.03
11/25/2002	9:02:33 AM	31.554	18.929	31.259	21.143	19.83	23.399	37.49	4.435	20.669	7.503	-2.963	48.189	0.001	3.879	0	23.00	0.38333	36.0	11.8	22.0	1.519	0.578	0.487	0.0221	22.087	18.80
11/25/2002	9:03:33 AM	31.428	18.927	31.242	21.091	19.823	23.26	37.246	4.338	20.749	7.466	-2.963	48.076	0.001	3.875	0	24.00	0.4	35.8	11.8	22.0	1.517	0.578	0.486	0.0221	22.104	18.81
11/25/2002	9:04:33 AM	31.356	18.935	31.057	21.033	19.816	23.182	37.193	4.497	20.304	7.463	-2.971	48.29	0.001	3.868	0	25.00	0.41667	35.7	11.8	21.7	1.499	0.577	0.488	0.0224	22.441	19.10
11/25/2002	9:05:33 AM	31.349	18.953	30.995	20.991	19.829	23.198	37.209	4.389	20.484	7.417	-2.968	48.256	0.002	3.853	0	26.00	0.43333	35.7	11.8	21.8	1.506	0.574	0.487	0.0223	22.291	18.97
11/25/2002	9:06:33 AM	31.298	18.976	31.122	20.969	19.832	23.232	37.298	4.371	20.439	7.428	-2.971	48.252	0.002	3.864	0	27.00	0.45	35.8	11.8	21.8	1.505	0.576	0.487	0.0223	22.284	18.96
11/25/2002	9:07:33 AM	31.221	18.984	30.996	20.951	19.84	23.169	37.199	4.473	20.364	7.301	-2.977	48.151	0.001	3.858	0	28.00	0.46667	35.7	11.8	21.8	1.501	0.575	0.487	0.0224	22.396	19.06
11/25/2002	9:08:33 AM	31.223	18.997	30.899	20.893	19.842	23.176	36.948	4.402	20.531	7.321	-2.977	48.35	0.001	3.842	0	29.00	0.48333	35.5	11.8	21.9	1.507	0.573	0.487	0.0223	22.272	18.95
11/25/2002	9:09:33 AM	31.201	19.014	30.981	20.901	19.86	23.304	37.319	4.41	20.577	7.307	-2.977	48.258	0.002	3.85	0	30.00	0.5	35.8	11.8	21.9	1.513	0.574	0.487	0.0222	22.181	18.88
11/25/2002	9:10:33 AM	31.149	19.032	30.959	20.879	19.863	23.122	36.893	4.465	20.315	7.321	-2.977	48.199	0.002	3.84	0	31.00	0.51667	35.4	11.8	21.7	1.497	0.573	0.486	0.0224	22.363	19.03
11/25/2002	9:11:33 AM	31.142	19.045	30.852	20.931	19.865	23.209	36.942	4.346	20.665	7.312	-2.974	48.076	0.002	3.849	0	32.00	0.53333	35.5	11.8	21.9	1.512	0.574	0.488	0.0223	22.256	18.94
11/25/2002	9:12:33 AM	31.164	19.063	30.89	20.959	19.863	23.484	37.402	4.449	20.798	7.281	-2.98	48.197	0.001	3.847	0	33.00	0.55	35.9	11.8	22.1	1.527	0.574	0.487	0.0220	22.017	18.74
11/25/2002	9:13:33 AM	31.102	19.076	30.957	21.023	19.891	23.221	37.097	4.459	20.415	7.321	-2.98	48.275	0.001	3.848	0	34.00	0.56667	35.6	11.8	21.8	1.504	0.574	0.487	0.0223	22.308	18.98
11/25/2002	9:14:33 AM	31.085	19.094	30.836	21.04	19.904	23.455	37.296	4.398	20.763	7.278	-2.98	48.038	0.002	3.845	0	35.00	0.58333	35.8	11.8	22.1	1.524	0.573	0.488	0.0221	22.070	18.78
11/25/2002	9:15:33 AM	31.128	19.117	30.814	21.053	19.932	23.269	37.081	4.377	20.624	7.278	-2.977	48.155	0.002	3.851	0	36.00	0.6	35.6	11.8	21.9	1.513	0.574	0.489	0.0223	22.281	18.96
11/25/2002	9:16:33 AM	31.082	19.136	30.951	21.092	19.971	23.37	37.439	4.445	20.601	7.341	-2.977	48.258	0.001	3.847	0	37.00	0.61667	36.0	11.8	22.0	1.516	0.574	0.487	0.0221	22.136	18.84
11/25/2002	9:17:33 AM	31.055	19.165	30.851	21.156	20.025	23.296	37.17	4.368	20.685	7.286	-2.977	48.126	0.001	3.847	0	38.00	0.63333	35.7	11.8	22.0	1.516	0.574	0.488	0.0222	22.191	18.89
11/25/2002	9:18:33 AM	31.109	19.203	30.809	21.241	20.074	23.072	36.818	4.419	20.355	7.286	-2.974	48.342	0.002	3.844	0	39.00	0.65	35.3	11.8	21.7	1.497	0.573	0.488	0.0225	22.482	19.13
11/25/2002	9:19:33 AM	31.077	19.212	30.937	21.284	20.113	23.347	37.157	4.376	20.74	7.35	-2.977	48.136	0.001	3.851	0	40.00	0.66667	35.7	11.8	22.0	1.520	0.574	0.487	0.0221	22.109	18.82
11/25/2002	9:20:33 AM	31.041	19.241	30.866	21.364	20.132	23.333	37.238	4.432	20.638	7.353	-2.974	48.187	0.001	3.851	0	41.00	0.68333	35.8	11.8	22.0	1.516	0.574	0.488	0.0222	22.210	18.90
11/25/2002	9:21:33 AM	31.075	19.27	30.786	21.388	20.156	23.356	37.079	4.409	20.714	7.336	-2.974	48.25	0.002	3.847	0	42.00	0.7	35.6	11.8	22.0	1.519	0.574	0.489	0.0222	22.185	18.88
11/25/2002	9:22:33 AM	31.094	19.31	30.929	21.447	20.19	23.484	37.381	4.434	20.755	7.391	-2.963	48.275	0.002	3.859	0	43.00	0.71667	35.9	11.8	22.1	1.525	0.575	0.488	0.0221	22.084	18.79
11/25/2002	9:23:33 AM	31.039	19.329	30.893	21.497	20.22	23.426	37.42	4.469	20.575	7.255	-2.968	48.195	0.002	3.851	0	44.00	0.73333	35.9	11.8	22.0	1.517	0.574	0.488	0.0222	22.179	18.87
11/25/2002	9:24:33 AM	31.068	19.359	30.803	21.526	20.254	23.202	37.197	4.409	20.486	7.341	-2.963	48.327	0.002	3.853	0	45.00	0.75	35.7	11.8	21.8	1.506	0.574	0.489	0.0224	22.404	19.07

Figure C16a: 1.31C: After AN-102R2, Batch 3A – 2 M Nitric Acid Cleaning – Second Cleaning (first 45 minutes) – Raw & Calculated Data

11/25/2002	9:25:33 AM	31.081	19.362	30.841	21.469	20.278	23.435	37.373	4.477	20.667	7.37	-2.966	48.048	0.001	3.853	0	46.00	0.76667	35.9	11.8	22.1	1.520	0.574	0.489	0.0222	22.171	18.87
11/25/2002	9:26:33 AM	31.05	19.401	30.92	21.463	20.307	23.497	37.422	4.473	20.642	7.292	-2.96	48.239	0.002	3.844	0	47.00	0.78333	36.0	11.8	22.1	1.522	0.573	0.487	0.0221	22.053	18.77
11/25/2002	9:27:33 AM	31.053	19.41	30.794	21.431	20.34	23.227	36.992	4.333	20.593	7.336	-2.963	48.214	0.002	3.85	0	48.00	0.8	35.5	11.8	21.9	1.511	0.574	0.489	0.0223	22.325	19.00
11/25/2002	9:28:33 AM	31.116	19.449	30.857	21.374	20.359	23.364	37.246	4.489	20.575	7.379	-2.957	48.277	0.002	3.852	0	49.00	0.81667	35.8	11.8	22.0	1.515	0.574	0.489	0.0222	22.238	18.92
11/25/2002	9:29:33 AM	31.06	19.457	30.934	21.322	20.383	23.2	37.102	4.411	20.488	7.445	-2.96	48.218	0.002	3.856	0	50.00	0.83333	35.6	11.8	21.8	1.506	0.575	0.488	0.0223	22.342	19.01
11/25/2002	9:30:33 AM	31.052	19.465	30.803	21.294	20.411	23.316	37.265	4.423	20.603	7.339	-2.957	48.122	0.002	3.853	0	51.00	0.85	35.8	11.8	22.0	1.514	0.574	0.489	0.0223	22.286	18.97
11/25/2002	9:31:33 AM	31.115	19.492	30.811	21.211	20.413	23.329	37.25	4.448	20.566	7.373	-2.957	48.224	0.001	3.851	0	52.00	0.86667	35.8	11.8	21.9	1.513	0.574	0.489	0.0223	22.282	18.96
11/25/2002	9:32:33 AM	31.053	19.495	30.927	21.229	20.431	23.151	37.151	4.387	20.484	7.48	-2.957	48.139	0.001	3.856	0	53.00	0.88333	35.7	11.8	21.8	1.504	0.575	0.488	0.0224	22.373	19.04
11/25/2002	9:33:33 AM	31.051	19.508	30.807	21.182	20.449	23.091	37.04	4.405	20.364	7.365	-2.954	48.189	0.001	3.856	0	54.00	0.9	35.6	11.8	21.7	1.498	0.575	0.490	0.0225	22.539	19.18
11/25/2002	9:34:33 AM	31.113	19.536	30.799	21.149	20.487	23.196	37.19	4.453	20.4	7.336	-2.954	48.214	0.002	3.85	0	55.00	0.91667	35.7	11.8	21.8	1.503	0.574	0.489	0.0224	22.436	19.09
11/25/2002	9:35:33 AM	31.09	19.559	30.96	21.131	20.499	23.178	37.1	4.335	20.531	7.431	-2.951	48.151	0.002	3.86	0	56.00	0.93333	35.6	11.8	21.9	1.507	0.575	0.488	0.0223	22.339	19.01
11/25/2002	9:36:33 AM	31.063	19.556	30.843	21.108	20.512	23.335	37.265	4.444	20.64	7.307	-2.951	48.195	0.002	3.853	0	57.00	0.95	35.8	11.8	22.0	1.516	0.574	0.489	0.0222	22.234	18.92
11/25/2002	9:37:33 AM	31.11	19.564	30.761	21.03	20.509	23.337	37.251	4.487	20.546	7.307	-2.951	48.386	0.001	3.843	0	58.00	0.96667	35.8	11.9	21.9	1.513	0.573	0.489	0.0223	22.272	18.95
11/25/2002	9:38:33 AM	31.097	19.586	30.952	21.058	20.542	23.124	36.998	4.433	20.417	7.341	-2.951	48.376	0.002	3.85	0	59.00	0.98333	35.5	11.9	21.8	1.501	0.574	0.487	0.0224	22.372	19.04
11/25/2002	9:39:33 AM	31.07	19.598	30.865	21.009	20.499	23.348	37.323	4.466	20.64	7.321	-2.951	48.245	0.001	3.847	0	60.00	1	35.9	11.8	22.0	1.516	0.574	0.488	0.0222	22.179	18.87
11/25/2002	9:40:33 AM	31.127	19.621	30.803	20.992	20.582	23.43	37.296	4.486	20.665	7.312	-2.951	48.373	0.001	3.851	0	61.00	1.01667	35.8	11.9	22.0	1.520	0.574	0.489	0.0222	22.186	18.88
11/25/2002	9:41:33 AM	31.104	19.623	30.934	20.988	20.578	23.341	37.18	4.445	20.638	7.281	-2.945	48.357	0.001	3.849	0	62.00	1.03333	35.7	11.9	22.0	1.516	0.574	0.487	0.0222	22.154	18.85
11/25/2002	9:42:33 AM	31.076	19.63	30.876	21.016	20.555	23.29	37.294	4.462	20.46	7.339	-2.948	48.222	0.002	3.852	0	63.00	1.05	35.8	11.8	21.9	1.508	0.574	0.488	0.0223	22.322	19.00
11/25/2002	9:43:33 AM	31.102	19.642	30.784	20.982	20.547	23.294	37.168	4.47	20.501	7.336	-2.945	48.186	0.001	3.845	0	64.00	1.06667	35.7	11.8	21.9	1.510	0.573	0.489	0.0223	22.314	18.99
11/25/2002	9:44:33 AM	31.129	19.664	30.915	21.005	20.569	23.095	36.762	4.413	20.433	7.26	-2.942	48.522	0.001	3.847	0	65.00	1.08333	35.3	11.9	21.8	1.501	0.574	0.487	0.0224	22.383	19.05
11/25/2002	9:45:33 AM	31.087	19.676	30.902	20.981	20.546	23.093	37.023	4.451	20.302	7.344	-2.942	48.527	0.002	3.847	0	66.00	1.1	35.6	11.9	21.7	1.496	0.574	0.487	0.0225	22.460	19.11
11/25/2002	9:46:33 AM	31.113	19.688	30.814	20.973	20.548	23.325	37.199	4.401	20.652	7.35	-2.942	48.388	0.002	3.843	0	67.00	1.11667	35.7	11.9	22.0	1.516	0.573	0.488	0.0222	22.192	18.89
11/25/2002	9:47:33 AM	31.13	19.695	30.886	20.985	20.58	23.209	37.18	4.482	20.319	7.333	-2.94	48.262	0.002	3.854	0	68.00	1.13333	35.7	11.8	21.8	1.501	0.575	0.488	0.0224	22.442	19.10
11/25/2002	9:48:33 AM	31.092	19.717	30.932	21.012	20.567	23.076	36.911	4.432	20.294	7.289	-2.94	48.525	0.002	3.841	0	69.00	1.15	35.4	11.9	21.7	1.495	0.573	0.486	0.0224	22.420	19.08
11/25/2002	9:49:33 AM	31.109	19.734	30.83	21.049	20.584	23.397	37.182	4.48	20.642	7.272	-2.94	48.355	0.002	3.842	0	70.00	1.16667	35.7	11.9	22.0	1.518	0.573	0.488	0.0221	22.146	18.85
11/25/2002	9:50:33 AM	31.145	19.751	30.876	21.015	20.57	23.221	37.097	4.455	20.421	7.304	-2.94	48.191	0.001	3.845	0	71.00	1.18333	35.6	11.8	21.8	1.504	0.573	0.487	0.0223	22.337	19.01
11/25/2002	9:51:33 AM	31.097	19.757	30.937	21.007	20.597	23.318	37.172	4.451	20.558	7.281	-2.94	48.273	0.001	3.846	0	72.00	1.2	35.7	11.8	21.9	1.513	0.573	0.487	0.0222	22.187	18.88
11/25/2002	9:52:33 AM	31.123	19.799	30.859	21.034	20.599	23.194	36.998	4.437	20.46	7.275	-2.94	48.535	0.001	3.838	0	73.00	1.21667	35.5	11.9	21.8	1.505	0.572	0.487	0.0223	22.300	18.98
11/25/2002	9:53:33 AM	31.145	19.806	30.846	21.005	20.631	23.401	37.147	4.47	20.705	7.272	-2.94	48.269	0.001	3.842	0	74.00	1.23333	35.7	11.8	22.1	1.520	0.573	0.487	0.0221	22.103	18.81
11/25/2002	9:54:33 AM	31.102	19.823	30.962	21.017	20.657	23.153	36.984	4.43	20.409	7.35	-2.94	48.413	0.001	3.849	0	75.00	1.25	35.5	11.9	21.8	1.502	0.574	0.487	0.0223	22.349	19.02
11/25/2002	9:55:33 AM	31.104	19.85	30.845	21.029	20.69	23.377	37.265	4.416	20.744	7.278	-2.942	48.275	0.001	3.845	0	76.00	1.26667	35.8	11.8	22.1	1.521	0.573	0.488	0.0221	22.113	18.82
11/25/2002	9:56:33 AM	31.161	19.888	30.857	21.062	20.712	23.134	37.075	4.437	20.4	7.321	-2.934	48.426	0.002	3.84	0	77.00	1.28333	35.6	11.9	21.8	1.501	0.573	0.487	0.0224	22.375	19.04
11/25/2002	9:57:33 AM	31.113	19.889	30.968	21.058	20.729	23.213	37.069	4.469	20.415	7.298	-2.94	48.17	0.002	3.85	0	78.00	1.3	35.6	11.8	21.8	1.504	0.574	0.487	0.0223	22.317	18.99
11/25/2002	9:58:33 AM	31.095	19.917	30.871	21.065	20.716	23.318	36.953	4.393	20.705	7.269	-2.937	48.311	0.002	3.842	0	79.00	1.31667	35.5	11.8	22.0	1.518	0.573	0.487	0.0221	22.129	18.83
11/25/2002	9:59:33 AM	31.146	19.934	30.803	21.057	20.738	23.416	37.22	4.461	20.667	7.203	-2.94	48.375	0.002	3.839	0	80.00	1.33333	35.7	11.9	22.0	1.520	0.572	0.488	0.0221	22.123	18.83
11/25/2002	10:00:33 AM	31.124	19.966	30.979	21.074	20.75	23.31	37.052	4.445	20.568	7.312	-2.934	48.334	0.002	3.846	0	81.00	1.35	35.6	11.8	21.9	1.513	0.573	0.486	0.0222	22.161	18.86
11/25/2002	10:01:33 AM	31.1	19.973	30.891	21.111	20.747	23.225	37.155	4.491	20.427	7.333	-2.937	48.229	0.001	3.847	0	82.00	1.36667	35.7	11.8	21.8	1.505	0.574	0.487	0.0223	22.334	19.01
11/25/2002	10:02:33 AM	31.142	19.985	30.818	21.138	20.769	23.159	36.948	4.446	20.39	7.249	-2.937	48.285	0.002	3.842	0	83.00	1.38333	35.5	11.8	21.8	1.501	0.573	0.488	0.0224	22.402	19.06
11/25/2002	10:03:33 AM	31.129	20.012	30.964	21.12	20.811	23.412	37.404	4.493	20.624	7.301	-2.937	48.327	0.001	3.847	0	84.00	1.4	35.9	11.8	22.0	1.518	0.574	0.487	0.0221	22.096	18.80
11/25/2002	10:04:33 AM	31.09	20.023	30.896	21.096	20.812	23.151	37.023	4.422	20.392	7.298	-2.931	48.355	0.002	3.843	0	85.00	1.41667	35.6	11.9	21.8	1.501	0.573	0.487	0.0224	22.364	19.03
11/25/2002	10:05:33 AM	31.131	20.044	30.812	21.087	20.823	23.327	37.267	4.498	20.488	7.234	-2.937	48.352	0.002	3.843	0	86.00	1.43333	35.8	11.8	21.9	1.510	0.573	0.488	0.0223	22.276	18.96
11/25/2002	10:06:33 AM	31.142	20.061	30.933	21.068	20.84	23.337	37.222	4.5	20.548	7.292	-2.934	48.355	0.001	3.845	0	87.00	1.45	35.8	11.9	21.9	1.513	0.573	0.487	0.0222	22.179	18.87
11/25/2002	10:07:33 AM	31.099	20.072	30.914	21.1	20.861	23.296	37.102	4.433	20.634	7.2	-2.934	48.359	0.001	3.847	0	88.00	1.46667	35.6	11.9	22.0	1.514	0.574	0.487	0.0222	22.179	18.87
11/25/2002	10:08:33 AM	31.125	20.093	30.826	21.086	20.872	23.273	37.222	4.411	20.515	7.278	-2.931	48.34	0.001	3.847	0	89.00	1.48333	35.8	11.8	21.9	1.510	0.574	0.488	0.0223	22.304	18.98
11/25/2002	10:09:33 AM	31.156	20.115	30.902	21.112	20.909	23.196	37.248	4.415	20.468	7.466	-2.928	48.365	0.001	3.857	0	90.00	1.5	35.8	11.9	21.8	1.505	0.575	0.489	0.0224	22.380	19.05
11/25/2002	10:10:33 AM	31.113	20.132	30.939	21.144	20.906	23.196	37.021	4.434	20.552	7.443	-2.931	48.396	0.001	3.85	0	91.00	1.51667	35.6	11.9	21.9	1.508	0.574	0.487	0.0223	22.274	18.96
	Averages	31.3	19.3	31.1	21.3	20.1	22.5	37.2	4.4	19.7	8.2	-1.9	48.3	0.0	3.8	0.0		0.8	35.7	11.8	21.1	1.454	0.560	0.473	0.0220	21.970	18.697
	Maximum	32.3	20.1	31.8	22.3	20.9	23.5	38.1	4.5	20.8	30.1	78.8	49.0	1.2	4.3	0.0		1.5	36.6	12.0	22.1	1.527	0.639	0.530	0.0284	28.377	24.150
	Median	31.1	19.4	30.9	21.1	20.3	23.2	37.2	4.4	20.5	7.3	-2.9	48.3	0.0	3.9	0.0		0.8	35.7	11.8	21.8	1.506	0.574	0.488	0.0223	22.296	18.974
	Minimum	28.9	18.4	30.8	20.9	18.8	2.8	36.7	4.3	-1.3	7.2	-3.0	45.8	0.0	0.0	0.0		0.0	35.3	11.2	0.7	0.050	0.000	0.000	0.0000	0.022	0.018
	2 x Std Dev	0.857	0.984	0.732	0.742	1.080	6.616	0.447	0.084	7.053	7.416	17.155	0.884	0.248	1.361	0.000		0.885	0.447	0.217	6.834	0.471	0.203	0.171	0.0071	7.127	6.065
Number of Points Used*		92	92	92	92	92	92	92	92	92	92	92	92	92	92	92		92	92	92	92	92	92	92	92	92	92
	* Backpulse points in box are not included																												

Figure C16b: 1.31C: After AN-102R2, Batch 3A – 2 M Nitric Acid Cleaning – Second Cleaning (remaining 46 minutes) – Raw & Calculated Data

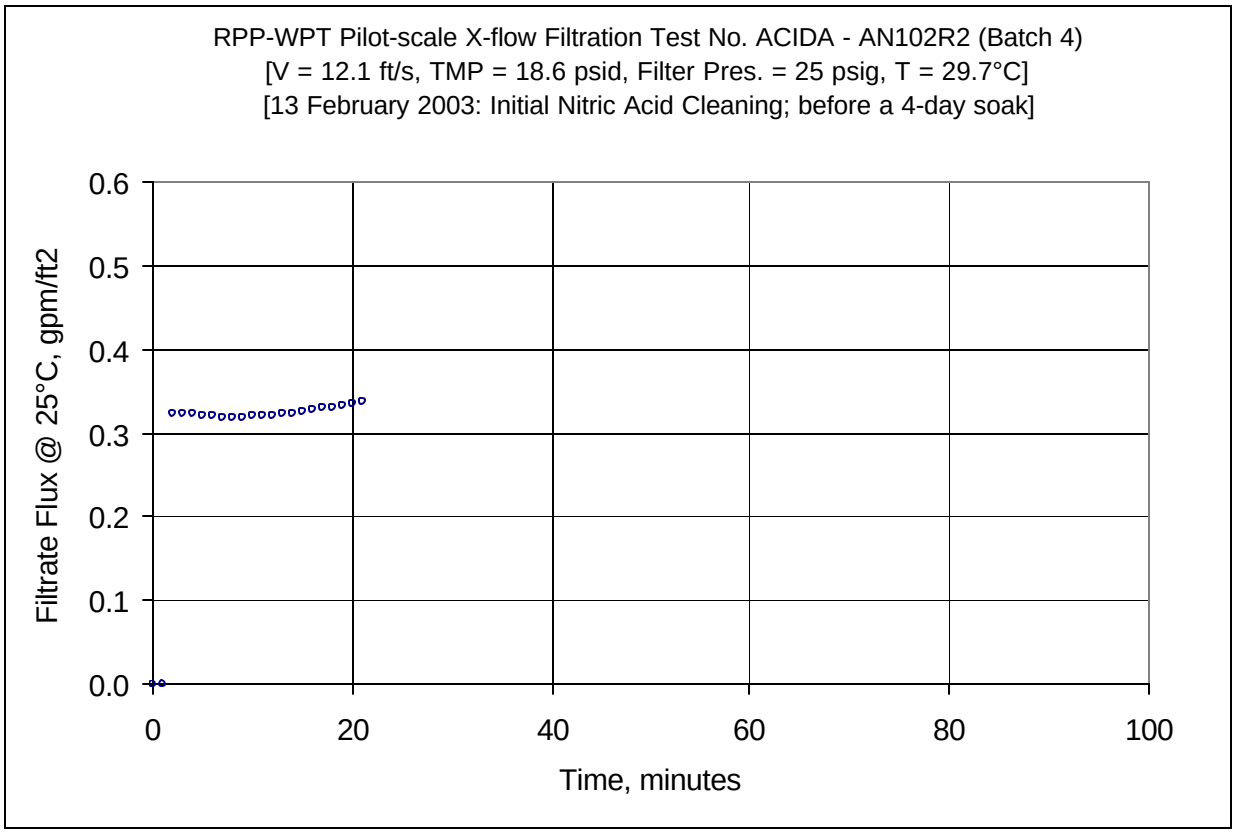


Figure C17: ACIDA: Before AN-102R2, Batch 4 – 2 M Nitric Acid Cleaning – First 20 minutes of a 4-day soak

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
2/13/2003	1:06:10 PM	21.115	19.654	20.772	21.388	19.398	-0.129	-0.098	-0.062	0.045	-0.19	0.218	3.321	0.154	0.001	0			Filter Surface	6.707	FT2					
2/13/2003	1:06:25 PM	21.115	19.654	20.772	21.388	19.398	-0.129	-0.098	-0.062	0.045	-0.19	0.218	3.321	0.154	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
2/13/2003	1:06:26 PM	21.116	19.654	20.737	21.384	19.409	-0.127	-0.1	-0.062	0.045	-0.201	0.215	3.09	0.153	0.001	0										
2/13/2003	1:06:27 PM	21.121	19.66	20.743	21.389	19.414	-0.127	-0.098	-0.062	0.045	-0.227	0.215	5.749	0.15	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig							
2/13/2003	1:06:28 PM	21.121	19.665	20.743	21.384	19.414	-0.127	-0.098	-0.062	0.047	-0.227	0.218	8.468	0.151	0.001	0										
2/13/2003	1:06:29 PM	21.116	19.66	20.732	21.379	19.414	-0.129	-0.1	-0.062	0.047	-0.204	0.218	12.788	0.149	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing							
2/13/2003	1:06:30 PM	21.116	19.654	20.727	21.379	19.409	-0.127	-0.1	-0.062	0.047	-0.187	0.218	7.664	0.152	0.001	0			VVVV				< Filtrate Flux <<		PERMIABILITY >>	
2/13/2003	1:06:31 PM	21.111	19.654	20.727	21.374	19.414	-0.129	-0.098	-0.062	0.045	-0.219	0.218	4.214	0.153	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
2/13/2003	2:26:06 PM	28.452	20.462	29.15	22.386	21.557	2.875	26.595	4.637	-1.093	18.563	66.93	47.63	0.001	0.001	0	0	0	25.1	11.7	0.9	0.061	0.000	0.000	0.0001	0.149	0.13
2/13/2003	2:27:06 PM	27.463	20.501	29.313	22.44	21.611	3.303	26.831	4.708	-0.85	18.344	34.281	47.567	0.001	0.001	0.001	1.00	0.01667	25.4	11.7	1.2	0.085	0.000	0.000	0.0001	0.108	0.09
2/13/2003	2:28:06 PM	29.364	20.519	29.411	22.422	21.675	20.604	26.241	4.71	16.934	-0.169	0.713	49.412	0.002	2.463	0	2.00	0.03333	24.8	12.1	18.8	1.294	0.367	0.325	0.0173	17.311	14.73
2/13/2003	2:29:06 PM	29.546	20.537	29.423	22.435	21.738	20.674	26.264	4.744	17.05	-0.181	0.71	49.532	0.001	2.462	0	3.00	0.05	24.8	12.1	18.9	1.300	0.367	0.325	0.0172	17.213	14.65
2/13/2003	2:30:06 PM	29.659	20.566	29.451	22.449	21.771	20.722	26.311	4.727	17.005	-0.25	0.708	49.37	0.001	2.452	0	4.00	0.06667	24.8	12.1	18.9	1.301	0.366	0.323	0.0171	17.129	14.58
2/13/2003	2:31:06 PM	29.731	20.583	29.499	22.486	21.855	20.581	26.071	4.625	17.071	-0.253	0.708	49.352	0.001	2.447	0	5.00	0.08333	24.6	12.1	18.8	1.298	0.365	0.322	0.0171	17.106	14.56
2/13/2003	2:32:06 PM	29.789	20.612	29.616	22.51	21.868	20.569	26.036	4.695	16.915	-0.253	0.705	49.488	0.001	2.446	0	6.00	0.1	24.6	12.1	18.7	1.292	0.365	0.321	0.0171	17.121	14.57
2/13/2003	2:33:06 PM	29.842	20.64	29.674	22.528	21.921	20.622	26.043	4.622	17.159	-0.25	0.702	49.308	0.001	2.445	0	7.00	0.11667	24.6	12.1	18.9	1.302	0.365	0.320	0.0170	16.952	14.43
2/13/2003	2:34:06 PM	29.874	20.657	29.676	22.495	21.994	20.515	25.956	4.611	17.044	-0.279	0.702	49.364	0.001	2.445	0	8.00	0.13333	24.5	12.1	18.8	1.295	0.365	0.320	0.0171	17.051	14.51
2/13/2003	2:35:06 PM	29.921	20.685	29.679	22.457	22.012	20.656	26.103	4.641	17.13	-0.297	0.699	49.306	0.001	2.445	0.001	9.00	0.15	24.6	12.1	18.9	1.303	0.365	0.320	0.0169	16.948	14.42
2/13/2003	2:36:06 PM	29.973	20.703	29.696	22.444	22.074	20.593	26.117	4.651	16.962	-0.25	0.699	49.389	0.001	2.449	0	10.00	0.16667	24.6	12.1	18.8	1.295	0.365	0.321	0.0171	17.072	14.53
2/13/2003	2:37:06 PM	30	20.714	29.782	22.436	22.081	20.633	26.138	4.693	16.989	-0.23	0.696	49.291	0.001	2.454	0	11.00	0.18333	24.7	12.1	18.8	1.297	0.366	0.320	0.0170	17.036	14.50
2/13/2003	2:38:06 PM	30.032	20.747	29.874	22.463	22.113	20.502	26.076	4.666	16.895	-0.178	0.696	49.341	0.001	2.466	0.001	12.00	0.2	24.6	12.1	18.7	1.289	0.368	0.321	0.0172	17.179	14.62
2/13/2003	2:39:06 PM	30.054	20.769	29.866	22.496	22.116	20.537	26.156	4.704	16.932	-0.155	0.696	49.349	0.001	2.481	0.001	13.00	0.21667	24.7	12.1	18.7	1.292	0.370	0.323	0.0173	17.254	14.68
2/13/2003	2:40:06 PM	30.076	20.777	29.848	22.498	22.198	20.413	26.107	4.655	16.776	-0.094	0.696	49.471	0.001	2.489	0	14.00	0.23333	24.6	12.1	18.6	1.282	0.371	0.324	0.0174	17.449	14.85
2/13/2003	2:41:06 PM	30.108	20.799	29.836	22.49	22.221	20.266	26.04	4.66	16.707	-0.048	0.69	49.362	0.001	2.507	0	15.00	0.25	24.6	12.1	18.5	1.275	0.374	0.327	0.0177	17.684	15.05
2/13/2003	2:42:06 PM	30.141	20.817	29.844	22.488	22.228	20.306	26.161	4.712	16.635	0.05	0.687	49.32	0.001	2.521	0	16.00	0.26667	24.7	12.1	18.5	1.273	0.376	0.329	0.0178	17.794	15.14
2/13/2003	2:43:06 PM	30.142	20.834	29.9	22.53	22.285	20.192	26.173	4.719	16.496	0.123	0.687	49.337	0.001	2.538	0.001	17.00	0.28333	24.7	12.1	18.3	1.265	0.378	0.330	0.0180	18.010	15.33
2/13/2003	2:44:06 PM	30.144	20.846	29.941	22.461	22.312	20.078	26.076	4.654	16.557	0.134	0.684	49.234	0.001	2.551	0.001	18.00	0.3	24.6	12.1	18.3	1.263	0.380	0.332	0.0181	18.108	15.41
2/13/2003	2:45:06 PM	30.146	20.863	29.924	22.504	22.335	20.038	26.061	4.65	16.504	0.229	0.684	49.333	0.001	2.561	0.001	19.00	0.31667	24.6	12.1	18.3	1.260	0.382	0.333	0.0182	18.234	15.52
2/13/2003	2:46:06 PM	30.173	20.88	29.92	22.47	22.341	20.198	26.4	4.711	16.582	0.25	0.684	49.414	0.001	2.574	0.001	20.00	0.33333	24.9	12.1	18.4	1.268	0.384	0.335	0.0182	18.210	15.50
2/13/2003	2:47:06 PM	30.184	20.886	29.892	22.486	22.368	19.829	26.082	4.665	16.201	0.299	0.679	49.461	0.001	2.592	0.001	21.00	0.35	24.6	12.1	18.0	1.242	0.386	0.337	0.0187	18.733	15.94
	Averages	29.9	20.7	29.7	22.5	22.1	20.4	26.1	4.7	16.8	-0.1	0.7	49.4	0.0	2.5	0.0		0.2	24.7	12.1	18.6	1.284	0.371	0.325	0.0175	17.480	14.875
	Maximum	30.2	20.9	29.9	22.5	22.4	20.7	26.4	4.7	17.2	0.3	0.7	49.5	0.0	2.6	0.0		0.4	24.9	12.1	18.9	1.303	0.386	0.337	0.0187	18.733	15.942
	Median	30.0	20.7	29.8	22.5	22.1	20.5	26.1	4.7	16.9	-0.2	0.7	49.4	0.0	2.5	0.0		0.2	24.6	12.1	18.7	1.292	0.367	0.324	0.0172	17.234	14.666
	Minimum	29.4	20.5	29.4	22.4	21.7	19.8	26.0	4.6	16.2	-0.3	0.7	49.2	0.0	2.4	0.0		0.0	24.5	12.1	18.0	1.242	0.365	0.320	0.0169	16.948	14.423
	2 x Std Dev	0.447	0.230	0.347	0.060	0.419	0.488	0.206	0.075	0.502	0.385	0.019	0.143	0.000	0.096	0.001		0.192	0.206	0.035	0.490	0.034	0.014	0.011	0.0010	1.023	0.870
Number of Points Used*		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		20	20	20	20	20	20	20	20	20	20
	* Backpulse points in box are not included																										

Figure C18: ACIDA: Before AN-102R2, Batch 4 – 2 M Nitric Acid Cleaning – First 20 minutes of a 4-day soak – Raw & Calculated Data

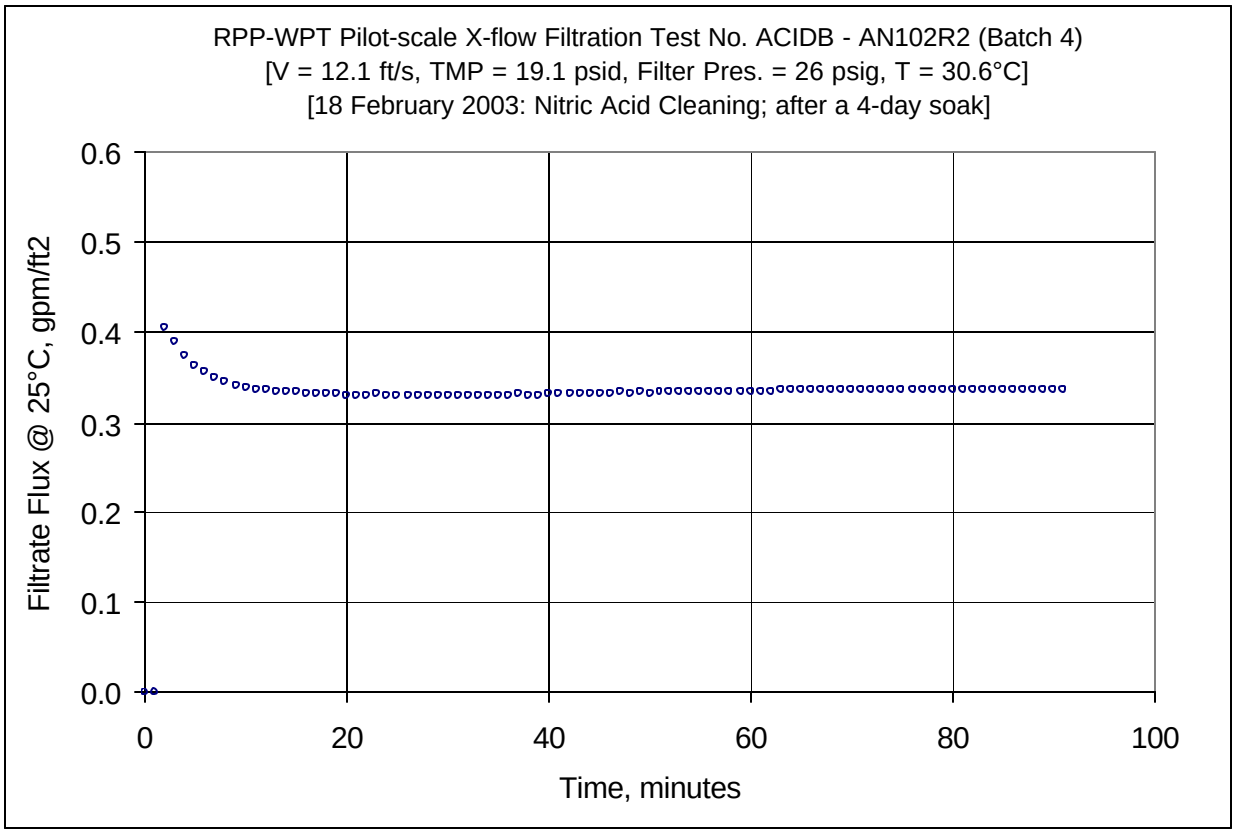


Figure C19: ACIDB: Before AN-102R2, Batch 4 – 2 M Nitric Acid Cleaning – Last 90 minutes of a 4-day soak

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
2/18/2003	7:41:35 AM	22.045	17.928	13.92	21.779	16.794	-0.125	-0.104	-0.058	0.055	-0.175	0.227	-0.216	0.001	0.001	0			Filter Surface	6.707	FT2						
2/18/2003	7:41:53 AM	22.045	17.928	13.92	21.779	16.794	-0.125	-0.104	-0.058	0.055	-0.175	0.227	-0.216	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
2/18/2003	7:41:54 AM	22.024	17.912	13.889	21.744	16.798	-0.125	-0.102	-0.058	0.053	-0.175	0.227	-0.215	0.001	0.001	0											
2/18/2003	7:41:55 AM	22.024	17.907	13.884	21.739	16.793	-0.125	-0.104	-0.059	0.053	-0.178	0.224	-0.218	0.001	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
2/18/2003	7:41:56 AM	22.024	17.907	13.883	21.728	16.788	-0.125	-0.102	-0.059	0.051	-0.181	0.224	-0.218	0.001	0.001	0											
2/18/2003	7:41:57 AM	22.034	17.917	13.894	21.739	16.793	-0.123	-0.102	-0.059	0.051	-0.178	0.224	-0.218	0.001	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
2/18/2003	7:41:58 AM	22.029	17.922	13.899	21.749	16.788	-0.123	-0.104	-0.059	0.051	-0.181	0.224	-0.218	0.001	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY >>		
2/18/2003	7:41:59 AM	22.034	17.922	13.904	21.759	16.788	-0.125	-0.102	-0.058	0.053	-0.181	0.221	-0.216	0.001	0.001	0							at 25C		x 1000		
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
2/18/2003	8:38:21 AM	28.188	17.991	28.775	21.228	17.977	3.026	27.795	4.729	-1.179	19.705	67.843	47.571	0.001	0.002	0	0	0	26.3	11.7	0.9	0.064	0.000	0.000	0.0003	0.291	0.25
2/18/2003	8:39:21 AM	24.95	17.976	28.98	21.183	18.003	7.504	27.623	4.729	3.476	15.748	1.208	47.711	0.333	0.003	0	1.00	0.01667	26.2	11.7	5.5	0.379	0.000	0.000	0.0001	0.073	0.06
2/18/2003	8:40:21 AM	29.101	17.988	29.21	21.21	18.03	18.427	27.091	4.676	14.926	2.733	0.878	49.817	0.002	3.06	0	2.00	0.03333	25.6	12.2	16.7	1.150	0.456	0.406	0.0243	24.340	20.71
2/18/2003	8:41:21 AM	29.45	18.004	29.449	21.221	18.061	19.181	27.178	4.739	15.579	2.123	0.876	49.628	0.001	2.953	0	3.00	0.05	25.7	12.2	17.4	1.198	0.440	0.389	0.0224	22.391	19.05
2/18/2003	8:42:21 AM	29.67	17.99	29.664	21.196	18.062	19.769	27.257	4.705	16.117	1.646	0.867	49.528	0.001	2.864	0	4.00	0.06667	25.8	12.1	17.9	1.237	0.427	0.375	0.0209	20.912	17.80
2/18/2003	8:43:21 AM	29.889	17.985	29.883	21.182	18.077	20.042	27.197	4.638	16.395	1.328	0.864	49.521	0.001	2.796	0	5.00	0.08333	25.7	12.1	18.2	1.256	0.417	0.364	0.0200	19.987	17.01
2/18/2003	8:44:21 AM	30.088	17.965	30.073	21.137	18.118	20.459	27.364	4.713	16.715	1.091	0.858	49.417	0.001	2.754	0	6.00	0.1	25.9	12.1	18.6	1.282	0.411	0.357	0.0192	19.196	16.34
2/18/2003	8:45:21 AM	30.318	17.982	30.317	21.158	18.14	20.525	27.236	4.65	16.821	0.932	0.858	49.543	0.001	2.719	0	7.00	0.11667	25.8	12.1	18.7	1.287	0.405	0.350	0.0187	18.740	15.95
2/18/2003	8:46:21 AM	30.558	17.993	30.561	21.159	18.151	20.581	27.145	4.586	16.962	0.813	0.861	49.501	0.001	2.702	0	8.00	0.13333	25.7	12.1	18.8	1.294	0.403	0.345	0.0184	18.403	15.66
2/18/2003	8:47:21 AM	30.747	17.978	30.746	21.109	18.177	20.823	27.402	4.694	17.024	0.79	0.858	49.394	0.001	2.685	0	9.00	0.15	25.9	12.1	18.9	1.305	0.400	0.342	0.0180	18.050	15.36
2/18/2003	8:48:21 AM	30.936	17.963	30.944	21.049	18.156	20.916	27.383	4.683	17.095	0.721	0.858	49.452	0.001	2.672	0	10.00	0.16667	25.9	12.1	19.0	1.310	0.398	0.338	0.0178	17.789	15.14
2/18/2003	8:49:21 AM	31.056	17.975	30.881	21.065	18.178	21.02	27.482	4.704	17.229	0.692	0.852	49.461	0.001	2.662	0	11.00	0.18333	26.0	12.1	19.1	1.319	0.397	0.337	0.0176	17.642	15.01
2/18/2003	8:50:21 AM	31.117	17.981	31.001	21.076	18.2	20.888	27.242	4.677	17.081	0.651	0.858	49.349	0.001	2.66	0.001	12.00	0.2	25.8	12.1	19.0	1.309	0.397	0.336	0.0177	17.702	15.06
2/18/2003	8:51:21 AM	31.118	17.976	30.948	21.077	18.2	20.945	27.255	4.638	17.155	0.694	0.852	49.389	0.001	2.649	0	13.00	0.21667	25.8	12.1	19.1	1.313	0.395	0.335	0.0176	17.593	14.97
2/18/2003	8:52:21 AM	31.154	17.983	30.919	21.089	18.248	20.981	27.259	4.618	17.314	0.527	0.852	49.425	0.001	2.634	0.001	14.00	0.23333	25.8	12.1	19.1	1.320	0.393	0.334	0.0174	17.418	14.82
2/18/2003	8:53:21 AM	31.16	17.979	30.93	21.075	18.309	20.987	27.236	4.614	17.286	0.53	0.852	49.412	0.001	2.637	0.001	15.00	0.25	25.8	12.1	19.1	1.319	0.393	0.334	0.0174	17.443	14.84
2/18/2003	8:54:21 AM	31.151	17.985	30.976	21.066	18.331	20.943	27.205	4.725	16.977	0.478	0.849	49.534	0.001	2.627	0.001	16.00	0.26667	25.7	12.1	19.0	1.307	0.392	0.332	0.0175	17.516	14.91
2/18/2003	8:55:21 AM	31.153	17.997	30.933	21.068	18.353	21.045	27.257	4.614	17.2	0.475	0.849	49.507	0.001	2.619	0.001	17.00	0.28333	25.8	12.1	19.1	1.318	0.390	0.331	0.0173	17.335	14.75
2/18/2003	8:56:21 AM	31.154	18.009	30.895	21.059	18.385	21.142	27.348	4.682	17.36	0.412	0.849	49.381	0.001	2.615	0	18.00	0.3	25.9	12.1	19.3	1.327	0.390	0.331	0.0172	17.211	14.65
2/18/2003	8:57:21 AM	31.166	18.026	30.907	21.036	18.437	21.173	27.364	4.702	17.335	0.472	0.849	49.436	0.001	2.618	0	19.00	0.31667	25.9	12.1	19.3	1.327	0.390	0.332	0.0172	17.222	14.66
2/18/2003	8:58:21 AM	31.153	18.022	30.988	21.027	18.474	21.113	27.336	4.669	17.315	0.414	0.852	49.486	0.001	2.615	0.001	20.00	0.33333	25.9	12.1	19.2	1.325	0.390	0.330	0.0172	17.200	14.64
2/18/2003	8:59:21 AM	31.145	18.04	30.955	21.03	18.497	20.974	27.071	4.638	17.21	0.38	0.855	49.448	0.001	2.611	0.002	21.00	0.35	25.6	12.1	19.1	1.316	0.389	0.330	0.0173	17.299	14.72
2/18/2003	9:00:21 AM	31.137	18.032	30.873	20.996	18.529	21.115	27.362	4.646	17.255	0.409	0.847	49.48	0.001	2.61	0	22.00	0.36667	25.9	12.1	19.2	1.323	0.389	0.331	0.0172	17.247	14.68
2/18/2003	9:01:21 AM	31.164	18.054	30.89	21.024	18.557	21.235	27.364	4.615	17.523	0.412	0.855	49.465	0.001	2.613	0.001	23.00	0.38333	25.9	12.1	19.4	1.336	0.390	0.331	0.0171	17.086	14.54
2/18/2003	9:02:21 AM	31.141	18.071	30.971	20.995	18.599	20.97	27.094	4.699	16.977	0.362	0.852	49.433	0.001	2.607	0.002	24.00	0.4	25.6	12.1	19.0	1.308	0.389	0.330	0.0174	17.373	14.78
2/18/2003	9:03:21 AM	31.133	18.083	30.948	20.992	18.641	21.144	27.245	4.651	17.4	0.365	0.855	49.352	0.002	2.606	0	25.00	0.41667	25.8	12.1	19.3	1.329	0.389	0.330	0.0171	17.108	14.56
2/18/2003	9:04:21 AM	31.129	18.085	30.89	20.963	18.648	21.003	27.1	4.629	17.231	0.368	0.849	49.442	0.001	2.605	0	26.00	0.43333	25.6	12.1	19.1	1.318	0.388	0.330	0.0173	17.267	14.69
2/18/2003	9:05:21 AM	31.137	18.102	30.872	20.976	18.645	21.161	27.317	4.669	17.229	0.351	0.847	49.419	0.001	2.605	0	27.00	0.45	25.8	12.1	19.2	1.323	0.388	0.330	0.0172	17.205	14.64
2/18/2003	9:06:21 AM	31.143	18.108	30.923	20.967	18.671	21.061	27.247	4.672	17.196	0.409	0.849	49.538	0.001	2.608	0.001	28.00	0.46667	25.8	12.1	19.1	1.319	0.389	0.330	0.0173	17.261	14.69
2/18/2003	9:07:21 AM	31.135	18.12	30.97	20.948	18.693	21.101	27.218	4.678	17.28	0.36	0.849	49.421	0.001	2.608	0.001	29.00	0.48333	25.7	12.1	19.2	1.323	0.389	0.330	0.0172	17.184	14.62
2/18/2003	9:08:21 AM	31.127	18.127	30.912	20.935	18.685	21.345	27.544	4.655	17.538	0.412	0.852	49.383	0.001	2.607	0.001	30.00	0.5	26.1	12.1	19.4	1.340	0.389	0.330	0.0170	16.982	14.45
2/18/2003	9:09:21 AM	31.128	18.128	30.878	20.916	18.691	21.062	27.174	4.63	17.267	0.36	0.852	49.289	0.001	2.606	0	31.00	0.51667	25.7	12.1	19.2	1.321	0.389	0.330	0.0172	17.237	14.67
2/18/2003	9:10:21 AM	31.151	18.147	30.862	20.914	18.72	21.119	27.236	4.665	17.224	0.371	0.847	49.484	0.001	2.607	0.002	32.00	0.53333	25.8	12.1	19.2	1.322	0.389	0.331	0.0172	17.244	14.68
2/18/2003	9:11:21 AM	31.137	18.158	30.947	20.941	18.746	21.086	27.195	4.626	17.364	0.409	0.852	49.515	0.001	2.614	0.002	33.00	0.55	25.7	12.1	19.2	1.325	0.390	0.331	0.0172	17.203	14.64
2/18/2003	9:12:21 AM	31.12	18.155	30.935	20.933	18.764	21.198	27.338	4.683	17.345	0.409	0.849	49.435	0.001	2.609	0.003	34.00	0.56667	25.9	12.1	19.3	1.329	0.389	0.330	0.0171	17.134	14.58
2/18/2003	9:13:21 AM	31.131	18.167	30.892	20.945	18.796	21.124	27.313	4.648	17.272	0.336	0.849	49.475	0.001	2.606	0.001	35.00	0.58333	25.8	12.1	19.2	1.324	0.389	0.330	0.0172	17.200	14.64
2/18/2003	9:14:21 AM	31.123	18.174	30.849	20.962	18.798	21.08	27.207	4.649	17.286	0.319	0.849	49.427	0.001	2.607	0.002	36.00	0.6	25.7	12.1	19.2	1.323	0.389	0.331	0.0172	17.240	14.67
2/18/2003	9:15:21 AM	31.13	18.176	30.881	20.928	18.8	21.153	27.257	4.65	17.409	0.412	0.852	49.492	0.001	2.613	0	37.00	0.61667	25.8	12.1	19.3	1.329	0.390	0.331	0.0172	17.177	14.62
2/18/2003	9:16:21 AM	31.117	18.203	30.952	20.945	18.822	21.122	27.275	4.669	17.259	0.412	0.852	49.404	0.001	2.612	0.001	38.00	0.63333	25.8	12.1	19.2	1.323	0.389	0.330	0.0172	17.218	14.65
2/18/2003	9:17:21 AM	31.118	18.199	30.913	20.916	18.858	21.018	27.176	4.621	17.239	0.417	0.852	49.515	0.001	2.612	0.002	39.00	0.65	25.7	12.1	19.1	1.319	0.389	0.331	0.0173	17.292	14.72
2/18/2003	9:18:21 AM	31.124	18.221	30.885	20.937	18.839	21.082	27.245	4.632	17.315	0.374	0.852	49.49	0.001	2.613	0.001	40.00	0.66667	25.8	12.1	19.2	1.324	0.390	0.331	0.0172	17.249	14.68
2/18/2003	9:19:21 AM	31.131	18.222	30.852	20.934	18.876	21.119	27.333	4.659	17.245	0.417	0.849	49.268	0.001	2.612	0.001	41.00	0.68333	25.9	12.1	19.2	1.323	0.389	0.331	0.0173	17.273	14.70
2/18/2003	9:20:21 AM	31.127	18.234	30.883	20.956	18.893	20.993	27.162	4.628	17.1	0.412	0.852	49.387	0.001	2.615	0.002	42.00	0.7	25.7	12.1	19.0	1.313	0.390	0.331	0.0174	17.401	14.81
2/18/2003	9:21:21 AM	31.119	18.246	30.949	20.952	18.91	21.074	27.238	4.59	17.345	0.429	0.858	49.498	0.001	2.619	0.001	43.00	0.71667	25.8	12.1	19.2	1.324	0.390	0.331	0.0172	17.249	14.68
2/18/2003	9:22:21 AM	31.115	18.247	30.906	20.924	18.926	21.024	27.156	4.648	17.233	0.412	0.852	49.377	0.001	2.615	0.001	44.00	0.73333	25.7	12.1	19.1	1.319	0.390	0.331	0.0173	17.316	14.74
2/18/2003	9:23:21 AM	31.092	18.269	30.823	20.92	18.948	21.18	27.348	4.66	17.388	0.409	0.855	49.813	0.001	2.613	0.001	45.00	0.75	25.9	12.2	19.3	1.330	0.390	0.332	0.0172	17.201	14.64

Figure C20a: ACIDB: Before AN-102R2, Batch 4 – 2 M Nitric Acid Cleaning (first 45 minutes) – Last 90 minutes of a 4-day soak

2/18/2003	9:24:21 AM	31.034	18.266	30.72	20.886	18.95	21.167	27.354	4.669	17.466	0.472	0.849	49.226	0.001	2.616	0	46.00	0.76667	25.9	12.1	19.3	1.332	0.390	0.333	0.0172	17.240	14.67
2/18/2003	9:25:21 AM	31.011	18.288	30.673	20.924	18.962	21.01	27.207	4.637	17.186	0.412	0.852	49.263	0.001	2.616	0.001	47.00	0.78333	25.7	12.1	19.1	1.317	0.390	0.333	0.0175	17.460	14.86
2/18/2003	9:26:21 AM	30.969	18.305	30.65	20.916	18.974	21.111	27.286	4.669	17.29	0.426	0.849	49.398	0.001	2.612	0	48.00	0.8	25.8	12.1	19.2	1.324	0.389	0.333	0.0174	17.351	14.77
2/18/2003	9:27:21 AM	30.917	18.313	30.672	20.949	18.997	21.049	27.209	4.663	17.274	0.478	0.849	49.087	0.001	2.615	0.002	49.00	0.81667	25.7	12.0	19.2	1.321	0.390	0.333	0.0174	17.396	14.80
2/18/2003	9:28:21 AM	30.869	18.32	30.664	20.95	19.019	21.08	27.267	4.676	17.243	0.414	0.852	49.308	0.001	2.61	0	50.00	0.83333	25.8	12.1	19.2	1.321	0.389	0.333	0.0174	17.366	14.78
2/18/2003	9:29:21 AM	30.84	18.336	30.606	20.982	19.015	21.068	27.203	4.66	17.241	0.412	0.855	49.406	0.001	2.61	0.001	51.00	0.85	25.7	12.1	19.2	1.321	0.389	0.333	0.0174	17.400	14.81
2/18/2003	9:30:21 AM	30.817	18.338	30.533	20.949	19.027	21.093	27.275	4.612	17.317	0.412	0.852	49.404	0.001	2.612	0	52.00	0.86667	25.8	12.1	19.2	1.324	0.389	0.334	0.0174	17.402	14.81
2/18/2003	9:31:21 AM	30.805	18.345	30.506	20.956	19.04	21.105	27.185	4.604	17.4	0.409	0.852	49.406	0.001	2.611	0.001	53.00	0.88333	25.7	12.1	19.3	1.327	0.389	0.334	0.0174	17.365	14.78
2/18/2003	9:32:21 AM	30.791	18.352	30.502	20.937	19.041	21.136	27.327	4.582	17.36	0.409	0.852	49.282	0.001	2.613	0.001	54.00	0.9	25.9	12.1	19.2	1.327	0.390	0.335	0.0174	17.384	14.79
2/18/2003	9:33:21 AM	30.768	18.364	30.564	20.964	19.078	20.966	27.098	4.584	17.278	0.481	0.849	49.383	0.001	2.613	0.001	55.00	0.91667	25.6	12.1	19.1	1.318	0.390	0.334	0.0175	17.469	14.87
2/18/2003	9:34:21 AM	30.745	18.371	30.531	20.936	19.085	21.153	27.313	4.671	17.278	0.423	0.849	49.337	0.001	2.611	0.002	56.00	0.93333	25.8	12.1	19.2	1.325	0.389	0.334	0.0174	17.387	14.80
2/18/2003	9:35:21 AM	30.733	18.389	30.484	20.933	19.108	21.111	27.253	4.595	17.392	0.403	0.849	49.287	0.001	2.61	0.001	57.00	0.95	25.8	12.1	19.3	1.327	0.389	0.334	0.0174	17.370	14.78
2/18/2003	9:36:21 AM	30.714	18.38	30.416	20.884	19.094	21.215	27.402	4.677	17.39	0.469	0.849	49.377	0.001	2.612	0	58.00	0.96667	25.9	12.1	19.3	1.331	0.389	0.335	0.0174	17.369	14.78
2/18/2003	9:37:21 AM	30.726	18.396	30.417	20.835	19.091	21.155	27.346	4.704	17.319	0.458	0.849	49.312	0.001	2.61	0.001	59.00	0.98333	25.9	12.1	19.2	1.326	0.389	0.335	0.0174	17.414	14.82
2/18/2003	9:38:21 AM	30.701	18.386	30.467	20.755	19.07	21.01	27.135	4.646	17.192	0.409	0.849	49.327	0.001	2.612	0.001	60.00	1	25.7	12.1	19.1	1.317	0.389	0.335	0.0175	17.528	14.92
2/18/2003	9:39:21 AM	30.682	18.397	30.463	20.67	19.092	21.163	27.354	4.619	17.343	0.472	0.847	49.446	0.001	2.616	0	61.00	1.01667	25.9	12.1	19.3	1.327	0.390	0.335	0.0174	17.418	14.82
2/18/2003	9:40:21 AM	30.672	18.402	30.423	20.584	19.061	21.018	27.145	4.621	17.229	0.412	0.849	49.255	0.001	2.61	0	62.00	1.03333	25.7	12.1	19.1	1.318	0.389	0.335	0.0175	17.515	14.91
2/18/2003	9:41:21 AM	30.677	18.403	30.374	20.484	19.057	21.219	27.367	4.606	17.409	0.475	0.849	49.272	0.001	2.615	0.001	63.00	1.05	25.9	12.1	19.3	1.332	0.390	0.336	0.0174	17.399	14.81
2/18/2003	9:42:21 AM	30.677	18.402	30.358	20.408	19.051	21.047	27.158	4.615	17.317	0.409	0.852	49.371	0.001	2.615	0.001	64.00	1.06667	25.7	12.1	19.2	1.323	0.390	0.336	0.0175	17.526	14.91
2/18/2003	9:43:21 AM	30.657	18.408	30.423	20.337	19.016	21.101	27.28	4.641	17.327	0.412	0.849	49.456	0.001	2.615	0	65.00	1.08333	25.8	12.1	19.2	1.325	0.390	0.336	0.0175	17.466	14.86
2/18/2003	9:44:21 AM	30.647	18.413	30.433	20.276	18.996	21.093	27.28	4.625	17.341	0.481	0.849	49.438	0.001	2.615	0.002	66.00	1.1	25.8	12.1	19.2	1.325	0.390	0.335	0.0175	17.458	14.86
2/18/2003	9:45:21 AM	30.652	18.413	30.378	20.211	19.001	21.217	27.377	4.675	17.401	0.432	0.849	49.289	0.001	2.614	0	67.00	1.11667	25.9	12.1	19.3	1.331	0.390	0.336	0.0174	17.394	14.80
2/18/2003	9:46:21 AM	30.647	18.408	30.338	20.15	18.985	21.105	27.309	4.622	17.321	0.472	0.849	49.371	0.001	2.613	0.001	68.00	1.13333	25.8	12.1	19.2	1.325	0.390	0.336	0.0175	17.494	14.89
2/18/2003	9:47:21 AM	30.661	18.407	30.343	20.155	18.934	20.943	27.081	4.598	17.173	0.449	0.847	49.375	0.001	2.616	0	69.00	1.15	25.6	12.1	19.1	1.314	0.390	0.336	0.0177	17.654	15.02
2/18/2003	9:48:21 AM	30.647	18.428	30.453	20.221	18.945	21.074	27.276	4.66	17.306	0.519	0.849	49.291	0.001	2.618	0.003	70.00	1.16667	25.8	12.1	19.2	1.323	0.390	0.336	0.0175	17.493	14.89
2/18/2003	9:49:21 AM	30.619	18.414	30.409	20.243	18.931	21.188	27.302	4.649	17.401	0.446	0.847	49.358	0.001	2.62	0	71.00	1.18333	25.8	12.1	19.3	1.330	0.391	0.336	0.0174	17.433	14.84
2/18/2003	9:50:21 AM	30.619	18.414	30.36	20.278	18.942	21.179	27.385	4.643	17.315	0.412	0.847	49.429	0.001	2.611	0	72.00	1.2	25.9	12.1	19.2	1.327	0.389	0.336	0.0174	17.439	14.84
2/18/2003	9:51:21 AM	30.624	18.425	30.35	20.329	18.967	21.122	27.28	4.605	17.452	0.481	0.852	49.347	0.001	2.62	0.001	73.00	1.21667	25.8	12.1	19.3	1.330	0.391	0.337	0.0175	17.468	14.87
2/18/2003	9:52:21 AM	30.63	18.431	30.346	20.355	18.983	21.14	27.321	4.677	17.321	0.455	0.844	49.301	0.001	2.616	0	74.00	1.23333	25.9	12.1	19.2	1.326	0.390	0.336	0.0175	17.494	14.89
2/18/2003	9:53:21 AM	30.626	18.437	30.436	20.401	19.004	20.941	27.149	4.68	17.052	0.481	0.849	49.454	0.001	2.619	0.002	75.00	1.25	25.7	12.1	19.0	1.310	0.390	0.336	0.0177	17.687	15.05
2/18/2003	9:54:21 AM	30.617	18.442	30.407	20.427	19.01	21.138	27.35	4.68	17.292	0.412	0.847	49.433	0.001	2.618	0.001	76.00	1.26667	25.9	12.1	19.2	1.325	0.390	0.336	0.0175	17.493	14.89
2/18/2003	9:55:21 AM	30.612	18.438	30.353	20.428	19.011	20.977	27.112	4.754	17.01	0.475	0.847	49.381	0.001	2.617	0.002	77.00	1.28333	25.6	12.1	19.0	1.310	0.390	0.336	0.0177	17.716	15.08
2/18/2003	9:56:21 AM	30.623	18.438	30.334	20.443	19.001	20.989	27.182	4.65	17.151	0.432	0.847	49.429	0.001	2.618	0.001	78.00	1.3	25.7	12.1	19.1	1.315	0.390	0.337	0.0177	17.661	15.03
2/18/2003	9:57:21 AM	30.628	18.449	30.359	20.489	18.981	21.078	27.3	4.653	17.253	0.478	0.847	49.421	0.001	2.62	0.002	79.00	1.31667	25.8	12.1	19.2	1.321	0.391	0.337	0.0176	17.574	14.96
2/18/2003	9:58:21 AM	30.619	18.46	30.425	20.531	19.003	21.024	27.234	4.64	17.208	0.513	0.849	49.435	0.001	2.62	0.002	80.00	1.33333	25.8	12.1	19.1	1.318	0.391	0.336	0.0176	17.588	14.97
2/18/2003	9:59:21 AM	30.596	18.446	30.371	20.522	19.014	21.138	27.321	4.552	17.581	0.501	0.844	49.327	0.001	2.624	0	81.00	1.35	25.9	12.1	19.4	1.335	0.391	0.337	0.0174	17.419	14.82
2/18/2003	10:00:21 AM	30.606	18.457	30.352	20.553	19.004	21.093	27.327	4.665	17.206	0.478	0.847	49.436	0.001	2.616	0.001	82.00	1.36667	25.9	12.1	19.1	1.320	0.390	0.336	0.0176	17.565	14.95
2/18/2003	10:01:21 AM	30.617	18.473	30.333	20.604	19.005	21.153	27.36	4.618	17.448	0.478	0.847	49.389	0.001	2.615	0.002	83.00	1.38333	25.9	12.1	19.3	1.331	0.390	0.336	0.0174	17.430	14.83
2/18/2003	10:02:21 AM	30.618	18.469	30.369	20.61	19.037	21.188	27.46	4.685	17.306	0.478	0.849	49.456	0.001	2.622	0.002	84.00	1.4	26.0	12.1	19.2	1.327	0.391	0.337	0.0175	17.508	14.90
2/18/2003	10:03:21 AM	30.604	18.485	30.425	20.657	19.053	21.078	27.249	4.669	17.292	0.481	0.849	49.36	0.001	2.619	0.001	85.00	1.41667	25.8	12.1	19.2	1.323	0.390	0.336	0.0175	17.518	14.91
2/18/2003	10:04:21 AM	30.595	18.476	30.376	20.672	19.049	21.041	27.193	4.65	17.263	0.475	0.847	49.41	0.001	2.62	0.002	86.00	1.43333	25.7	12.1	19.2	1.320	0.391	0.337	0.0176	17.578	14.96
2/18/2003	10:05:21 AM	30.611	18.497	30.357	20.729	19.055	20.991	27.154	4.655	17.138	0.478	0.847	49.4	0.001	2.618	0.002	87.00	1.45	25.7	12.1	19.1	1.314	0.390	0.337	0.0177	17.655	15.02
2/18/2003	10:06:21 AM	30.628	18.504	30.334	20.751	19.062	21.006	27.174	4.686	17.202	0.498	0.847	49.44	0.001	2.624	0	88.00	1.46667	25.7	12.1	19.1	1.317	0.391	0.338	0.0177	17.669	15.04
2/18/2003	10:07:21 AM	30.618	18.505	30.379	20.757	19.072	21.004	27.211	4.63	17.214	0.527	0.847	49.41	0.001	2.624	0	89.00	1.48333	25.7	12.1	19.1	1.317	0.391	0.337	0.0176	17.643	15.01
2/18/2003	10:08:21 AM	30.595	18.506	30.4	20.758	19.109	20.999	27.23	4.648	17.2	0.524	0.844	49.324	0.001	2.622	0.002	90.00	1.5	25.8	12.1	19.1	1.317	0.391	0.337	0.0176	17.629	15.00
2/18/2003	10:09:21 AM	30.601	18.527	30.377	20.804	19.1	21.055	27.269	4.584	17.366	0.501	0.849	49.404	0.001	2.622	0.002	91.00	1.51667	25.8	12.1	19.2	1.324	0.391	0.337	0.0175	17.538	14.92
	Averages	30.8	18.2	30.6	20.8	18.8	21.0	27.3	4.7	17.2	0.5	0.9	49.4	0.0	2.6	0.0		0.8	25.8	12.1	19.1	1.316	0.393	0.337	0.0177	17.657	15.0
	Maximum	31.2	18.5	31.0	21.2	19.1	21.3	27.5	4.8	17.6	2.7	0.9	49.8	0.0	3.1	0.0		1.5	26.1	12.2	19.4	1.340	0.456	0.406	0.0243	24.340	20.7
	Median	30.8	18.3	30.5	20.9	18.9	21.1	27.3	4.7	17.3	0.4	0.8	49.4	0.0	2.6	0.0		0.8	25.8	12.1	19.2	1.323	0.390	0.335	0.0174	17.418	14.8
	Minimum	29.1	18.0	29.2	20.2	18.0	18.4	27.1	4.6	14.9	0.3	0.8	49.1	0.0	2.6	0.0		0.0	25.6	12.0	16.7	1.150	0.388	0.330	0.0170	16.982	14.5
	2 x Std Dev	0.749	0.367	0.677	0.560	0.654	0.794	0.187	0.073	0.720	0.694	0.011	0.204	0.000	0.138	0.002		0.866	0.187	0.050	0.753	0.052	0.021	0.023	0.0021	2.053	1.747
Number of Points Used*		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90		90	90	90	90	90	90	90	90	90	90
	* Backpulse points in box are not included																												

Figure C20b: ACIDB: Before AN-102R2, Batch 4 – 2 M Nitric Acid Cleaning (remaining 46 minutes) – Last 90 minutes of a 4-day soak

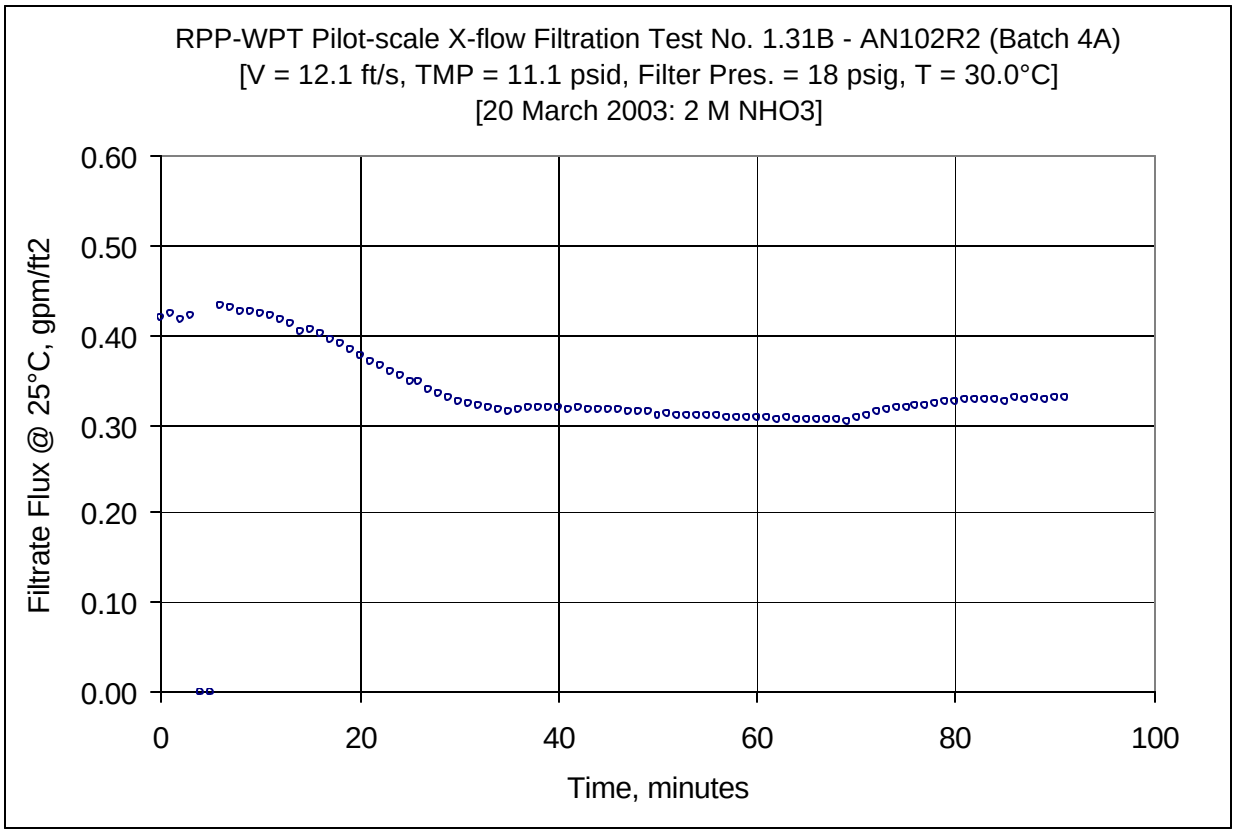


Figure C21: 1.31B: After AN-102R2, Batch 4A – 2 M Nitric Acid Cleaning – First Cleaning

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
3/20/2003	8:33:49 AM	20.344	19.646	17.583	19.665	18.839	-0.127	-0.057	-0.054	0.052	-0.174	0.222	-0.216	0.002	0.001	0			Filter Surface	6.707	FT2						
3/20/2003	8:34:20 AM	20.344	19.646	17.583	19.665	18.839	-0.127	-0.057	-0.054	0.052	-0.174	0.222	-0.216	0.002	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
3/20/2003	8:34:21 AM	20.341	19.643	17.576	19.657	18.832	-0.129	-0.057	-0.054	0.052	-0.162	0.222	-0.216	0.002	0.001	0											
3/20/2003	8:34:22 AM	20.341	19.648	17.581	19.657	18.837	-0.127	-0.057	-0.054	0.052	-0.174	0.222	-0.212	0.002	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
3/20/2003	8:34:23 AM	20.341	19.648	17.581	19.657	18.842	-0.127	-0.055	-0.054	0.05	-0.174	0.222	-0.216	0.002	0.001	0											
3/20/2003	8:34:24 AM	20.341	19.643	17.57	19.657	18.841	-0.127	-0.057	-0.054	0.052	-0.174	0.222	-0.212	0.002	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
3/20/2003	8:34:25 AM	20.346	19.643	17.581	19.662	18.847	-0.127	-0.057	-0.054	0.052	-0.174	0.222	-0.216	0.001	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY		>>
3/20/2003	8:34:26 AM	20.336	19.648	17.58	19.662	18.846	-0.127	-0.057	-0.054	0.052	-0.171	0.222	-0.21	0.002	0.001	0							at 25C		x 1000		
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
3/20/2003	2:29:50 PM	24.067	23.765	23.595	25.638	24.62	12.261	19.414	4.827	8.517	0.977	-4.546	49.449	0.002	2.704	0.001	0	0	17.9	12.1	10.4	0.716	0.403	0.419	0.0404	40.378	34.36
3/20/2003	2:30:50 PM	23.897	23.775	23.485	25.623	24.67	12.376	19.685	4.759	8.717	1.133	-4.541	48.671	0.002	2.727	0.001	1.00	0.01667	18.2	11.9	10.5	0.727	0.407	0.424	0.0402	40.239	34.24
3/20/2003	2:31:50 PM	23.875	23.778	23.694	25.551	24.713	12.296	19.672	4.788	8.597	1.251	21.2	48.812	0.002	2.691	0	2.00	0.03333	18.2	12.0	10.4	0.720	0.401	0.416	0.0399	39.850	33.91
3/20/2003	2:32:50 PM	24.009	23.797	23.788	25.499	24.752	12.273	19.519	4.741	8.603	1.167	58.992	48.841	0.001	2.728	0	3.00	0.05	18.0	12.0	10.4	0.720	0.407	0.421	0.0403	40.323	34.32
3/20/2003	2:33:50 PM	24.098	23.836	23.861	25.458	24.8	2.843	20.347	4.64	-1.301	11.986	59.021	47.79	0.001	0.003	0	4.00	0.06667	18.9	11.7	0.8	0.053	0.000	0.000	0.0006	0.599	0.51
3/20/2003	2:34:50 PM	26.394	23.839	23.925	25.471	24.818	6.219	20.043	4.674	2.191	8.521	0.376	47.306	0.433	0.001	0	5.00	0.08333	18.6	11.6	4.2	0.290	0.000	0.000	0.0000	0.037	0.03
3/20/2003	2:35:50 PM	24.218	23.846	24.007	25.448	24.836	11.9	19.59	4.804	8.234	1.569	0.584	49.129	0.002	2.816	0	6.00	0.1	18.1	12.0	10.1	0.694	0.420	0.432	0.0429	42.891	36.50
3/20/2003	2:36:50 PM	24.246	23.874	24.05	25.496	24.864	11.718	19.378	4.786	8.105	1.552	0.59	49.177	0.002	2.81	0	7.00	0.11667	17.9	12.1	9.9	0.683	0.419	0.430	0.0434	43.418	36.95
3/20/2003	2:37:50 PM	24.393	23.89	24.342	25.443	24.87	11.78	19.529	4.816	8.081	1.581	0.59	49.275	0.002	2.81	0	8.00	0.13333	18.1	12.1	9.9	0.685	0.419	0.427	0.0430	42.978	36.58
3/20/2003	2:38:50 PM	24.64	23.892	24.639	25.294	24.876	11.747	19.67	4.736	8.04	1.656	0.581	48.982	0.001	2.835	0	9.00	0.15	18.2	12.0	9.9	0.682	0.423	0.427	0.0432	43.159	36.73
3/20/2003	2:39:50 PM	24.943	23.924	24.962	25.196	24.884	11.759	19.633	4.725	8.071	1.653	0.587	48.025	0.002	2.834	0	10.00	0.16667	18.2	11.8	9.9	0.684	0.423	0.423	0.0427	42.660	36.30
3/20/2003	2:40:50 PM	25.228	23.918	25.237	25.025	24.873	11.695	19.625	4.714	8.028	1.673	0.584	49.158	0.002	2.842	0.001	11.00	0.18333	18.2	12.0	9.9	0.680	0.424	0.421	0.0427	42.681	36.32
3/20/2003	2:41:50 PM	25.524	23.934	25.533	24.93	24.844	11.739	19.612	4.767	8.046	1.659	0.584	49.194	0.002	2.841	0	12.00	0.2	18.1	12.1	9.9	0.682	0.424	0.417	0.0422	42.181	35.90
3/20/2003	2:42:50 PM	25.778	23.928	25.786	24.819	24.822	11.724	19.619	4.787	7.999	1.659	0.579	49.059	0.002	2.832	0.001	13.00	0.21667	18.1	12.0	9.9	0.680	0.422	0.413	0.0419	41.881	35.64
3/20/2003	2:43:50 PM	26.067	23.942	26.081	24.733	24.801	12.076	19.765	4.791	8.433	1.448	0.579	49.37	0.002	2.797	0	14.00	0.23333	18.3	12.1	10.3	0.707	0.417	0.405	0.0395	39.451	33.57
3/20/2003	2:44:50 PM	26.346	23.951	26.369	24.666	24.795	11.989	19.776	4.72	8.281	1.529	0.584	49.256	0.002	2.822	0.001	15.00	0.25	18.3	12.1	10.1	0.699	0.421	0.405	0.0400	39.951	34.00
3/20/2003	2:45:50 PM	26.599	23.944	26.622	24.59	24.788	11.639	19.339	4.77	7.872	1.566	0.581	49.288	0.002	2.822	0.001	16.00	0.26667	17.9	12.1	9.8	0.673	0.421	0.402	0.0412	41.213	35.07
3/20/2003	2:46:50 PM	26.862	23.943	26.88	24.543	24.792	12.016	19.602	4.767	8.349	1.442	0.579	49.147	0.002	2.794	0	17.00	0.28333	18.1	12.0	10.2	0.702	0.417	0.395	0.0388	38.814	33.03
3/20/2003	2:47:50 PM	27.137	23.963	27.15	24.508	24.807	12.167	19.718	4.728	8.501	1.326	0.579	49.032	0.002	2.775	0.002	18.00	0.3	18.2	12.0	10.3	0.712	0.414	0.390	0.0377	37.701	32.08
3/20/2003	2:48:50 PM	27.382	23.968	27.414	24.483	24.812	12.265	19.534	4.723	8.709	1.196	0.576	49.359	0.002	2.753	0.001	19.00	0.31667	18.1	12.1	10.5	0.723	0.410	0.384	0.0366	36.587	31.14
3/20/2003	2:49:50 PM	27.631	23.968	27.659	24.473	24.832	12.347	19.538	4.652	8.76	1.046	0.57	49.112	0.002	2.728	0.001	20.00	0.33333	18.1	12.0	10.6	0.728	0.407	0.378	0.0358	35.783	30.45
3/20/2003	2:50:50 PM	27.876	23.973	27.913	24.498	24.852	12.484	19.525	4.728	8.771	0.925	0.57	49.265	0.002	2.7	0.001	21.00	0.35	18.1	12.1	10.6	0.733	0.403	0.371	0.0349	34.923	29.72
3/20/2003	2:51:50 PM	28.121	23.984	28.169	24.544	24.879	12.681	19.639	4.686	9.002	0.792	0.57	49.191	0.002	2.674	0	22.00	0.36667	18.2	12.1	10.8	0.747	0.399	0.365	0.0337	33.666	28.65
3/20/2003	2:52:50 PM	28.371	23.99	28.408	24.575	24.909	12.946	19.728	4.723	9.264	0.647	0.567	49.441	0.002	2.651	0.002	23.00	0.38333	18.3	12.1	11.1	0.766	0.395	0.359	0.0324	32.370	27.55
3/20/2003	2:53:50 PM	28.596	24.001	28.663	24.651	24.925	12.934	19.697	4.754	9.233	0.641	0.567	49.378	0.002	2.633	0.001	24.00	0.4	18.2	12.1	11.1	0.764	0.393	0.355	0.0320	31.988	27.22
3/20/2003	2:54:50 PM	28.837	24.002	28.884	24.683	24.947	13.149	19.78	4.748	9.42	0.471	0.561	48.306	0.001	2.607	0.001	25.00	0.41667	18.3	11.8	11.3	0.778	0.389	0.349	0.0309	30.920	26.31
3/20/2003	2:55:50 PM	29.087	24.019	29.134	24.739	24.973	13.002	19.623	4.775	9.133	0.508	0.561	49.082	0.002	2.612	0.002	26.00	0.43333	18.2	12.0	11.1	0.763	0.389	0.347	0.0314	31.371	26.70
3/20/2003	2:56:50 PM	29.317	24.04	29.383	24.775	25.019	13.215	19.573	4.776	9.336	0.257	0.558	49.166	0.002	2.568	0.002	27.00	0.45	18.1	12.0	11.3	0.777	0.383	0.339	0.0301	30.068	25.59
3/20/2003	2:57:50 PM	29.558	24.057	29.624	24.807	25.061	13.458	19.794	4.695	9.805	0.144	0.558	49.309	0.002	2.55	0.002	28.00	0.46667	18.3	12.1	11.6	0.802	0.380	0.334	0.0288	28.753	24.47
3/20/2003	2:58:50 PM	29.792	24.058	29.864	24.848	25.082	13.549	19.782	4.666	9.942	0.124	0.558	49.271	0.002	2.539	0.001	29.00	0.48333	18.3	12.1	11.7	0.810	0.379	0.331	0.0282	28.166	23.97
3/20/2003	2:59:50 PM	30.033	24.079	30.109	24.885	25.103	13.561	19.629	4.619	9.866	-0.012	0.561	50.916	0.002	2.514	0	30.00	0.5	18.2	12.5	11.7	0.808	0.375	0.325	0.0278	27.779	23.64
3/20/2003	3:00:50 PM	30.263	24.091	30.324	24.836	25.13	13.723	19.84	4.705	10.058	-0.02	0.555	49.449	0.002	2.511	0.001	31.00	0.51667	18.4	12.1	11.9	0.820	0.374	0.323	0.0272	27.174	23.13
3/20/2003	3:01:50 PM	30.487	24.106	30.553	24.792	25.136	13.64	19.71	4.656	9.979	-0.038	0.558	49.185	0.001	2.516	0	32.00	0.53333	18.2	12.1	11.8	0.814	0.375	0.322	0.0272	27.245	23.19
3/20/2003	3:02:50 PM	30.715	24.126	30.791	24.777	25.136	13.789	19.85	4.708	9.981	-0.067	0.558	49.401	0.002	2.503	0.001	33.00	0.55	18.4	12.1	11.9	0.819	0.373	0.318	0.0268	26.758	22.77
3/20/2003	3:03:50 PM	30.928	24.136	31.009	24.721	25.14	13.576	19.623	4.796	9.6	-0.047	0.558	49.279	0.002	2.505	0	34.00	0.56667	18.2	12.1	11.6	0.799	0.373	0.316	0.0273	27.305	23.24
3/20/2003	3:04:50 PM	31.166	24.145	31.221	24.66	25.154	13.886	19.993	4.71	10.042	-0.055	0.558	49.431	0.002	2.508	0	35.00	0.58333	18.5	12.1	12.0	0.825	0.374	0.315	0.0263	26.327	22.40
3/20/2003	3:05:50 PM	31.359	24.164	31.012	24.599	25.214	13.603	19.631	4.668	9.821	-0.047	0.558	49.225	0.002	2.516	0.001	36.00	0.6	18.2	12.1	11.7	0.808	0.375	0.318	0.0271	27.132	23.09
3/20/2003	3:06:50 PM	30.96	24.173	30.276	24.543	25.167	13.847	19.66	4.68	10.142	-0.179	0.555	49.647	0.002	2.471	0	37.00	0.61667	18.2	12.2	12.0	0.827	0.368	0.318	0.0265	26.544	22.59
3/20/2003	3:07:50 PM	30.531	24.176	30.035	24.495	25.14	13.893	19.718	4.683	10.097	-0.191	0.552	49.37	0.002	2.464	0.001	38.00	0.63333	18.2	12.1	12.0	0.827	0.367	0.320	0.0266	26.641	22.67
3/20/2003	3:08:50 PM	30.331	24.189	29.999	24.494	25.128	14.031	19.9	4.701	10.204	-0.252	0.552	49.483	0.002	2.456	0.001	39.00	0.65	18.4	12.1	12.1	0.835	0.366	0.319	0.0263	26.312	22.39
3/20/2003	3:09:50 PM	30.289	24.198	30.082	24.482	25.127	13.891	19.769	4.804	9.899	-0.252	0.552	49.361	0.002	2.454	0	40.00	0.66667	18.3	12.1	11.9	0.820	0.366	0.318	0.0267	26.722	22.74
3/20/2003	3:10:50 PM	30.344	24.198	30.206	24.482	25.107	13.905	19.759	4.656	10.155	-0.231	0.55	49.24	0.002	2.461	0.001	41.00	0.68333	18.3	12.1	12.0	0.829	0.367	0.318	0.0264	26.408	22.47
3/20/2003	3:11:50 PM	30.458	24.212	30.379	24.527	25.111	13.694	19.55	4.68	9.878	-0.182	0.55	49.137	0.001	2.474	0	42.00	0.7	18.1	12.0	11.8	0.813	0.369	0.318	0.0270	26.970	22.95
3/20/2003	3:12:50 PM	30.587	24.217	30.538	24.552	25.136	13.899	19.821	4.678	10.091	-0.179	0.552	49.078	0.002	2.478	0.001	43.00	0.71667	18.4	12.0	12.0	0.827	0.369	0.317	0.0264	26.429	22.49
3/20/2003	3:13:50 PM	30.731	24.207	30.687	24.572	25.141	13.87	19.842	4.68	10.183	-0.159	0.547	50.385	0.002	2.488	0.002	44.00	0.73333	18.4	12.3	12.0	0.829	0.371	0.317	0.0264	26.359	22.43
3/20/2003	3:14:50 PM	30.915	24.233	30.886	24.618	25.147	13.897	19.95	4.659	10.06	-0.075	0.547	48.31	0.002	2.497	0.001	45.00	0.75	18.5	11.8	12.0	0.826	0.372	0.316	0.0264	26.418	22.48

Figure C22a: 1.31B: After AN-102R2, Batch 4A – 2 M Nitric Acid Cleaning – First Cleaning (first 45 minutes) – Raw & Calculated Data

3/20/2003	3:15:50 PM	31.09	24.244	31.081	24.638	25.173	13.777	19.877	4.599	10.071	-0.052	0.547	48.917	0.002	2.51	0.001	46.00	0.76667	18.4	12.0	11.9	0.822	0.374	0.316	0.0265	26.536	22.58
3/20/2003	3:16:50 PM	31.269	24.255	31.26	24.679	25.178	13.886	19.933	4.577	10.204	-0.093	0.547	49.217	0.002	2.504	0	47.00	0.78333	18.5	12.1	12.0	0.830	0.373	0.314	0.0261	26.081	22.20
3/20/2003	3:17:50 PM	31.429	24.26	31.444	24.725	25.214	13.746	19.877	4.635	10.122	0.029	0.547	48.826	0.002	2.526	0.002	48.00	0.8	18.4	12.0	11.9	0.823	0.377	0.315	0.0264	26.423	22.49
3/20/2003	3:18:50 PM	31.598	24.261	31.599	24.691	25.245	13.746	19.904	4.677	9.987	0.063	0.55	48.977	0.002	2.536	0.001	49.00	0.81667	18.4	12.0	11.9	0.818	0.378	0.315	0.0266	26.567	22.61
3/20/2003	3:19:50 PM	31.782	24.287	31.788	24.732	25.256	13.511	19.459	4.733	9.721	-0.099	0.547	49.619	0.002	2.513	0	50.00	0.83333	18.0	12.2	11.6	0.801	0.375	0.311	0.0268	26.757	22.77
3/20/2003	3:20:50 PM	31.957	24.303	31.982	24.778	25.287	13.638	19.788	4.652	9.897	0.066	0.55	49.298	0.002	2.536	0	51.00	0.85	18.3	12.1	11.8	0.811	0.378	0.312	0.0265	26.516	22.57
3/20/2003	3:21:50 PM	32.131	24.314	32.152	24.819	25.303	13.634	19.788	4.698	9.809	0.052	0.55	49.689	0.002	2.536	0.001	52.00	0.86667	18.3	12.2	11.7	0.808	0.378	0.311	0.0265	26.499	22.55
3/20/2003	3:22:50 PM	32.291	24.316	32.312	24.83	25.324	13.584	19.757	4.684	9.989	0.069	0.547	49.506	0.002	2.544	0.002	53.00	0.88333	18.3	12.1	11.8	0.813	0.379	0.310	0.0263	26.323	22.40
3/20/2003	3:23:50 PM	32.476	24.352	32.511	24.872	25.361	13.364	19.65	4.616	9.704	0.127	0.547	49.456	0.002	2.55	0.001	54.00	0.9	18.2	12.1	11.5	0.795	0.380	0.309	0.0268	26.819	22.82
3/20/2003	3:24:50 PM	32.651	24.359	32.671	24.818	25.377	13.487	19.778	4.676	9.731	0.179	0.544	49.37	0.002	2.559	0.001	55.00	0.91667	18.3	12.1	11.6	0.800	0.382	0.309	0.0266	26.625	22.66
3/20/2003	3:25:50 PM	32.815	24.374	32.84	24.789	25.373	13.367	19.788	4.605	9.702	0.28	0.547	49.126	0.001	2.587	0	56.00	0.93333	18.3	12.0	11.5	0.795	0.386	0.311	0.0270	26.968	22.95
3/20/2003	3:26:50 PM	32.985	24.411	33.029	24.806	25.385	13.377	19.695	4.634	9.671	0.222	0.547	49.43	0.002	2.575	0.001	57.00	0.95	18.2	12.1	11.5	0.795	0.384	0.308	0.0267	26.732	22.75
3/20/2003	3:27:50 PM	33.143	24.396	33.163	24.74	25.365	13.298	19.687	4.581	9.708	0.208	0.547	49.466	0.002	2.587	0.001	58.00	0.96667	18.2	12.1	11.5	0.793	0.386	0.308	0.0268	26.810	22.82
3/20/2003	3:28:50 PM	33.311	24.411	33.326	24.73	25.385	13.159	19.558	4.743	9.317	0.283	0.547	49.374	0.002	2.597	0.001	59.00	0.98333	18.1	12.1	11.2	0.775	0.387	0.308	0.0274	27.429	23.34
3/20/2003	3:29:50 PM	33.469	24.415	33.479	24.725	25.379	13.367	19.823	4.606	9.716	0.289	0.544	49.676	0.001	2.601	0.001	60.00	1	18.4	12.2	11.5	0.796	0.388	0.307	0.0266	26.640	22.67
3/20/2003	3:30:50 PM	33.621	24.425	33.621	24.749	25.363	13.149	19.643	4.697	9.413	0.349	0.544	49.386	0.002	2.61	0	61.00	1.01667	18.2	12.1	11.3	0.778	0.389	0.307	0.0272	27.246	23.19
3/20/2003	3:31:50 PM	33.788	24.433	33.788	24.737	25.332	13.259	19.757	4.7	9.54	0.387	0.544	49.401	0.002	2.614	0	62.00	1.03333	18.3	12.1	11.4	0.786	0.390	0.306	0.0269	26.885	22.88
3/20/2003	3:32:50 PM	33.946	24.447	33.945	24.707	25.336	13.201	19.77	4.605	9.59	0.367	0.544	49.359	0.002	2.628	0.001	63.00	1.05	18.3	12.1	11.4	0.786	0.392	0.307	0.0269	26.926	22.91
3/20/2003	3:33:50 PM	34.092	24.451	34.097	24.58	25.314	13.05	19.573	4.813	9.199	0.315	0.544	49.839	0.002	2.621	0.001	64.00	1.06667	18.1	12.2	11.1	0.767	0.391	0.305	0.0274	27.398	23.32
3/20/2003	3:34:50 PM	34.255	24.465	34.264	24.524	25.319	13.083	19.736	4.581	9.53	0.526	0.547	49.464	0.002	2.645	0	65.00	1.08333	18.3	12.1	11.3	0.780	0.394	0.306	0.0271	27.083	23.05
3/20/2003	3:35:50 PM	34.402	24.475	34.406	24.513	25.338	13.093	19.736	4.636	9.416	0.526	0.544	49.462	0.002	2.644	0.002	66.00	1.1	18.3	12.1	11.3	0.776	0.394	0.305	0.0271	27.096	23.06
3/20/2003	3:36:50 PM	34.554	24.484	34.559	24.522	25.342	13.093	19.83	4.641	9.514	0.569	0.55	49.579	0.002	2.657	0.001	67.00	1.11667	18.4	12.2	11.3	0.779	0.396	0.305	0.0270	27.002	22.98
3/20/2003	3:37:50 PM	34.703	24.494	34.702	24.512	25.367	13.019	19.767	4.673	9.317	0.586	0.547	49.481	0.002	2.661	0.001	68.00	1.13333	18.3	12.1	11.2	0.770	0.397	0.305	0.0273	27.267	23.20
3/20/2003	3:38:50 PM	34.836	24.494	34.845	24.497	25.387	13.132	19.889	4.613	9.571	0.598	0.544	49.401	0.002	2.668	0.002	69.00	1.15	18.4	12.1	11.4	0.783	0.398	0.304	0.0268	26.796	22.80
3/20/2003	3:39:50 PM	34.841	24.504	34.401	24.573	25.372	13.103	19.817	4.71	9.475	0.586	0.544	49.508	0.002	2.66	0.001	70.00	1.16667	18.3	12.1	11.3	0.778	0.397	0.307	0.0272	27.180	23.13
3/20/2003	3:40:50 PM	34.461	24.504	33.862	24.838	25.422	13.062	19.801	4.666	9.344	0.543	0.541	49.516	0.002	2.656	0.002	71.00	1.18333	18.3	12.1	11.2	0.772	0.396	0.311	0.0277	27.741	23.61
3/20/2003	3:41:50 PM	34.012	24.53	33.364	25.094	25.428	12.946	19.53	4.624	9.381	0.523	0.547	48.745	0.002	2.645	0.002	72.00	1.2	18.1	11.9	11.2	0.770	0.394	0.314	0.0281	28.094	23.91
3/20/2003	3:42:50 PM	33.578	24.536	32.876	25.241	25.425	13.213	19.861	4.62	9.588	0.468	0.541	49.344	0.002	2.633	0.001	73.00	1.21667	18.4	12.1	11.4	0.786	0.393	0.316	0.0277	27.744	23.61
3/20/2003	3:43:50 PM	33.163	24.542	32.49	25.387	25.44	13.103	19.587	4.705	9.321	0.367	0.541	50.513	0.001	2.62	0.001	74.00	1.23333	18.1	12.4	11.2	0.773	0.391	0.318	0.0284	28.362	24.14
3/20/2003	3:44:50 PM	32.795	24.575	32.196	25.485	25.473	13.282	19.796	4.581	9.729	0.367	0.547	49.298	0.002	2.612	0	75.00	1.25	18.3	12.1	11.5	0.793	0.389	0.320	0.0278	27.772	23.63
3/20/2003	3:45:50 PM	32.451	24.572	31.906	25.527	25.506	13.284	19.846	4.659	9.594	0.375	0.541	49.227	0.001	2.608	0.001	76.00	1.26667	18.4	12.1	11.4	0.789	0.389	0.322	0.0281	28.109	23.92
3/20/2003	3:46:50 PM	32.176	24.605	31.681	25.6	25.538	13.418	19.838	4.647	9.778	0.289	0.544	49.223	0.002	2.598	0	77.00	1.28333	18.4	12.1	11.6	0.800	0.387	0.322	0.0278	27.785	23.65
3/20/2003	3:47:50 PM	31.922	24.608	31.451	25.678	25.557	13.191	19.621	4.659	9.508	0.289	0.541	49.252	0.002	2.589	0	78.00	1.3	18.2	12.1	11.3	0.783	0.386	0.323	0.0285	28.471	24.23
3/20/2003	3:48:50 PM	31.691	24.621	31.265	25.726	25.564	13.404	19.863	4.69	9.708	0.289	0.544	49.162	0.002	2.595	0	79.00	1.31667	18.4	12.0	11.6	0.797	0.387	0.326	0.0282	28.168	23.97
3/20/2003	3:49:50 PM	31.479	24.622	31.063	25.697	25.565	13.522	19.962	4.64	9.983	0.26	0.544	49.191	0.001	2.589	0	80.00	1.33333	18.5	12.1	11.8	0.810	0.386	0.327	0.0278	27.785	23.65
3/20/2003	3:50:50 PM	31.302	24.629	30.906	25.654	25.567	13.201	19.558	4.77	9.362	0.266	0.547	49.177	0.002	2.58	0	81.00	1.35	18.1	12.1	11.3	0.778	0.385	0.327	0.0290	28.967	24.65
3/20/2003	3:51:50 PM	31.149	24.639	30.758	25.599	25.543	13.445	19.815	4.67	9.717	0.208	0.547	49.099	0.002	2.572	0	82.00	1.36667	18.3	12.0	11.6	0.798	0.383	0.327	0.0282	28.243	24.04
3/20/2003	3:52:50 PM	31.02	24.65	30.624	25.545	25.548	13.362	19.664	4.615	9.653	0.231	0.547	49.179	0.002	2.566	0.001	83.00	1.38333	18.2	12.1	11.5	0.793	0.383	0.328	0.0285	28.460	24.22
3/20/2003	3:53:50 PM	30.896	24.66	30.505	25.495	25.533	13.383	19.759	4.819	9.506	0.231	0.547	49.193	0.002	2.564	0	84.00	1.4	18.3	12.1	11.4	0.789	0.382	0.328	0.0287	28.687	24.41
3/20/2003	3:54:50 PM	30.786	24.654	30.38	25.394	25.512	13.588	19.885	4.674	9.843	0.121	0.55	49.569	0.001	2.541	0.001	85.00	1.41667	18.4	12.1	11.7	0.808	0.379	0.326	0.0279	27.867	23.71
3/20/2003	3:55:50 PM	30.701	24.659	30.295	25.368	25.482	13.617	19.91	4.623	9.956	0.138	0.547	49.271	0.001	2.557	0.001	86.00	1.43333	18.4	12.1	11.8	0.813	0.381	0.329	0.0279	27.938	23.78
3/20/2003	3:56:50 PM	30.62	24.657	30.234	25.352	25.475	13.493	19.794	4.692	9.778	0.164	0.552	49.355	0.002	2.547	0.002	87.00	1.45	18.3	12.1	11.6	0.802	0.380	0.329	0.0282	28.236	24.03
3/20/2003	3:57:50 PM	30.544	24.651	30.188	25.27	25.434	13.458	19.73	4.659	9.751	0.153	0.544	49.114	0.002	2.555	0	88.00	1.46667	18.3	12.0	11.6	0.800	0.381	0.330	0.0284	28.436	24.20
3/20/2003	3:58:50 PM	30.458	24.639	30.167	25.249	25.402	13.447	19.714	4.616	9.843	0.138	0.544	49.198	0.002	2.545	0.002	89.00	1.48333	18.2	12.1	11.6	0.803	0.379	0.329	0.0282	28.243	24.03
3/20/2003	3:59:50 PM	30.396	24.652	30.12	25.196	25.395	13.57	19.813	4.665	9.893	0.13	0.544	49.326	0.002	2.543	0.001	90.00	1.5	18.3	12.1	11.7	0.809	0.379	0.329	0.0280	28.048	23.87
3/20/2003	4:00:50 PM	30.355	24.65	30.049	25.135	25.383	13.601	19.838	4.736	9.792	0.066	0.547	49.29	0.002	2.546	0.002	91.00	1.51667	18.4	12.1	11.7	0.806	0.380	0.330	0.0282	28.220	24.02
	Averages	30.2	24.2	30.0	24.9	25.2	12.9	19.7	4.7	9.2	0.7	1.9	49.2	0.0	2.6	0.0	45.5	0.8	18.3	12.1	11.1	0.763	0.381	0.333	0.0298	29.842	25.396
	Maximum	34.8	24.7	34.8	25.7	25.6	14.0	20.3	4.8	10.2	12.0	59.0	50.9	0.4	2.8	0.0	91.0	1.5	18.9	12.5	12.1	0.835	0.424	0.432	0.0434	43.418	36.949
	Median	30.7	24.2	30.5	24.8	25.2	13.3	19.7	4.7	9.6	0.3	0.6	49.3	0.0	2.6	0.0	45.5	0.8	18.3	12.1	11.4	0.789	0.386	0.322	0.0278	27.782	23.643
	Minimum	23.9	23.8	23.5	24.5	24.6	2.8	19.3	4.6	-1.3	-0.3	-4.5	47.3	0.0	0.0	0.0	0.0	0.0	17.9	11.6	0.8	0.053	0.000	0.000	0.0000	0.037	0.031
	2 x Std Dev	6.135	0.548	6.171	0.788	0.521	2.868	0.303	0.126	2.952	3.105	17.614	0.901	0.089	0.791	0.001	53.113	0.885	0.304	0.221	2.909	0.201	0.118	0.127	0.0141	14.071	11.975
Number of Points Used*		92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
	* Backpulse points in box are not included																												

Figure C22b: 1.31B: After AN-102R2, Batch 4A – 2 M Nitric Acid Cleaning – First Cleaning (remaining 45 minutes) – Raw & Calculated Data

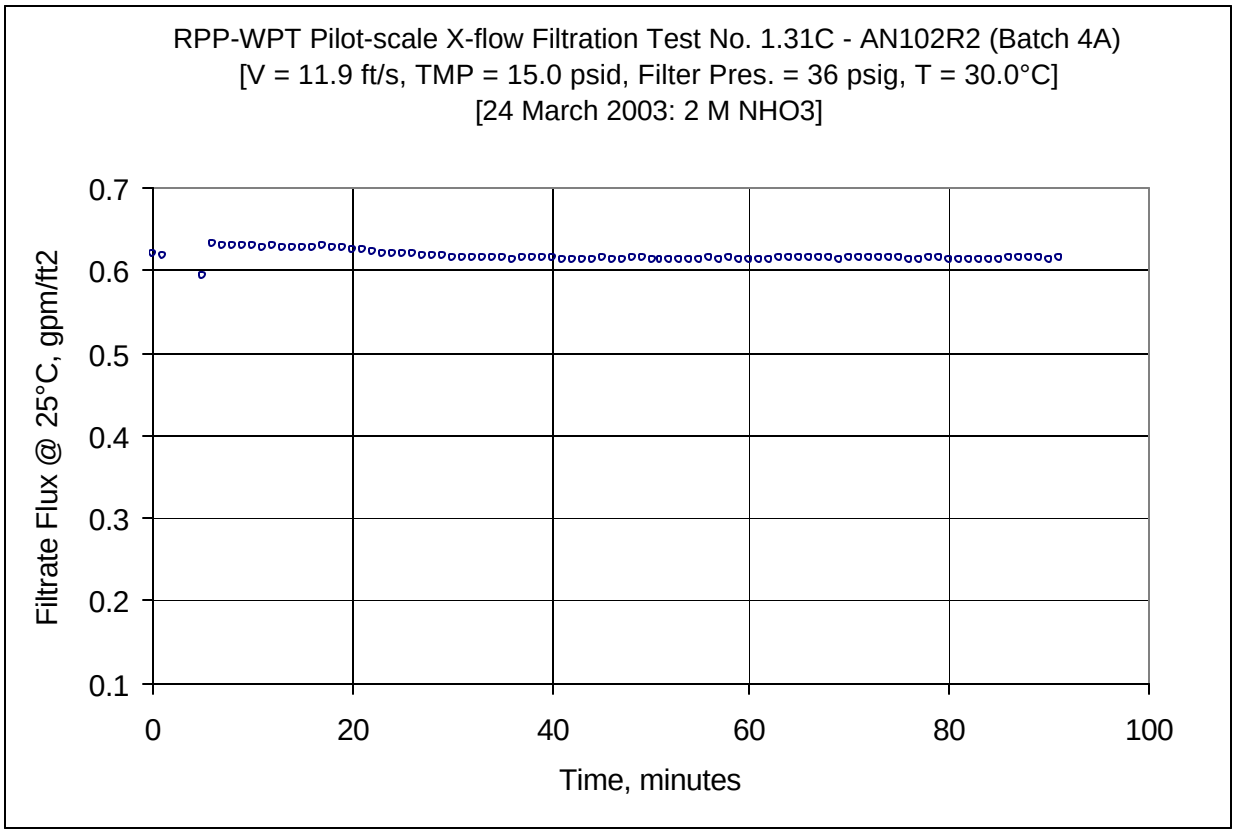


Figure C23: 1.31C: After AN-102R2, Batch 4A – 2 M Nitric Acid Cleaning – Second Cleaning

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
3/24/2003	8:57:40 AM	20.463	19.765	18.083	20.818	19.56	-0.129	-0.053	-0.056	0.05	-0.174	0.219	-0.216	0.001	0.001	0			Filter Surface	6.707	FT2						
3/24/2003	8:57:56 AM	20.463	19.765	18.083	20.818	19.56	-0.129	-0.053	-0.056	0.05	-0.174	0.219	-0.216	0.001	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
3/24/2003	8:57:57 AM	20.462	19.76	18.093	20.828	19.555	-0.133	-0.053	-0.056	0.052	-0.174	0.222	-0.212	0.002	0.001	0											
3/24/2003	8:57:58 AM	20.462	19.76	18.093	20.823	19.56	-0.131	-0.053	-0.056	0.054	-0.171	0.222	-0.216	0.002	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
3/24/2003	8:57:59 AM	20.467	19.765	18.093	20.823	19.555	-0.131	-0.055	-0.056	0.05	-0.174	0.222	-0.212	0.002	0.001	0											
3/24/2003	8:58:00 AM	20.462	19.76	18.098	20.828	19.56	-0.131	-0.053	-0.056	0.054	-0.174	0.222	-0.218	0.002	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
3/24/2003	8:58:01 AM	20.462	19.765	18.093	20.833	19.56	-0.131	-0.053	-0.056	0.054	-0.174	0.222	-0.212	0.002	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY >>		
3/24/2003	8:58:02 AM	20.467	19.765	18.093	20.828	19.555	-0.131	-0.055	-0.056	0.052	-0.174	0.219	-0.218	0.002	0.001	0							at 25C		x 1000		
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
3/24/2003	9:29:37 AM	29.896	20.187	29.855	21.365	20.497	16.444	37.352	4.424	14.458	14.03	-4.35	49.03	0.001	4.758	0.002	0	0	35.9	12.0	15.5	1.065	0.709	0.620	0.0401	40.134	34.15
3/24/2003	9:30:37 AM	30.125	20.203	30.09	21.397	20.569	16.508	37.4	4.42	14.535	14.03	-4.35	48.994	0.002	4.764	0.001	1.00	0.01667	35.9	12.0	15.5	1.070	0.710	0.617	0.0397	39.747	33.83
3/24/2003	9:31:37 AM	30.098	20.211	30.186	21.449	20.651	2.698	38.746	4.323	-1.371	30.895	15.018	45.099	0.003	0.001	0	2.00	0.03333	37.3	11.1	0.7	0.046	0.000	0.000	0.0002	0.195	0.17
3/24/2003	9:32:37 AM	29.957	20.255	30.334	21.599	20.731	2.806	38.629	4.346	-1.174	30.881	20.572	44.774	0.002	0.001	0	3.00	0.05	37.4	11.0	0.8	0.056	0.000	0.000	0.0002	0.158	0.13
3/24/2003	9:33:37 AM	29.757	20.284	30.358	21.729	20.81	2.704	38.781	4.3	-1.328	30.939	78.563	45.003	0.002	0.001	0	4.00	0.06667	37.3	11.0	0.7	0.047	0.000	0.000	0.0002	0.187	0.16
3/24/2003	9:34:37 AM	30.015	20.313	30.119	21.924	20.91	15.489	37.399	4.384	13.563	14.926	1.728	48.957	0.887	4.593	0	5.00	0.08333	35.9	12.0	14.5	1.002	0.685	0.594	0.0409	40.914	34.82
3/24/2003	9:35:37 AM	30.179	20.354	29.945	22.06	20.986	15.583	37.371	4.352	13.684	14.871	1.647	48.858	0.002	4.862	0	6.00	0.1	35.9	12.0	14.6	1.009	0.725	0.632	0.0432	43.196	36.76
3/24/2003	9:36:37 AM	30.07	20.385	29.826	22.162	21.088	15.728	37.325	4.332	14.024	14.631	1.641	48.883	0.002	4.836	0	7.00	0.11667	35.9	12.0	14.9	1.026	0.721	0.631	0.0424	42.402	36.08
3/24/2003	9:37:37 AM	29.946	20.421	29.732	22.308	21.164	15.788	37.265	4.351	13.884	14.539	1.638	48.877	0.001	4.82	0	8.00	0.13333	35.8	12.0	14.8	1.023	0.719	0.630	0.0425	42.485	36.16
3/24/2003	9:38:37 AM	29.858	20.457	29.669	22.389	21.245	15.955	37.288	4.303	14.175	14.498	1.63	48.717	0.001	4.809	0	9.00	0.15	35.8	11.9	15.1	1.039	0.717	0.630	0.0418	41.815	35.59
3/24/2003	9:39:37 AM	29.76	20.488	29.605	22.486	21.327	16.214	37.49	4.341	14.443	14.359	1.63	48.797	0.001	4.801	0	10.00	0.16667	36.0	12.0	15.3	1.057	0.716	0.630	0.0411	41.100	34.98
3/24/2003	9:40:37 AM	29.687	20.52	29.547	22.568	21.394	16.2	37.437	4.408	14.316	14.296	1.627	48.671	0.001	4.784	0.001	11.00	0.18333	36.0	11.9	15.3	1.052	0.713	0.629	0.0412	41.209	35.07
3/24/2003	9:41:37 AM	29.623	20.541	29.494	22.594	21.471	16.179	37.203	4.368	14.257	14.14	1.621	48.717	0.001	4.78	0	12.00	0.2	35.7	11.9	15.2	1.049	0.713	0.629	0.0413	41.342	35.18
3/24/2003	9:42:37 AM	29.574	20.583	29.47	22.621	21.532	16.202	37.203	4.381	14.218	14.171	1.621	48.749	0.001	4.77	0.001	13.00	0.21667	35.7	11.9	15.2	1.049	0.711	0.628	0.0413	41.305	35.15
3/24/2003	9:43:37 AM	29.537	20.631	29.427	22.633	21.61	16.264	37.284	4.379	14.212	14.166	1.618	48.676	0.001	4.766	0	14.00	0.23333	35.8	11.9	15.2	1.051	0.711	0.628	0.0412	41.243	35.10
3/24/2003	9:44:37 AM	29.503	20.666	29.388	22.649	21.681	16.361	37.273	4.367	14.519	13.958	1.618	48.713	0.002	4.757	0	15.00	0.25	35.8	11.9	15.4	1.065	0.709	0.628	0.0407	40.669	34.61
3/24/2003	9:45:37 AM	29.455	20.704	29.35	22.661	21.753	16.368	37.228	4.407	14.366	14.012	1.618	48.655	0.001	4.753	0.001	16.00	0.26667	35.8	11.9	15.4	1.060	0.709	0.628	0.0409	40.871	34.78
3/24/2003	9:46:37 AM	29.431	20.735	29.292	22.677	21.815	16.318	37.213	4.289	14.503	14.038	1.615	48.743	0.001	4.757	0	17.00	0.28333	35.7	11.9	15.4	1.063	0.709	0.630	0.0409	40.854	34.77
3/24/2003	9:47:37 AM	29.402	20.777	29.263	22.733	21.877	16.361	37.17	4.269	14.421	13.911	1.609	48.671	0.001	4.743	0	18.00	0.3	35.7	11.9	15.4	1.061	0.707	0.628	0.0408	40.818	34.74
3/24/2003	9:48:37 AM	29.379	20.808	29.299	22.74	21.948	16.482	37.3	4.315	14.605	13.966	1.609	48.684	0.001	4.743	0.001	19.00	0.31667	35.8	11.9	15.5	1.072	0.707	0.628	0.0404	40.378	34.36
3/24/2003	9:49:37 AM	29.524	20.85	29.4	22.801	22.03	16.475	37.337	4.37	14.494	13.885	1.609	48.696	0.001	4.746	0	20.00	0.33333	35.9	11.9	15.5	1.068	0.708	0.626	0.0404	40.446	34.42
3/24/2003	9:50:37 AM	29.61	20.886	29.496	22.862	22.071	16.548	37.342	4.361	14.615	13.868	1.612	48.65	0.001	4.745	0	21.00	0.35	35.9	11.9	15.6	1.074	0.707	0.625	0.0401	40.080	34.11
3/24/2003	9:51:37 AM	29.68	20.922	29.596	22.848	22.127	16.401	37.3	4.342	14.329	13.969	1.609	48.676	0.001	4.753	0	22.00	0.36667	35.8	11.9	15.4	1.059	0.709	0.624	0.0406	40.602	34.55
3/24/2003	9:52:37 AM	29.736	20.959	29.692	22.88	22.184	16.451	37.306	4.37	14.396	13.943	1.609	48.571	0.001	4.746	0	23.00	0.38333	35.8	11.9	15.4	1.063	0.708	0.621	0.0403	40.283	34.28
3/24/2003	9:53:37 AM	29.792	21	29.762	22.896	22.245	16.475	37.236	4.34	14.699	13.859	1.609	48.764	0.001	4.745	0.002	24.00	0.4	35.8	12.0	15.6	1.075	0.707	0.620	0.0398	39.776	33.85
3/24/2003	9:54:37 AM	29.832	21.025	29.787	22.931	22.301	16.405	37.164	4.302	14.488	13.894	1.606	48.705	0.001	4.748	0.001	25.00	0.41667	35.7	11.9	15.4	1.065	0.708	0.620	0.0401	40.136	34.16
3/24/2003	9:55:37 AM	29.873	21.057	29.823	23.083	22.377	16.682	37.625	4.345	14.84	14.036	1.606	48.671	0.001	4.749	0.001	26.00	0.43333	36.2	11.9	15.8	1.087	0.708	0.619	0.0393	39.305	33.45
3/24/2003	9:56:37 AM	29.924	21.113	29.879	23.185	22.439	16.624	37.416	4.418	14.65	13.891	1.612	48.671	0.002	4.745	0.001	27.00	0.45	35.9	11.9	15.6	1.078	0.707	0.618	0.0395	39.522	33.63
3/24/2003	9:57:37 AM	29.93	21.124	29.865	23.11	22.496	16.531	37.373	4.331	14.619	13.862	1.604	48.589	0.001	4.748	0	28.00	0.46667	35.9	11.9	15.6	1.074	0.708	0.619	0.0397	39.720	33.80
3/24/2003	9:58:37 AM	29.956	21.166	29.911	23.177	22.542	16.531	37.364	4.356	14.445	13.822	1.609	48.722	0.001	4.746	0.001	29.00	0.48333	35.9	11.9	15.5	1.068	0.708	0.618	0.0399	39.876	33.94
3/24/2003	9:59:37 AM	29.981	21.202	29.932	23.173	22.588	16.415	37.176	4.353	14.433	13.871	1.604	48.734	0.001	4.742	0.001	30.00	0.5	35.7	11.9	15.4	1.063	0.707	0.617	0.0400	39.985	34.03
3/24/2003	10:00:37 AM	30.018	21.244	29.973	23.209	22.65	16.581	37.375	4.402	14.578	13.923	1.609	48.661	0.002	4.742	0	31.00	0.51667	35.9	11.9	15.6	1.074	0.707	0.616	0.0395	39.542	33.65
3/24/2003	10:01:37 AM	30.028	21.255	29.959	23.2	22.681	16.593	37.366	4.335	14.628	13.845	1.604	48.625	0.001	4.745	0.001	32.00	0.53333	35.9	11.9	15.6	1.076	0.707	0.617	0.0395	39.503	33.62
3/24/2003	10:02:37 AM	30.054	21.301	30	23.236	22.732	16.49	37.261	4.318	14.54	13.92	1.606	48.657	0.001	4.747	0	33.00	0.55	35.8	11.9	15.5	1.070	0.708	0.616	0.0397	39.719	33.80
3/24/2003	10:03:37 AM	30.086	21.348	30.031	23.293	22.779	16.525	37.284	4.369	14.484	13.827	1.606	48.694	0.002	4.738	0.002	34.00	0.56667	35.8	11.9	15.5	1.069	0.706	0.615	0.0396	39.637	33.73
3/24/2003	10:04:37 AM	30.091	21.374	30.037	23.334	22.82	16.654	37.468	4.38	14.634	13.822	1.606	48.619	0.001	4.742	0.001	35.00	0.58333	36.0	11.9	15.6	1.079	0.707	0.615	0.0393	39.310	33.45
3/24/2003	10:05:37 AM	30.112	21.41	30.043	23.35	22.866	16.554	37.277	4.371	14.611	13.882	1.604	48.675	0.001	4.737	0.001	36.00	0.6	35.8	11.9	15.6	1.074	0.706	0.614	0.0394	39.417	33.54
3/24/2003	10:06:37 AM	30.118	21.436	30.049	23.366	22.917	16.535	37.387	4.341	14.576	13.885	1.604	48.688	0.002	4.742	0	37.00	0.61667	35.9	11.9	15.6	1.072	0.707	0.615	0.0395	39.521	33.63
3/24/2003	10:07:37 AM	30.123	21.472	30.054	23.401	22.978	16.519	37.277	4.346	14.556	13.906	1.601	48.646	0.001	4.747	0.001	38.00	0.63333	35.8	11.9	15.5	1.071	0.708	0.615	0.0396	39.603	33.70
3/24/2003	10:08:37 AM	30.135	21.498	30.065	23.453	23.034	16.513	37.323	4.33	14.494	13.822	1.601	48.745	0.001	4.743	0.001	39.00	0.65	35.9	11.9	15.5	1.069	0.707	0.615	0.0396	39.645	33.74
3/24/2003	10:09:37 AM	30.146	21.54	30.072	23.519	23.081	16.382	37.131	4.382	14.349	13.848	1.601	48.694	0.001	4.746	0.001	40.00	0.66667	35.7	11.9	15.4	1.059	0.708	0.615	0.0400	40.018	34.06
3/24/2003	10:10:37 AM	30.151	21.575	30.082	23.53	23.116	16.527	37.296	4.323	14.505	13.816	1.601	48.65	0.001	4.741	0.001	41.00	0.68333	35.8	11.9	15.5	1.070	0.707	0.614	0.0396	39.578	33.68
3/24/2003	10:11:37 AM	30.162	21.607	30.083	23.601	23.163	16.486	37.29	4.329	14.486	13.891	1.598	48.633	0.001	4.736	0	42.00	0.7	35.8	11.9	15.5	1.068	0.706	0.613	0.0396	39.611	33.71
3/24/2003	10:12:37 AM	30.173	21.653	30.114	23.683	23.219	16.602	37.352	4.297	14.72	13.819	1.604	48.642	0.001	4.739	0	43.00	0.71667	35.9	11.9	15.7	1.080	0.707	0.613	0.0392	39.161	33.33
3/24/2003	10:13:37 AM	30.169	21.684	30.1	23.668	23.26	16.562	37.331	4.326	14.642	13.804	1.606	48.673	0.002	4.746	0.001	44.00	0.73333	35.9	11.9	15.6	1.076	0.708	0.614	0.0394	39.382	33.51
3/24/2003	10:14:37 AM	30.17	21.71	30.096	23.729	23.311	16.571	37.381	4.364	14.626	13.926	1.604	48.665	0.001	4.746	0	45.00	0.75	35.9	11.9	15.6	1.075	0.708	0.615	0.0394	39.395	33.53

Figure C24a: 1.31B: After AN-102R2, Batch 4A – 2 M Nitric Acid Cleaning – First Cleaning (first 45 minutes) – Raw & Calculated Data

3/24/2003	10:15:37 AM	30.175	21.735	30.106	23.765	23.356	16.61	37.48	4.358	14.611	13.859	1.604	48.703	0.001	4.743	0.001	46.00	0.76667	36.0	11.9	15.6	1.076	0.707	0.614	0.0393	39.329	33.47
3/24/2003	10:16:37 AM	30.181	21.772	30.102	23.831	23.412	16.529	37.313	4.346	14.597	13.813	1.606	48.661	0.002	4.739	0.001	47.00	0.78333	35.8	11.9	15.6	1.073	0.707	0.613	0.0394	39.420	33.55
3/24/2003	10:17:37 AM	30.186	21.813	30.093	23.827	23.458	16.676	37.503	4.384	14.609	13.885	1.601	48.743	0.001	4.749	0	48.00	0.8	36.0	11.9	15.6	1.078	0.708	0.615	0.0393	39.312	33.46
3/24/2003	10:18:37 AM	30.17	21.817	30.067	23.8	23.503	16.595	37.449	4.35	14.679	13.934	1.598	48.642	0.001	4.744	0.001	49.00	0.81667	36.0	11.9	15.6	1.078	0.707	0.615	0.0393	39.312	33.46
3/24/2003	10:19:37 AM	30.181	21.868	30.112	23.816	23.554	16.508	37.323	4.361	14.527	13.903	1.604	48.644	0.001	4.742	0.001	50.00	0.83333	35.9	11.9	15.5	1.070	0.707	0.614	0.0395	39.550	33.66
3/24/2003	10:20:37 AM	30.186	21.892	30.107	23.836	23.583	16.492	37.236	4.351	14.609	13.946	1.598	48.701	0.001	4.744	0	51.00	0.85	35.8	11.9	15.6	1.072	0.707	0.614	0.0395	39.488	33.60
3/24/2003	10:21:37 AM	30.197	21.934	30.128	23.902	23.624	16.552	37.317	4.315	14.634	13.784	1.601	48.598	0.002	4.741	0.001	52.00	0.86667	35.8	11.9	15.6	1.075	0.707	0.613	0.0393	39.333	33.47
3/24/2003	10:22:37 AM	30.186	21.953	30.113	23.862	23.664	16.432	37.217	4.308	14.406	13.877	1.601	48.617	0.001	4.74	0.002	53.00	0.88333	35.7	11.9	15.4	1.063	0.707	0.613	0.0398	39.785	33.86
3/24/2003	10:23:37 AM	30.221	22.009	30.158	23.937	23.7	16.602	37.371	4.346	14.734	13.906	1.604	48.665	0.001	4.739	0.001	54.00	0.9	35.9	11.9	15.7	1.080	0.707	0.613	0.0391	39.096	33.27
3/24/2003	10:24:37 AM	30.205	22.028	30.132	23.991	23.734	16.498	37.327	4.406	14.492	13.871	1.604	48.627	0.001	4.741	0	55.00	0.91667	35.9	11.9	15.5	1.068	0.707	0.613	0.0396	39.577	33.68
3/24/2003	10:25:37 AM	30.215	22.058	30.116	24.036	23.784	16.627	37.437	4.323	14.752	13.819	1.604	48.525	0.001	4.751	0.001	56.00	0.93333	36.0	11.9	15.7	1.082	0.708	0.615	0.0392	39.186	33.35
3/24/2003	10:26:37 AM	30.22	22.093	30.126	24.116	23.833	16.571	37.31	4.31	14.707	13.868	1.606	48.422	0.001	4.745	0.002	57.00	0.95	35.8	11.9	15.6	1.078	0.707	0.614	0.0393	39.253	33.40
3/24/2003	10:27:37 AM	30.219	22.128	30.121	24.151	23.868	16.504	37.385	4.321	14.568	14.007	1.606	48.457	0.002	4.749	0	58.00	0.96667	35.9	11.9	15.5	1.071	0.708	0.614	0.0396	39.551	33.66
3/24/2003	10:28:37 AM	30.224	22.163	30.135	24.211	23.918	16.564	37.358	4.308	14.679	13.917	1.601	48.537	0.001	4.75	0.001	59.00	0.98333	35.9	11.9	15.6	1.077	0.708	0.614	0.0393	39.328	33.47
3/24/2003	10:29:37 AM	30.224	22.188	30.115	24.175	23.953	16.569	37.486	4.337	14.63	13.903	1.601	48.403	0.001	4.742	0	60.00	1	36.0	11.9	15.6	1.076	0.707	0.614	0.0393	39.339	33.48
3/24/2003	10:30:37 AM	30.238	22.223	30.13	24.18	23.993	16.405	37.315	4.3	14.347	13.949	1.604	48.583	0.001	4.749	0	61.00	1.01667	35.8	11.9	15.4	1.060	0.708	0.614	0.0400	39.953	34.00
3/24/2003	10:31:37 AM	30.252	22.257	30.124	24.249	24.037	16.446	37.277	4.318	14.411	13.903	1.604	48.575	0.001	4.746	0.002	62.00	1.03333	35.8	11.9	15.4	1.064	0.708	0.614	0.0398	39.799	33.87
3/24/2003	10:32:37 AM	30.256	22.295	30.137	24.273	24.065	16.577	37.451	4.36	14.581	13.88	1.606	48.485	0.001	4.751	0.001	63.00	1.05	36.0	11.9	15.6	1.074	0.708	0.614	0.0394	39.442	33.57
3/24/2003	10:33:37 AM	30.245	22.315	30.107	24.282	24.095	16.521	37.311	4.234	14.771	13.963	1.606	48.457	0.001	4.752	0	64.00	1.06667	35.8	11.9	15.6	1.079	0.708	0.615	0.0393	39.313	33.46
3/24/2003	10:34:37 AM	30.254	22.344	30.096	24.241	24.129	16.593	37.517	4.332	14.63	13.874	1.601	48.472	0.001	4.747	0	65.00	1.08333	36.0	11.9	15.6	1.076	0.708	0.615	0.0394	39.370	33.50
3/24/2003	10:35:37 AM	30.249	22.359	30.076	24.206	24.159	16.558	37.373	4.337	14.55	13.848	1.601	48.512	0.001	4.746	0	66.00	1.1	35.9	11.9	15.6	1.072	0.708	0.615	0.0395	39.529	33.64
3/24/2003	10:36:37 AM	30.263	22.413	30.095	24.28	24.208	16.529	37.339	4.313	14.701	13.877	1.606	48.512	0.001	4.747	0	67.00	1.11667	35.9	11.9	15.6	1.077	0.708	0.615	0.0394	39.363	33.50
3/24/2003	10:37:37 AM	30.251	22.436	30.078	24.308	24.231	16.457	37.217	4.358	14.505	13.937	1.601	48.554	0.001	4.748	0.001	68.00	1.13333	35.7	11.9	15.5	1.067	0.708	0.615	0.0397	39.730	33.81
3/24/2003	10:38:37 AM	30.27	22.475	30.082	24.362	24.285	16.506	37.296	4.276	14.685	13.851	1.604	48.504	0.001	4.741	0	69.00	1.15	35.8	11.9	15.6	1.075	0.707	0.614	0.0394	39.376	33.51
3/24/2003	10:39:37 AM	30.253	22.493	30.05	24.365	24.308	16.351	37.12	4.247	14.466	13.9	1.601	48.506	0.001	4.743	0	70.00	1.16667	35.6	11.9	15.4	1.062	0.707	0.615	0.0399	39.905	33.96
3/24/2003	10:40:37 AM	30.262	22.533	30.07	24.41	24.348	16.523	37.292	4.271	14.671	13.88	1.604	48.52	0.001	4.744	0	71.00	1.18333	35.8	11.9	15.6	1.075	0.707	0.615	0.0394	39.410	33.54
3/24/2003	10:41:37 AM	30.256	22.567	30.068	24.428	24.387	16.461	37.25	4.318	14.601	13.949	1.606	48.543	0.001	4.746	0	72.00	1.2	35.8	11.9	15.5	1.071	0.708	0.615	0.0396	39.596	33.70
3/24/2003	10:42:37 AM	30.27	22.607	30.062	24.493	24.426	16.678	37.534	4.331	14.769	13.81	1.609	48.504	0.002	4.747	0	73.00	1.21667	36.1	11.9	15.7	1.084	0.708	0.615	0.0391	39.126	33.30
3/24/2003	10:43:37 AM	30.259	22.63	30.051	24.541	24.459	16.498	37.294	4.294	14.675	13.822	1.604	48.527	0.001	4.743	0	74.00	1.23333	35.8	11.9	15.6	1.075	0.707	0.615	0.0394	39.449	33.57
3/24/2003	10:44:37 AM	30.267	22.664	30.059	24.57	24.488	16.417	37.257	4.268	14.513	13.978	1.604	48.493	0.001	4.753	0	75.00	1.25	35.8	11.9	15.5	1.066	0.709	0.616	0.0398	39.834	33.90
3/24/2003	10:45:37 AM	30.266	22.698	30.063	24.558	24.527	16.589	37.41	4.307	14.675	13.822	1.604	48.503	0.001	4.741	0.002	76.00	1.26667	35.9	11.9	15.6	1.078	0.707	0.614	0.0393	39.304	33.45
3/24/2003	10:46:37 AM	30.261	22.733	30.068	24.598	24.577	16.562	37.41	4.353	14.556	13.825	1.604	48.512	0.001	4.74	0.001	77.00	1.28333	35.9	11.9	15.6	1.073	0.707	0.614	0.0395	39.475	33.59
3/24/2003	10:47:37 AM	30.255	22.752	30.082	24.608	24.621	16.579	37.368	4.391	14.466	13.958	1.606	48.587	0.001	4.747	0.001	78.00	1.3	35.9	11.9	15.5	1.070	0.708	0.615	0.0396	39.611	33.71
3/24/2003	10:48:37 AM	30.255	22.787	30.102	24.693	24.646	16.569	37.389	4.262	14.8	13.868	1.606	48.575	0.002	4.748	0	79.00	1.31667	35.9	11.9	15.7	1.081	0.708	0.615	0.0392	39.189	33.35
3/24/2003	10:49:37 AM	30.258	22.816	30.105	24.732	24.65	16.595	37.461	4.332	14.638	13.793	1.606	48.438	0.001	4.744	0.001	80.00	1.33333	36.0	11.9	15.6	1.077	0.707	0.614	0.0393	39.323	33.46
3/24/2003	10:50:37 AM	30.248	22.836	30.125	24.752	24.675	16.627	37.447	4.371	14.564	13.804	1.606	48.39	0.001	4.745	0	81.00	1.35	36.0	11.9	15.6	1.075	0.707	0.614	0.0394	39.363	33.50
3/24/2003	10:51:37 AM	30.263	22.881	30.15	24.792	24.68	16.591	37.424	4.286	14.707	13.9	1.606	48.424	0.001	4.742	0.001	82.00	1.36667	36.0	11.9	15.6	1.079	0.707	0.613	0.0392	39.177	33.34
3/24/2003	10:52:37 AM	30.253	22.901	30.135	24.706	24.709	16.554	37.449	4.319	14.542	13.929	1.601	48.42	0.001	4.75	0	83.00	1.38333	36.0	11.9	15.5	1.072	0.708	0.614	0.0395	39.514	33.63
3/24/2003	10:53:37 AM	30.246	22.939	30.163	24.684	24.718	16.438	37.186	4.339	14.427	13.923	1.606	48.541	0.001	4.747	0	84.00	1.4	35.7	11.9	15.4	1.064	0.708	0.614	0.0398	39.755	33.83
3/24/2003	10:54:37 AM	30.254	22.957	30.141	24.657	24.701	16.72	37.613	4.382	14.929	13.88	1.606	48.548	0.001	4.749	0	85.00	1.41667	36.1	11.9	15.8	1.091	0.708	0.614	0.0388	38.809	33.03
3/24/2003	10:55:37 AM	30.24	22.978	30.112	24.673	24.671	16.697	37.563	4.312	14.83	13.865	1.606	48.392	0.001	4.751	0	86.00	1.43333	36.1	11.9	15.8	1.087	0.708	0.615	0.0390	39.007	33.20
3/24/2003	10:56:37 AM	30.25	22.998	30.092	24.648	24.621	16.384	37.213	4.316	14.523	13.96	1.609	48.407	0.001	4.746	0	87.00	1.45	35.7	11.9	15.5	1.065	0.708	0.615	0.0398	39.769	33.84
3/24/2003	10:57:37 AM	30.249	23.023	30.086	24.587	24.575	16.411	37.207	4.288	14.58	13.848	1.606	48.436	0.001	4.747	0	88.00	1.46667	35.7	11.9	15.5	1.068	0.708	0.615	0.0397	39.676	33.76
3/24/2003	10:58:37 AM	30.253	23.047	30.101	24.531	24.56	16.537	37.435	4.298	14.634	13.946	1.609	48.371	0.002	4.748	0	89.00	1.48333	36.0	11.9	15.6	1.075	0.708	0.615	0.0394	39.439	33.56
3/24/2003	10:59:37 AM	30.243	23.051	30.07	24.375	24.534	16.401	37.213	4.229	14.621	13.88	1.604	48.352	0.001	4.739	0	90.00	1.5	35.7	11.8	15.5	1.069	0.707	0.614	0.0396	39.587	33.69
3/24/2003	11:00:37 AM	30.257	23.081	30.064	24.284	24.548	16.591	37.424	4.314	14.599	13.914	1.606	48.376	0.001	4.749	0	91.00	1.51667	36.0	11.9	15.6	1.075	0.708	0.615	0.0395	39.463	33.58
	Averages	30.1	21.7	30.0	23.6	23.1	16.0	37.4	4.3	14.0	14.5	2.7	48.5	0.0	4.6	0.0	45.5	0.8	35.9	11.9	15.0	1.035	0.685	0.597	0.0386	38.569	32.822
	Maximum	30.3	23.1	30.4	24.8	24.7	16.7	38.8	4.4	14.9	30.9	78.6	49.0	0.9	4.9	0.0	91.0	1.5	37.4	12.0	15.8	1.091	0.725	0.632	0.0432	43.196	36.761
	Median	30.2	21.7	30.1	23.7	23.3	16.5	37.3	4.3	14.6	13.9	1.6	48.6	0.0	4.7	0.0	45.5	0.8	35.9	11.9	15.5	1.071	0.708	0.615	0.0396	39.564	33.670
	Minimum	29.4	20.2	29.3	21.4	20.5	2.7	37.1	4.2	-1.4	13.8	-4.4	44.8	0.0	0.0	0.0	0.0	0.0	35.6	11.0	0.7	0.046	0.000	0.000	0.0002	0.158	0.134
	2 x Std Dev	0.494	1.747	0.494	1.796	2.491	4.893	0.553	0.081	5.635	6.034	16.719	1.328	0.184	1.688	0.001	53.113	0.885	0.553	0.325	5.263	0.363	0.252	0.220	0.0142	14.184	12.071
Number of Points Used*		92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
	* Backpulse points in box are not included																													

Figure C24b: 1.31C: After AN-102R2, Batch 4A – 2 M Nitric Acid Cleaning – Second Cleaning (remaining 45 minutes) – Raw & Calculated Data

Appendix D: Slurry Dewatering, Test Run 1.16 – AN-102R2

While this task filtered slurry under steady state conditions, i.e., both the flow parameters and slurry solids concentration were held constant, the most important test runs dealt with "dewatering" the slurry, which means allowing the solids concentration to increase with time. Initially there were to be just two dewatering tests for this organic based slurry: Batch 3 and Batch 4, which would differ only in mixing regimes while the slurry was prepared before filtration. However, problems with filtering Batch 3 led to reformulating the slurry; therefore it was followed with a Batch 3B and a Batch 3A. The first batch was named Batch 3C. Instead of having two batch it turned out to be four, for which the data are included herein.

The general test matrix was to first test the cross filter with water and then a standard slurry. The slurry dewatering test run, No. 1.16, began by preparing the test slurry and introducing into the test at a insoluble solids concentration near 1.0 wt %. During the dewatering test the slurry axial velocity, V, was maintained at approximately 12 ft/s and the Transmembrane Pressure, TMP, at approximately 40 psid. This process continued until the solids concentration reached the target of 20 wt. This Appendix includes the following dewatering test runs:

1.16, Batch 3C	This AN-102 simulant was precipitated under NOC, see below
1.16, Batch 3B	This AN-102 simulant was precipitated under BC, see below
1.16, Batch 3A	This AN-102 simulant was precipitated under BC at 25°C, see below
1.16, Batch 4A	This AN-102 simulant was precipitated using PJM, see below

NOC – Newly Optimized Conditions – Initially there was to be only a single Batch 3 simulant prepared under the newly optimized conditions, however poor filterability forced a formulation of the slurry simulant and two more Batch 3 test. The conditions that were being "optimized" are called Baseline Conditions, explained below, and basically means using less reagents during the precipitation phase of the slurry preparation, i.e., are 0.03 M SrCO3, 0.03 M NaMn4, bring the free hydroxide concentration to 0.3 M, and precipitate at 20°C. Unfortunately only the decontamination factors were optimized while the filterability of the slurry became worse. This slurry was made while being well mixed.

BC – Baseline Conditions – These were the precipitation conditions used to test another organic based slurry in the past, i.e., AN-107 slurry (Duignan, 2000), which were 0.075 M SrCO3, 0.05 M, bring the free hydroxide concentration to 1 M, and precipitate at 50°C. This slurry was made while being well mixed.

BC at 20°C – Baseline Conditions but at the lower temperature of 20°C. This slurry was made while being well mixed.

PJM – Pulse Jetpump Mixer – This AN-102 simulated slurry was precipitated at the baseline conditions, however, the mixing environment during precipitation was made to mock that which was planned for actual plant operation. A scaled version of the air driven jetpumps were used to determine its effect on the overall process.

Each dewatering test in this Appendix contains a graph of the filtrate flux with time and tables of the data taken and calculated. To better understand the presented information important aspects of the graphs and tables are explained below:

Graphs – Each graph contains time averages of some of the imporant parameters taken during the run at the top of the figures, i.e. Slurry velocity in the filter tube, V; transmembrane pressure, TMP; slurry pressure at the entrance of the filter tube, Filter Pres; and the slurry temperature, T.

Tables – Each table is divided into raw data (the first 17 columns) and calculations (the last 10 columns) which are based on the raw data. The raw data section is divided into three parts:

Individual Entries – Raw Data

Temperature	Filtrate – from the filtrate loop at the exit of the filter bundle
	Cleaning – from the cleaning loop (this loop was not used, except for tests Clean 1 & 2)
	Slurry – from the slurry loop in the slurry reservoir
	Hi Amb. – outside ambient temperature at the top of the test rig
	Lo Amb. – inside ambient temperature at the bottom of the test rig
Pressure	BotTMP – differential pressure across the filter tube at the bottom of the vertical tube
	Filter – gauge pressureof the slurry at the entrance of the filter tube bundle
	Filter dP – differential pressure of the slurry along the height of the vertical 90-inch tube
	TopTMP – differential pressure across the filter tube at the top the vertical 90-inch tube
	Filtrate – gauge pressure of the filtrate at the exit of the filter tube housing
	Pulsepot – gauge pressure of the filtrate at the bottom of the pulsepot
Flow	Slurry – rate of slurry just before entering the seven-filter-tube bundle
	Filtrate – rate of slurry filtrate under normal flow (max. is 1.2 gpm)
	Hi Filtrate – rate of any liquid with has a high flowrate (water, acid, etc.) (max. 5 gpm)
	Backpulse – rate of filtrate in opposite direction from normal flow, i.e., backpulse

Individual Entries – Calculated Data

Time – Minutes after start of test, including the backpulse (based on raw data TIME column)
Press. – Internal filter pressure of slurry at the filter bundle entrance (based on raw data P1 column and corrected for a 40.9-inch water column that exists from the transducer to the point where P1 is measured.)
Vel. – Slurry velocity in filter tube (based on raw data Q1 column and i.d. of the tubes of 0.488 inches)
TMP – Filter transmembrane pressure (based on average of raw data columns dP2 and dP3) in psi.
TMP – Filter transmembrane pressure (based on average of raw data columns dP2 and dP3) in bar.
Filtrate Flux – Filtrate flow rate (raw data columns Q2/Q3) divided by inside filter surface area (6.87 ft2)
Filtrate Flux @ 25°C – Same as Filtrate flux, but correct for temperature with the following multiplier:

T(corrected) = T x Exp[2500/((1/273+T))-(1/298)] as per Test Spec 24590-WTP-TSP-RT-01-029, Rev. 0

Permiability – Filterate flow rate per TMP (based on calculated columns Filtrate Flux @ 25°C and TMP)
Permiability x 1000 – Same as the above Permiability, but increase by 1000 to facilitate graphing
Permiability – Same as Permiability but in metric units, meter/day/bar

Statistics

At the bottom of the last individual entry there are six rows with some data statistics to better understand the data and their fluctuations. The columns are self explained with titles of Averages, Maximum, Median, and Minimum. The next row 2 x Std Dev, is two times the population standard deviation based on the number of data points used, which is the last row. The Number of Points used generally do not included the points taken during the backpulse sequence of each test. This is explained below.

Raw Data Table Layout

The raw data is generally made up of three sections:

Zeros – These eight rows include approximately 15 to 20 seconds of data taken with the pressure transducers placed in the "zero" mode to determine if any zero drift occurred from one test to the next.

Data-Per Minute – On most of the tables the first six rows of these data are contained in a box which indicate data taken during the backpulse. This is were the filtrate flow is reversed temporarily to knock the filtrate cake of the filter surface. During these first few minutes the filtrate flow is stopped, then reversed, then stopped again, then it is finally returned to normal operation. The data during the backpulse operation were taken with a separate log, therefore those data are marked with a box to note this fact. Most or all of those data points are not counted in the statistics at the bottom of the table. The tables of some of the later tests do not show the boxed data because separate logs of data were not taken, however since a backpulse for each run still occurred only those data were not included in the statistics at the bottom of the page.

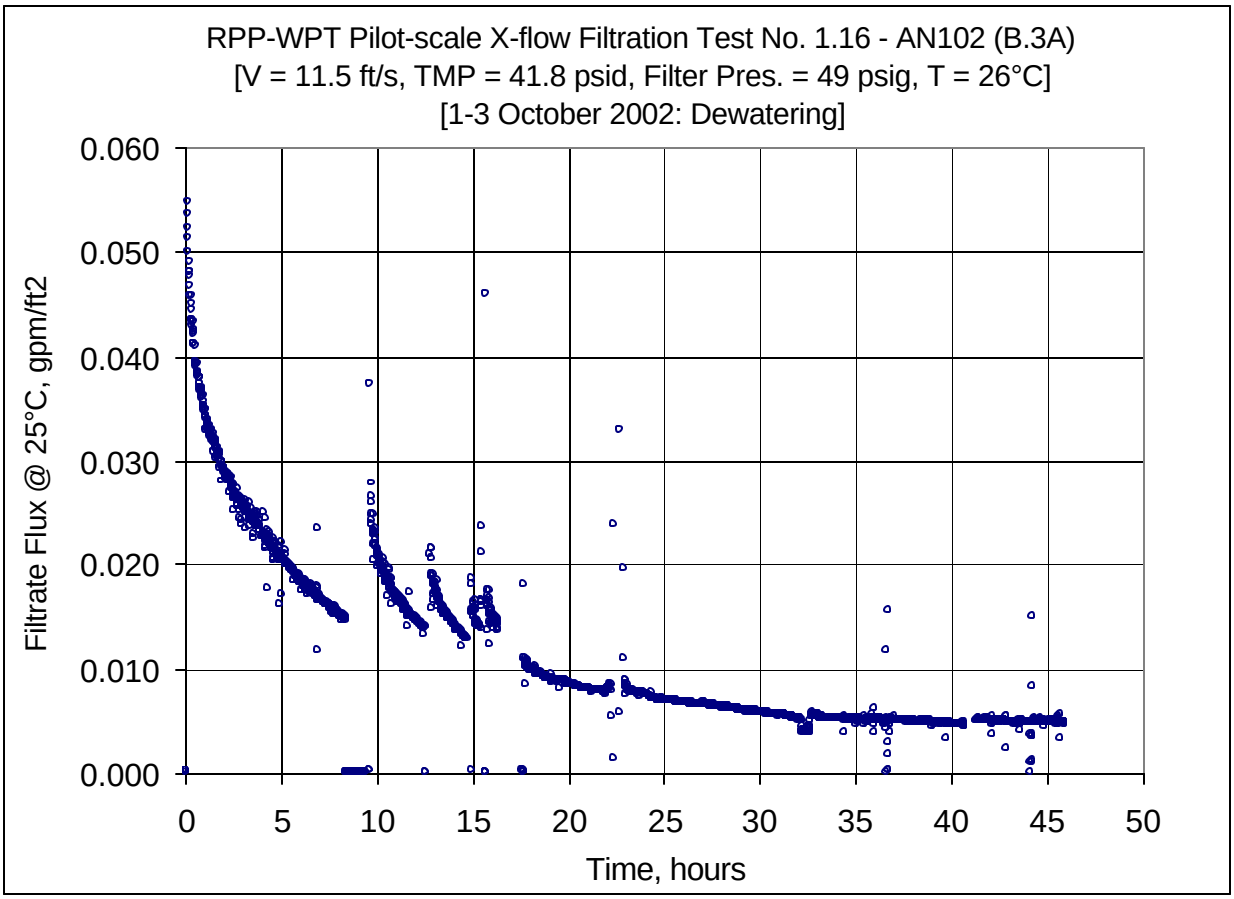


Figure D1: Dewatering of the AN-102R2, batch 3C, insoluble solids concentrations from 1 to 8.5 wt%

(Data from 26 Files)
(1.16-rpp-pxu-100102-1710, -1910, -2110, -2310)
(1.16-rpp-pxu-100202-0132, -0240, -0335, -0534, -0541, -0549, -0756, -0840, -1040)
(1.16-rpp-pxu-100202-1251, -1501, -1524, -1600, -1800, -2000, -2359)
(1.16-rpp-pxu-100302-0200, -0400, -0834, -1031, -1248)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1			<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>						<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
2	DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
3			deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
4			T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
5	Zeros																											
6	9/30/2002	12:25:13 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0											
7	9/30/2002	12:25:25 PM	23.333	22.362	22.232	23.16	22.218	-0.121	0.013	-0.084	0.058	-0.249	0.341	47.06	0.002	0.001	0											
8	9/30/2002	12:25:26 PM	23.313	22.362	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.246	0.344	47.052	0.002	0.001	0											
9	9/30/2002	12:25:27 PM	23.303	22.362	22.226	23.129	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.214	0.002	0.001	0											
10	9/30/2002	12:25:28 PM	23.308	22.357	22.231	23.119	22.223	-0.119	0.013	-0.084	0.06	-0.246	0.344	47.153	0.002	0.001	0											
11	9/30/2002	12:25:29 PM	23.308	22.367	22.237	23.135	22.223	-0.119	0.011	-0.084	0.058	-0.266	0.341	47.233	0.002	0.001	0											
12	9/30/2002	12:25:30 PM	23.308	22.357	22.231	23.129	22.223	-0.119	0.013	-0.084	0.058	-0.249	0.341	47.207	0.002	0.001	0											
13	9/30/2002	12:25:31 PM	23.308	22.357	22.231	23.119	22.223	-0.121	0.013	-0.084	0.058	-0.249	0.344	47.075	0.002	0.001	0											
14																												
15	Data - Per Minute																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
16	10/1/2002	5:10:16 PM	26.595	25.939	25.959	27.276	26.255	4.554	48.081	7.527	-2.155	37.766	86.777	46.404	0.002	0.001	0	Min.	Hour	psig	ft/s	psi	bar	ft2	ft2	ft2/psi	ft2/psi	day/bar
17	10/1/2002	5:11:01 PM	26.595	25.939	25.959	27.276	26.255	4.554	48.081	7.527	-2.155	37.766	86.777	46.404	0.002	0.001	0	0	0	46.6	11.4	1.2	0.083	0.000	0.000	0.000	0.242	0.21
18	10/1/2002	5:11:16 PM	26.558	25.942	25.927	27.255	26.259	-7.453	48.43	7.516	-18.542	71.407	73.904	45.387	0.002	0.001	1.247	0.75	0.0125	46.6	11.4	1.2	0.083	0.000	0.000	0.000	0.242	0.21
19	10/1/2002	5:11:46 PM	26.502	25.946	26.056	27.219	26.258	4.813	48.194	7.544	-1.858	37.665	60.866	46.213	0.002	0.001	0.001	1.00	0.01667	47.0	11.1	-13.0	-0.896	0.000	0.000	0.000	-0.022	-0.02
20	10/1/2002	5:12:16 PM	26.467	25.946	26.046	27.213	26.262	20.81	48.105	7.583	13.997	21.574	21.281	46.681	0.005	0.001	0	1.50	0.025	46.7	11.3	1.5	0.102	0.000	0.000	0.000	0.098	0.08
21	10/1/2002	5:12:46 PM	26.796	25.951	26.011	27.223	26.262	41.723	48.639	7.72	34.861	0.714	0.741	46.574	0.002	0.001	0	2.00	0.03333	46.6	11.4	17.4	1.200	0.000	0.000	0.000	0.008	0.01
22	10/1/2002	5:15:06 PM	27.016	25.961	26.176	27.074	26.218	42.614	47.954	7.53	35.772	-1.003	-0.892	46.486	0.38	0.001	0	2.50	0.04167	47.2	11.4	38.3	2.640	0.000	0.000	0.000	0.008	0.01
23	10/1/2002	5:16:06 PM	27.059	25.969	26.028	27.151	26.21	43.113	47.814	7.459	36.454	-1.286	-1.359	46.18	0.371	0.001	0	4.83	0.08056	46.5	11.4	39.2	2.702	0.057	0.055	0.001	1.399	1.19
24	10/1/2002	5:17:06 PM	27.032	25.967	25.767	27.22	26.189	43.568	47.613	7.433	37.016	-1.289	-1.689	45.997	0.369	0.001	0	5.83	0.09722	46.3	11.3	39.8	2.743	0.055	0.054	0.001	1.361	1.15
25	10/1/2002	5:18:06 PM	26.997	25.956	25.781	27.239	26.193	44.103	47.946	7.528	37.398	-1.289	-1.967	46.173	0.352	0.001	0	6.83	0.11389	46.4	11.3	40.3	2.778	0.054	0.052	0.001	1.300	1.11
26	10/1/2002	5:19:06 PM	26.976	25.96	25.59	27.313	26.217	43.9	47.547	7.614	37.132	-1.289	-2.224	46.534	0.342	0.001	0	7.83	0.13056	46.5	11.3	40.8	2.810	0.052	0.051	0.001	1.260	1.07
27	10/1/2002	5:20:06 PM	26.971	25.98	25.65	27.348	26.217	44.606	48.389	7.522	37.946	-1.284	-2.308	45.84	0.329	0.001	0	8.83	0.14722	46.1	11.4	40.6	2.793	0.051	0.050	0.001	1.238	1.05
28	10/1/2002	5:21:06 PM	26.931	25.97	25.43	27.313	26.257	44.086	47.673	7.51	37.377	-1.289	-2.45	45.94	0.334	0.001	0	9.83	0.16389	46.9	11.2	41.3	2.846	0.049	0.048	0.001	1.167	0.99
29	10/1/2002	5:22:06 PM	26.897	25.981	25.486	27.299	26.288	44.386	47.756	7.465	37.791	-1.289	-2.589	45.722	0.328	0.001	0	10.83	0.18056	46.2	11.3	40.7	2.808	0.050	0.049	0.001	1.208	1.03
30	10/1/2002	5:23:06 PM	26.843	25.988	25.307	27.335	26.314	44.784	48.076	7.47	38.184	-1.289	-2.717	45.831	0.323	0.001	0	11.83	0.19722	46.3	11.2	41.1	2.833	0.049	0.048	0.001	1.174	1.00
31	10/1/2002	5:24:06 PM	26.81	25.994	25.379	27.402	26.336	44.592	47.882	7.388	38.039	-1.286	-2.832	46.169	0.318	0.001	0	12.83	0.21389	46.6	11.2	41.5	2.860	0.048	0.048	0.001	1.151	0.98
32	10/1/2002	5:25:06 PM	26.747	26.006	25.211	27.473	26.377	44.897	47.851	7.429	38.286	-1.289	-2.922	45.846	0.31	0.001	0	13.83	0.23056	46.3	11.3	41.3	2.849	0.047	0.047	0.001	1.135	0.97
33	10/1/2002	5:26:06 PM	26.699	26.023	25.253	27.431	26.405	44.705	47.706	7.457	38.163	-1.286	-3.012	46.048	0.31	0.001	0	14.83	0.24722	46.4	11.3	41.8	2.867	0.046	0.046	0.001	1.106	0.94
34	10/1/2002	5:27:06 PM	26.636	26.02	25.019	27.412	26.396	45.014	48.051	7.424	38.489	-1.292	-3.133	45.741	0.303	0.001	0	15.83	0.26389	46.2	11.2	41.4	2.857	0.046	0.046	0.001	1.108	0.94
35	10/1/2002	5:28:06 PM	26.583	26.037	25.027	27.479	26.394	45.455	48.395	7.402	38.909	-1.286	-3.226	45.301	0.299	0.001	0	16.83	0.28056	46.6	11.2	41.8	2.879	0.045	0.045	0.001	1.081	0.92
36	10/1/2002	5:29:06 PM	26.527	26.046	24.981	27.473	26.418	45.753	48.339	7.299	39.562	-1.289	-3.301	45.611	0.292	0.001	0	17.83	0.29722	46.9	11.1	42.2	2.908	0.045	0.045	0.001	1.056	0.90
37	10/1/2002	5:30:06 PM	26.45	26.049	24.983	27.511	26.45	45.379	48.107	7.326	38.919	-1.289	-3.342	45.446	0.292	0.001	0	18.83	0.31389	46.9	11.2	42.7	2.941	0.044	0.044	0.001	1.021	0.87
38	10/1/2002	5:31:06 PM	26.402	26.051	25.015	27.488	26.458	45.826	48.463	7.377	39.47	-1.286	-3.374	45.542	0.291	0.001	0	19.83	0.33056	46.6	11.1	42.1	2.906	0.044	0.044	0.001	1.033	0.88
39	10/1/2002	5:32:06 PM	26.375	26.059	24.933	27.526	26.461	45.83	48.674	7.447	39.212	-1.289	-3.388	45.368	0.288	0.001	0	20.83	0.34722	47.0	11.2	42.6	2.940	0.043	0.043	0.001	1.017	0.87
40	10/1/2002	5:33:06 PM	26.353	26.067	25.006	27.489	26.478	45.664	48.322	7.318	39.457	-1.289	-3.38	45.473	0.291	0.001	0	21.83	0.36389	47.2	11.1	42.5	2.932	0.043	0.043	0.001	1.012	0.86
41	10/1/2002	5:34:06 PM	26.345	26.074	24.903	27.531	26.49	45.503	48.289	7.392	39.011	-1.289	-3.397	45.466	0.284	0.001	0	22.83	0.38056	46.8	11.1	42.3	2.916	0.042	0.042	0.001	1.004	0.86
42	10/1/2002	5:35:06 PM	26.337	26.081	24.99	27.513	26.492	46.079	48.705	7.378	39.689	-1.289	-3.484	44.151	0.286	0.001	0	23.83	0.39722	47.2	10.8	42.9	2.957	0.043	0.043	0.001	0.995	0.85
43	10/1/2002	5:36:06 PM	26.328	26.092	24.901	27.524	26.509	45.981	48.736	7.523	39.371	-1.289	-3.53	45.498	0.282	0.001	0	24.83	0.41389	47.2	11.1	42.7	2.942	0.042	0.042	0.001	0.988	0.84
44	10/1/2002	5:37:06 PM	26.319	26.103	24.952	27.48	26.534	45.992	48.652	7.524	39.361	-1.289	-3.559	45.51	0.277	0.001	0	25.83	0.43056	47.3	11.1	42.7	2.942	0.042	0.042	0.001	0.988	0.84
45	10/1/2002	5:38:06 PM	26.309	26.098	24.932	27.5	26.554	46.048	48.682	7.554	39.47	-1.286	-3.594	45.745	0.276	0.001	0	26.83	0.44722	47.1	11.2	42.7	2.942	0.041	0.041	0.001	0.969	0.82
46	10/1/2002	5:39:06 PM	26.301	26.11	24.929	27.482	26.566	45.026	47.363	8.136	37.834	-1.289	-3.733	48.218	0.275	0.001	0	27.83	0.46389	47.2	11.2	42.8	2.948	0.041	0.041	0.001	0.969	0.82
47	10/1/2002	5:40:06 PM	26.293	26.127	24.986	27.504	26.583	45.06	47.238	8.098	37.805	-1.286	-3.846	48.233	0.262	0.001	0	28.83	0.48056	45.9	11.8	41.4	2.857	0.041	0.041	0.001	0.992	0.84
48	10/1/2002	5:41:06 PM	26.29	26.129	24.919	27.556	26.611	45.221	47.609	8.045	38.012	-1.289	-3.866	48.447	0.263	0.001	0	29.83	0.49722	45.8	11.8	41.4	2.857	0.039	0.039	0.001	0.943	0.80
49	10/1/2002	5:42:06 PM	26.286	26.135	25.01	27.562	26.587	45.468	47.874	8.117	38.311	-1.289	-3.907	47.887	0.264	0.001	0	30.83	0.51389	46.1	11.9	41.6	2.869	0.039	0.039	0.001	0.944	0.80
50	10/1/2002	5:43:06 PM	26.303	26.142	24.911	27.594	26.596	45.461	47.689	8.015	38.29	-1.286	-3.956	47.788	0.263	0.001	0	31.83	0.53056	46.4	11.7	41.9	2.888	0.039	0.039	0.001	0.939	0.80
51	10/1/2002	5:44:06 PM	26.289	26.138	24.993	27.56	26.6	45.196	47.354	7.91	38.225	-1.292	-4.002	47.641	0.265	0.001	0	32.83	0.54722	46.2	11.7	41.9	2.887	0.039	0.039	0.001	0.939	0.80
52	10/1/2002	5:45:06 PM	26.296	26.16	24.934	27.602	26.602	45.726	47.946	8.078	38.612	-1.289	-4.109	47.885	0.263	0.001	0	33.83	0.56389	45.9	11.7	41.7	2.876	0.040	0.040	0.001	0.947	0.81
53	10/1/2002	5:46:06 PM	26.297	26.161	24.985	27.583	26.597	45.739	47.849	7.993	38.728	-1.289	-4.15	47.132	0.259	0.001	0	34.83	0.58056	46.5	11.7	42.2	2.907	0.039	0.039	0.001	0.932	0.79
54	10/1/2002	5:47:06 PM	26.296	26.155	24.974	27.632	26.602	45.635	48.008	8.069	38.458	-1.289	-4.216	47.239	0.257	0.001	0	35.83	0.59722	46.4	11.6	42.2	2.912	0.039	0.039	0.001	0.915	0.78
55	10/1/2002	5:48:06 PM	26.302	26.176	24.97	27.653	26.617	45.225	47.441	8.045	37.996	-1.286	-4.208	47.153	0.257	0.001	0	36.83	0.61389	46.5	11.6	42.0	2.899	0.038	0.038	0.001	0.912	0.78
56	10/1/2002	5:49:06 PM	26.302	26.176	25.025	27.638	26.622	45.762	48.027	7.984	38.726	-1.286	-4.245	47.182	0.258	0.001	0	37.83	0.63056	46.0	11.6	41.6	2.869	0.038	0.038	0.001	0.922	0.78
57	10/1/2002	5:50:06 PM	26.308	26.187	24.937	27.629	26.639	45.944	48.076	7.906	39.119	-1.292	-4.248	47.232	0.256	0.001	0	38.83	0.64722	46.6	11.6	42.2	2.913	0.038	0.038	0.001	0.910	0.77
58	10/1/2002	5:51:06 PM	26.309	26.193	25.043	27.676	26.645	45.822	47.979	7.921	38.829	-1.289	-4.271	47.084	0.255	0.001	0	39.83	0.66389	46.6	11.6	42.5	2.932	0.038	0.038	0.001	0.899	0.77
59	10/1/2002	5:52:06 PM	26.315	26.194	24.923	27.681	26.651	46.22	48.426	7.973	39.13	-1.289	-4.358	45.989	0.254	0.001	0	40.83	0.68056	46.5	11.5	42.3	2.918	0.038	0.038	0.001	0.897	0.76
60	10/1/2002	5:53:06 PM	26.306	26.195	25.019	27.637	26.651	45.83	48.109	7.862	38.892	-1.289	-4.373	47.069	0.255	0.001	0	41.83	0.69722	47.0	11.5	42.7	2.942	0.038	0.038	0.001	0.889	0.76
61	10/1/2002	5:54:06 PM	26.318	26.211	24.941	27.718	26.668	45.633	47.89	7.962	38.438	-1.289	-4.436	46.998	0.254	0.001	0	42.83	0.71389	46.6	11.5	42.4	2.921	0.038	0.038	0.001	0.897	0.76
62	10/1/2002	5:55:06 PM	26.319	26.218	25.023	27.68	26.69	45.492	47.749	8.001	38.37	-1.289	-4.445	47.427	0.252	0.001	0	43.83	0.73056	46.4	11.5	42.0	2.898	0.038	0.038	0.001	0.902	0.77
63	10/1/2002	5:56:06 PM	26.332	26.231	25	27.737	26.712	45.48	47.731	7.936	38.397	-1.289	-4.451	47.35	0.249	0.001	0	44.83	0.74722	46.3	11.6	41.9	2.891	0.038	0.038	0.001	0.895	0.76
64	10/1/2002	5:57:06 PM	26.317	26.231	24.991	27.658	26.698	45.613	47.88	7.881	38.659	-1.289	-4.431	47.258	0.247	0.001	0	45.83	0.76389	46.4	11.6	42.1	2.905	0.037	0.037	0.001	0.892	0.76
65	10/1/2002	5:58:06 PM	26.325	26.234	25.033	27.696	26.72	45.468	47.65	7.886	38.536	-1.286	-4.497	46.723	0.249	0.001	0	46.83	0.78056	46.4	11.6	42.1	2.905	0.037	0.037	0.001	0.874	0.74
66	10/1/2002	5:59:06 PM	26.337	26.261	25.001	27.693	26.718	45.983	48.231	8.05	38.833	-1.286	-4.509	47.042	0.244	0.001	0	47.83	0.79722	46.2	11.5	42.0	2.896	0.037	0.037	0.001	0.883	0.75
67	10/1/2002	6:00:06 PM	26.319	26.238	25.063	27.715	26.735	45.753	48.306	7.951	38.479	-1.286	-4.551	47.014	0.249	0.001	0	48.83	0.81389	46.8	11.5	42.4	2.924	0.036	0.036	0.001	0.858	0.73
68	10/1/2002	6:01:06 PM	26.326	26.255	24.939	27.776	26.741	45.374	47.762	7.888	38.321	-1.289	-4.561	46.802	0.246	0.001	0	49.83	0.83056	46.8	11.5	42.1	2.904	0.037	0.037	0.001	0.876	0.75
69	10/1/2002	6:02:06 PM	26.321	26.245	25.04	27.672	26.757	45.573	47.52	7.812	38.667	-1.289	-4.602	46.928	0.245	0.001	0	50.83	0.84722	46.9	11.5	42.4	2.921	0.037	0.037	0.001	0.876	0.75
70	10/1/2002	6:03:06 PM	26.319	26.253	24.922	27.704	26.774	45.693	48.066	7.955	38.518	-1.289	-4.573	46.607	0.242	0.001	0	51.83	0.86389	46.0	11.5	42.1	2.904	0.037	0.036	0.001	0.866	0.74
71	10/1/2002	6:04:06 PM	26.325	26.264	24.984	27.666	26.786	46.068	48.498	7.8	39.175	-1.289	-4.602	46.561	0.243	0.001	0	52.83	0.88056	46.4	11.4	42.1	2.903	0.036	0.036	0.001	0.859	0.73
72	10/1/2002	6:05:06 PM	26.332	26.271	24.835	27.678	26.807	45.903	48.238	7.82	39.007	-1.289	-4.746	47.165	0.239	0.001	0	53.83	0.89722	47.0	11.4	42.6	2.939	0.036	0.036	0.001	0.850	0.72
73	10/1/2002	6:06:06 PM	26.309	26.268	24.792	27.65	26.804	45.406	47.685	7.609	38.866	-1.289	-4.665	46.568	0.236	0.001	0	54.83	0.91389	46.8	11.6	42.5	2.927	0.036	0.036	0.001	0.843	0.72
74	10/1/2002	6:07:06 PM	26.291	26.29	24.824	27.647	26.836	45.898	48.209	7.753	38.966	-1.292	-4.729	46.318	0.236	0.001	0	55.83	0.93056	46.2	11.4	42.1	2.905	0.035	0.035	0.001	0.840	0.71
75	10/1/2002	6:08:06 PM	26.257	26.291	24.78	27.643	26.852	45.63	48.066	7.787	38.86	-1.289	-4.81	46.205	0.234	0.001	0	56.83	0.94722	46.7	11.4	42.4	2.926	0.035	0.035	0.001	0.833	0.71
76	10/1/2002	6:09:06 PM	26.239	26.288	24.863	27.69	26.844	46.277	48.866	7.812	39.312	-1.292	-4.756	46.343	0.234	0.001	0	57.83	0.96389	46.3	11.4	42.3	2.920	0.035	0.035	0.001	0.829	0.71
77	10/1/2002	6:10:06 PM	26.227	26.286	24.77	27.623	26.792	45.973	48.442	7.707	39.156	-1.289	-4.706	46.171	0.233	0.001	0	58.83	0.98056	46.4	11.4	42.4	2.934	0.035	0.035	0.001	0.818	0.70
78	10/1/2002	6:11:06 PM	26.224	26.288	24.867	27.465	26.779	46.159	48.625	7.772	39.367	-1.289	-4.758	46.538	0.234	0.001	0	59.83	0.99722	47.0	11.4	42.6	2.939	0.035	0.035	0.001	0.821	0.70
79	10/1/2002	6:12:06 PM	26.214	26.273	24.827	27.415	26.704	45.774	48.025	7.698	38.997	-1.289	-4.758	46.616	0.228	0.001	0	60.83	1.01389	47.2	11.4	42.8	2.948	0.035	0.035	0.001	0.819	0.70
80	10/1/2002	6:13:06 PM	26.22	26.264	24.843	27.346	26.695	46.244	48.517	7.777	39.367	-1.289	-4.778	46.442	0.23	0.001	0	61.83	1.03056	46.6	11.4	42.4	2.922	0.034	0.034	0.001	0.806	0.69
81	10/1/2002	6:14:06 PM	26.226	26.27	24.905	27.273	26.662	46.234	48.718	7.828	39.175	-1.289	-4.752	46.358	0.221	0.001	0	62.83	1.04722	47.0	11.4	42.8	2.951	0.034	0.034	0.001	0.805	0.68
82	10/1/2002	6:15:06 PM	26.223	26.267	24.836	27.17	26.669	45.729	48.18	7.734	38.968	-1.286	-4.807	46.041	0.23	0.001	0	63.83	1.06389	47.2	11.4	42.7	2.944	0.033	0.033	0.001	0.774	0.66
83	10/1/2002	6:16:06 PM	26.231	26.26	24.944	27.108	26.631	45.78	48.043	7.77	38.919	-1.289	-4.819	46.389	0.222	0.002	0	64.83	1.08056	46.7	11.3	42.3	2.920	0.034	0.033	0.001	0.813	0.69
84	10/1/2002	6:17:06 PM	26.222	26.251	24.845	27.118	26.582	45.838	48.201	7.809	38.831	-1.286	-4.79	46.236	0.224	0.001	0	65.83	1.09722	46.6	11.4	42.3	2.920	0.033	0.033	0.001	0.783	0.67
85	10/1/2002	6:18:06 PM	26.223	26.232	24.921	27.1	26.559	46.278	48.898	7.885	39.246	-1.289	-4.781	46.44	0.227	0.001	0	66.83	1.11389	46.7	11.3	42.3	2.919	0.033	0.034	0.001	0.799	0.68
86	10/1/2002	6:19:06 PM	26.246	26.255	24.939	27.178	26.552	45.484	47.901	7.806	38.548	-1.284	-4.796	46.406	0.226	0.002	0	67.83	1.13056	46.4	11.4	42.0	2.897	0.034	0.034	0.001	0.803	0.68
87	10/1/2002	6:20:06 PM	26.239	26.233	24.912	27.11	26.554	45.909	48.213	7.82	39.05	-1.289	-4.853	46.358	0.225	0.001	0	68.83	1.14722	46.4	11.4	42.1	2.905	0.034	0.034	0.001	0.792	0.67
88	10/1/2002	6:21:06 PM	26.237	26.236	24.985	27.139	26.548	46.106	48.352	7.943	39.066	-1.284	-4.804	46.375	0.223	0.002	0	69.83	1.16389	46.7	11.4	42.5	2.929	0.034	0.034	0.001	0.792	0.67
89	10/1/2002	6:22:06 PM	26.236	26.235	24.895	27.223	26.532	45.635	48.105	7.775	38.64	-1.292	-4.851	46.492	0.224	0.001	0	70.83	1.18056	46.9	11.4	42.6	2.936	0.033	0.033	0.001	0.781	0.66
90	10/1/2002	6:23:06 PM	26.24	26.229	24.999	27.232	26.531	45.693	47.882	7.729	38.886	-1.289	-4.862	46.572	0.221	0.001	0	71.83	1.19722	46.6	11.4	42.1	2.905	0.033	0.033	0.001	0.795	0.68
91	10/1/2002	6:24:06 PM	26.24	26.224	24.908	27.251	26.505	45.646	47.913	7.836	38.602	-1.286	-4.859	46.414	0.224	0.001	0	72.83	1.21389	46.4	11.4	42.3	2.916	0.033	0.033	0.001	0.779	0.66
92	10/1/2002	6:25:06 PM	26.24	26.219	24.978	27.241	26.51	46.037	48.318	7.847	39.064	-1.289	-4.865	46.708	0.222	0.001	0	73.83	1.23056	46.4	11.4	42.1	2.904	0.033	0.033	0.001	0.795	0.68
93	10/1/2002	6:26:06 PM	26.245	26.214	24.973	27.326	26.52	46.139	48.364	7.793	39.236	-1.286	-4.911	46.349	0.219	0.001	0	74.83	1.24722	46.8	11.4	42.6	2.934	0.033	0.033	0.001	0.778	0.66
94	10/1/2002	6:27:06 PM	26.24	26.209	24.978	27.347	26.52	46.135	48.559	7.829	39.199	-1.289	-4.933	45.622	0.219	0.001	0	75.83	1.26389	46.9	11.4	42.7	2.943	0.033	0.033	0.001	0.766	0.65
95	10/1/2002	6:28:06 PM	26.25	26.214

131	10/1/2002	7:04:06 PM	26.255	26.279	24.933	27.266	26.695	46.71	48.695	7.751	39.94	-1.289	-5.473	45.75	0.198	0.001	0	113.83	1.89722	47.2	11.2	43.3	2.987	0.030	0.030	0.001	0.683	0.58
132	10/1/2002	7:05:06 PM	26.239	26.258	24.967	27.206	26.689	46.712	48.96	7.758	39.803	-1.289	-5.508	46.031	0.198	0.001	0	114.83	1.91389	47.5	11.3	43.3	2.982	0.030	0.030	0.001	0.683	0.58
133	10/1/2002	7:06:06 PM	26.253	26.257	24.972	27.206	26.649	46.659	48.724	7.7	39.944	-1.289	-5.508	46.186	0.197	0.001	0	115.83	1.93056	47.3	11.3	43.3	2.985	0.029	0.029	0.001	0.679	0.58
134	10/1/2002	7:07:06 PM	26.242	26.241	24.916	27.164	26.663	46.447	48.469	7.704	39.578	-1.289	-5.508	45.796	0.196	0.001	0	116.83	1.94722	47.0	11.2	43.0	2.966	0.029	0.029	0.001	0.681	0.58
135	10/1/2002	7:08:06 PM	26.263	26.257	25.022	27.25	26.669	46.654	48.61	7.842	39.732	-1.289	-5.569	45.907	0.197	0.002	0	117.83	1.96389	47.1	11.3	43.2	2.978	0.029	0.029	0.001	0.680	0.58
136	10/1/2002	7:09:06 PM	26.279	26.268	24.947	27.271	26.674	46.636	48.736	7.671	40.022	-1.281	-5.519	45.857	0.196	0.002	0	118.83	1.98056	47.3	11.2	43.3	2.987	0.029	0.029	0.001	0.675	0.57
137	10/1/2002	7:10:06 PM	26.273	26.257	25.022	27.195	26.669	46.648	48.685	7.759	39.975	-1.286	-5.54	46.177	0.197	0.001	0	119.83	1.99722	47.2	11.3	43.3	2.986	0.029	0.029	0.001	0.678	0.58
138	10/1/2002	7:10:13 PM	26.283	26.267	25.027	27.215	26.679	46.19	48.242	7.736	39.236	-1.286	-5.569	45.485	0.196	0.001	0	119.95	1.99917	46.8	11.1	42.7	2.945	0.029	0.029	0.001	0.684	0.58
139	10/1/2002	7:11:13 PM	26.283	26.257	24.992	27.175	26.669	46.553	48.593	7.83	39.705	-1.286	-5.566	45.582	0.195	0.001	0	120.95	2.01583	47.1	11.2	43.1	2.974	0.029	0.029	0.001	0.674	0.57
140	10/1/2002	7:12:13 PM	26.278	26.247	24.972	27.16	26.684	46.679	49.146	7.902	39.529	-1.292	-5.412	45.485	0.193	0.001	0	121.95	2.0325	47.7	11.1	43.1	2.972	0.029	0.029	0.001	0.668	0.57
141	10/1/2002	7:13:13 PM	26.288	26.252	25.032	27.185	26.669	46.161	48.418	7.738	39.31	-1.289	-5.586	46.135	0.19	0.001	0	122.95	2.04917	46.9	11.3	42.7	2.946	0.028	0.028	0.001	0.662	0.56
142	10/1/2002	7:14:13 PM	26.292	26.256	24.951	27.169	26.673	46.277	48.422	7.792	39.379	-1.289	-5.635	45.882	0.195	0.001	0	123.95	2.06583	46.9	11.2	42.8	2.953	0.029	0.029	0.001	0.680	0.58
143	10/1/2002	7:15:13 PM	26.302	26.261	25.051	27.109	26.673	46.632	49.018	7.837	39.615	-1.289	-5.647	45.962	0.194	0.001	0	124.95	2.0825	47.5	11.3	43.1	2.973	0.029	0.029	0.001	0.670	0.57
144	10/1/2002	7:16:13 PM	26.307	26.256	24.946	27.139	26.686	46.209	48.55	7.809	39.257	-1.292	-5.511	46.251	0.192	0.001	0	125.95	2.09917	47.1	11.3	42.7	2.946	0.029	0.029	0.001	0.671	0.57
145	10/1/2002	7:17:13 PM	26.307	26.261	25.025	27.148	26.697	46.806	48.898	7.803	39.904	-1.292	-5.661	46.138	0.192	0.001	0	126.95	2.11583	47.4	11.3	43.4	2.989	0.029	0.029	0.001	0.660	0.56
146	10/1/2002	7:18:13 PM	26.306	26.25	25.004	27.147	26.671	46.509	48.767	7.811	39.543	-1.289	-5.658	46.01	0.192	0.001	0	127.95	2.1325	47.3	11.3	43.0	2.966	0.029	0.029	0.001	0.665	0.57
147	10/1/2002	7:19:13 PM	26.317	26.261	25	27.113	26.682	46.095	48.254	7.712	39.285	-1.289	-5.632	46.026	0.192	0.001	0	128.95	2.14917	46.8	11.3	42.7	2.943	0.029	0.029	0.001	0.671	0.57
148	10/1/2002	7:20:13 PM	26.316	26.25	25.064	27.088	26.671	45.898	48.192	7.858	38.774	-1.289	-5.658	45.861	0.194	0.001	0	129.95	2.16583	46.7	11.2	42.3	2.919	0.029	0.029	0.001	0.682	0.58
149	10/1/2002	7:21:13 PM	26.321	26.245	24.979	27.063	26.651	46.18	48.529	7.81	39.128	-1.286	-5.528	46.261	0.188	0.001	0	130.95	2.1825	47.1	11.3	42.7	2.941	0.028	0.028	0.001	0.658	0.56
150	10/1/2002	7:22:13 PM	26.321	26.25	25.079	27.048	26.651	46.472	48.666	7.769	39.549	-1.289	-5.661	45.565	0.193	0.001	0	131.95	2.19917	47.2	11.2	43.0	2.965	0.029	0.029	0.001	0.668	0.57
151	10/1/2002	7:23:13 PM	26.325	26.239	24.978	27.052	26.645	46.335	48.507	7.764	39.496	-1.286	-5.635	45.898	0.194	0.001	0	132.95	2.21583	47.0	11.2	42.9	2.959	0.029	0.029	0.001	0.674	0.57
152	10/1/2002	7:24:13 PM	26.33	26.239	25.069	27.022	26.66	46.05	48.366	7.795	39.089	-1.292	-5.641	45.898	0.191	0.001	0	133.95	2.2325	46.9	11.2	42.6	2.935	0.028	0.028	0.001	0.668	0.57
153	10/1/2002	7:25:13 PM	26.329	26.238	25.048	27.091	26.666	45.909	48.062	7.781	38.892	-1.286	-5.748	45.81	0.19	0.001	0	134.95	2.24917	46.6	11.2	42.4	2.923	0.028	0.028	0.001	0.667	0.57
154	10/1/2002	7:26:13 PM	26.329	26.238	25.013	27.061	26.64	45.942	48.205	7.771	38.878	-1.289	-5.596	45.947	0.192	0.001	0	135.95	2.26583	46.7	11.3	42.4	2.924	0.029	0.029	0.001	0.675	0.57
155	10/1/2002	7:27:13 PM	26.334	26.228	25.093	26.986	26.625	46.269	48.569	7.87	39.197	-1.289	-5.65	46.169	0.192	0.001	0	136.95	2.2825	47.1	11.3	42.7	2.946	0.029	0.029	0.001	0.668	0.57
156	10/1/2002	7:28:13 PM	26.335	26.229	24.988	27.022	26.63	45.909	48.219	7.718	39.021	-1.286	-5.708	45.842	0.19	0.001	0	137.95	2.29917	46.7	11.2	42.5	2.928	0.028	0.028	0.001	0.667	0.57
157	10/1/2002	7:29:13 PM	26.324	26.213	25.088	27.031	26.6	46.18	48.6	7.836	39.042	-1.289	-5.71	46.996	0.181	0.001	0	138.95	2.31583	47.1	11.5	42.6	2.938	0.027	0.027	0.001	0.632	0.54
158	10/1/2002	7:30:13 PM	26.336	26.225	24.994	27.068	26.601	46.093	48.434	7.741	39.134	-1.289	-5.687	45.825	0.188	0.001	0	139.95	2.3325	47.0	11.2	42.6	2.938	0.028	0.028	0.001	0.658	0.56
159	10/1/2002	7:31:13 PM	26.331	26.215	25.064	27.058	26.586	46.222	48.449	7.689	39.455	-1.292	-5.696	45.798	0.191	0.001	0	140.95	2.34917	47.0	11.2	42.8	2.954	0.028	0.028	0.001	0.664	0.56
160	10/1/2002	7:32:13 PM	26.335	26.209	25.049	27.047	26.6	46.269	48.653	7.858	39.186	-1.289	-5.586	45.754	0.186	0.001	0	141.95	2.36583	47.2	11.2	42.7	2.946	0.028	0.028	0.001	0.648	0.55
161	10/1/2002	7:33:13 PM	26.33	26.209	25.023	26.987	26.605	45.884	48.068	7.774	38.839	-1.289	-5.76	45.794	0.183	0.001	0	142.95	2.3825	46.6	11.2	42.4	2.921	0.027	0.027	0.001	0.644	0.55
162	10/1/2002	7:34:13 PM	26.339	26.208	25.128	27.026	26.6	46.199	48.412	7.769	39.349	-1.284	-5.67	45.695	0.188	0.001	0	143.95	2.39917	46.9	11.2	42.8	2.949	0.028	0.028	0.001	0.653	0.56
163	10/1/2002	7:35:13 PM	26.339	26.208	24.993	27.026	26.6	46.248	48.667	7.857	39.148	-1.289	-5.676	45.725	0.185	0.001	0	144.95	2.41583	47.1	11.2	42.7	2.944	0.028	0.028	0.001	0.646	0.55
164	10/1/2002	7:36:13 PM	26.333	26.202	25.102	26.97	26.594	46.831	49.102	7.899	39.711	-1.289	-5.742	45.838	0.187	0.001	0	145.95	2.4325	47.6	11.2	43.3	2.983	0.028	0.028	0.001	0.642	0.55
165	10/1/2002	7:37:13 PM	26.338	26.202	25.017	27.025	26.574	46.309	48.426	7.78	39.465	-1.289	-5.806	45.802	0.186	0.001	0	146.95	2.44917	47.0	11.2	42.9	2.957	0.028	0.028	0.001	0.646	0.55
166	10/1/2002	7:38:13 PM	26.343	26.197	25.002	27.005	26.594	46.104	48.403	7.927	38.726	-1.286	-5.832	45.636	0.179	0.001	0	147.95	2.46583	46.9	11.2	42.4	2.924	0.027	0.027	0.001	0.629	0.54
167	10/1/2002	7:39:13 PM	26.339	26.198	24.877	27.001	26.6	46.002	48.209	7.61	39.244	-1.289	-5.803	45.544	0.185	0.001	0	148.95	2.4825	46.7	11.2	42.6	2.939	0.028	0.028	0.001	0.649	0.55
168	10/1/2002	7:40:13 PM	26.298	26.187	24.731	26.985	26.594	46.385	48.699	7.656	39.484	-1.286	-5.76	45.125	0.181	0.001	0	149.95	2.49917	47.2	11.1	42.9	2.960	0.027	0.027	0.001	0.633	0.54
169	10/1/2002	7:41:13 PM	26.268	26.187	24.716	26.95	26.594	46.497	48.676	7.602	39.742	-1.286	-5.667	45.364	0.184	0.001	0	150.95	2.51583	47.2	11.1	43.1	2.973	0.027	0.028	0.001	0.641	0.55
170	10/1/2002	7:42:13 PM	26.218	26.181	24.645	26.946	26.588	47.112	49.469	7.611	40.311	-1.289	-5.696	45.135	0.167	0.001	0	151.95	2.5325	48.0	11.1	43.7	3.014	0.025	0.025	0.001	0.575	0.49
171	10/1/2002	7:43:13 PM	26.183	26.187	24.756	26.91	26.574	46.478	48.589	7.572	39.803	-1.289	-5.777	45.146	0.176	0.001	0	152.95	2.54917	47.1	11.1	43.1	2.974	0.026	0.026	0.001	0.612	0.52
172	10/1/2002	7:44:13 PM	26.163	26.181	24.756	26.92	26.568	46.789	48.736	7.654	40.057	-1.286	-5.794	45.2	0.18	0.001	0	153.95	2.56583	47.3	11.1	43.4	2.994	0.027	0.027	0.001	0.622	0.53
173	10/1/2002	7:45:13 PM	26.128	26.171	24.761	26.91	26.538	46.764	48.809	7.555	40.143	-1.289	-5.916	45.322	0.18	0.001	0	154.95	2.5825	47.3	11.1	43.5	2.996	0.027	0.027	0.001	0.622	0.53
174	10/1/2002	7:46:13 PM	26.127	26.171	24.84	26.914	26.522	46.994	49.189	7.659	40.252	-1.289	-5.887	45.332	0.176	0.001	0	155.95	2.59917	47.7	11.1	43.6	3.008	0.026	0.026	0.001	0.604	0.51
175	10/1/2002	7:47:13 PM	26.122	26.161	24.76	26.909	26.527	46.679	48.953	7.75	39.715	-1.289	-5.667	45.385	0.18	0.001	0	156.95	2.61583	47.5	11.1	43.2	2.978	0.027	0.027	0.001	0.625	0.53
176	10/1/2002	7:48:13 PM	26.127	26.161	24.855	26.859	26.542	46.864	48.939	7.701	40.008	-1.292	-5.844	45.435	0.179	0.001	0	157.95	2.6325	47.5	11.1	43.4	2.995	0.027	0.027	0.001	0.617	0.53
177	10/1/2002	7:49:13 PM	26.141	26.165	24.864	26.923	26.531	46.791	48.933	7.727	39.744	-1.286	-5.884	45.477	0.177	0.001	0	158.95	2.64917	47.5	11.1	43.3	2.983	0.026	0.026	0.001	0.612	0.52
178	10/1/2002	7:50:13 PM	26.134	26.158	24.863	26.856	26.505	46.63	48.709	7.61	39.859	-1.289	-5.757	45.573	0.183	0.001	0	159.95	2.66583	47.2	11.2	43.2	2.982	0.027	0.027	0.001	0.633	0.54
179	10/1/2002	7:51:13 PM	26.143	26.152	24.926	26.865	26.493	46.92	49.08	7.789	39.998	-1.289	-5.867	45.919	0.175	0.001	0	160.95	2.6825	47.6	11.3	43.5	2.996	0.026	0.026	0.001	0.602	0.51
180	10/1/2002	7:52:13 PM	26.163	26.157	24.951	26.87	26.492	46.366	48.931	7.733	39.369	-1.289	-5.803	45.445	0.176	0.001	0	161.95	2.69917	47.2	11.1	42.9	2.966	0.026	0.026	0.001	0.616	0.52
181	10/1/2002	7:53:13 PM	26.158	26.157	24.956	26.86	26.503	47.272	49.367	7.712	40.385	-1.289	-5.881	45.492	0.173	0.001	0	162.95	2.71583	47.9	11.1	43.8	3.022	0.026	0.026	0.001	0.589	0.50
182	10/1/2002	7:54:13 PM	26.188	26.172	24.932	27	26.544	47.038	49.274	7.746	40.047	-1.284	-5.916	45.588	0.175	0.001	0	163.95	2.7325	47.8	11.2	43.5	3.002	0.026	0.026	0.001	0.600	0.51
183	10/1/2002	7:55:13 PM	26.19	26.174	24.964	26.952	26.571	46.679	48.716	7.791	39.672	-1.289	-5.771	45.712	0.171	0.001	0	164.95	2.74917	47.2	11.2	43.2	2.977	0.025	0.026	0.001	0.591	0.50
184	10/1/2002	7:56:13 PM	26.191	26.16	24.984	26.983	26.596	46.646	48.608	7.7	39.789	-1.289	-5.933	45.5	0.176	0.001	0	165.95	2.76583	47.1	11.2	43.2	2.980	0.026	0.026	0.001	0.607	0.52
185	10/1/2002	7:57:13 PM	26.208	26.172	24.942	27.065	26.629	46.313	48.304	7.685	39.42	-1.289	-5.98	45.485	0.176	0.001	0	166.95	2.7825	46.8	11.1	42.9	2.955	0.026	0.026	0.001	0.613	0.52
186	10/1/2002	7:58:13 PM	26.216	26.18	25.019	27.152	26.661	46.706	48.773	7.712	39.775	-1.292	-5.997	44.29	0.176	0.001	0	167.95	2.79917	47.3	10.9	43.2	2.981	0.026	0.026	0.001	0.607	0.52
187	10/1/2002	7:59:13 PM	26.228	26.187	24.947	27.245	26.669	46.625	48.509	7.73	39.746	-1.289	-5.945	45.561	0.178	0.001	0	168.95	2.81583	47.0	11.2	43.2	2.977	0.027	0.027	0.001	0.615	0.52
188	10/1/2002	8:00:13 PM	26.241	26.195	25.029	27.277	26.686	46.545	48.643	7.767	39.611	-1.289	-5.803	45.666	0.164	0.001	0	169.95	2.8325	47.2	11.2	43.1	2.970	0.024	0.024	0.001	0.567	0.48
189	10/1/2002	8:01:13 PM	26.249	26.203	24.987	27.395	26.725	46.632	48.695	7.676	39.744	-1.292	-5.808	45.313	0.169	0.001	0	170.95	2.84917	47.2	11.1	43.2	2.978	0.025	0.025	0.001	0.584	0.50
190	10/1/2002	8:02:13 PM	26.256	26.215	25.005	27.368	26.737	46.975	49.071	7.762	40.071	-1.289	-5.96	45.536	0.177	0.001	0	171.95	2.86583	47.6	11.2	43.5	3.001	0.026	0.026	0.001	0.606	0.52
191	10/1/2002	8:03:13 PM	26.264	26.223	25.057	27.39	26.744	47.172	49.249	7.795	40.084	-1.289	-5.925	45.504	0.174	0.001	0	172.95	2.8825	47.8	11.2	43.6	3.008	0.026	0.026	0.001	0.594	0.51
192	10/1/2002	8:04:13 PM	26.266	26.22	24.965	27.333	26.752	47.154	49.293	7.796	40.264	-1.289	-5.884	45.678	0.175	0.001	0	173.95	2.89917	47.8	11.2	43.7	3.014	0.026	0.026	0.001	0.598	0.51
193	10/1/2002	8:05:13 PM	26.268	26.232	25.062	27.294	26.758	46.988	48.924	7.814	40	-1.289	-5.974	45.46	0.172	0.001	0	174.95	2.91583	47.5	11.1	43.5	2.999	0.026	0.026	0.001	0.589	0.50
194	10/1/2002	8:06:13 PM	26.27	26.229	24.968	27.231	26.74	46.899	48.933	7.826	39.861	-1.289	-6.023	45.605	0.173	0.001	0	175.95	2.9325	47.5	11.2	43.4	2.991	0.026	0.026	0.001	0.595	0.51
195	10/1/2002	8:07:13 PM	26.28	26.239	25.059	27.187	26.731	46.977	48.98	7.78	40.03	-1.289	-5.928	45.5	0.163	0.001	0	176.95	2.94917	47.5	11.2	43.5	2.999	0.024	0.024	0.001	0.558	0.47
196	10/1/2002	8:08:13 PM	26.286	26.245	25.035	27.183	26.741	46.663	48.412	7.65	40.026	-1.286	-5.742	45.406	0.16	0.001	0	177.95	2.96583	46.9	11.1	43.3	2.988	0.024	0.024	0.001	0.550	0.47
197	10/1/2002	8:09:13 PM	26.292	26.246	25.021	27.169	26.722	46.754	48.825	7.744	39.791	-1.289	-5.904	45.657	0.174	0.001	0	178.95	2.9825	47.4	11.2	43.3	2.983	0.026	0.026	0.001	0.599	0.51
198	10/1/2002	8:10:13 PM	26.293	26.242	25.092	27.055	26.716	46.739	48.763	7.671	39.884	-1.289	-5.984	45.67	0.175	0.001	0	179.95	2.99917	47.3	11.2	43.3	2.986	0.026	0.026	0.001	0.601	0.51
199	10/1/2002	8:11:13 PM	26.298	26.237	24.996	27.105	26.708	46.913	48.951	7.846	39.818	-1.289	-5.896	45.59	0.174	0.001	0	180.95	3.01583	47.5	11.2	43.4	2.990	0.026	0.026	0.001	0.598	0.51
200	10/1/2002	8:12:13 PM	26.299	26.243	25.092	27.11	26.709	46.408	48.606	7.773	39.439	-1.289	-5.933	45.135	0.172	0.001	0	181.95	3.0325	47.1	11.1	42.9	2.959	0.026	0.026	0.001	0.596	0.51
201	10/1/2002	8:13:13 PM	26.309	26.248	25.022	27.105	26.714	46.642	48.705	7.809	39.705	-1.289	-6.017	45.59	0.171	0.001	0	182.95	3.04917	47.2	11.2	43.2	2.977	0.025	0.025	0.001	0.590	0.50
202	10/1/2002	8:14:13 PM	26.309	26.243	25.072	27.056	26.714	46.909	48.852	7.778	39.897	-1.286	-6.009	45.557	0.171	0.001	0	183.95	3.06583	47.4	11.2	43.4	2.992	0.025	0.025	0.001	0.586	0.50
203	10/1/2002	8:15:13 PM	26.309	26.243	25.092	26.986	26.694	47.015	49.123	7.769	40.11	-1.289	-5.76	45.611	0.176	0.001	0	184.95	3.0825	47.7	11.2	43.6	3.003	0.026	0.026	0.001	0.601	0.51
204	10/1/2002	8:16:13 PM	26.302	26.236	25.026	26.954	26.677	46.636	48.461	7.787	39.68	-1.289	-5.858	45.211	0.164	0.001	0	185.95	3.09917	47.0	11.1	43.2	2.976	0.024	0.024	0.001	0.566	0.48
205	10/1/2002	8:17:13 PM	26.312	26.236	25.126	26.914	26.672	47.064	48.883	7.795	40.084	-1.286	-6.058	45.229	0.171	0.001	0	186.95	3.11583	47.4	11.1	43.6	3.004	0.025	0.025	0.001	0.583	0.50
206	10/1/2002	8:18:13 PM	26.311	26.226	25.015	26.962	26.672	46.911	48.936	7.794	40.033	-1.286	-5.988	45.669	0.171	0.001	0	187.95	3.1325	47.5	11.2	43.5	2.997	0.025	0.025	0.001	0.586	0.50
207	10/1/2002	8:19:13 PM	26.31	26.234	25.133	26.937	26.65	46.901	48.734	7.824	39.951	-1.284	-6.035	45.511	0.169	0.001	0	188.95	3.14917	47.3	11.2	43.4	2.994	0.025	0.025	0.001	0.578	0.49
208	10/1/2002	8:20:13 PM	26.32	26.229	25.078	26.912	26.65	46.866	49.005	7.875	39.676	-1.286	-6.009	45.605	0.158	0.001	0	189.95	3.16583	47.5	11.2	43.3	2.983	0.024	0.024	0.001	0.543	0.46
209	10/1/2002	8:21:13 PM	26.323	26.227	25.087	26.896	26.633	47.139	49.065	7.823	40.121	-1.286	-6.067	45.59	0.172	0.001	0	190.95	3.1825	47.6	11.2	43.6	3.008	0.026	0.026	0.001	0.586	0.50
210	10/1/2002	8:22:13 PM	26.322	26.221	25.146	26.859	26.638	46.874	48.933	7.892	39.588	-1.289	-6.145	45.517	0.169	0.001	0	191.95	3.19917	47.5	11.2	43.2	2.981	0.025	0.025	0.001	0.580	0.49
211	10/1/2002	8:23:13 PM	26.327	26.226	25.056	26.914	26.648	47.156	49.08	7.779	40.276	-1.286	-6.116	45.833	0.168	0.001	0	192.95	3.21583	47.6	11.2	43.7	3.014	0.025	0.025	0.001	0.572	0.49
212	10/1/2002	8:24:13 PM	26.325	26.204	25.138	26.842	26.62	47.16	49.131	7.857	40.096	-1.295	-5.997	45.733	0.172	0.001	0	193.95	3.2325	47.7	11.2	43.6	3.008	0.026	0.026	0.001	0.586	0.50
213	10/1/2002	8:25:13 PM	26.338	26.207	25.067	26.82	26.579	46.882	48.78	7.792	40	-1.289	-5.91	45.565	0.168	0.001	0	194.95	3.24917	47.3	11.2	43.4	2.995	0.025	0.025	0.001	0.575	0.49
214	10/1/2002	8:26:13 PM	26.332	26.201	25.126	26.769	26.588	46.775	48.596	7.789	39.76	-1.289	-6.087	45.519	0.169	0.001	0	195.95	3.26583	47.1	11.2	43.3	2.983	0.025	0.025	0.001	0.580	0.49
215	10/1/2002	8:27:13 PM	26.336	26.195	25.14	26.678	26.567	47.094	49.12	7.828	40.043	-1.284	-6.067	45.722	0.159	0.001	0	196.95	3.2825	47.6	11.2	43.6	3.004	0.024	0.024	0.001	0.542	0.46
216	10/1/2002	8:28:13 PM	26.336	26.19	25.089	26.863	26.566	46.868	48.788	7.861	39.871	-1.289	-5.881	45.296	0.175	0.001	0	197.95	3.29917	47.3	11.1	43.4	2.990	0.026	0.026	0.001	0.600	0.51
217	10/1/2002	8:29:13 PM	26.334	26.183	25.183	26.786	26.529	46.802	48.825	7.839	39.65	-1.289	-6.029	46.593	0.169	0.001	0	198.95	3.31583	47.4	11.4	43.2	2.980	0.025	0.025	0.001	0.580	0.49
218	10/1/2002	8:30:13 PM	26.343	26.187	25.077	26.83	26.519	47.085	48.939	7.853	40.026	-1.289	-6.09	45.617	0.163	0.001	0	199.95	3.3325	47.5	11.2	43.6	3.003	0.024	0

261	10/1/2002	9:18:23 PM	26.304	26.168	25.178	26.806	26.634	47.462	49.21	7.523	40.808	-1.289	-5.829	44.428	0.154	0.001	0	248.12	4.13528	47.7	10.9	44.1	3.043	0.023	0.023	0.001	0.518	0.44
262	10/1/2002	9:19:23 PM	26.302	26.161	25.076	26.859	26.613	48.16	50.064	7.649	41.205	-1.292	-6.209	44.69	0.147	0.001	0	249.12	4.15194	48.6	11.0	44.7	3.081	0.022	0.022	0.000	0.489	0.42
263	10/1/2002	9:20:23 PM	26.312	26.176	25.196	26.834	26.613	47.686	49.148	7.438	41.023	-1.289	-6.266	44.699	0.165	0.002	0	250.12	4.16861	47.7	11.0	44.3	3.055	0.023	0.023	0.001	0.519	0.44
264	10/1/2002	9:21:23 PM	26.31	26.164	25.103	26.812	26.61	47.537	49.185	7.653	40.643	-1.286	-6.246	43.929	0.154	0.001	0	251.12	4.18528	47.7	10.8	44.1	3.040	0.023	0.023	0.001	0.519	0.44
265	10/1/2002	9:22:23 PM	26.313	26.162	25.157	26.77	26.604	47.377	49.044	7.526	40.63	-1.289	-6.214	44.317	0.15	0.001	0	252.12	4.20194	47.6	10.9	44.0	3.034	0.022	0.022	0.001	0.506	0.43
266	10/1/2002	9:23:23 PM	26.307	26.166	25.181	26.779	26.576	47.524	49.28	7.657	40.575	-1.289	-6.324	44.191	0.145	0.001	0	253.12	4.21861	47.8	10.8	44.0	3.037	0.022	0.022	0.000	0.488	0.42
267	10/1/2002	9:24:23 PM	26.311	26.155	25.125	26.754	26.567	47.589	49.03	7.651	40.753	-1.289	-6.249	44.667	0.157	0.001	0	254.12	4.23528	47.6	10.9	44.2	3.045	0.023	0.023	0.001	0.528	0.45
268	10/1/2002	9:25:23 PM	26.316	26.15	25.225	26.744	26.572	48.376	50.083	7.67	41.525	-1.286	-6.391	44.5	0.153	0.001	0	255.12	4.25194	48.6	10.9	45.0	3.099	0.023	0.023	0.001	0.504	0.43
269	10/1/2002	9:26:23 PM	26.322	26.146	25.116	26.794	26.608	47.398	48.96	7.604	40.694	-1.289	-6.209	44.21	0.119	0.001	0	256.12	4.26861	47.5	10.8	44.0	3.037	0.018	0.018	0.000	0.401	0.34
270	10/1/2002	9:27:23 PM	26.327	26.151	25.206	26.789	26.618	48.077	49.738	7.699	41.107	-1.289	-6.185	44.435	0.151	0.001	0	257.12	4.28528	48.3	10.9	44.6	3.074	0.023	0.022	0.001	0.502	0.43
271	10/1/2002	9:28:23 PM	26.333	26.142	25.177	26.865	26.624	47.939	49.382	7.646	41.079	-1.289	-6.258	44.525	0.155	0.001	0	258.12	4.30194	47.9	10.9	44.5	3.069	0.023	0.023	0.001	0.517	0.44
272	10/1/2002	9:29:23 PM	26.33	26.149	25.168	26.937	26.655	47.845	49.39	7.648	40.923	-1.289	-6.431	44.216	0.151	0.001	0	259.12	4.31861	47.9	10.8	44.4	3.060	0.023	0.022	0.001	0.505	0.43
273	10/1/2002	9:30:23 PM	26.336	26.155	25.265	26.978	26.687	47.444	48.8	7.556	40.806	-1.289	-6.44	44.793	0.151	0.001	0	260.12	4.33528	47.3	11.0	44.1	3.042	0.023	0.022	0.001	0.507	0.43
274	10/1/2002	9:31:23 PM	26.333	26.147	25.107	27.075	26.686	48.123	49.605	7.792	40.998	-1.292	-6.296	44.753	0.156	0.001	0	261.12	4.35194	48.1	11.0	44.6	3.072	0.023	0.023	0.001	0.520	0.44
275	10/1/2002	9:32:23 PM	26.35	26.164	25.238	27.116	26.72	47.932	49.456	7.646	41.166	-1.289	-6.408	44.609	0.153	0.001	0	262.12	4.36861	47.9	10.9	44.5	3.071	0.023	0.023	0.001	0.509	0.43
276	10/1/2002	9:33:23 PM	26.367	26.176	25.171	27.239	26.747	47.727	49.107	7.717	40.767	-1.289	-6.449	44.158	0.149	0.001	0	263.12	4.38528	47.6	10.8	44.2	3.051	0.022	0.022	0.000	0.500	0.43
277	10/1/2002	9:34:23 PM	26.359	26.183	25.213	27.275	26.769	47.794	49.299	7.718	40.819	-1.286	-6.481	44.701	0.149	0.001	0	264.12	4.40194	47.8	11.0	44.3	3.055	0.022	0.022	0.000	0.498	0.42
278	10/1/2002	9:35:23 PM	26.372	26.196	25.241	27.313	26.782	47.574	48.951	7.641	40.675	-1.292	-6.501	45.005	0.148	0.001	0	265.12	4.41861	47.5	11.0	44.1	3.042	0.022	0.022	0.000	0.497	0.42
279	10/1/2002	9:36:23 PM	26.38	26.214	25.169	27.352	26.821	47.885	49.351	7.745	40.935	-1.289	-6.481	44.571	0.146	0.001	0	266.12	4.43528	47.9	10.9	44.4	3.062	0.022	0.022	0.000	0.488	0.42
280	10/1/2002	9:37:23 PM	26.383	26.222	25.217	27.354	26.813	47.93	49.433	7.69	41.021	-1.289	-6.478	44.437	0.148	0.001	0	267.12	4.45194	48.0	10.9	44.5	3.066	0.022	0.022	0.000	0.493	0.42
281	10/1/2002	9:38:23 PM	26.374	26.218	24.903	27.326	26.795	47.82	49.187	7.592	41.111	-1.289	-6.4	44.353	0.149	0.001	0	268.12	4.46861	47.7	10.9	44.5	3.066	0.022	0.022	0.001	0.501	0.43
282	10/1/2002	9:39:23 PM	26.347	26.216	24.83	27.308	26.772	47.516	49.131	7.575	40.669	-1.289	-6.429	44.216	0.146	0.001	0	269.12	4.48528	47.7	10.8	44.1	3.040	0.022	0.022	0.000	0.496	0.42
283	10/1/2002	9:40:23 PM	26.292	26.211	24.7	27.296	26.762	47.369	48.947	7.462	40.563	-1.289	-6.51	44.451	0.144	0.001	0	270.12	4.50194	47.5	10.9	44.0	3.031	0.021	0.022	0.000	0.493	0.42
284	10/1/2002	9:41:23 PM	26.242	26.221	24.68	27.204	26.742	47.908	49.179	7.461	41.341	-1.289	-6.524	44.399	0.145	0.001	0	271.12	4.51861	47.7	10.9	44.6	3.077	0.022	0.022	0.000	0.489	0.42
285	10/1/2002	9:42:23 PM	26.193	26.227	24.791	27.115	26.778	47.698	49.198	7.537	41.064	-1.289	-6.342	44.768	0.136	0.001	0	272.12	4.53528	47.7	11.0	44.4	3.060	0.020	0.020	0.000	0.460	0.39
286	10/1/2002	9:43:23 PM	26.164	26.233	24.747	27.11	26.799	47.827	49.38	7.556	40.997	-1.289	-6.356	44.476	0.138	0.001	0	273.12	4.55194	47.9	10.9	44.4	3.062	0.021	0.021	0.000	0.467	0.40
287	10/1/2002	9:44:23 PM	26.134	26.228	24.837	27.05	26.804	48.065	49.605	7.509	41.47	-1.289	-6.431	44.519	0.148	0.001	0	274.12	4.56861	48.1	10.9	44.8	3.087	0.022	0.022	0.000	0.495	0.42
288	10/1/2002	9:45:23 PM	26.134	26.233	24.862	27.04	26.814	47.881	49.394	7.482	41.351	-1.289	-6.46	44.405	0.151	0.001	0	275.12	4.58528	47.9	10.9	44.6	3.076	0.023	0.023	0.001	0.507	0.43
289	10/1/2002	9:46:23 PM	26.109	26.218	24.827	26.976	26.804	47.63	49.235	7.569	40.753	-1.295	-6.359	44.546	0.141	0.001	0	276.12	4.60194	47.8	10.9	44.2	3.047	0.021	0.021	0.000	0.478	0.41
290	10/1/2002	9:47:23 PM	26.124	26.233	24.967	27.01	26.819	47.615	49.047	7.545	40.89	-1.284	-6.371	44.497	0.146	0.001	0	277.12	4.61861	47.6	10.9	44.3	3.051	0.022	0.022	0.000	0.492	0.42
291	10/1/2002	9:48:23 PM	26.129	26.228	24.892	26.971	26.804	48.141	49.715	7.618	41.445	-1.284	-6.495	44.527	0.142	0.001	0	278.12	4.63528	48.2	10.9	44.8	3.088	0.021	0.021	0.000	0.474	0.40
292	10/1/2002	9:49:23 PM	26.133	26.232	24.976	26.905	26.793	47.976	49.316	7.608	41.197	-1.286	-6.443	44.683	0.149	0.001	0	279.12	4.65194	47.8	10.9	44.6	3.074	0.022	0.022	0.000	0.499	0.42
293	10/1/2002	9:50:23 PM	26.147	26.236	25.001	26.894	26.822	47.995	49.644	7.607	41.072	-1.286	-6.327	44.321	0.144	0.001	0	280.12	4.66861	48.2	10.9	44.5	3.070	0.021	0.022	0.000	0.482	0.41
294	10/1/2002	9:51:23 PM	26.145	26.229	24.954	26.872	26.781	47.7	49.142	7.466	41.038	-1.289	-6.379	44.541	0.147	0.001	0	281.12	4.68528	47.7	10.9	44.4	3.059	0.022	0.022	0.000	0.495	0.42
295	10/1/2002	9:52:23 PM	26.154	26.233	25.042	26.821	26.789	47.943	49.436	7.554	41.161	-1.289	-6.437	44.403	0.145	0.001	0	282.12	4.70194	48.0	10.9	44.6	3.072	0.022	0.022	0.000	0.485	0.41
296	10/1/2002	9:53:23 PM	26.163	26.232	24.976	26.85	26.783	48.069	49.287	7.563	41.269	-1.286	-6.504	45.06	0.148	0.001	0	283.12	4.71861	47.8	11.0	44.7	3.080	0.022	0.022	0.000	0.494	0.42
297	10/1/2002	9:54:23 PM	26.162	26.231	25.056	26.849	26.782	48.141	49.512	7.625	41.185	-1.286	-6.397	44.8	0.144	0.001	0	284.12	4.73528	48.0	11.0	44.7	3.079	0.021	0.021	0.000	0.480	0.41
298	10/1/2002	9:55:23 PM	26.185	26.234	25.074	26.882	26.786	47.692	49.078	7.487	41.005	-1.286	-6.385	44.439	0.142	0.001	0	285.12	4.75194	47.6	10.9	44.3	3.058	0.021	0.021	0.000	0.476	0.41
299	10/1/2002	9:56:23 PM	26.17	26.188	25.003	26.817	26.655	48.204	49.711	7.67	41.22	-1.289	-6.486	44.477	0.138	0.001	0	286.12	4.76861	48.2	10.9	44.7	3.083	0.021	0.021	0.000	0.460	0.39
300	10/1/2002	9:57:23 PM	26.181	26.16	25.085	26.704	26.567	48.263	49.748	7.581	41.486	-1.289	-6.455	44.468	0.139	0.001	0	287.12	4.78528	48.3	10.9	44.9	3.094	0.021	0.021	0.000	0.461	0.39
301	10/1/2002	9:58:23 PM	26.187	26.126	25.015	26.744	26.452	48.162	49.551	7.532	41.461	-1.286	-6.501	44.848	0.142	0.001	0	288.12	4.80194	48.1	11.0	44.8	3.080	0.021	0.021	0.000	0.472	0.40
302	10/1/2002	9:59:23 PM	26.195	26.074	25.099	26.623	26.296	47.864	49.216	7.54	41.095	-1.286	-6.484	44.466	0.143	0.001	0	289.12	4.81861	47.7	10.9	44.5	3.067	0.021	0.021	0.000	0.478	0.41
303	10/1/2002	10:00:23 PM	26.205	26.039	25.088	26.617	26.17	47.688	49.214	7.601	40.737	-1.292	-6.515	44.512	0.142	0.001	0	290.12	4.83528	47.7	10.9	44.2	3.048	0.021	0.021	0.000	0.478	0.41
304	10/1/2002	10:01:23 PM	26.195	25.999	25.059	26.597	26.066	48.487	49.831	7.625	41.723	-1.289	-6.446	44.795	0.145	0.001	0	291.12	4.85194	48.4	11.0	45.1	3.110	0.022	0.022	0.000	0.478	0.41
305	10/1/2002	10:02:23 PM	26.214	25.963	25.153	26.601	25.97	47.781	49.771	7.664	40.921	-1.289	-5.873	44.523	0.109	0.001	0	292.12	4.86861	48.3	10.9	44.4	3.058	0.016	0.016	0.000	0.365	0.31
306	10/1/2002	10:03:23 PM	26.224	25.938	25.052	26.651	25.884	47.82	49.413	7.693	40.722	-1.289	-6.307	45.085	0.146	0.001	0	293.12	4.88528	47.9	11.0	44.3	3.052	0.022	0.022	0.000	0.491	0.42
307	10/1/2002	10:04:23 PM	26.242	25.921	25.15	26.574	25.822	48.309	49.816	7.62	41.566	-1.289	-6.527	44.307	0.141	0.001	0	294.12	4.90194	48.3	10.9	44.9	3.098	0.021	0.021	0.000	0.466	0.40
308	10/1/2002	10:05:23 PM	26.25	25.904	25.143	26.567	25.78	47.999	49.338	7.505	41.341	-1.286	-6.55	44.359	0.138	0.001	0	295.12	4.91861	47.9	10.9	44.7	3.080	0.021	0.020	0.000	0.459	0.39
309	10/1/2002	10:06:23 PM	26.244	25.863	25.108	26.517	25.706	48.185	49.713	7.573	41.402	-1.289	-6.602	44.542	0.137	0.001	0	296.12	4.93528	48.2	10.9	44.8	3.088	0.020	0.020	0.000	0.455	0.39
310	10/1/2002	10:07:23 PM	26.265	25.864	25.219	26.493	25.616	48.096	49.421	7.629	41.253	-1.286	-6.589	44.445	0.138	0.001	0	297.12	4.95194	47.9	10.9	44.7	3.080	0.021	0.020	0.000	0.458	0.39
311	10/1/2002	10:08:23 PM	26.251	25.805	25.094	26.503	25.596	47.781	49.133	7.621	40.984	-1.286	-6.579	44.47	0.116	0.001	0	298.12	4.96861	47.7	10.9	44.4	3.060	0.017	0.017	0.000	0.389	0.33
312	10/1/2002	10:09:23 PM	26.25	25.768	25.183	26.437	25.5	48.042	49.636	7.607	41.12	-1.289	-6.229	44.525	0.15	0.001	0	299.12	4.98528	48.2	10.9	44.6	3.074	0.022	0.022	0.000	0.499	0.42
313	10/1/2002	10:10:23 PM	26.242	25.726	25.155	26.479	25.392	47.628	48.819	7.548	40.913	-1.286	-6.513	44.594	0.141	0.001	0	300.12	5.00194	47.3	10.9	44.3	3.052	0.021	0.021	0.000	0.473	0.40
314	10/1/2002	10:11:23 PM	26.241	25.695	25.15	26.494	25.322	48.525	50.006	7.638	41.603	-1.289	-6.594	44.445	0.139	0.001	0	301.12	5.01861	48.5	10.9	45.1	3.107	0.021	0.021	0.000	0.468	0.39
315	10/1/2002	10:12:23 PM	26.258	25.672	25.262	26.461	25.259	47.889	49.032	7.548	41.289	-1.286	-6.588	44.573	0.139	0.001	0	302.12	5.03528	47.6	10.9	44.6	3.074	0.021	0.021	0.000	0.461	0.39
316	10/1/2002	10:13:23 PM	26.258	25.636	25.176	26.505	25.193	48.432	49.649	7.581	41.74	-1.286	-6.625	44.871	0.139	0.001	0	303.12	5.05194	48.2	11.0	45.1	3.109	0.021	0.021	0.000	0.457	0.39
317	10/1/2002	10:14:23 PM	26.25	25.589	25.264	26.448	25.115	47.852	49.173	7.591	41.032	-1.286	-6.605	44.659	0.139	0.001	0	304.12	5.06861	47.7	10.9	44.4	3.064	0.021	0.021	0.000	0.463	0.39
318	10/1/2002	10:15:23 PM	26.247	25.551	25.216	26.475	25.052	48.054	49.423	7.615	41.302	-1.289	-6.634	44.374	0.138	0.001	0	305.12	5.08528	48.0	10.9	44.7	3.080	0.021	0.020	0.000	0.458	0.39
319	10/1/2002	10:16:23 PM	26.232	25.501	25.186	26.364	24.972	48.373	49.804	7.676	41.402	-1.292	-6.631	44.344	0.139	0.001	0	306.12	5.10194	48.3	10.9	44.9	3.095	0.021	0.021	0.000	0.459	0.39
320	10/1/2002	10:17:23 PM	26.239	25.473	25.277	26.401	24.924	48.701	50.199	7.705	41.918	-1.286	-6.617	44.376	0.139	0.001	0	307.12	5.11861	48.7	10.9	45.3	3.124	0.021	0.021	0.000	0.454	0.39
321	10/1/2002	10:18:23 PM	26.239	25.438	25.163	26.392	24.894	48.015	49.599	7.675	41.034	-1.289	-6.64	44.498	0.138	0.001	0	308.12	5.13528	48.1	10.9	44.5	3.070	0.021	0.020	0.000	0.460	0.39
322	10/1/2002	10:19:23 PM	26.232	25.406	25.241	26.375	24.897	47.899	49.458	7.664	40.993	-1.289	-6.646	44.328	0.138	0.001	0	309.12	5.15194	48.0	10.9	44.4	3.064	0.021	0.020	0.000	0.460	0.39
323	10/1/2002	10:20:23 PM	26.23	25.398	25.218	26.427	24.914	48.115	49.438	7.675	41.193	-1.289	-6.536	44.642	0.144	0.001	0	310.12	5.16861	48.0	10.9	44.7	3.079	0.021	0.021	0.000	0.478	0.41
324	10/1/2002	10:21:23 PM	26.253	25.407	25.237	26.481	24.933	47.924	49.262	7.545	41.146	-1.286	-6.403	44.523	0.142	0.001	0	311.12	5.18528	47.8	10.9	44.5	3.071	0.021	0.021	0.000	0.472	0.40
325	10/1/2002	10:22:23 PM	26.246	25.39	25.3	26.574	24.971	48.098	49.34	7.616	41.3	-1.289	-6.521	44.447	0.136	0.001	0	312.12	5.20194	47.9	10.9	44.7	3.082	0.020	0.020	0.000	0.450	0.38
326	10/1/2002	10:23:23 PM	26.263	25.401	25.196	26.675	25.022	48.017	49.423	7.653	41.007	-1.289	-6.594	44.462	0.138	0.001	0	313.12	5.21861	48.0	10.9	44.5	3.069	0.021	0.020	0.000	0.460	0.39
327	10/1/2002	10:24:23 PM	26.268	25.401	25.306	26.725	25.072	48.003	49.46	7.61	41.228	-1.286	-6.614	44.342	0.137	0.001	0	314.12	5.23528	48.0	10.9	44.6	3.076	0.020	0.020	0.000	0.454	0.38
328	10/1/2002	10:25:23 PM	26.268	25.411	25.241	26.81	25.123	48.63	49.905	7.646	41.75	-1.292	-6.628	44.611	0.136	0.001	0	315.12	5.25194	48.4	10.9	45.2	3.116	0.020	0.020	0.000	0.466	0.39
329	10/1/2002	10:26:23 PM	26.279	25.423	25.283	26.886	25.189	48.162	49.376	7.554	41.611	-1.286	-6.634	44.487	0.137	0.001	0	316.12	5.26861	47.9	10.9	44.9	3.095	0.020	0.020	0.000	0.451	0.38
330	10/1/2002	10:27:23 PM	26.292	25.451	25.341	26.894	25.237	48.121	49.309	7.641	41.406	-1.289	-6.628	44.476	0.137	0.001	0	317.12	5.28528	47.8	10.9	44.8	3.086	0.020	0.020	0.000	0.452	0.38
331	10/1/2002	10:28:23 PM	26.289	25.457	25.237	26.921	25.249	48.119	49.593	7.626	41.291	-1.289	-6.625	44.29	0.136	0.001	0	318.12	5.30194	48.1	10.9	44.7	3.082	0.020	0.020	0.000	0.451	0.38
332	10/1/2002	10:29:23 PM	26.282	25.436	25.326	26.884	25.247	47.995	49.34	7.667	41.169	-1.286	-6.663	44.141	0.136	0.001	0	319.12	5.31861	47.9	10.8	44.6	3.074	0.020	0.020	0.000	0.451	0.38
333	10/1/2002	10:30:23 PM	26.301	25.45	25.26	26.908	25.226	48.088	49.566	7.719	41.183	-1.286	-6.666	44.407	0.136	0.001	0	320.12	5.33528	48.1	10.9	44.6	3.077	0.020	0.020	0.000	0.451	0.38
334	10/1/2002	10:31:23 PM	26.274	25.408	25.258	26.746	25.209	47.649	49.187	7.607	40.749	-1.289	-6.666	44.449	0.135	0.001	0	321.12	5.35194	47.7	10.9	44.2	3.047	0.020	0.020	0.000	0.452	0.38
335	10/1/2002	10:32:23 PM	26.293	25.421	25.311	26.805	25.183	48.193	49.52	7.697	41.332	-1.286	-6.654	44.338	0.135	0.001	0	322.12	5.36861	48.0	10.9	44.8	3.086	0.020	0.020	0.000	0.446	0.38
336	10/1/2002	10:33:23 PM	26.286	25.393	25.213	26.737	25.16	48.002	49.691	7.649	41.189	-1.289	-6.666	44.465	0.135	0.001	0	323.12	5.38528	48.1	10.9	44.6	3.076	0.020	0.020	0.000	0.446	0.38
337	10/1/2002	10:34:23 PM	26.292	25.39	25.34	26.664	25.117	48.081	49.744	7.748	40.937	-1.284	-6.652	44.156	0.136	0.001	0	324.12	5.40194	48.3	10.8	44.5	3.069	0.020	0.020	0.000	0.451	0.38
338	10/1/2002	10:35:23 PM	26.289	25.368	25.213	26.602	25.094	47.775	49.303	7.617	40.913	-1.289	-6.669	44.401	0.134	0.001	0	325.12	5.41861	47.8	10.9	44.3	3.057	0.020	0.020	0.000	0.448	0.38
339	10/1/2002	10:36:23 PM	26.293	25.356	25.301	26.62	25.068	47.924	49.382	7.655	41.148	-1.284	-6.666	44.571	0.135	0.002	0	326.12	5.43528	47.9	10.9	44.5	3.071	0.020	0.020	0.000	0.448	0.38
340	10/1/2002	10:37:23 PM	26.281	25.324	25.274	26.568	25.045	47.997	49.566	7.652	41.191	-1.292	-6.669	44.485	0.134	0.001	0	327.12	5.45194	48.1	10.9	44.6	3.075	0.020	0.020	0.000	0.445	0.38
341	10/1/2002	10:38:23 PM	26.305	25.333	25.248	26.577	25.095	47.727	49.253	7.645	40.896	-1.289	-6.686	44.556	0.133	0.001	0	328.12	5.46861	47.8	10.9	44.3	3.055	0.020	0.020	0.000	0.444	0.38
342	10/1/2002	10:39:23 PM	26.293	25.306	25.336	26.505	24.987	47.854	49.512	7.67	40.964	-1.286	-6.678	44.151	0.134	0.001	0	329.12	5.48528	48.0	10.8	44.4	3.062	0.020	0.020	0.000	0.446	0.38
343	10/1/2002	10:40:23 PM	26.29	25.288	25.223	26.497	24.964	47.798	49.162	7.635	40.966	-1.286	-6.692	44.449	0.133	0.001	0	330.12	5.50194	47.7	10.9	44.4	3.060	0.020	0.020	0.000	0.444	0.38
344	10/1/2002	10:41:23 PM	26.285	25.264	25.299	26.468	24.93	48.162	49.841	7.763	41.083	-1.286	-6.696	44.21	0.133	0.001	0	331.12	5.51861	48.4	10.8	44.6	3.077	0.020	0.020	0.000	0.441	0.38
345	10/1/2002	10:42:23 PM	26.281	25.244	25.274	26.473	24.91	47.93	49.547	7.702	41.075	-1.289	-6.692	44.288	0.132	0.001	0	332.12	5.53528	48.1	10.9	44.5	3.068	0.020	0.020	0.000	0.439	0.37
346	10/1/2002	10:43:23 PM	26.287	25.231	25.245	26.46	24.887	48.106	49.777	7.742	41.124	-1.289	-6.672	44.477	0.133	0.001	0	333.12	5.55194	48.3	10.9	44.6	3.076	0.020	0.020	0.000	0.441	0.38
347	10/1/2002	10:44:23 PM	26.281	25.209	25.334	26.428	24.87	47.939	49.585	7.721	41.054	-1.289	-6.715	44.462	0.132	0.001	0	334.12	5.56861	48.1	10.9	44.5	3.068	0.020	0.019	0.000	0.438	0.37
348	10/1/2002	10:45:23 PM	26.283	25.192	25.141	26.426	24.868	47.934	49.632	7.726	40.964	-1.286	-6.718	44.263	0.131	0.001	0	335.12	5.58528	48.2	10.8	44.4	3.065	0.020

391	10/1/2002	11:28:18 PM	26.169	24.957	25.222	26.351	24.736	47.104	49.253	7.609	40.237	-1.286	-6.753	44.567	0.119	0.001	0	378.03	6.30056	47.8	10.9	43.7	3.011	0.018	0.018	0.000	0.404	0.34
392	10/1/2002	11:29:18 PM	26.162	24.934	25.275	26.239	24.706	47.557	49.595	7.7	40.684	-1.286	-6.811	45.001	0.123	0.001	0	379.03	6.31722	48.1	11.0	44.1	3.042	0.018	0.018	0.000	0.412	0.35
393	10/1/2002	11:30:18 PM	26.177	24.939	25.3	26.294	24.706	47.823	50.137	7.756	40.767	-1.286	-6.814	44.672	0.121	0.001	0	380.03	6.33389	48.7	10.9	44.3	3.054	0.018	0.018	0.000	0.404	0.34
394	10/1/2002	11:31:18 PM	26.183	24.931	25.246	26.275	24.717	47.752	49.916	7.711	40.749	-1.286	-6.808	44.741	0.122	0.001	0	381.03	6.35056	48.4	11.0	44.3	3.051	0.018	0.018	0.000	0.408	0.35
395	10/1/2002	11:32:18 PM	26.191	24.934	25.339	26.253	24.72	47.692	49.855	7.735	40.64	-1.286	-6.762	44.359	0.117	0.001	0	382.03	6.36722	48.4	10.9	44.2	3.045	0.017	0.017	0.000	0.391	0.33
396	10/1/2002	11:33:18 PM	26.183	24.921	25.236	26.225	24.727	47.526	49.858	7.688	40.51	-1.289	-6.806	44.476	0.121	0.001	0	383.03	6.38389	48.4	10.9	44.0	3.035	0.018	0.018	0.000	0.407	0.35
397	10/1/2002	11:34:18 PM	26.161	24.889	25.289	26.173	24.67	47.566	49.692	7.642	40.716	-1.286	-6.814	44.594	0.121	0.001	0	384.03	6.40056	48.2	10.9	44.1	3.043	0.018	0.018	0.000	0.405	0.34
398	10/1/2002	11:35:18 PM	26.169	24.881	25.317	26.191	24.643	47.089	49.216	7.573	40.137	-1.281	-6.834	44.353	0.12	0.002	0	385.03	6.41722	47.7	10.9	43.6	3.007	0.018	0.018	0.000	0.407	0.35
399	10/1/2002	11:36:18 PM	26.181	24.879	25.249	26.193	24.615	47.655	49.75	7.656	40.831	-1.284	-6.796	44.535	0.12	0.001	0	386.03	6.43389	48.3	10.9	44.2	3.050	0.018	0.018	0.000	0.402	0.34
400	10/1/2002	11:37:18 PM	26.162	24.85	25.32	26.165	24.591	47.462	49.795	7.651	40.597	-1.289	-6.805	44.395	0.122	0.001	0	387.03	6.45056	48.3	10.9	44.0	3.036	0.018	0.018	0.000	0.409	0.35
401	10/1/2002	11:38:18 PM	26.169	24.836	25.237	26.156	24.562	47.419	49.709	7.711	40.354	-1.284	-6.819	44.411	0.118	0.001	0	388.03	6.46722	48.2	10.9	43.9	3.026	0.018	0.017	0.000	0.398	0.34
402	10/1/2002	11:39:18 PM	26.165	24.832	25.298	26.107	24.543	47.497	49.913	7.672	40.421	-1.289	-6.848	44.437	0.122	0.001	0	389.03	6.48389	48.4	10.9	44.0	3.031	0.018	0.018	0.000	0.410	0.35
403	10/1/2002	11:40:18 PM	26.167	24.819	25.325	26.139	24.536	47.481	49.537	7.718	40.489	-1.286	-6.819	44.399	0.12	0.001	0	390.03	6.50056	48.1	10.9	44.0	3.033	0.018	0.018	0.000	0.403	0.34
404	10/1/2002	11:41:18 PM	26.163	24.801	25.236	26.126	24.512	47.569	49.816	7.735	40.501	-1.292	-6.822	44.546	0.12	0.001	0	391.03	6.51722	48.3	10.9	44.0	3.036	0.018	0.018	0.000	0.404	0.34
405	10/1/2002	11:42:18 PM	26.165	24.787	25.343	26.077	24.488	46.911	49.16	7.681	40.153	-1.286	-6.837	44.391	0.121	0.001	0	392.03	6.53389	47.7	10.9	43.5	3.001	0.018	0.018	0.000	0.410	0.35
406	10/1/2002	11:43:18 PM	26.158	24.775	25.236	26.05	24.471	47.346	49.525	7.688	40.448	-1.292	-6.846	44.365	0.122	0.001	0	393.03	6.55056	48.1	10.9	43.9	3.027	0.018	0.018	0.000	0.412	0.35
407	10/1/2002	11:44:18 PM	26.17	24.767	25.323	26.037	24.448	47.514	49.858	7.676	40.681	-1.286	-6.843	44.355	0.121	0.001	0	394.03	6.56722	48.4	10.9	44.1	3.040	0.018	0.018	0.000	0.405	0.34
408	10/1/2002	11:45:18 PM	26.178	24.765	25.356	26.045	24.451	47.479	49.688	7.743	40.487	-1.286	-6.831	44.321	0.119	0.001	0	395.03	6.58389	48.2	10.9	44.0	3.032	0.018	0.018	0.000	0.399	0.34
409	10/1/2002	11:46:18 PM	26.181	24.764	25.289	26.089	24.47	47.384	49.496	7.695	40.374	-1.284	-6.877	44.325	0.117	0.001	0	396.03	6.60056	48.0	10.9	43.9	3.025	0.017	0.017	0.000	0.394	0.34
410	10/1/2002	11:47:18 PM	26.181	24.758	25.374	26.073	24.494	47.355	49.506	7.642	40.589	-1.289	-6.84	45.211	0.12	0.001	0	397.03	6.61722	48.0	11.1	44.0	3.032	0.018	0.018	0.000	0.403	0.34
411	10/1/2002	11:48:18 PM	26.18	24.763	25.308	26.132	24.524	47.34	49.667	7.757	40.217	-1.289	-6.825	44.223	0.117	0.001	0	398.03	6.63389	48.2	10.8	43.8	3.018	0.017	0.017	0.000	0.395	0.34
412	10/1/2002	11:49:18 PM	26.175	24.763	25.338	26.147	24.564	47.33	49.634	7.617	40.436	-1.289	-6.837	44.474	0.118	0.001	0	399.03	6.65056	48.2	10.9	43.9	3.026	0.018	0.017	0.000	0.397	0.34
413	10/1/2002	11:50:18 PM	26.186	24.779	25.399	26.229	24.62	47.431	49.637	7.646	40.616	-1.286	-6.86	44.497	0.117	0.001	0	400.03	6.66722	48.1	10.9	44.0	3.035	0.017	0.017	0.000	0.392	0.33
414	10/1/2002	11:51:18 PM	26.198	24.79	25.311	26.315	24.672	47.4	49.655	7.753	40.301	-1.286	-6.86	44.325	0.118	0.001	0	401.03	6.68389	48.2	10.9	43.9	3.023	0.018	0.017	0.000	0.398	0.34
415	10/1/2002	11:52:18 PM	26.199	24.812	25.407	26.337	24.723	47.448	49.64	7.712	40.53	-1.284	-6.851	44.284	0.118	0.001	0	402.03	6.70056	48.2	10.9	44.0	3.033	0.018	0.017	0.000	0.396	0.34
416	10/1/2002	11:53:18 PM	26.201	24.828	25.329	26.408	24.795	47.473	49.936	7.742	40.385	-1.292	-6.86	44.443	0.118	0.001	0	403.03	6.71722	48.5	10.9	43.9	3.029	0.018	0.017	0.000	0.397	0.34
417	10/1/2002	11:54:18 PM	26.213	24.851	25.381	26.501	24.868	47.259	49.525	7.646	40.403	-1.286	-6.863	44.344	0.117	0.001	0	404.03	6.73389	48.1	10.9	43.8	3.022	0.017	0.017	0.000	0.394	0.34
418	10/1/2002	11:55:18 PM	26.228	24.89	25.446	26.575	24.942	47.355	49.916	7.817	40.174	-1.289	-6.851	44.279	0.118	0.001	0	405.03	6.75056	48.4	10.9	43.8	3.017	0.018	0.017	0.000	0.397	0.34
419	10/1/2002	11:56:18 PM	26.225	24.893	25.323	26.628	24.99	47.454	49.897	7.834	40.17	-1.292	-6.88	44.554	0.115	0.001	0	406.03	6.76722	48.4	10.9	43.8	3.021	0.017	0.017	0.000	0.388	0.33
420	10/1/2002	11:57:18 PM	26.225	24.917	25.433	26.557	24.994	47.199	49.576	7.663	40.35	-1.286	-6.892	44.468	0.116	0.001	0	407.03	6.78389	48.1	10.9	43.8	3.018	0.017	0.017	0.000	0.390	0.33
421	10/1/2002	11:58:18 PM	26.225	24.917	25.328	26.487	24.999	47.508	49.576	7.713	40.612	-1.286	-6.903	44.458	0.117	0.001	0	408.03	6.80056	48.1	10.9	44.1	3.038	0.017	0.017	0.000	0.392	0.33
422	10/1/2002	11:59:18 PM	26.223	24.931	25.386	26.43	24.982	47.197	49.537	7.662	40.229	-1.281	-6.892	44.166	0.117	0.001	0	409.03	6.81722	48.1	10.8	43.7	3.014	0.017	0.017	0.000	0.396	0.34
423	10/2/2002	12:00:18 AM	26.231	24.934	25.439	26.373	24.97	47.191	49.615	7.687	40.262	-1.281	-6.513	44.363	0.0881	0.001	0	410.03	6.83389	48.1	10.9	43.7	3.015	0.012	0.012	0.000	0.273	0.23
424	10/2/2002	12:01:18 AM	26.228	24.926	25.311	26.39	24.947	47.673	50.191	7.855	40.514	-1.286	-6.796	44.242	0.121	0.001	0	411.03	6.85056	48.7	10.8	44.1	3.040	0.018	0.018	0.000	0.406	0.35
425	10/2/2002	12:02:18 AM	26.23	24.928	25.423	26.323	24.935	46.942	49.477	7.648	40.03	-1.286	-6.345	43.679	0.12	0.001	0	412.03	6.86722	48.0	10.7	43.5	2.998	0.018	0.018	0.000	0.407	0.35
426	10/2/2002	12:03:18 AM	26.232	24.935	25.335	26.335	24.927	47.185	49.818	7.782	40.17	-1.286	-6.394	44.999	0.112	0.001	0	413.03	6.88389	48.3	11.0	43.7	3.011	0.017	0.017	0.000	0.379	0.32
427	10/2/2002	12:04:18 AM	26.224	24.921	25.362	26.246	24.883	47.528	50.178	7.777	40.378	-1.286	-6.232	44.428	0.159	0.002	0	414.03	6.90056	48.7	10.9	44.0	3.030	0.024	0.023	0.001	0.534	0.45
428	10/2/2002	12:05:18 AM	26.219	24.911	25.402	26.196	24.863	47.427	50.025	7.79	40.311	-1.292	-6.33	43.965	0.12	0.001	0	415.03	6.91722	48.6	10.8	43.9	3.025	0.018	0.018	0.000	0.403	0.34
429	10/2/2002	12:06:18 AM	26.23	24.908	25.303	26.207	24.834	47.064	49.525	7.715	39.99	-1.289	-6.872	44.367	0.116	0.001	0	416.03	6.93389	48.1	10.9	43.5	3.001	0.017	0.017	0.000	0.394	0.34
430	10/2/2002	12:07:18 AM	26.226	24.899	25.414	26.153	24.8	47.454	50.054	7.884	40.268	-1.289	-6.986	44.015	0.115	0.001	0	417.03	6.95056	48.6	10.8	43.9	3.024	0.017	0.017	0.000	0.386	0.33
431	10/2/2002	12:08:18 AM	26.243	24.896	25.346	26.14	24.777	47.249	49.816	7.787	40.188	-1.289	-7.016	44.361	0.112	0.001	0	418.03	6.96722	48.1	10.9	43.7	3.014	0.017	0.017	0.000	0.378	0.32
432	10/2/2002	12:09:18 AM	26.243	24.886	25.406	26.125	24.727	47.317	49.773	7.842	40.092	-1.284	-7.025	44.424	0.115	0.001	0	419.03	6.98389	48.3	10.9	43.7	3.013	0.017	0.017	0.000	0.388	0.33
433	10/2/2002	12:10:18 AM	26.219	24.856	25.432	26.001	24.698	47.404	49.911	7.758	40.331	-1.284	-7.063	44.342	0.115	0.001	0	420.03	7.00056	48.4	10.9	43.9	3.025	0.017	0.017	0.000	0.386	0.33
434	10/2/2002	12:11:18 AM	26.224	24.847	25.332	26.032	24.668	47.386	49.944	7.813	40.249	-1.286	-7.06	44.219	0.114	0.001	0	421.03	7.01722	48.5	10.8	43.8	3.021	0.017	0.017	0.000	0.384	0.33
435	10/2/2002	12:12:18 AM	26.219	24.832	25.382	25.947	24.638	47.071	49.402	7.698	40.01	-1.286	-7.057	44.307	0.114	0.001	0	422.03	7.03389	47.9	10.9	43.5	3.002	0.017	0.017	0.000	0.386	0.33
436	10/2/2002	12:13:18 AM	26.214	24.822	25.037	25.972	24.608	47.093	49.518	7.699	39.895	-1.284	-7.089	43.958	0.112	0.001	0	423.03	7.05056	48.0	10.8	43.5	2.999	0.017	0.017	0.000	0.384	0.33
437	10/2/2002	12:14:18 AM	26.189	24.812	24.867	25.932	24.588	47.245	49.46	7.419	40.708	-1.289	-7.08	43.686	0.112	0.001	0	424.03	7.06722	48.0	10.7	44.0	3.032	0.017	0.017	0.000	0.381	0.32
438	10/2/2002	12:15:18 AM	26.14	24.803	24.782	25.912	24.564	47.383	49.915	7.578	40.473	-1.284	-7.103	43.654	0.111	0.001	0	425.03	7.08389	48.4	10.7	43.9	3.029	0.017	0.017	0.000	0.379	0.32
439	10/2/2002	12:16:18 AM	26.076	24.798	24.768	25.923	24.529	46.849	49.299	7.5	39.981	-1.284	-7.086	43.698	0.111	0.001	0	426.03	7.10056	47.8	10.7	43.4	2.993	0.017	0.017	0.000	0.384	0.33
440	10/2/2002	12:17:18 AM	26.006	24.769	24.659	25.853	24.476	47.514	50.157	7.536	40.673	-1.284	-7.112	43.6	0.111	0.001	0	427.03	7.11722	48.7	10.7	44.1	3.040	0.017	0.017	0.000	0.377	0.32
441	10/2/2002	12:18:18 AM	25.963	24.755	24.896	25.885	24.481	47.245	49.773	7.515	40.486	-1.286	-7.095	43.843	0.111	0.001	0	428.03	7.13389	48.3	10.7	43.9	3.024	0.017	0.017	0.000	0.378	0.32
442	10/2/2002	12:19:18 AM	25.912	24.72	24.86	25.865	24.461	47.214	49.649	7.469	40.477	-1.289	-7.106	43.671	0.111	0.001	0	429.03	7.15056	48.2	10.7	43.8	3.023	0.017	0.017	0.000	0.379	0.32
443	10/2/2002	12:20:18 AM	25.918	24.735	24.996	25.84	24.456	47.303	49.915	7.521	40.305	-1.286	-7.092	43.78	0.111	0.001	0	430.03	7.16722	48.4	10.7	43.8	3.020	0.017	0.017	0.000	0.378	0.32
444	10/2/2002	12:21:18 AM	25.907	24.715	24.94	25.865	24.441	46.789	49.398	7.495	39.932	-1.286	-7.103	42.106	0.11	0.001	0	431.03	7.18389	47.9	10.3	43.4	2.990	0.016	0.016	0.000	0.379	0.32
445	10/2/2002	12:22:18 AM	25.908	24.7	25.011	25.845	24.416	46.942	49.436	7.425	40.198	-1.286	-7.097	43.828	0.111	0.001	0	432.03	7.20056	48.0	10.7	43.6	3.004	0.017	0.017	0.000	0.380	0.32
446	10/2/2002	12:23:18 AM	25.902	24.679	25.055	25.79	24.376	47.201	49.762	7.389	40.55	-1.286	-7.095	43.868	0.111	0.001	0	433.03	7.21722	48.3	10.8	43.9	3.025	0.017	0.017	0.000	0.377	0.32
447	10/2/2002	12:24:18 AM	25.896	24.658	24.994	25.828	24.349	47.328	50.083	7.628	40.338	-1.286	-7.1	43.965	0.11	0.001	0	434.03	7.23389	48.6	10.8	43.8	3.022	0.016	0.016	0.000	0.374	0.32
448	10/2/2002	12:25:18 AM	25.917	24.659	25.1	25.779	24.356	46.932	49.469	7.401	40.292	-1.289	-7.08	43.336	0.11	0.001	0	435.03	7.25056	48.0	10.6	43.6	3.007	0.016	0.016	0.000	0.375	0.32
449	10/2/2002	12:26:18 AM	25.911	24.634	25.079	25.754	24.345	46.665	49.299	7.435	39.795	-1.292	-7.103	43.589	0.111	0.001	0	436.03	7.26722	47.8	10.7	43.2	2.981	0.017	0.017	0.000	0.382	0.33
450	10/2/2002	12:27:18 AM	25.916	24.624	25.069	25.804	24.355	46.959	49.502	7.487	40.176	-1.286	-7.097	43.696	0.111	0.001	0	437.03	7.28389	48.0	10.7	43.6	3.004	0.017	0.017	0.000	0.379	0.32
451	10/2/2002	12:28:18 AM	25.932	24.634	25.16	25.85	24.38	47.354	50.075	7.473	40.563	-1.286	-7.089	43.761	0.11	0.001	0	438.03	7.30056	48.6	10.7	44.0	3.031	0.016	0.016	0.000	0.371	0.32
452	10/2/2002	12:29:18 AM	25.938	24.63	25.086	25.885	24.416	47.468	50.048	7.551	40.669	-1.286	-7.116	43.742	0.109	0.001	0	439.03	7.31722	48.6	10.7	44.1	3.038	0.016	0.016	0.000	0.368	0.31
453	10/2/2002	12:30:18 AM	25.938	24.635	25.131	25.905	24.461	47.069	49.661	7.485	40.186	-1.286	-7.089	43.615	0.11	0.001	0	440.03	7.33389	48.2	10.7	43.6	3.008	0.016	0.016	0.000	0.375	0.32
454	10/2/2002	12:31:18 AM	25.959	24.661	25.197	26.031	24.512	47.181	49.918	7.496	40.413	-1.284	-7.097	43.856	0.11	0.001	0	441.03	7.35056	48.4	10.7	43.8	3.020	0.016	0.016	0.000	0.372	0.32
455	10/2/2002	12:32:18 AM	25.97	24.682	25.133	26.092	24.564	47.162	49.766	7.472	40.399	-1.284	-7.112	43.843	0.11	0.001	0	442.03	7.36722	48.3	10.7	43.8	3.019	0.016	0.016	0.000	0.373	0.32
456	10/2/2002	12:33:18 AM	25.987	24.7	25.225	26.14	24.616	46.763	49.473	7.486	39.912	-1.286	-7.077	44.015	0.11	0.001	0	443.03	7.38389	48.0	10.8	43.3	2.989	0.016	0.016	0.000	0.376	0.32
457	10/2/2002	12:34:18 AM	25.999	24.716	25.177	26.196	24.676	46.94	49.613	7.425	40.213	-1.286	-7.089	43.757	0.109	0.001	0	444.03	7.40056	48.1	10.7	43.6	3.004	0.016	0.016	0.000	0.371	0.32
458	10/2/2002	12:35:18 AM	26.007	24.739	25.19	26.27	24.736	46.615	49.278	7.476	39.762	-1.292	-7.118	43.547	0.109	0.001	0	445.03	7.41722	47.8	10.7	43.2	2.978	0.016	0.016	0.000	0.374	0.32
459	10/2/2002	12:36:18 AM	26.024	24.777	25.268	26.362	24.789	47.228	49.978	7.532	40.424	-1.289	-7.097	43.946	0.11	0.001	0	446.03	7.43389	48.5	10.8	43.8	3.022	0.016	0.016	0.000	0.371	0.32
460	10/2/2002	12:37:18 AM	26.027	24.794	25.18	26.394	24.816	46.675	49.508	7.507	39.744	-1.286	-7.08	43.875	0.109	0.001	0	447.03	7.45056	48.0	10.8	43.2	2.979	0.016	0.016	0.000	0.374	0.32
461	10/2/2002	12:38:18 AM	26.039	24.806	25.262	26.326	24.823	46.816	49.591	7.46	40.055	-1.289	-7.086	43.923	0.11	0.001	0	448.03	7.46722	48.1	10.8	43.4	2.995	0.016	0.016	0.000	0.375	0.32
462	10/2/2002	12:39:18 AM	26.04	24.808	25.218	26.253	24.814	46.926	49.82	7.531	40.119	-1.286	-7.045	43.981	0.109	0.001	0	449.03	7.48389	48.3	10.8	43.5	3.001	0.016	0.016	0.000	0.371	0.32
463	10/2/2002	12:40:18 AM	26.052	24.815	25.225	26.21	24.807	46.806	49.593	7.513	39.889	-1.286	-7.048	43.931	0.109	0.001	0	450.03	7.50056	48.1	10.8	43.3	2.989	0.016	0.016	0.000	0.373	0.32
464	10/2/2002	12:41:18 AM	26.058	24.811	25.286	26.096	24.777	47.618	50.559	7.607	40.679	-1.286	-7.048	43.864	0.11	0.001	0	451.03	7.51722	49.1	10.7	44.1	3.044	0.016	0.016	0.000	0.368	0.31
465	10/2/2002	12:42:18 AM	26.054	24.796	25.167	26.061	24.755	47.458	50.565	7.625	40.467	-1.286	-7.08	43.577	0.107	0.001	0	452.03	7.53389	49.1	10.7	44.0	3.031	0.016	0.016	0.000	0.361	0.31
466	10/2/2002	12:43:18 AM	26.065	24.792	25.273	26.012	24.726	47.41	50.056	7.657	40.057	-1.286	-7.05	43.843	0.11	0.001	0	453.03	7.55056	48.6	10.7	43.6	3.006	0.016	0.016	0.000	0.373	0.32
467	10/2/2002	12:44:18 AM	26.07	24.787	25.263	25.987	24.689	46.65	49.454	7.517	39.828	-1.286	-7.045	43.852	0.108	0.001	0	454.03	7.56722	48.0	10.7	43.2	2.981	0.016	0.016	0.000	0.370	0.31
468	10/2/2002	12:45:18 AM	26.059	24.766	25.227	25.971	24.663	46.93	49.86	7.551	40.133	-1.286	-7.089	43.992	0.108	0.001	0	455.03	7.58389	48.4	10.8	43.5	3.001	0.016	0.016	0.000	0.368	0.31
469	10/2/2002	12:46:18 AM	26.058	24.755	25.296	25.865	24.637	47.191	49.94	7.592	40.241	-1.289	-7.034	44.03	0.106	0.001	0	456.03	7.60056	48.5	10.8	43.7	3.014	0.016	0.016	0.000	0.369	0.31
470	10/2/2002	12:47:18 AM	26.063	24.74	25.191	25.88	24.612	46.868	49.837	7.535	40.045	-1.292	-7.083	43.856	0.108	0.001	0	457.03	7.61722	48.4	10.7	43.5	2.996	0.016	0.016	0.000	0.369	0.31
471	10/2/2002	12:48:18 AM	26.088	24.75	25.301	25.87	24.597	47.357	50.209	7.588	40.577	-1.286	-7.074	43.937	0.105	0.001	0	458.03	7.63389	48.7	10.8	44.0	3.031	0.016	0.016	0.000	0.363	0.30
472	10/2/2002	12:49:18 AM	26.087	24.734	25.3	25.854	24.545	46.799	49.845	7.603	39.85	-1.286	-7.057	43.906	0.107	0.001	0	459.03	7.65056	48.4	10.8	43.3	2.987	0.016	0.016	0.000	0.365	0.31
473	10/2/2002	12:50:18 AM	26.079	24.711	25.237	25.881	24.522	46.772	49.901	7.537	39.932	-1.284	-7.045	43.944	0.106	0.001	0	460.03	7.66722	48.4	10.8	43.4	2.989	0.016	0.016	0.000	0.362	0.31
474	10/2/2002	12:51:18 AM	26.092	24.71	25.335	25.84	24.491	46.944	49.884	7.548	40.069	-1.286	-7.074	43.713	0.108	0.001	0	461.03	7.68389	48.4	10.7	43.5	3.000	0.016	0.016	0.000	0.367	0.31
475	10/2/2002	12:52:18 AM	26.087	24.689	25.24	25.814	24.475	47.105	50.063	7.583	40.17	-1.286	-7.082	43.774	0.107	0.001	0	462.03	7.70056	48.6	10.7	43.6	3.008	0.016	0.016	0.000	0.363	0.31
476	10/2/2002	12:53:18 AM	26.096	24.693	25.304	25.793	24.444	47.069	50.044	7.561	40.268	-1.286	-7.066	43.608	0.108	0.001	0	463.03	7.71722	48.6	10.7	43.7	3.011	0.016	0.016	0.000	0.366	0.31
477	10/2/2002	12:54:18 AM	26.09	24.672	25.333	25.747	24.429	47.004	50.037	7.612	40.047	-1.286	-7.051	43.975	0.107	0.001	0	464.03	7.73389	48.6	10.8	43.5	3.001	0.016	0.016	0.000	0.363	0.31
478	10/2/2002	12:55:18 AM	26.089	24.651	25.242	25.781	24.412	46.862	49.992	7.582	39.965	-1.286	-7.068	43.835	0.103	0.001	0	465.03	7.75056	48.5	10.7	43.4	2.993	0.015

521	10/2/2002	1:38:07 AM	26.146	24.493	25.374	25.598	24.199	46.377	49.735	7.805	39.334	-1.286	-7.155	0.099	0.001	0	0	507.85	8.46417	48.3	0.0	42.9	2.955	0.000	0.000	0.000	0.003	0.00
522	10/2/2002	1:39:07 AM	26.139	24.466	25.453	25.511	24.197	45.778	49.158	7.719	38.724	-1.289	-7.138	0.099	0.001	0	0	508.85	8.48083	47.7	0.0	42.3	2.913	0.000	0.000	0.000	0.003	0.00
523	10/2/2002	1:40:07 AM	26.153	24.47	25.451	25.535	24.211	46.176	49.603	7.793	39.081	-1.292	-7.123	0.099	0.001	0	0	509.85	8.4975	48.1	0.0	42.6	2.939	0.000	0.000	0.000	0.003	0.00
524	10/2/2002	1:41:07 AM	26.157	24.474	25.43	25.604	24.23	46.375	49.93	7.838	39.097	-1.286	-7.15	0.1	0.001	0	0	510.85	8.51417	48.5	0.0	42.7	2.946	0.000	0.000	0.000	0.003	0.00
525	10/2/2002	1:42:07 AM	26.157	24.473	25.415	25.609	24.264	46.362	49.895	7.807	39.269	-1.289	-7.109	0.101	0.001	0	0	511.85	8.53083	48.4	0.0	42.8	2.952	0.000	0.000	0.000	0.003	0.00
526	10/2/2002	1:43:07 AM	26.172	24.499	25.03	25.729	24.31	46.043	49.634	7.599	39.195	-1.286	-7.092	0.099	0.001	0	0	512.85	8.5475	48.2	0.0	42.6	2.938	0.000	0.000	0.000	0.003	0.00
527	10/2/2002	1:44:07 AM	26.116	24.483	24.843	25.763	24.339	46.532	50.031	7.559	39.691	-1.292	-7.118	0.098	0.001	0	0	513.85	8.56417	48.6	0.0	43.1	2.972	0.000	0.000	0.000	0.003	0.00
528	10/2/2002	1:45:07 AM	26.072	24.513	24.864	25.824	24.405	46.132	49.522	7.572	39.283	-1.286	-7.141	0.097	0.001	0	0	514.85	8.58083	48.0	0.0	42.7	2.945	0.000	0.000	0.000	0.004	0.00
529	10/2/2002	1:46:07 AM	26.007	24.528	24.849	25.909	24.455	46.031	49.545	7.508	39.154	-1.289	-7.144	0.098	0.001	0	0	515.85	8.5975	48.1	0.0	42.6	2.937	0.000	0.000	0.000	0.004	0.00
530	10/2/2002	1:47:07 AM	25.962	24.564	24.98	25.935	24.511	45.814	49.231	7.438	39.169	-1.286	-7.129	0.095	0.001	0	0	516.85	8.61417	47.8	0.0	42.5	2.930	0.000	0.000	0.000	0.004	0.00
531	10/2/2002	1:48:07 AM	25.928	24.575	24.951	25.975	24.577	46.083	49.624	7.608	39.259	-1.292	-7.147	0.097	0.001	0	0	517.85	8.63083	48.2	0.0	42.7	2.942	0.000	0.000	0.000	0.003	0.00
532	10/2/2002	1:49:07 AM	25.919	24.611	25.021	26.056	24.637	46.128	49.669	7.645	39.076	-1.286	-7.158	0.098	0.001	0	0	518.85	8.6475	48.2	0.0	42.6	2.937	0.000	0.000	0.000	0.003	0.00
533	10/2/2002	1:50:07 AM	25.905	24.627	25.093	26.097	24.694	46.246	49.87	7.656	39.32	-1.286	-7.132	0.096	0.001	0	0	519.85	8.66417	48.4	0.0	42.8	2.950	0.000	0.000	0.000	0.003	0.00
534	10/2/2002	1:51:07 AM	25.901	24.649	25.029	26.129	24.726	46.211	49.551	7.591	39.293	-1.286	-7.106	0.099	0.001	0	0	520.85	8.68083	48.1	0.0	42.8	2.948	0.000	0.000	0.000	0.003	0.00
535	10/2/2002	1:52:07 AM	25.903	24.67	25.116	26.115	24.747	45.967	49.647	7.623	39.015	-1.284	-7.132	0.097	0.001	0	0	521.85	8.6975	48.2	0.0	42.5	2.930	0.000	0.000	0.000	0.003	0.00
536	10/2/2002	1:53:07 AM	25.905	24.682	25.143	26.082	24.734	46.209	50.019	7.693	39.13	-1.289	-7.126	0.094	0.001	0	0	522.85	8.71417	48.5	0.0	42.7	2.942	0.000	0.000	0.000	0.003	0.00
537	10/2/2002	1:54:07 AM	25.906	24.684	25.094	26.019	24.705	46.253	49.812	7.65	39.382	-1.284	-7.15	0.098	0.001	0	0	523.85	8.73083	48.3	0.0	42.8	2.952	0.000	0.000	0.000	0.003	0.00
538	10/2/2002	1:55:07 AM	25.912	24.684	25.195	25.97	24.691	45.923	49.539	7.612	38.988	-1.286	-7.095	0.099	0.001	0	0	524.85	8.7475	48.1	0.0	42.5	2.927	0.000	0.000	0.000	0.003	0.00
539	10/2/2002	1:56:07 AM	25.913	24.685	25.146	25.94	24.657	46.087	49.816	7.644	39.034	-1.286	-7.121	0.096	0.001	0	0	525.85	8.76417	48.3	0.0	42.6	2.934	0.000	0.000	0.000	0.003	0.00
540	10/2/2002	1:57:07 AM	25.907	24.664	25.155	25.865	24.621	45.894	49.502	7.611	38.917	-1.292	-7.132	0.096	0.001	0	0	526.85	8.78083	48.0	0.0	42.4	2.924	0.000	0.000	0.000	0.004	0.00
541	10/2/2002	1:58:07 AM	25.926	24.649	25.224	25.809	24.68	46.087	49.725	7.597	39.336	-1.286	-7.118	0.095	0.001	0	0	527.85	8.7975	48.3	0.0	42.7	2.945	0.000	0.000	0.000	0.003	0.00
542	10/2/2002	1:59:07 AM	25.929	24.636	25.142	25.777	24.536	45.888	49.529	7.62	38.982	-1.286	-7.109	0.098	0.001	0	0	528.85	8.81417	48.1	0.0	42.4	2.926	0.000	0.000	0.000	0.003	0.00
543	10/2/2002	2:00:07 AM	25.944	24.636	25.237	25.671	24.512	46.352	50.342	7.804	38.966	-1.286	-7.106	0.095	0.001	0	0	529.85	8.83083	48.9	0.0	42.7	2.941	0.000	0.000	0.000	0.003	0.00
544	10/2/2002	2:01:07 AM	25.958	24.635	25.236	25.665	24.491	46.093	49.713	7.656	39.156	-1.284	-7.095	0.097	0.001	0	0	530.85	8.8475	48.2	0.0	42.6	2.939	0.000	0.000	0.000	0.003	0.00
545	10/2/2002	2:02:07 AM	25.956	24.603	25.204	25.638	24.439	46.267	49.971	7.767	39.126	-1.289	-7.096	0.095	0.001	0	0	531.85	8.86417	48.5	0.0	42.7	2.944	0.000	0.000	0.000	0.003	0.00
546	10/2/2002	2:03:07 AM	25.944	24.581	25.267	25.571	24.408	46.251	49.998	7.691	39.191	-1.286	-7.103	0.096	0.001	0	0	532.85	8.88083	48.5	0.0	42.7	2.945	0.000	0.000	0.000	0.003	0.00
547	10/2/2002	2:04:07 AM	25.968	24.58	25.211	25.62	24.376	46.162	49.725	7.642	39.197	-1.289	-7.144	0.095	0.001	0	0	533.85	8.8975	48.3	0.0	42.7	2.943	0.000	0.000	0.000	0.003	0.00
548	10/2/2002	2:05:07 AM	25.972	24.569	25.285	25.574	24.35	46.139	49.661	7.691	39.14	-1.286	-7.152	0.096	0.001	0	0	534.85	8.91417	48.2	0.0	42.6	2.940	0.000	0.000	0.000	0.003	0.00
549	10/2/2002	2:06:07 AM	25.982	24.558	25.31	25.579	24.33	46.07	49.615	7.679	39.142	-1.286	-7.152	0.097	0.001	0	0	535.85	8.93083	48.1	0.0	42.6	2.938	0.000	0.000	0.000	0.003	0.00
550	10/2/2002	2:07:07 AM	25.987	24.538	25.245	25.554	24.305	45.751	49.545	7.669	38.796	-1.284	-7.121	0.094	0.001	0	0	536.85	8.9475	48.1	0.0	42.3	2.915	0.000	0.000	0.000	0.004	0.00
551	10/2/2002	2:08:07 AM	25.981	24.518	25.329	25.508	24.269	45.807	49.4	7.611	38.917	-1.286	-7.173	0.096	0.001	0	0	537.85	8.96417	47.9	0.0	42.4	2.921	0.000	0.000	0.000	0.003	0.00
552	10/2/2002	2:09:07 AM	25.99	24.512	25.286	25.532	24.243	46.143	49.973	7.72	39.034	-1.286	-7.147	0.094	0.001	0	0	538.85	8.98083	48.5	0.0	42.6	2.936	0.000	0.000	0.000	0.003	0.00
553	10/2/2002	2:10:07 AM	25.988	24.49	25.291	25.475	24.211	46.033	49.694	7.696	39.023	-1.289	-7.167	0.096	0.001	0	0	539.85	8.9975	48.2	0.0	42.5	2.932	0.000	0.000	0.000	0.003	0.00
554	10/2/2002	2:11:07 AM	25.972	24.464	25.34	25.404	24.17	46.28	50.095	7.784	39.111	-1.289	-7.129	0.093	0.001	0	0	540.85	9.01417	48.6	0.0	42.7	2.944	0.000	0.000	0.000	0.003	0.00
555	10/2/2002	2:12:07 AM	25.986	24.447	25.264	25.443	24.153	46.391	49.994	7.705	39.382	-1.286	-7.181	0.094	0.001	0	0	541.85	9.03083	48.5	0.0	42.9	2.957	0.000	0.000	0.000	0.003	0.00
556	10/2/2002	2:13:07 AM	26.011	24.453	25.364	25.463	24.138	45.633	49.332	7.71	38.685	-1.286	-7.129	0.095	0.001	0	0	542.85	9.0475	47.9	0.0	42.2	2.907	0.000	0.000	0.000	0.004	0.00
557	10/2/2002	2:14:07 AM	25.999	24.42	25.352	25.446	24.151	46.294	49.88	7.679	39.353	-1.284	-7.158	0.096	0.001	0	0	543.85	9.06417	48.4	0.0	42.8	2.953	0.000	0.000	0.000	0.003	0.00
558	10/2/2002	2:15:07 AM	26.002	24.413	25.305	25.514	24.164	46.099	49.8	7.666	39.265	-1.286	-7.123	0.094	0.001	0	0	544.85	9.08083	48.3	0.0	42.7	2.943	0.000	0.000	0.000	0.003	0.00
559	10/2/2002	2:16:07 AM	26.015	24.427	25.398	25.537	24.196	45.861	49.661	7.783	38.745	-1.286	-7.152	0.095	0.001	0	0	545.85	9.0975	48.2	0.0	42.3	2.917	0.000	0.000	0.000	0.003	0.00
560	10/2/2002	2:17:07 AM	26.024	24.441	25.322	25.662	24.242	46.342	50.35	7.721	39.222	-1.284	-7.138	0.095	0.001	0	0	546.85	9.11417	48.9	0.0	42.8	2.950	0.000	0.000	0.000	0.003	0.00
561	10/2/2002	2:18:07 AM	26.014	24.435	25.352	25.686	24.277	45.849	49.533	7.693	39.034	-1.286	-7.184	0.093	0.001	0	0	547.85	9.13083	48.1	0.0	42.4	2.926	0.000	0.000	0.000	0.003	0.00
562	10/2/2002	2:19:07 AM	26.029	24.456	25.408	25.717	24.323	45.542	49.585	7.655	38.436	-1.284	-7.106	0.094	0.001	0	0	548.85	9.1475	48.1	0.0	42.0	2.896	0.000	0.000	0.000	0.004	0.00
563	10/2/2002	2:20:07 AM	26.036	24.478	25.319	25.758	24.379	46.402	50.178	7.729	39.463	-1.289	-7.106	0.093	0.001	0	0	549.85	9.16417	48.7	0.0	42.9	2.960	0.000	0.000	0.000	0.003	0.00
564	10/2/2002	2:21:07 AM	26.042	24.498	25.415	25.799	24.425	45.981	49.901	7.683	38.999	-1.289	-7.161	0.094	0.001	0	0	550.85	9.18083	48.4	0.0	42.5	2.930	0.000	0.000	0.000	0.003	0.00
565	10/2/2002	2:22:07 AM	26.048	24.505	25.376	25.83	24.487	45.99	50.064	7.822	38.696	-1.289	-7.141	0.094	0.001	0	0	551.85	9.1975	48.6	0.0	42.3	2.919	0.000	0.000	0.000	0.003	0.00
566	10/2/2002	2:23:07 AM	26.06	24.542	25.388	25.938	24.549	45.774	49.431	7.702	38.771	-1.284	-7.147	0.094	0.001	0	0	552.85	9.21417	48.0	0.0	42.3	2.915	0.000	0.000	0.000	0.003	0.00
567	10/2/2002	2:24:07 AM	26.055	24.547	25.433	25.938	24.599	46.072	50.129	7.77	38.851	-1.289	-7.164	0.094	0.001	0	0	553.85	9.23083	48.7	0.0	42.5	2.928	0.000	0.000	0.000	0.003	0.00
568	10/2/2002	2:25:07 AM	26.073	24.58	25.341	26.03	24.657	45.766	49.566	7.661	38.808	-1.286	-7.147	0.095	0.001	0	0	554.85	9.2475	48.1	0.0	42.3	2.916	0.000	0.000	0.000	0.003	0.00
569	10/2/2002	2:26:07 AM	26.091	24.608	25.439	26.063	24.686	45.664	49.644	7.686	38.663	-1.284	-7.144	0.094	0.001	0	0	555.85	9.26417	48.2	0.0	42.1	2.904	0.000	0.000	0.000	0.003	0.00
570	10/2/2002	2:27:07 AM	26.094	24.636	25.422	26.051	24.683	45.921	49.907	7.744	38.792	-1.289	-7.147	0.094	0.001	0	0	556.85	9.28083	48.4	0.0	42.4	2.920	0.000	0.000	0.000	0.003	0.00
571	10/2/2002	2:28:07 AM	26.106	24.648	25.409	25.963	24.66	46.023	50.06	7.734	38.982	-1.286	-7.129	0.095	0.001	0	0	557.85	9.2975	48.6	0.0	42.5	2.930	0.000	0.000	0.000	0.003	0.00
572	10/2/2002	2:29:07 AM	26.107	24.639	25.47	25.879	24.625	45.395	49.599	7.706	38.252	-1.286	-7.176	0.094	0.001	0	0	558.85	9.31417	48.1	0.0	41.8	2.884	0.000	0.000	0.000	0.004	0.00
573	10/2/2002	2:30:07 AM	26.087	24.619	25.36	25.854	24.6	46.07	50.064	7.703	39.025	-1.284	-7.135	0.087	0.001	0	0	559.85	9.33083	48.6	0.0	42.5	2.934	0.000	0.000	0.000	0.003	0.00
574	10/2/2002	2:31:07 AM	26.081	24.608	25.414	25.768	24.569	45.432	49.613	7.7	38.376	-1.286	-7.167	0.094	0.001	0	0	560.85	9.3475	48.1	0.0	41.9	2.889	0.000	0.000	0.000	0.004	0.00
575	10/2/2002	2:32:07 AM	26.081	24.593	25.399	25.683	24.529	45.302	49.363	7.647	38.335	-1.289	-7.167	0.092	0.001	0	0	561.85	9.36417	47.9	0.0	41.8	2.883	0.000	0.000	0.000	0.004	0.00
576	10/2/2002	2:33:07 AM	26.091	24.598	25.369	25.698	24.494	45.917	49.996	7.765	38.888	-1.286	-7.155	0.093	0.001	0	0	562.85	9.38083	48.5	0.0	42.4	2.924	0.000	0.000	0.000	0.003	0.00
577	10/2/2002	2:45:52 AM	26.081	24.438	25.424	25.398	24.309	42.498	49.858	7.703	35.684	1.167	1.525	44.29	0.002	0.001	0	575.60	9.59333	48.4	10.9	39.0	2.692	0.000	0.000	0.000	0.008	0.01
578	10/2/2002	2:46:52 AM	26.145	24.446	25.463	25.427	24.326	42.315	49.605	7.609	35.641	1.208	1.566	44.372	0.002	0.001	0	576.60	9.61	48.1	10.9	39.0	2.687	0.000	0.000	0.000	0.008	0.01
579	10/2/2002	2:47:52 AM	26.106	24.468	25.404	25.478	24.364	44.973	49.616	7.761	37.955	-1.286	-2.844	44.084	0.254	0.001	0	577.60	9.62667	48.1	10.8	41.4	2.955	0.038	0.037	0.001	0.904	0.77
580	10/2/2002	2:48:52 AM	26.11	24.471	25.508	25.512	24.363	46.267	49.824	7.726	39.381	-1.284	-4.9	44.2	0.181	0.001	0	578.60	9.64333	48.4	10.8	42.8	2.953	0.027	0.027	0.001	0.621	0.53
581	10/2/2002	2:49:52 AM	26.05	24.456	25.393	25.572	24.378	46.758	49.868	7.798	39.908	-1.289	-4.497	44.412	0.189	0.001	0	579.60	9.66	48.4	10.9	43.3	2.988	0.028	0.028	0.001	0.643	0.55
582	10/2/2002	2:50:52 AM	26.059	24.466	25.437	25.611	24.397	46.901	50.085	7.774	39.975	-1.286	-5.039	44.133	0.177	0.001	0	580.60	9.67667	48.6	10.8	43.4	2.995	0.026	0.026	0.001	0.600	0.51
583	10/2/2002	2:51:52 AM	26.065	24.481	25.503	25.682	24.428	46.772	49.433	7.701	39.981	-1.286	-5.351	44.271	0.165	0.001	0	581.60	9.69333	48.0	10.8	43.4	2.991	0.025	0.024	0.001	0.559	0.48
584	10/2/2002	2:52:52 AM	26.081	24.508	25.419	25.803	24.459	46.843	49.531	7.683	40.118	-1.286	-5.256	44.183	0.168	0.001	0	582.60	9.71	48.1	10.8	43.5	2.998	0.025	0.025	0.001	0.569	0.48
585	10/2/2002	2:53:52 AM	26.077	24.509	25.495	25.805	24.506	47.027	49.471	7.598	40.587	-1.286	-5.343	44.258	0.162	0.001	0	583.60	9.72667	48.0	10.8	43.8	3.020	0.024	0.024	0.001	0.544	0.46
586	10/2/2002	2:54:52 AM	26.067	24.509	25.415	25.635	24.541	47.466	49.975	7.753	40.641	-1.289	-5.574	44.11	0.158	0.001	0	584.60	9.74333	48.5	10.8	44.1	3.037	0.024	0.023	0.001	0.529	0.45
587	10/2/2002	2:55:52 AM	26.089	24.546	25.467	25.926	24.603	47.398	49.891	7.811	40.475	-1.286	-5.603	44.189	0.156	0.001	0	585.60	9.76	48.4	10.8	43.9	3.029	0.023	0.023	0.001	0.523	0.44
588	10/2/2002	2:56:52 AM	26.1	24.577	25.523	25.963	24.649	47.39	49.727	7.778	40.524	-1.289	-5.603	44.323	0.157	0.001	0	586.60	9.77667	48.3	10.9	44.0	3.031	0.023	0.023	0.001	0.525	0.45
589	10/2/2002	2:57:52 AM	26.087	24.579	25.39	26.004	24.665	47.746	50.12	7.82	40.87	-1.292	-5.708	44.067	0.139	0.001	0	587.60	9.79333	48.6	10.8	44.3	3.055	0.021	0.020	0.001	0.463	0.39
590	10/2/2002	2:58:52 AM	26.109	24.601	25.517	25.971	24.683	47.676	50.04	7.796	40.819	-1.286	-5.815	43.849	0.169	0.001	0	588.60	9.81	48.6	10.7	44.2	3.051	0.025	0.025	0.001	0.561	0.48
591	10/2/2002	2:59:52 AM	26.111	24.613	25.479	26.033	24.696	47.228	49.38	7.729	40.587	-1.284	-5.864	44.191	0.149	0.001	0	589.60	9.82667	47.9	10.8	43.9	3.027	0.022	0.022	0.000	0.499	0.42
592	10/2/2002	3:00:52 AM	26.095	24.597	25.453	25.968	24.674	47.837	50.091	7.896	40.757	-1.289	-5.783	44.112	0.158	0.001	0	590.60	9.84333	48.6	10.8	44.3	3.054	0.024	0.023	0.001	0.525	0.45
593	10/2/2002	3:01:52 AM	26.105	24.607	25.533	25.902	24.654	47.514	49.634	7.779	40.655	-1.286	-5.899	44.13	0.157	0.001	0	591.60	9.86	48.2	10.8	44.1	3.039	0.023	0.023	0.001	0.523	0.45
594	10/2/2002	3:02:52 AM	26.115	24.607	25.428	25.877	24.664	47.899	49.971	7.805	40.931	-1.284	-5.945	44.068	0.16	0.001	0	592.60	9.87667	48.5	10.8	44.4	3.062	0.024	0.024	0.001	0.531	0.45
595	10/2/2002	3:03:52 AM	26.117	24.614	25.535	25.75	24.646	47.816	49.719	7.645	41.367	-1.289	-5.873	44.042	0.149	0.001	0	593.60	9.89333	48.2	10.8	44.6	3.074	0.022	0.022	0.000	0.491	0.42
596	10/2/2002	3:04:52 AM	26.117	24.604	25.495	25.687	24.616	47.474	49.577	7.767	40.78	-1.292	-6.038	44.046	0.153	0.001	0	594.60	9.91	48.1	10.8	44.2	3.046	0.023	0.023	0.001	0.509	0.43
597	10/2/2002	3:05:52 AM	26.112	24.584	25.46	25.664	24.586	47.738	49.498	7.742	41.031	-1.292	-6.125	44.047	0.152	0.001	0	595.60	9.92667	48.0	10.8	44.4	3.060	0.023	0.022	0.001	0.504	0.43
598	10/2/2002	3:06:52 AM	26.117	24.584	25.56	25.629	24.555	47.765	49.853	7.796	40.888	-1.286	-6.162	43.898	0.148	0.001	0	596.60	9.94333	48.4	10.8	44.3	3.056	0.022	0.022	0.000	0.490	0.42
599	10/2/2002	3:07:52 AM	26.109	24.566	25.418	25.652	24.518	47.582	49.547	7.772	40.806	-1.286	-6.145	44.114	0.147	0.001	0	597.60	9.96	48.1	10.8	44.2	3.047	0.022	0.022	0.000	0.490	0.42
600	10/2/2002	3:08:52 AM	26.114	24.566	25.257	25.581	24.472	47.589	49.479	7.629	41.038	-1.286	-6.119	43.787	0.141	0.001	0	598.60	9.97667	48.0	10.7	44.3	3.055	0.021	0.021	0.000	0.471	0.40
601	10/2/2002	3:09:52 AM	26.082	24.544	24.969	25.579	24.425	47.413	49.225	7.519	40.909	-1.289	-6.127	43.602	0.141	0.001	0	599.60	9.99333	47.8	10.7	44.2	3.045	0.021	0.021	0.000	0.476	0.41
602	10/2/2002	3:10:52 AM	26.014	24.536	24.796	25.521	24.387	47.891	50.011	7.57	41.251	-1.286	-6.24	43.719	0.143	0.001	0	600.60	10.01	48.5	10.7	44.6	3.073	0.021	0.021	0.000	0.481	0.41
603	10/2/2002	3:11:52 AM	25.937	24.519	24.889	25.464	24.366	47.734	49.721	7.513	41.21	-1.286	-6.292	43.744	0.142	0.001	0	601.60	10.0267	48.2	10.7	44.5	3.066	0.021	0.021	0.000	0.478	0.41
604	10/2/2002	3:12:52 AM	25.862	24.499	24.855	25.49	24.326	48.005	49.798	7.548	41.541	-1.284	-6.278	43.912	0.133	0.001	0	602.60	10.0433	48.3	10.8	44.8	3.087	0.020	0.020	0.000	0.445	0.38
605	10/2/2002	3:13:52 AM	25.815	24.481	24.957	25.392	24.296	47.91	49.33	7.563	40.628	-1.286	-6.11	43.709	0.133	0.001	0	603.60	10.06	47.9	10.7	44.0	3.034	0.020	0.020	0.000	0.458	0.39
606	10/2/2002	3:14:52 AM	25.791	24.483	25.014	25.388	24.269	47.912	49.905	7.646	41.218	-1.284	-6.11	44.112	0.141	0.001	0	604.60	10.0767	48.4	10.8	44.6	3.073	0.021	0.021	0.000	0.472	0.40
607	10/2/2002	3:15:52 AM	25.778	24.469	24.98	25.36	24.261	48.15	50.067	7.661	41.398	-1.289	-6.368	43.726	0.14	0.001	0	605.60	10.0933	48.6	10.7	44.8	3.087	0.021	0.021	0.000	0.466	0.40
608	10/2/2002	3:16:52 AM	25.765	24.447	25.093	25.347	24.238	47.901	49.897	7.668	41.042	-1.284	-6.353	44.021	0.138	0.001	0	606.60	10.11	48.4	10.8	44.5	3.066	0.021	0.021	0.000	0.461	0.39
609	10/2/2002	3:17:52 AM	25.773	24.45	25.066	25.521	24.251	47.773	49.516	7.617	41.161	-1.286	-6

651	10/2/2002	3:59:04 AM	26.079	24.506	25.507	26.016	24.557	48.419	49.971	7.776	41.629	-1.286	-6.678	43.929	0.12	0.001	0	648.80	10.8133	48.5	10.8	45.0	3.104	0.018	0.018	0.000	0.392	0.33
652	10/2/2002	4:00:04 AM	26.081	24.518	25.609	26.038	24.58	48.231	49.978	7.785	41.332	-1.281	-6.625	43.95	0.117	0.001	0	649.80	10.83	48.5	10.8	44.8	3.088	0.017	0.017	0.000	0.383	0.33
653	10/2/2002	4:01:04 AM	26.089	24.526	25.503	26.087	24.608	48.291	49.839	7.703	41.617	-1.286	-6.724	43.996	0.119	0.001	0	650.80	10.8467	48.4	10.8	45.0	3.099	0.018	0.017	0.000	0.389	0.33
654	10/2/2002	4:02:04 AM	26.101	24.538	25.599	25.973	24.61	48.293	49.766	7.76	41.549	-1.286	-6.669	44.122	0.118	0.001	0	651.80	10.8633	48.3	10.8	44.9	3.097	0.018	0.017	0.000	0.385	0.33
655	10/2/2002	4:03:04 AM	26.092	24.518	25.54	25.884	24.596	47.997	49.595	7.771	41.177	-1.289	-6.727	43.908	0.118	0.001	0	652.80	10.88	48.1	10.8	44.6	3.074	0.018	0.017	0.000	0.389	0.33
656	10/2/2002	4:04:04 AM	26.09	24.517	25.523	25.842	24.564	48.077	49.783	7.741	41.363	-1.289	-6.721	43.946	0.119	0.001	0	653.80	10.8967	48.3	10.8	44.7	3.083	0.018	0.017	0.000	0.391	0.33
657	10/2/2002	4:05:04 AM	26.099	24.521	25.598	25.717	24.538	48.332	50.027	7.782	41.457	-1.286	-6.654	44.063	0.118	0.001	0	654.80	10.9133	48.6	10.8	44.9	3.095	0.018	0.017	0.000	0.385	0.33
658	10/2/2002	4:06:04 AM	26.087	24.489	25.465	25.7	24.511	48.048	49.634	7.664	41.482	-1.289	-6.735	43.984	0.118	0.001	0	655.80	10.93	48.2	10.8	44.8	3.086	0.018	0.017	0.000	0.388	0.33
659	10/2/2002	4:07:04 AM	26.107	24.503	25.595	25.679	24.49	48.413	50.046	7.787	41.594	-1.286	-6.675	44.131	0.118	0.001	0	656.80	10.9467	48.6	10.8	45.0	3.103	0.018	0.017	0.000	0.384	0.33
660	10/2/2002	4:08:04 AM	26.105	24.502	25.518	25.677	24.474	48.16	49.851	7.701	41.517	-1.289	-6.686	44.101	0.114	0.001	0	657.80	10.9633	48.4	10.8	44.8	3.091	0.017	0.017	0.000	0.374	0.32
661	10/2/2002	4:09:04 AM	26.104	24.491	25.542	25.696	24.452	47.947	49.76	7.785	41.001	-1.289	-6.738	43.862	0.117	0.001	0	658.80	10.98	48.3	10.7	44.5	3.066	0.017	0.017	0.000	0.386	0.33
662	10/2/2002	4:10:04 AM	26.102	24.483	25.605	25.629	24.425	48.168	49.901	7.796	41.337	-1.286	-6.692	43.864	0.116	0.001	0	659.80	10.9967	48.4	10.7	44.8	3.086	0.017	0.017	0.000	0.380	0.32
663	10/2/2002	4:11:04 AM	26.104	24.471	25.507	25.581	24.392	47.613	49.56	7.692	40.739	-1.284	-6.744	43.797	0.115	0.001	0	660.80	11.0133	48.1	10.7	44.2	3.046	0.017	0.017	0.000	0.383	0.33
664	10/2/2002	4:12:04 AM	26.112	24.473	25.61	25.514	24.37	48.245	49.963	7.753	41.496	-1.286	-6.686	43.917	0.116	0.001	0	661.80	11.03	48.5	10.8	44.9	3.094	0.017	0.017	0.000	0.379	0.32
665	10/2/2002	4:13:04 AM	26.115	24.461	25.528	25.537	24.336	48.429	50.482	7.8	41.543	-1.289	-6.707	43.896	0.112	0.001	0	662.80	11.0467	49.0	10.8	45.0	3.102	0.017	0.017	0.000	0.366	0.31
666	10/2/2002	4:14:04 AM	26.113	24.449	25.571	25.55	24.311	48.365	50.447	7.894	41.382	-1.286	-6.689	43.812	0.117	0.001	0	663.80	11.0633	49.0	10.7	44.9	3.094	0.017	0.017	0.000	0.383	0.33
667	10/2/2002	4:15:04 AM	26.128	24.464	25.636	25.455	24.301	48.03	49.998	7.789	41.242	-1.286	-6.721	43.845	0.117	0.001	0	664.80	11.08	48.5	10.7	44.6	3.077	0.017	0.017	0.000	0.384	0.33
668	10/2/2002	4:16:04 AM	26.115	24.437	25.544	25.462	24.268	48.05	49.864	7.799	41.136	-1.286	-6.733	44.002	0.116	0.001	0	665.80	11.0967	48.4	10.8	44.6	3.075	0.017	0.017	0.000	0.382	0.33
669	10/2/2002	4:17:04 AM	26.12	24.437	25.639	25.407	24.253	47.808	49.783	7.748	41.023	-1.286	-6.733	43.753	0.116	0.001	0	666.80	11.1133	48.3	10.7	44.4	3.062	0.017	0.017	0.000	0.382	0.33
670	10/2/2002	4:18:04 AM	26.12	24.427	25.569	25.498	24.248	48.206	49.93	7.882	41.234	-1.284	-6.695	43.81	0.113	0.001	0	667.80	11.13	48.5	10.7	44.7	3.083	0.017	0.017	0.000	0.371	0.32
671	10/2/2002	4:19:04 AM	26.125	24.427	25.624	25.553	24.248	47.928	49.978	7.822	41.034	-1.284	-6.701	43.931	0.112	0.001	0	668.80	11.1467	48.5	10.8	44.5	3.067	0.017	0.016	0.000	0.369	0.31
672	10/2/2002	4:20:04 AM	26.125	24.422	25.649	25.563	24.273	47.984	50.131	7.903	40.841	-1.289	-6.704	44.122	0.113	0.001	0	669.80	11.1633	48.7	10.8	44.4	3.062	0.017	0.017	0.000	0.372	0.32
673	10/2/2002	4:21:04 AM	26.136	24.433	25.674	25.668	24.286	47.999	49.613	7.705	41.453	-1.289	-6.736	43.977	0.115	0.001	0	670.80	11.19	48.1	10.8	44.7	3.084	0.017	0.017	0.000	0.377	0.32
674	10/2/2002	4:22:04 AM	26.143	24.429	25.681	25.655	24.311	47.812	49.742	7.811	40.892	-1.286	-6.707	43.145	0.115	0.001	0	671.80	11.1967	48.3	10.6	44.4	3.058	0.017	0.017	0.000	0.379	0.32
675	10/2/2002	4:23:04 AM	26.138	24.43	25.666	25.731	24.331	47.845	49.798	7.847	40.946	-1.292	-6.678	43.87	0.114	0.001	0	672.80	11.2133	48.3	10.8	44.4	3.061	0.017	0.017	0.000	0.377	0.32
676	10/2/2002	4:24:04 AM	26.15	24.452	25.664	25.788	24.369	48.133	50.122	7.886	41.115	-1.286	-6.692	43.654	0.114	0.001	0	673.80	11.23	48.6	10.7	44.6	3.077	0.017	0.017	0.000	0.374	0.32
677	10/2/2002	4:25:04 AM	26.157	24.464	25.681	25.815	24.406	48.164	50.067	7.826	41.455	-1.286	-6.727	43.807	0.111	0.001	0	674.80	11.2467	48.6	10.7	44.8	3.089	0.017	0.016	0.000	0.362	0.31
678	10/2/2002	4:26:04 AM	26.16	24.456	25.618	25.887	24.443	48.156	50.232	7.904	41.04	-1.289	-6.704	43.923	0.113	0.001	0	675.80	11.2633	48.8	10.8	44.6	3.075	0.017	0.017	0.000	0.371	0.32
679	10/2/2002	4:27:04 AM	26.177	24.484	25.731	25.895	24.486	48.137	50.04	7.819	41.377	-1.286	-6.68	43.789	0.112	0.001	0	676.80	11.28	48.6	10.7	44.8	3.086	0.017	0.016	0.000	0.366	0.31
680	10/2/2002	4:28:04 AM	26.169	24.486	25.612	26.021	24.537	47.773	49.839	7.805	40.804	-1.289	-6.707	43.747	0.114	0.001	0	677.80	11.2967	48.4	10.7	44.3	3.054	0.017	0.017	0.000	0.377	0.32
681	10/2/2002	4:29:04 AM	26.177	24.503	25.695	26.019	24.575	48.295	50.18	7.809	41.474	-1.286	-6.686	43.849	0.113	0.001	0	678.80	11.3133	48.7	10.7	44.9	3.095	0.017	0.017	0.000	0.368	0.31
682	10/2/2002	4:30:04 AM	26.185	24.512	25.683	26.088	24.614	48.092	50.033	7.868	41.228	-1.289	-6.736	43.795	0.113	0.001	0	679.80	11.33	48.6	10.7	44.7	3.079	0.017	0.017	0.000	0.370	0.31
683	10/2/2002	4:31:04 AM	26.193	24.53	25.661	26.135	24.647	47.642	49.632	7.821	40.7	-1.286	-6.68	43.778	0.113	0.001	0	680.80	11.3467	48.2	10.7	44.2	3.045	0.017	0.017	0.000	0.374	0.32
684	10/2/2002	4:32:04 AM	26.202	24.543	25.75	26.049	24.665	47.81	49.808	7.843	41.017	-1.289	-6.704	43.835	0.107	0.001	0	681.80	11.3633	48.3	10.7	44.4	3.062	0.016	0.016	0.000	0.362	0.30
685	10/2/2002	4:33:04 AM	26.209	24.546	25.628	26.077	24.658	48.001	50.004	7.823	41.156	-1.286	-6.744	44.099	0.111	0.001	0	682.80	11.38	48.5	10.8	44.6	3.074	0.017	0.016	0.000	0.365	0.31
686	10/2/2002	4:34:04 AM	26.217	24.548	25.74	25.984	24.655	48.16	50.176	7.943	41.038	-1.286	-6.695	44.036	0.108	0.001	0	683.80	11.3967	48.7	10.8	44.6	3.075	0.016	0.016	0.000	0.354	0.30
687	10/2/2002	4:35:04 AM	26.207	24.533	25.67	25.934	24.625	48.119	49.891	7.831	41.255	-1.286	-6.764	45.378	0.111	0.001	0	684.80	11.4133	48.4	11.1	44.7	3.081	0.017	0.016	0.000	0.363	0.31
688	10/2/2002	4:36:04 AM	26.207	24.539	25.185	25.89	24.606	47.763	49.847	7.843	40.849	-1.289	-6.773	43.518	0.109	0.001	0	685.80	11.43	48.4	10.7	44.3	3.055	0.016	0.016	0.000	0.365	0.31
689	10/2/2002	4:37:04 AM	26.167	24.534	24.91	25.785	24.571	47.823	50.093	7.6	41.017	-1.286	-6.741	43.063	0.106	0.001	0	686.80	11.4467	48.6	10.6	44.4	3.063	0.016	0.016	0.000	0.357	0.30
690	10/2/2002	4:38:04 AM	26.086	24.518	24.703	25.813	24.534	47.804	49.663	7.55	41.312	-1.284	-6.802	43.503	0.106	0.001	0	687.80	11.4633	48.2	10.7	44.6	3.072	0.016	0.016	0.000	0.358	0.30
691	10/2/2002	4:39:04 AM	25.995	24.517	24.858	25.632	24.486	48.009	50.244	7.671	41.126	-1.284	-6.837	43.394	0.107	0.001	0	688.80	11.48	48.8	10.6	44.6	3.073	0.016	0.016	0.000	0.359	0.31
692	10/2/2002	4:40:04 AM	25.929	24.52	24.901	25.566	24.472	47.733	49.944	7.626	40.921	-1.284	-6.805	43.818	0.105	0.001	0	689.80	11.4967	48.5	10.7	44.3	3.056	0.016	0.016	0.000	0.354	0.30
693	10/2/2002	4:41:04 AM	25.861	24.503	24.923	25.493	24.434	48.156	50.067	7.58	41.699	-1.289	-6.817	44.151	0.106	0.001	0	690.80	11.5133	48.6	10.8	44.9	3.098	0.016	0.016	0.000	0.363	0.30
694	10/2/2002	4:42:04 AM	25.812	24.484	25.025	25.429	24.406	47.901	49.762	7.614	41.208	-1.289	-6.623	43.885	0.104	0.001	0	691.80	11.53	48.3	10.8	44.6	3.072	0.016	0.015	0.000	0.348	0.30
695	10/2/2002	4:43:04 AM	25.809	24.486	25.007	25.431	24.383	48.096	50.157	7.663	41.285	-1.286	-6.368	43.759	0.101	0.001	0	692.80	11.5467	48.7	10.7	44.7	3.081	0.015	0.015	0.000	0.337	0.29
696	10/2/2002	4:44:04 AM	25.792	24.473	25.084	25.404	24.345	47.959	50.091	7.664	41.175	-1.289	-6.42	43.757	0.104	0.001	0	693.80	11.5633	48.6	10.7	44.6	3.073	0.016	0.015	0.000	0.347	0.30
697	10/2/2002	4:45:04 AM	25.778	24.45	25.166	25.365	24.306	48.224	50.317	7.666	41.521	-1.284	-6.518	43.591	0.103	0.001	0	694.80	11.58	48.8	10.7	44.9	3.094	0.015	0.015	0.000	0.341	0.29
698	10/2/2002	4:46:04 AM	25.78	24.442	25.118	25.432	24.278	47.647	49.7	7.559	41.068	-1.284	-6.284	44.154	0.095	0.001	0	695.80	11.5967	48.2	10.8	44.4	3.058	0.014	0.014	0.000	0.318	0.27
699	10/2/2002	4:47:04 AM	25.784	24.435	25.217	25.396	24.257	47.895	49.8	7.629	41.218	-1.286	-6.576	43.971	0.105	0.001	0	696.80	11.6133	48.3	10.8	44.6	3.072	0.016	0.016	0.000	0.349	0.30
700	10/2/2002	4:48:04 AM	25.798	24.44	25.236	25.44	24.276	48.061	49.924	7.675	41.394	-1.284	-6.736	43.784	0.105	0.001	0	697.80	11.63	48.5	10.7	44.7	3.084	0.016	0.016	0.000	0.348	0.30
701	10/2/2002	4:49:04 AM	25.807	24.418	25.24	25.449	24.245	48.257	50.097	7.73	41.4	-1.286	-6.683	43.164	0.117	0.001	0	698.80	11.6467	48.6	10.6	44.8	3.091	0.017	0.017	0.000	0.387	0.33
702	10/2/2002	4:50:04 AM	25.822	24.423	25.32	25.449	24.26	47.945	49.951	7.624	41.414	-1.286	-6.539	43.99	0.106	0.001	0	699.80	11.6633	48.5	10.8	44.7	3.080	0.016	0.016	0.000	0.361	0.30
703	10/2/2002	4:51:04 AM	25.832	24.428	25.265	25.569	24.285	48.131	50.298	7.793	41.134	-1.289	-6.811	43.87	0.104	0.001	0	700.80	11.68	48.8	10.8	44.6	3.077	0.016	0.015	0.000	0.345	0.29
704	10/2/2002	4:52:04 AM	25.847	24.433	25.35	25.564	24.295	48.102	49.932	7.635	41.425	-1.281	-6.846	43.937	0.105	0.001	0	701.80	11.6967	48.5	10.8	44.8	3.086	0.016	0.016	0.000	0.346	0.29
705	10/2/2002	4:53:04 AM	25.862	24.434	25.365	25.56	24.331	48.139	50.087	7.764	41.23	-1.286	-6.901	43.9	0.105	0.001	0	702.80	11.7133	48.6	10.8	44.7	3.081	0.016	0.015	0.000	0.347	0.30
706	10/2/2002	4:54:04 AM	25.874	24.435	25.332	25.641	24.362	47.897	49.916	7.654	41.328	-1.289	-6.909	43.935	0.104	0.001	0	703.80	11.73	48.4	10.8	44.6	3.076	0.016	0.015	0.000	0.344	0.29
707	10/2/2002	4:55:04 AM	25.885	24.437	25.423	25.617	24.373	47.854	49.984	7.676	41.134	-1.284	-6.921	43.856	0.104	0.001	0	704.80	11.7467	48.5	10.7	44.5	3.068	0.016	0.015	0.000	0.344	0.29
708	10/2/2002	4:56:04 AM	25.902	24.459	25.365	25.79	24.406	47.91	50.079	7.692	41.216	-1.286	-6.88	44.097	0.102	0.001	0	705.80	11.7633	48.6	10.8	44.6	3.072	0.015	0.015	0.000	0.338	0.29
709	10/2/2002	4:57:04 AM	25.919	24.471	25.428	25.682	24.446	47.514	49.324	7.633	40.874	-1.289	-6.958	43.529	0.104	0.001	0	706.80	11.78	47.9	10.7	44.2	3.047	0.016	0.015	0.000	0.347	0.30
710	10/2/2002	4:58:04 AM	25.932	24.484	25.465	25.855	24.486	47.64	49.878	7.758	40.692	-1.284	-6.915	44.042	0.103	0.001	0	707.80	11.7967	48.4	10.8	44.2	3.045	0.015	0.015	0.000	0.343	0.29
711	10/2/2002	4:59:04 AM	25.944	24.491	25.398	25.982	24.523	47.879	49.905	7.648	41.292	-1.289	-6.944	43.671	0.102	0.001	0	708.80	11.8133	48.4	10.7	44.6	3.074	0.015	0.015	0.000	0.337	0.29
712	10/2/2002	5:00:04 AM	25.942	24.494	25.485	25.95	24.561	47.868	49.812	7.675	41.267	-1.286	-6.938	43.982	0.103	0.001	0	709.80	11.83	48.3	10.8	44.6	3.073	0.015	0.015	0.000	0.340	0.29
713	10/2/2002	5:01:04 AM	25.966	24.508	25.414	26.098	24.61	47.966	49.94	7.697	41.304	-1.286	-6.964	44.11	0.103	0.001	0	710.80	11.8467	48.5	10.8	44.6	3.077	0.015	0.015	0.000	0.340	0.29
714	10/2/2002	5:02:04 AM	25.989	24.531	25.483	26.127	24.648	47.833	49.955	7.707	41.158	-1.286	-6.932	44.017	0.103	0.001	0	711.80	11.8633	48.5	10.8	44.5	3.068	0.015	0.015	0.000	0.340	0.29
715	10/2/2002	5:03:04 AM	25.996	24.533	25.509	26.108	24.65	47.582	49.707	7.692	40.831	-1.286	-6.958	43.875	0.102	0.001	0	712.80	11.88	48.2	10.8	44.2	3.048	0.015	0.015	0.000	0.339	0.29
716	10/2/2002	5:04:04 AM	26.001	24.528	25.45	26.079	24.645	47.468	49.7	7.708	40.78	-1.284	-6.987	44.128	0.101	0.001	0	713.80	11.8967	48.2	10.8	44.1	3.042	0.015	0.015	0.000	0.337	0.29
717	10/2/2002	5:05:04 AM	26.007	24.534	25.525	26.08	24.627	48.028	50.236	7.842	41.167	-1.289	-7.006	44.126	0.102	0.001	0	714.80	11.9133	48.8	10.8	44.6	3.075	0.015	0.015	0.000	0.338	0.29
718	10/2/2002	5:06:04 AM	26.017	24.539	25.46	25.905	24.591	47.317	49.591	7.776	40.467	-1.286	-6.99	44.29	0.102	0.001	0	715.80	11.93	48.1	10.9	43.9	3.027	0.015	0.015	0.000	0.342	0.29
719	10/2/2002	5:07:04 AM	26.016	24.528	25.5	25.764	24.58	47.814	49.978	7.827	40.858	-1.286	-6.993	44.04	0.101	0.001	0	716.80	11.9467	48.5	10.8	44.3	3.057	0.015	0.015	0.000	0.335	0.29
720	10/2/2002	5:08:04 AM	26.03	24.527	25.533	25.697	24.544	47.847	50.122	7.704	41.146	-1.286	-6.97	44.156	0.1	0.001	0	717.80	11.9633	48.6	10.8	44.5	3.068	0.015	0.015	0.000	0.330	0.28
721	10/2/2002	5:09:04 AM	26.049	24.52	25.467	25.691	24.522	47.897	50.255	7.805	41.025	-1.286	-6.987	43.421	0.101	0.001	0	718.80	11.98	48.8	10.6	44.5	3.065	0.015	0.015	0.000	0.334	0.28
722	10/2/2002	5:10:04 AM	26.041	24.513	25.564	25.573	24.489	47.727	50.182	7.709	40.991	-1.284	-6.967	43.552	0.1	0.001	0	719.80	11.9967	48.7	10.7	44.4	3.058	0.015	0.015	0.000	0.331	0.28
723	10/2/2002	5:11:04 AM	26.044	24.5	25.472	25.546	24.462	47.489	49.673	7.71	40.774	-1.292	-7.016	44.246	0.1	0.001	0	720.80	12.0133	48.2	10.8	44.1	3.043	0.015	0.015	0.000	0.333	0.28
724	10/2/2002	5:12:04 AM	26.052	24.503	25.53	25.484	24.445	47.566	49.957	7.886	40.524	-1.289	-7.013	44.042	0.101	0.001	0	721.80	12.03	48.5	10.8	44.0	3.037	0.015	0.015	0.000	0.337	0.29
725	10/2/2002	5:13:04 AM	26.054	24.501	25.577	25.456	24.402	47.841	50.253	7.767	41.12	-1.286	-7.028	44.124	0.101	0.001	0	722.80	12.0467	48.8	10.8	44.5	3.067	0.015	0.015	0.000	0.333	0.28
726	10/2/2002	5:14:04 AM	26.057	24.488	25.485	25.469	24.38	47.63	50.247	7.808	40.894	-1.286	-7.016	44.078	0.1	0.001	0	723.80	12.0633	48.8	10.8	44.2	3.044	0.015	0.015	0.000	0.333	0.28
727	10/2/2002	5:15:04 AM	26.044	24.46	25.572	25.371	24.322	47.572	49.814	7.68	40.882	-1.286	-7.015	44.502	0.1	0.001	0	724.80	12.08	48.3	10.9	44.2	3.049	0.015	0.015	0.000	0.332	0.28
728	10/2/2002	5:16:04 AM	26.057	24.464	25.511	25.384	24.31	47.901	50.406	7.883	40.712	-1.289	-7.019	44.212	0.1	0.001	0	725.80	12.0967	48.9	10.8	44.3	3.055	0.015	0.015	0.000	0.332	0.28
729	10/2/2002	5:17:04 AM	26.061	24.448	25.549	25.368	24.289	47.408	49.766	7.696	40.71	-1.289	-7.008	43.891	0.1	0.001	0	726.80	12.1133	48.3	10.8	44.1	3.038	0.015	0.015	0.000	0.333	0.28
730	10/2/2002	5:18:04 AM	26.065	24.441	25.603	25.306	24.257	47.098	49.469	7.714	40.301	-1.284	-7.022	44.217	0.099	0.001	0	727.80	12.13	48.0	10.8	43.7	3.013	0.015	0.015	0.000	0.332	0.28
731	10/2/2002	5:19:04 AM	26.068	24.44	25.516	25.415	24.236	47.435	49.841	7.764	40.622	-1.286	-7.022	44.2	0.099	0.001	0	728.80	12.1467	48.4	10.8	44.0	3.036	0.015	0.015	0.000	0.330	0.28
732	10/2/2002	5:20:04 AM	26.072	24.439	25.611	25.379	24.23	47.638	50.073	7.762	40.874	-1.286	-6.999	43.419	0.099	0.001	0	729.80	12.1633	48.6	10.6	44.3	3.051	0.015	0.015	0.000	0.328	0.28
733	10/2/2002	5:21:04 AM	26.071	24.428	25.559	25.448	24.234	47.216	49.529	7.669	40.61	-1.286	-7.025	44.196	0.099	0.001	0	730.80	12.18	48.1	10.8	43.9	3.028	0.015	0.015	0.000	0.331	0.28
734	10/2/2002	5:22:04 AM	26.076	24.428	25.584	25.513	24.254	47.369	49.818	7.75	40.602	-1.289	-6.999	44.055	0.099	0.001	0	731.80	12.1967	48.3	10.8	44.0	3.033	0.015	0.015	0.000	0.330	0.28
735	10/2/2002	5:23:04 AM	26.081	24.428	25.604	25.535	24.279	47.647	50.048	7.764	40.896	-1.286	-6.999	45.036	0.099	0.001	0	732.80	12.2133	48.1	11.0	44.2	3.050	0.015	0.015	0.000	0.328	0.28
736	10/2/2002	5:24:04 AM	26.086	24.433	25.539	25.648	24.294	47.57	50.203	7.788	40.733	-1.286	-7.028	44.361	0.098	0.001	0	733.80	12.23	48.7	10.9	44.2	3.044	0.015	0.014	0.000	0.326	0.28
737	10/2/2002	5:25:04 AM	26.092	24.444	25.641	25.615	24.321	46.785	49.249	7.701	40.084	-1.286	-7.016	44.076	0.099	0.001	0	734.80	12.2467	47.8	10.8	43.4	2.995	0.015	0.014	0.000	0.334	0.28
738	10/2/2002	5:26:04 AM	26.087	24.429	25.581	25.75	24.351	47.299	50.203	7.823	40.372	-1.289	-7.028	43.986	0.098	0.001	0	735.80	12.2633	48.7	10.8	43.8	3.022	0.015	0.014	0.000	0.328	0.28
739	10/2/

781	10/2/2002	6:22:40 AM	25.805	24.392	25.048	25.382	24.253	48.181	49.818	7.65	41.547	-1.286	-6.712	43.954	0.113	0.001	0	792.40	13.2067	48.3	10.8	44.9	3.093	0.017	0.017	0.000	0.375	0.32
782	10/2/2002	6:23:40 AM	25.779	24.38	24.961	25.461	24.262	48.21	49.922	7.746	41.263	-1.284	-6.704	43.726	0.11	0.001	0	793.40	13.2233	48.4	10.7	44.7	3.084	0.016	0.016	0.000	0.367	0.31
783	10/2/2002	6:24:40 AM	25.754	24.385	24.881	25.516	24.262	47.934	49.464	7.621	41.382	-1.286	-6.753	42.494	0.111	0.001	0	794.40	13.24	48.0	10.4	44.7	3.079	0.017	0.017	0.000	0.372	0.32
784	10/2/2002	6:25:40 AM	25.719	24.386	24.927	25.516	24.297	48.241	50.009	7.71	41.4	-1.286	-6.744	43.801	0.11	0.001	0	795.40	13.2567	48.5	10.7	44.8	3.090	0.016	0.016	0.000	0.367	0.31
785	10/2/2002	6:26:40 AM	26.7	24.402	24.823	25.612	24.333	48.452	50.273	7.655	41.928	-1.284	-6.741	43.843	0.111	0.001	0	796.40	13.2733	48.8	10.7	45.2	3.116	0.016	0.016	0.000	0.365	0.31
786	10/2/2002	6:27:40 AM	25.68	24.407	24.813	25.582	24.353	48.106	50.079	7.698	41.122	-1.286	-6.756	43.478	0.108	0.001	0	797.40	13.29	48.6	10.7	44.6	3.076	0.016	0.016	0.000	0.363	0.31
787	10/2/2002	6:28:40 AM	25.651	24.418	24.859	25.604	24.395	48.483	50.28	7.749	41.699	-1.286	-6.753	43.896	0.107	0.001	0	798.40	13.3067	48.8	10.8	45.1	3.109	0.016	0.016	0.000	0.365	0.30
788	10/2/2002	6:29:40 AM	25.638	24.43	24.736	25.756	24.432	48.398	50.203	7.776	41.468	-1.289	-6.788	43.898	0.106	0.001	0	799.40	13.3233	48.7	10.8	44.9	3.098	0.016	0.016	0.000	0.364	0.30
789	10/2/2002	6:30:40 AM	25.61	24.432	24.778	25.767	24.454	48.287	50.143	7.777	41.468	-1.286	-6.776	43.979	0.105	0.001	0	800.40	13.34	48.7	10.8	44.9	3.094	0.016	0.016	0.000	0.361	0.30
790	10/2/2002	6:31:40 AM	25.592	24.444	24.795	25.77	24.501	48.218	50.056	7.711	41.423	-1.289	-6.793	43.975	0.107	0.001	0	801.40	13.3567	48.6	10.8	44.8	3.090	0.016	0.016	0.000	0.368	0.30
791	10/2/2002	6:32:40 AM	25.569	24.451	24.667	25.827	24.543	48.092	49.783	7.749	41.248	-1.289	-6.753	43.938	0.104	0.001	0	802.40	13.3733	48.3	10.8	44.7	3.080	0.016	0.016	0.000	0.360	0.30
792	10/2/2002	6:33:40 AM	25.552	24.474	24.745	25.845	24.581	48.113	50.073	7.791	41.161	-1.284	-6.811	44.024	0.107	0.001	0	803.40	13.39	48.6	10.8	44.6	3.078	0.016	0.016	0.000	0.360	0.31
793	10/2/2002	6:34:40 AM	25.535	24.472	24.728	25.903	24.614	47.783	49.444	7.632	41.218	-1.289	-6.786	44.005	0.106	0.001	0	804.40	13.4067	48.0	10.8	44.5	3.068	0.016	0.016	0.000	0.358	0.30
794	10/2/2002	6:35:40 AM	25.511	24.473	24.628	25.873	24.61	48.266	50.131	7.743	41.488	-1.286	-6.814	43.707	0.105	0.001	0	805.40	13.4233	48.7	10.7	44.9	3.094	0.016	0.016	0.000	0.363	0.30
795	10/2/2002	6:36:40 AM	25.497	24.479	24.71	25.885	24.601	47.974	49.787	7.707	41.334	-1.289	-6.819	43.841	0.106	0.001	0	806.40	13.44	48.3	10.7	44.7	3.079	0.016	0.016	0.000	0.367	0.30
796	10/2/2002	6:37:40 AM	25.483	24.49	24.665	25.41	24.587	47.953	49.915	7.76	41.136	-1.286	-6.782	43.826	0.102	0.001	0	807.40	13.4567	48.4	10.7	44.5	3.071	0.015	0.015	0.000	0.345	0.29
797	10/2/2002	6:38:40 AM	25.463	24.485	24.625	24.989	24.547	48.473	50.114	7.729	41.875	-1.281	-6.793	43.747	0.102	0.001	0	808.40	13.4733	48.6	10.7	45.2	3.115	0.015	0.015	0.000	0.340	0.29
798	10/2/2002	6:39:40 AM	25.431	24.468	24.694	24.768	24.485	48.102	50.048	7.768	41.206	-1.289	-6.831	43.95	0.103	0.001	0	809.40	13.49	48.6	10.8	44.7	3.079	0.015	0.015	0.000	0.347	0.30
799	10/2/2002	6:40:40 AM	25.415	24.458	24.623	24.662	24.439	48.026	49.988	7.764	41.248	-1.286	-6.822	43.667	0.103	0.001	0	810.40	13.5067	48.5	10.7	44.6	3.078	0.015	0.016	0.000	0.348	0.30
800	10/2/2002	6:41:40 AM	25.384	24.441	24.597	24.535	24.388	48.313	50.246	7.799	41.429	-1.289	-6.854	43.096	0.104	0.001	0	811.40	13.5233	48.8	10.6	44.9	3.094	0.016	0.016	0.000	0.360	0.30
801	10/2/2002	6:42:40 AM	25.367	24.424	24.675	24.467	24.33	48.141	50.038	7.77	41.396	-1.286	-6.819	44.007	0.101	0.001	0	812.40	13.54	48.6	10.8	44.8	3.087	0.015	0.015	0.000	0.339	0.29
802	10/2/2002	6:43:40 AM	25.344	24.396	24.572	24.414	24.277	48.208	50.337	7.867	41.154	-1.286	-6.834	43.797	0.101	0.001	0	813.40	13.5567	48.9	10.7	44.7	3.081	0.015	0.015	0.000	0.341	0.29
803	10/2/2002	6:44:40 AM	25.332	24.394	24.615	24.333	24.216	47.763	49.758	7.802	40.792	-1.281	-6.834	43.942	0.102	0.001	0	814.40	13.5733	48.3	10.8	44.3	3.063	0.015	0.015	0.000	0.347	0.30
804	10/2/2002	6:45:40 AM	25.321	24.378	24.679	24.316	24.174	48.376	50.364	7.761	41.541	-1.281	-6.872	43.822	0.103	0.002	0	815.40	13.59	48.9	10.7	45.0	3.100	0.015	0.015	0.000	0.345	0.29
805	10/2/2002	6:46:40 AM	25.31	24.361	24.562	24.29	24.133	48.44	50.234	7.741	41.668	-1.286	-6.912	43.996	0.101	0.001	0	816.40	13.6067	48.8	10.8	45.1	3.106	0.015	0.015	0.000	0.338	0.29
806	10/2/2002	6:47:40 AM	25.271	24.333	24.594	24.201	24.064	47.881	49.824	7.69	41.197	-1.289	-6.869	43.887	0.102	0.001	0	817.40	13.6233	48.4	10.8	44.5	3.071	0.015	0.015	0.000	0.345	0.29
807	10/2/2002	6:48:40 AM	25.258	24.32	24.641	24.128	24.011	48.011	50.238	7.87	40.995	-1.289	-6.857	43.747	0.1	0.001	0	818.40	13.64	48.8	10.7	44.5	3.068	0.015	0.015	0.000	0.338	0.29
808	10/2/2002	6:49:40 AM	25.24	24.287	24.538	24.1	23.968	47.76	49.504	7.768	40.968	-1.286	-6.924	42.782	0.1	0.001	0	819.40	13.6567	48.0	10.5	44.4	3.059	0.015	0.015	0.000	0.340	0.29
809	10/2/2002	6:50:40 AM	25.246	24.283	24.619	24.091	23.923	48.137	50.186	7.782	41.306	-1.286	-6.854	43.891	0.099	0.001	0	820.40	13.6733	48.7	10.8	44.7	3.083	0.015	0.015	0.000	0.334	0.28
810	10/2/2002	6:51:40 AM	25.222	24.254	24.61	24.077	23.885	47.988	49.913	7.764	41.205	-1.292	-6.892	43.627	0.099	0.001	0	821.40	13.69	48.4	10.7	44.6	3.075	0.015	0.015	0.000	0.336	0.28
811	10/2/2002	6:52:40 AM	25.216	24.233	24.518	24.01	23.863	47.907	50.011	7.637	41.364	-1.289	-6.915	43.931	0.099	0.001	0	822.40	13.7067	48.5	10.8	44.6	3.078	0.015	0.015	0.000	0.335	0.29
812	10/2/2002	6:53:40 AM	25.194	24.211	24.497	23.929	23.847	47.81	50.038	7.806	40.952	-1.292	-6.927	43.91	0.1	0.001	0	823.40	13.7233	48.6	10.8	44.4	3.060	0.015	0.015	0.000	0.340	0.29
813	10/2/2002	6:54:40 AM	25.189	24.19	24.667	23.998	23.831	47.752	49.944	7.761	41.031	-1.284	-6.898	43.914	0.1	0.001	0	824.40	13.74	48.5	10.8	44.4	3.061	0.015	0.015	0.000	0.339	0.29
814	10/2/2002	6:55:40 AM	25.195	24.192	24.678	24.025	23.842	48.249	50.344	7.776	41.433	-1.286	-6.927	43.996	0.099	0.001	0	825.40	13.7567	48.9	10.8	44.8	3.092	0.015	0.015	0.000	0.332	0.28
815	10/2/2002	6:56:40 AM	25.205	24.187	24.823	24.05	23.837	48.463	50.548	7.886	41.486	-1.284	-6.912	43.371	0.099	0.001	0	826.40	13.7733	49.1	10.6	45.0	3.101	0.015	0.015	0.000	0.330	0.28
816	10/2/2002	6:57:40 AM	25.201	24.178	24.795	24.106	23.849	48.023	50.197	7.78	41.122	-1.286	-6.921	43.577	0.099	0.001	0	827.40	13.79	48.7	10.7	44.6	3.073	0.015	0.015	0.000	0.333	0.28
817	10/2/2002	6:58:40 AM	25.212	24.163	24.825	24.106	23.864	48.527	50.95	7.933	41.574	-1.286	-6.912	44.193	0.099	0.001	0	828.40	13.8067	49.5	10.8	45.1	3.106	0.015	0.015	0.000	0.329	0.28
818	10/2/2002	6:59:40 AM	25.241	24.157	24.939	24.171	23.868	47.613	49.628	7.715	40.999	-1.284	-6.929	43.801	0.098	0.001	0	829.40	13.8233	48.2	10.7	44.3	3.055	0.015	0.015	0.000	0.330	0.28
819	10/2/2002	7:00:40 AM	25.255	24.152	24.848	24.155	23.878	47.984	50.035	7.816	41.146	-1.286	-6.947	43.556	0.097	0.001	0	830.40	13.84	48.6	10.7	44.6	3.073	0.014	0.015	0.000	0.326	0.28
820	10/2/2002	7:01:40 AM	25.266	24.142	24.929	24.121	23.903	47.893	49.88	7.801	41.103	-1.289	-6.932	43.7	0.099	0.001	0	831.40	13.8567	48.4	10.7	44.5	3.068	0.015	0.015	0.000	0.332	0.28
821	10/2/2002	7:02:40 AM	25.296	24.147	24.994	24.211	23.916	47.729	50.054	7.782	40.847	-1.286	-6.915	43.808	0.097	0.001	0	832.40	13.8733	48.6	10.7	44.3	3.054	0.014	0.014	0.000	0.327	0.28
822	10/2/2002	7:03:40 AM	25.322	24.153	24.93	24.161	23.949	47.68	49.94	7.836	40.757	-1.286	-6.953	43.646	0.097	0.001	0	833.40	13.89	48.5	10.7	44.2	3.049	0.014	0.014	0.000	0.328	0.28
823	10/2/2002	7:04:40 AM	25.337	24.159	25.046	24.142	23.975	47.949	50.273	7.825	41.085	-1.286	-6.932	43.615	0.097	0.001	0	834.40	13.9067	48.8	10.7	44.5	3.069	0.014	0.014	0.000	0.324	0.28
824	10/2/2002	7:05:40 AM	25.369	24.165	24.957	24.169	24.007	48.021	50.327	7.786	41.189	-1.292	-6.967	44.002	0.097	0.001	0	835.40	13.9233	48.9	10.8	44.6	3.075	0.014	0.014	0.000	0.325	0.28
825	10/2/2002	7:06:40 AM	25.369	24.165	24.922	24.159	24.027	47.508	49.682	7.684	40.821	-1.286	-6.947	43.984	0.098	0.001	0	836.40	13.94	48.2	10.8	44.2	3.045	0.015	0.015	0.000	0.332	0.28
826	10/2/2002	7:07:40 AM	25.385	24.176	24.993	24.27	24.067	47.791	50.247	7.8	40.784	-1.286	-6.967	44.019	0.096	0.001	0	837.40	13.9567	48.8	10.8	44.3	3.053	0.014	0.014	0.000	0.323	0.28
827	10/2/2002	7:08:40 AM	25.39	24.176	24.918	24.711	24.093	47.738	49.841	7.638	41.095	-1.284	-6.967	43.977	0.096	0.001	0	838.40	13.9733	48.4	10.8	44.4	3.062	0.014	0.014	0.000	0.323	0.27
828	10/2/2002	7:09:40 AM	25.41	24.181	24.988	24.911	24.113	47.617	50.04	7.645	40.919	-1.286	-6.985	44.084	0.096	0.001	0	839.40	13.99	48.6	10.8	44.3	3.052	0.014	0.014	0.000	0.323	0.28
829	10/2/2002	7:10:40 AM	25.415	24.191	24.986	25.026	24.113	47.671	50.108	7.765	40.72	-1.289	-6.999	44.24	0.096	0.001	0	840.40	14.0067	48.6	10.8	44.2	3.047	0.014	0.014	0.000	0.324	0.28
830	10/2/2002	7:11:40 AM	25.424	24.19	24.942	25.131	24.117	47.698	50.313	7.748	40.71	-1.289	-7.013	44.175	0.095	0.001	0	841.40	14.0233	48.8	10.8	44.2	3.048	0.014	0.014	0.000	0.321	0.27
831	10/2/2002	7:12:40 AM	25.443	24.2	25.036	25.09	24.111	47.866	50.217	7.738	41.107	-1.286	-6.999	43.959	0.093	0.001	0	842.40	14.04	48.7	10.8	44.5	3.067	0.014	0.014	0.000	0.311	0.26
832	10/2/2002	7:13:40 AM	25.426	24.162	24.939	25.078	24.089	48.009	50.491	7.775	41.138	-1.289	-7.025	44.204	0.095	0.001	0	843.40	14.0567	49.0	10.8	44.6	3.073	0.014	0.014	0.000	0.318	0.27
833	10/2/2002	7:14:40 AM	25.455	24.171	24.993	25.006	24.072	47.676	50.087	7.745	40.941	-1.284	-7.013	44.116	0.096	0.001	0	844.40	14.0733	48.6	10.8	44.3	3.055	0.014	0.014	0.000	0.323	0.27
834	10/2/2002	7:15:40 AM	25.463	24.175	25.041	25.036	24.061	47.4	49.967	7.742	40.51	-1.289	-7.042	44.458	0.095	0.001	0	845.40	14.09	48.5	10.9	44.0	3.031	0.014	0.014	0.000	0.322	0.27
835	10/2/2002	7:16:40 AM	25.466	24.162	24.949	25.033	24.034	47.719	50.441	7.726	40.944	-1.286	-7.042	43.973	0.094	0.001	0	846.40	14.1067	49.0	10.8	44.3	3.057	0.014	0.014	0.000	0.317	0.27
836	10/2/2002	7:17:40 AM	25.464	24.155	25.027	24.961	24.007	47.705	50.251	7.713	40.839	-1.284	-7.045	44.051	0.094	0.001	0	847.40	14.1233	48.8	10.8	44.3	3.052	0.014	0.014	0.000	0.316	0.27
837	10/2/2002	7:18:40 AM	25.476	24.142	25.014	24.963	23.984	47.309	49.849	7.667	40.645	-1.286	-7.011	44	0.094	0.001	0	848.40	14.14	48.4	10.8	44.0	3.032	0.014	0.014	0.000	0.319	0.27
838	10/2/2002	7:19:40 AM	25.474	24.13	24.972	24.961	23.957	47.707	50.333	7.791	40.753	-1.286	-7.04	44.013	0.094	0.001	0	849.40	14.1567	48.9	10.8	44.2	3.050	0.014	0.014	0.000	0.317	0.27
839	10/2/2002	7:20:40 AM	25.471	24.117	25.049	24.913	23.924	47.555	50.193	7.787	40.676	-1.286	-7.045	44.094	0.094	0.001	0	850.40	14.1733	48.7	10.8	44.1	3.042	0.014	0.014	0.000	0.317	0.27
840	10/2/2002	7:21:40 AM	25.499	24.125	25.012	24.996	23.906	47.201	49.717	7.698	40.297	-1.284	-7.028	44.11	0.094	0.001	0	851.40	14.19	48.2	10.8	43.7	3.016	0.014	0.014	0.000	0.320	0.27
841	10/2/2002	7:22:40 AM	25.481	24.097	25.019	24.853	23.874	47.332	49.76	7.674	40.704	-1.286	-7.04	44.204	0.093	0.001	0	852.40	14.2067	48.3	10.8	44.0	3.035	0.014	0.014	0.000	0.315	0.27
842	10/2/2002	7:23:40 AM	25.484	24.085	25.057	24.826	23.861	47.224	49.777	7.621	40.618	-1.289	-7.054	43.921	0.092	0.001	0	853.40	14.2233	48.3	10.8	43.9	3.028	0.014	0.014	0.000	0.312	0.27
843	10/2/2002	7:24:40 AM	25.486	24.077	24.969	24.853	23.869	47.292	49.911	7.723	40.399	-1.286	-7.031	43.166	0.093	0.001	0	854.40	14.24	48.4	10.6	43.8	3.023	0.014	0.014	0.000	0.317	0.27
844	10/2/2002	7:25:40 AM	25.479	24.055	25.027	24.826	23.846	47.622	50.187	7.734	40.923	-1.289	-7.063	44.063	0.092	0.001	0	855.40	14.2567	48.7	10.8	44.3	3.052	0.014	0.014	0.000	0.310	0.26
845	10/2/2002	7:26:40 AM	25.498	24.074	25.046	24.965	23.865	47.375	50.011	7.757	40.46	-1.286	-7.063	43.948	0.092	0.001	0	856.40	14.2733	48.5	10.8	43.9	3.028	0.014	0.014	0.000	0.312	0.27
846	10/2/2002	7:27:40 AM	25.502	24.073	25.01	25.018	23.874	47.342	50.106	7.743	40.471	-1.286	-7.063	44.053	0.092	0.001	0	857.40	14.29	48.6	10.8	43.9	3.027	0.014	0.014	0.000	0.312	0.27
847	10/2/2002	7:28:40 AM	25.5	24.066	25.068	25.002	23.872	47.184	50.41	7.822	40.636	-1.286	-7.054	44.26	0.092	0.001	0	858.40	14.2733	48.9	10.8	44.1	3.042	0.014	0.014	0.000	0.310	0.26
848	10/2/2002	7:29:40 AM	25.515	24.075	25.017	25.161	23.912	47.22	49.932	7.751	40.35	-1.286	-7.066	44.055	0.091	0.001	0	859.40	14.3233	48.5	10.8	43.8	3.019	0.014	0.014	0.000	0.310	0.26
849	10/2/2002	7:30:40 AM	25.519	24.075	25.047	25.201	23.921	47.696	50.573	7.833	40.759	-1.286	-7.051	44.368	0.092	0.001	0	860.40	14.34	49.1	10.9	44.2	3.049	0.014	0.014	0.000	0.310	0.26
850	10/2/2002	7:31:40 AM	25.52	24.085	25.103	25.207	23.967	47.021	49.736	7.709	40.348	-1.289	-7.06	44.393	0.091	0.001	0	861.40	14.3567	48.3	10.9	43.7	3.012	0.014	0.014	0.000	0.310	0.26
851	10/2/2002	7:32:40 AM	25.54	24.091	25.023	25.312	24.013	47.112	49.822	7.751	40.223	-1.289	-7.063	43.965	0.091	0.001	0	862.40	14.3733	48.3	10.8	43.7	3.011	0.014	0.014	0.000	0.310	0.26
852	10/2/2002	7:33:40 AM	25.54	24.106	25.098	25.312	24.038	46.839	49.719	7.727	40.037	-1.281	-7.095	44.095	0.082	0.001	0	863.40	14.39	48.2	10.8	43.4	2.995	0.012	0.012	0.000	0.281	0.24
853	10/2/2002	7:34:40 AM	25.532	24.108	25.075	25.359	24.094	47.019	50.139	7.786	40.118	-1.292	-7.066	44.193	0.09	0.001	0	864.40	14.4067	48.7	10.8	43.6	3.004	0.013	0.013	0.000	0.307	0.26
854	10/2/2002	7:35:40 AM	25.554	24.125	25.047	25.506	24.142	47.381	50.402	7.83	40.389	-1.286	-7.06	43.868	0.091	0.001	0	865.40	14.4233	48.9	10.8	43.9	3.026	0.014	0.014	0.000	0.309	0.26
855	10/2/2002	7:36:40 AM	25.558	24.149	25.146	25.51	24.191	47.073	50.193	7.795	40.153	-1.284	-7.068	44.158	0.09	0.001	0	866.40	14.44	48.7	10.8	43.6	3.007	0.013	0.013	0.000	0.306	0.26
856	10/2/2002	7:37:40 AM	25.571	24.163	25.084	25.604	24.226	47.405	50.443	7.832	40.29	-1.286	-7.043	43.732	0.089	0.001	0	867.40	14.4567	49.0	10.7	43.8	3.019	0.013	0.013	0.000	0.302	0.25
857	10/2/2002	7:38:40 AM	25.564	24.16	25.092	25.682	24.267	47.185	50.387	7.804	40.237	-1.284	-7.066	44.095	0.089	0.001	0	868.40	14.4733	48.9	10.8	43.7	3.014	0.013	0.013	0.000	0.303	0.26
858	10/2/2002	7:39:40 AM	25.577	24.178	25.155	25.67	24.31	46.888	49.913	7.758	39.887	-1.289	-7.08	43.908	0.089	0.001	0	869.40	14.49	48.4	10.8	43.4	2.991	0.013	0.013	0.000	0.304	0.26
859	10/2/2002	7:40:40 AM	25.574	24.185	25.052	25.722	24.343	46.913	50.044	7.813	40	-1.286	-7.028	44.095	0.09	0.001	0	870.40	14.5067	48.6	10.8	43.5	2.996	0.013	0.013	0.000	0.308	0.26
860	10/2/2002	7:41:40 AM	25.576	24.187	25.109	25.614	24.345	47.025	50.377	7.81	40.022	-1.292	-7.074	43.998	0.089	0.001	0	871.40	14.5233	48.9	10.8	43.5	3.001	0.013	0.013	0.000	0.304	0.26
861	10/2/2002	7:42:40 AM	25.578	24.194	25.116	25.525	24.346	46.992	50.097	7.809	40.069	-1.289	-7.08	44.172	0.089	0.001	0	872.40	14.54	48.6	10.8	43.5	3.001	0.013	0.013	0.000	0.304	0.26
862	10/2/2002	7:43:40 AM	25.596	24.217	25.074	25.538	24.339	47.342	50.468	7.806	40.534	-1.289	-7.083	44.107	0.088	0.001	0	873.40	14.5567	49.0	10.8	43.9	3.029	0.013	0.013	0.000	0.298	0.25
863	10/2/2002	7:44:40 AM	25.603	24.219	25.161	25.445	24.316	47.048	50.3	7.823	40.08	-1.286	-7.057	44.089	0.089	0.001	0	874.40	14.5733	48.8	10.8	43.6	3.004	0.013	0.013	0.000	0.303	0.26
864	10/2/2002	7:45:40 AM	25.603	24.22	25.107	25.446	24.312	46.632	49.878	7.766	39.684	-1.286	-7.083	44.154	0.088	0.001	0	875.40	14.59	48.4	10.8	43.2	2.976	0.013	0.013	0.000	0.303	0.26
865	10/2/2002	7:46:40 AM	25.598	24.2	25.107	25.401	24.277	46.737	49.87	7.742	39.756	-1.284	-7.08	44.325	0.088	0.001	0	876.40	14.6067	48.4	10.9	43.2	2.982	0.013	0.013	0.000	0.306	0.26
866	10/2/2002	7:47:40 AM	25.603	24.199	25.161	25.32	24.266	47.065	50.145	7.839	40.125	-1.286	-7.092	44.003	0.088	0.001	0	877.40	14.6233	48.7	10.8	43.6	3.006	0.013	0.013	0.000	0.300	0.25
867	10/2/2002	7:48:40 AM	25.621	24.202	25.094	25.363	24.224	46.924	50.013	7.782	40.147	-1.284	-7.092	44.049	0.088	0.001	0	878.40	14.64	48.5	10.8	43.5	3.002	0.013	0.013	0.000	0.301	0.26
868	10/2/2002	8:02:16 AM	25.712	24.148	25.18	25.575	24.19	42.626	50.195	7.693	35.746	1.485	1.954	43.562	0.002	0.001	0	892.00	14.8667	48.7	10.7	39.2	2.702	0.000	0.000	0.000	0.008	0.01

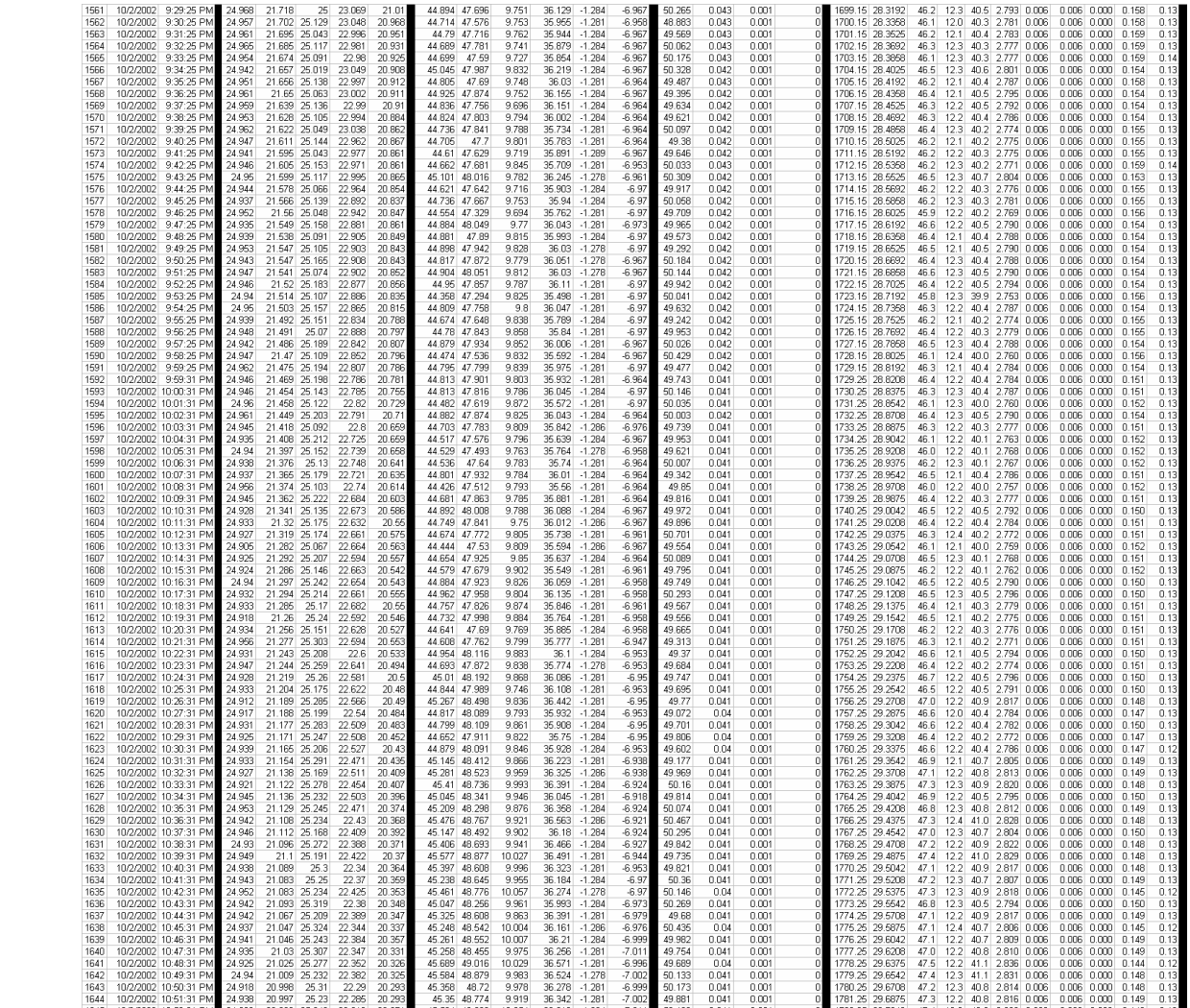
911	10/2/2002	8:52:18 AM	26.863	24.485	26.612	25.906	24.753	54.921	57.497	9.272	46.469	-1.289	-5.878	49.443	0.116	0.001	0	942.03	15.7006	56.0	12.1	50.7	3.495	0.017	0.017	0.000	0.326	0.28
912	10/2/2002	8:53:18 AM	26.843	24.465	26.637	25.676	24.743	55.401	57.769	9.287	46.956	-1.289	-6.246	49.527	0.12	0.001	0	943.03	15.7172	56.3	12.1	51.2	3.529	0.018	0.017	0.000	0.334	0.28
913	10/2/2002	8:54:18 AM	26.868	24.49	26.716	25.536	24.718	55.857	58.039	9.149	47.713	-1.286	-6.188	49.902	0.113	0.001	0	944.03	15.7339	56.6	12.2	51.8	3.570	0.017	0.016	0.000	0.310	0.26
914	10/2/2002	8:55:18 AM	26.86	24.477	26.649	25.443	24.665	55.478	57.485	9.13	47.372	-1.286	-6.168	50.641	0.114	0.001	0	945.03	15.7506	56.0	12.4	51.4	3.546	0.017	0.016	0.000	0.316	0.27
915	10/2/2002	8:56:18 AM	26.882	24.464	26.736	25.34	24.602	55.554	57.644	9.092	47.349	-1.289	-5.850	49.357	0.097	0.001	0	946.03	15.7672	56.2	12.1	51.5	3.547	0.014	0.014	0.000	0.268	0.23
916	10/2/2002	8:57:18 AM	26.888	24.44	26.646	25.225	24.537	55.186	57.158	9.028	47.109	-1.286	-6.041	49.129	0.124	0.001	0	947.03	15.7839	55.7	12.0	51.1	3.526	0.018	0.018	0.000	0.345	0.29
917	10/2/2002	8:58:18 AM	26.899	24.435	26.742	25.135	24.482	54.819	56.678	8.986	46.938	-1.286	-6.191	49.6	0.116	0.001	0	948.03	15.8006	55.2	12.2	50.9	3.508	0.017	0.016	0.000	0.324	0.28
918	10/2/2002	8:59:18 AM	26.936	24.432	26.728	25.122	24.424	55.894	57.934	9.167	47.633	-1.284	-5.904	48.948	0.088	0.001	0	949.03	15.8172	56.5	12.0	51.8	3.569	0.013	0.013	0.000	0.241	0.21
919	10/2/2002	9:00:18 AM	26.92	24.392	26.718	24.946	24.373	55.803	57.706	9.083	47.746	-1.289	-6.379	48.839	0.11	0.001	0	950.03	15.8339	56.2	12.0	51.8	3.570	0.016	0.016	0.000	0.302	0.26
920	10/2/2002	9:01:18 AM	26.94	24.382	26.778	24.871	24.328	56.207	58.143	9.096	48.102	-1.286	-6.278	48.373	0.103	0.001	0	951.03	15.8506	56.7	11.9	52.2	3.596	0.015	0.015	0.000	0.280	0.24
921	10/2/2002	9:02:18 AM	26.925	24.362	26.724	24.782	24.229	56.225	58.275	9.132	48.098	-1.286	-6.336	48.717	0.118	0.001	0	952.03	15.8672	56.8	11.9	52.2	3.596	0.018	0.017	0.000	0.321	0.27
922	10/2/2002	9:03:18 AM	26.952	24.354	26.825	24.863	24.19	55.77	57.564	9.116	47.588	-1.286	-6.078	48.376	0.108	0.001	0	953.03	15.8839	56.1	11.9	51.7	3.563	0.016	0.015	0.000	0.296	0.25
923	10/2/2002	9:04:18 AM	26.965	24.347	26.744	24.892	24.179	55.846	57.7	9.108	47.681	-1.286	-6.376	48.877	0.111	0.001	0	954.03	15.9006	56.2	12.0	51.8	3.569	0.017	0.016	0.000	0.304	0.26
924	10/2/2002	9:05:18 AM	26.982	24.334	26.841	24.889	24.136	55.627	57.634	9.114	47.382	-1.284	-6.466	49.019	0.11	0.001	0	955.03	15.9172	56.2	12.0	51.5	3.551	0.016	0.016	0.000	0.302	0.26
925	10/2/2002	9:06:18 AM	26.994	24.316	26.772	24.941	24.112	55.824	57.628	9.12	47.588	-1.286	-6.42	49.074	0.103	0.001	0	956.03	15.9339	56.2	12.0	51.7	3.565	0.015	0.015	0.000	0.283	0.24
926	10/2/2002	9:07:18 AM	27.007	24.308	26.825	24.863	24.11	56.101	58.06	9.088	47.939	-1.286	-6.423	48.984	0.112	0.001	0	957.03	15.9506	56.6	12.0	52.0	3.587	0.017	0.016	0.000	0.305	0.26
927	10/2/2002	9:08:18 AM	27.032	24.313	26.885	24.878	24.085	55.647	57.322	9.103	47.492	-1.281	-6.346	48.376	0.101	0.001	0	958.03	15.9672	55.9	11.9	51.6	3.556	0.015	0.014	0.000	0.277	0.24
928	10/2/2002	9:09:18 AM	27.027	24.278	26.83	24.793	23.989	56.281	57.88	9.104	48.258	-1.286	-6.431	48.791	0.108	0.001	0	959.03	15.9839	56.4	12.0	52.3	3.604	0.016	0.015	0.000	0.293	0.25
929	10/2/2002	9:10:18 AM	27.023	24.26	26.901	24.734	23.961	55.902	57.675	9.101	47.736	-1.289	-6.51	49.533	0.107	0.001	0	960.03	16.0006	56.2	12.1	51.8	3.573	0.016	0.015	0.000	0.292	0.25
930	10/2/2002	9:11:18 AM	27.022	24.249	26.801	24.794	23.945	55.991	57.831	9.042	47.982	-1.286	-6.492	49.051	0.099	0.001	0	961.03	16.0172	56.4	12.0	52.0	3.584	0.015	0.014	0.000	0.270	0.23
931	10/2/2002	9:12:18 AM	27.017	24.218	26.905	24.818	23.929	56.389	58.162	9.129	48.315	-1.286	-6.562	49.07	0.108	0.001	0	962.03	16.0339	56.7	12.0	52.4	3.609	0.016	0.015	0.000	0.292	0.25
932	10/2/2002	9:13:18 AM	27.015	24.206	26.813	24.851	23.912	55.594	57.543	9.047	47.525	-1.286	-6.594	48.973	0.106	0.001	0	963.03	16.0506	56.1	12.0	51.6	3.555	0.016	0.015	0.000	0.291	0.25
933	10/2/2002	9:14:18 AM	27.012	24.194	26.9	24.834	23.895	56.033	57.779	9.132	47.867	-1.286	-6.617	49.311	0.106	0.001	0	964.03	16.0672	56.3	12.1	52.0	3.592	0.016	0.015	0.000	0.288	0.25
934	10/2/2002	9:15:18 AM	27.01	24.162	26.883	24.772	23.817	55.917	57.75	9.141	47.615	-1.286	-6.666	49.099	0.103	0.001	0	965.03	16.0839	56.3	12.0	51.8	3.569	0.015	0.015	0.000	0.281	0.24
935	10/2/2002	9:16:18 AM	27.019	24.155	26.897	24.735	23.816	55.935	57.706	9.072	47.869	-1.284	-6.672	48.822	0.104	0.001	0	966.03	16.1006	56.2	12.0	51.9	3.578	0.016	0.015	0.000	0.283	0.24
936	10/2/2002	9:17:18 AM	27.016	24.122	26.904	24.632	23.778	56.608	58.472	8.706	48.731	-1.289	-6.672	47.444	0.107	0.001	0	967.03	16.1172	57.0	11.6	52.7	3.631	0.016	0.015	0.000	0.287	0.24
937	10/2/2002	9:18:18 AM	27.004	24.105	26.812	24.59	23.736	56.932	58.882	8.676	49.191	-1.292	-6.704	47.329	0.105	0.001	0	968.03	16.1339	57.4	11.6	53.1	3.658	0.016	0.015	0.000	0.280	0.24
938	10/2/2002	9:19:18 AM	27.013	24.109	26.821	24.659	23.73	56.874	58.695	8.717	49.136	-1.286	-6.657	47.341	0.103	0.001	0	969.03	16.1506	57.2	11.6	53.0	3.655	0.015	0.015	0.000	0.275	0.23
939	10/2/2002	9:20:18 AM	27.01	24.091	26.729	24.682	23.712	56.675	58.515	8.572	49.071	-1.286	-6.689	47.207	0.105	0.001	0	970.03	16.1672	57.0	11.6	52.9	3.645	0.016	0.015	0.000	0.282	0.24
940	10/2/2002	9:21:18 AM	27.012	24.078	26.625	24.668	23.653	56.784	58.706	8.513	49.22	-1.286	-6.701	46.612	0.103	0.001	0	971.03	16.1839	57.2	11.4	53.0	3.654	0.015	0.015	0.000	0.277	0.24
941	10/2/2002	9:22:18 AM	26.994	24.065	26.612	24.72	23.625	57.727	59.682	8.382	50.303	-1.286	-6.683	45.865	0.105	0.001	0	972.03	16.2006	58.2	11.2	54.0	3.724	0.016	0.015	0.000	0.277	0.24
942	10/2/2002	9:23:18 AM	26.981	24.041	26.624	24.672	23.613	56.686	58.726	8.661	49.013	-1.289	-6.73	46.943	0.103	0.001	0	973.03	16.2172	57.3	11.6	52.8	3.644	0.015	0.015	0.000	0.278	0.24
943	10/2/2002	9:24:18 AM	26.969	24.019	26.542	24.77	23.6	56.459	58.333	8.92	48.518	-1.284	-6.767	47.778	0.101	0.001	0	974.03	16.2339	56.9	11.7	52.5	3.619	0.015	0.014	0.000	0.275	0.23
944	10/2/2002	9:25:18 AM	26.935	23.996	26.468	24.721	23.571	56.051	57.868	8.952	48.029	-1.289	-6.715	48.069	0.102	0.001	0	975.03	16.2506	56.4	11.8	52.0	3.588	0.015	0.015	0.000	0.280	0.24
945	10/2/2002	9:26:18 AM	26.893	23.984	26.451	24.844	23.554	56.608	58.553	8.826	48.708	-1.289	-6.727	47.658	0.097	0.001	0	976.03	16.2672	57.1	11.7	52.7	3.631	0.014	0.014	0.000	0.264	0.22
946	10/2/2002	9:27:18 AM	26.883	23.974	26.506	24.889	23.544	54.601	56.542	8.893	45.621	-1.286	-6.866	50.488	0.097	0.001	0	977.03	16.2839	55.1	12.4	50.1	3.455	0.014	0.014	0.000	0.277	0.24
947	10/2/2002	9:28:18 AM	26.85	23.961	26.448	24.802	23.531	55.393	57.272	9.848	46.659	-1.286	-6.825	51.003	0.096	0.001	0	978.03	16.3006	55.8	12.5	51.0	3.518	0.014	0.014	0.000	0.269	0.23
948	10/2/2002	10:43:12 AM	26.725	23.223	26.298	25.047	22.973	50.463	58.11	9.202	42.202	1.644	1.893	48.898	0.002	0.001	0	1052.93	17.5489	56.6	12.0	46.3	3.194	0.000	0.000	0.000	0.006	0.01
949	10/2/2002	10:44:12 AM	26.735	23.208	26.333	25.037	22.973	50.099	57.787	9.136	41.68	1.514	2.075	49.282	0.002	0.001	0	1053.93	17.5656	56.3	12.1	45.9	3.164	0.000	0.000	0.000	0.006	0.01
950	10/2/2002	10:45:12 AM	26.724	23.171	26.297	24.986	22.972	49.745	57.431	9.092	41.488	1.717	2.055	49.177	0.002	0.001	0	1054.93	17.5822	56.0	12.1	45.6	3.145	0.000	0.000	0.000	0.006	0.01
951	10/2/2002	10:46:12 AM	26.723	23.175	26.28	25.074	22.946	50.047	57.709	9.08	41.715	1.662	2.177	48.86	0.001	0.001	0	1055.93	17.5989	56.2	12.0	45.9	3.163	0.000	0.000	0.000	0.005	0.01
952	10/2/2002	10:47:12 AM	26.707	23.164	26.35	24.999	22.94	50.124	57.713	9.138	41.906	1.659	2.119	49.013	0.001	0.001	0	1056.93	17.6156	56.2	12.0	46.0	3.173	0.000	0.000	0.000	0.003	0.00
953	10/2/2002	10:48:12 AM	26.675	23.172	26.258	25.047	22.928	52.972	57.311	9.214	44.587	-1.286	-2.314	49.019	0.126	0.001	0	1057.93	17.6322	55.8	12.0	48.8	3.363	0.019	0.018	0.000	0.372	0.32
954	10/2/2002	10:49:12 AM	26.622	23.179	26.514	24.958	22.949	40.894	43.484	13.991	27.766	-1.284	-5.841	64.741	0.078	0.001	0	1058.93	17.6489	42.0	16.9	34.3	2.367	0.012	0.011	0.000	0.325	0.28
955	10/2/2002	10:50:12 AM	26.577	23.169	26.374	24.963	22.954	44.534	47.338	11.019	34.54	-1.281	-5.986	56.1	0.06	0.001	0	1059.93	17.6656	45.9	13.7	39.5	2.726	0.009	0.009	0.000	0.218	0.19
956	10/2/2002	10:51:12 AM	26.593	23.165	26.32	25.009	22.956	45.963	48.325	10.598	36.382	-1.284	-6.864	53.384	0.077	0.001	0	1060.93	17.6822	46.9	13.1	41.2	2.839	0.011	0.011	0.000	0.269	0.23
957	10/2/2002	10:52:12 AM	26.617	23.154	26.27	25.019	22.95	45.053	47.565	10.37	36.545	-1.286	-6.924	52.394	0.073	0.001	0	1061.93	17.6989	46.1	12.8	40.3	2.778	0.011	0.011	0.000	0.261	0.22
958	10/2/2002	10:53:12 AM	26.477	23.149	26.075	25.099	22.945	45.331	47.803	9.97	36.282	-1.286	-6.95	51.22	0.071	0.001	0	1062.93	17.7156	46.3	12.6	40.8	2.813	0.011	0.010	0.000	0.252	0.21
959	10/2/2002	10:54:12 AM	26.441	23.143	26.069	25.123	22.934	44.989	47.313	9.85	36.047	-1.286	-6.953	51.094	0.073	0.001	0	1063.93	17.7322	45.8	12.5	40.5	2.794	0.011	0.011	0.000	0.261	0.22
960	10/2/2002	10:55:12 AM	26.405	23.142	26.172	25.066	22.937	44.884	47.424	9.793	35.977	-1.284	-6.938	51.199	0.072	0.001	0	1064.93	17.7489	46.0	12.6	40.4	2.788	0.011	0.010	0.000	0.258	0.21
961	10/2/2002	10:56:12 AM	26.37	23.142	25.837	25.071	22.922	46.06	48.724	9.392	37.531	-1.284	-6.944	49.173	0.072	0.001	0	1065.93	17.7656	47.3	12.1	41.8	2.882	0.011	0.010	0.000	0.251	0.21
962	10/2/2002	10:57:12 AM	26.316	23.123	25.809	24.902	22.888	46.168	48.612	9.201	37.944	-1.292	-6.929	48.699	0.074	0.001	0	1066.93	17.7822	47.1	11.9	42.1	2.900	0.011	0.011	0.000	0.266	0.22
963	10/2/2002	10:58:12 AM	26.289	23.141	25.717	24.885	22.886	46.257	48.922	9.127	38.127	-1.284	-6.921	48.331	0.074	0.001	0	1067.93	17.7989	47.4	11.8	42.2	2.909	0.011	0.011	0.000	0.266	0.22
964	10/2/2002	10:59:12 AM	26.238	23.135	25.636	24.874	22.901	45.836	48.275	8.994	37.832	-1.284	-6.872	48.48	0.074	0.001	0	1068.93	17.8156	46.8	11.9	41.8	2.884	0.011	0.011	0.000	0.269	0.22
965	10/2/2002	11:00:12 AM	26.202	23.124	25.645	24.798	22.9	46.381	48.97	8.987	38.282	-1.284	-6.929	48.231	0.074	0.001	0	1069.93	17.8322	47.5	11.8	42.3	2.919	0.011	0.011	0.000	0.266	0.22
966	10/2/2002	11:01:12 AM	26.151	23.097	25.533	24.882	22.913	44.583	47.162	10.201	35.193	-1.286	-6.985	51.587	0.069	0.001	0	1070.93	17.8489	45.7	12.6	39.9	2.750	0.010	0.010	0.000	0.254	0.22
967	10/2/2002	11:02:12 AM	26.12	23.112	25.538	24.841	22.918	44.519	46.957	9.977	35.625	-1.286	-6.987	52.736	0.069	0.001	0	1071.93	17.8656	45.5	12.9	40.0	2.759	0.010	0.010	0.000	0.253	0.22
968	10/2/2002	11:03:12 AM	26.075	23.101	25.567	24.745	22.927	44.641	47.255	10.023	35.5	-1.286	-6.953	51.196	0.07	0.001	0	1072.93	17.8822	45.8	12.5	40.1	2.763	0.010	0.010	0.000	0.256	0.22
969	10/2/2002	11:04:12 AM	26.022	23.084	25.434	24.843	22.91	45.068	47.673	10.039	35.926	-1.286	-7.011	51.389	0.069	0.001	0	1073.93	17.8989	46.2	12.6	40.5	2.792	0.010	0.010	0.000	0.261	0.22
970	10/2/2002	11:05:12 AM	25.992	23.084	25.464	24.858	22.92	45.039	47.561	10.019	35.928	-1.286	-7.002	51.199	0.069	0.001	0	1074.93	17.9156	46.1	12.5	40.5	2.791	0.010	0.010	0.000	0.251	0.21
971	10/2/2002	11:06:12 AM	25.967	23.084	25.499	24.823	22.925	44.964	47.418	9.99	35.862	-1.284	-7.005	51.687	0.069	0.001	0	1075.93	17.9322	45.9	12.7	40.4	2.786	0.010	0.010	0.000	0.251	0.21
972	10/2/2002	11:07:12 AM	25.949	23.091	25.401	24.87	22.922	45.319	47.942	10.058	36.192	-1.284	-7.011	51.039	0.068	0.001	0	1076.93	17.9489	46.5	12.5	40.8	2.810	0.010	0.010	0.000	0.246	0.21
973	10/2/2002	11:08:12 AM	25.911	23.083	25.449	24.742	22.904	45.279	47.795	9.934	36.194	-1.284	-6.993	50.794	0.069	0.001	0	1077.93	17.9656	46.3	12.4	40.7	2.809	0.010	0.010	0.000	0.249	0.21
974	10/2/2002	11:09:12 AM	25.871	23.073	25.444	24.742	22.909	45.337	47.762	9.816	36.604	-1.284	-6.921	51.067	0.069	0.001	0	1078.93	17.9822	46.3	12.5	41.0	2.825	0.010	0.010	0.000	0.248	0.21
975	10/2/2002	11:10:12 AM	25.846	23.068	25.334	24.868	22.904	44.784	47.238	9.791	36.034	-1.286	-6.961	51.1	0.069	0.001	0	1079.93	17.9989	45.8	12.5	40.4	2.786	0.010	0.010	0.000	0.252	0.21
976	10/2/2002	11:11:12 AM	25.826	23.062	25.383	24.932	22.883	45.169	47.617	9.844	36.341	-1.284	-6.967	50.886	0.069	0.001	0	1080.93	18.0156	46.1	12.5	40.8	2.810	0.010	0.010	0.000	0.250	0.21
977	10/2/2002	11:12:12 AM	25.82	23.067	25.408	24.951	22.888	44.826	47.507	9.829	36.014	-1.281	-6.964	50.412	0.068	0.001	0	1081.93	18.0322	46.0	12.4	40.4	2.797	0.010	0.010	0.000	0.248	0.21
978	10/2/2002	11:13:12 AM	25.789	23.046	25.282	25.021	22.892	45.145	47.805	9.858	36.372	-1.289	-6.982	50.716	0.068	0.001	0	1082.93	18.0489	46.3	12.4	40.8	2.810	0.010	0.010	0.000	0.247	0.21
979	10/2/2002	11:14:12 AM	25.773	23.045	25.361	25.035	22.876	45.466	48.087	9.898	36.452	-1.284	-6.976	51.001	0.067	0.001	0	1083.93	18.0656	46.6	12.5	41.0	2.824	0.010	0.010	0.000	0.241	0.21
980	10/2/2002	11:15:12 AM	25.752	23.033	25.344	25.033	22.869	45.246	48.093	9.959	36.118	-1.284	-6.976	50.62	0.068	0.001	0	1084.93	18.0822	46.6	12.4	40.7	2.805	0.010	0.010	0.000	0.247	0.21
981	10/2/2002	11:16:12 AM	25.741	23.032	25.258	25.132	22.838	44.96	47.677	9.884	35.975	-1.286	-6.973	50.869	0.068	0.001	0	1085.93	18.0989	46.2	12.5	40.5	2.790	0.010	0.010	0.000	0.249	0.21
982	10/2/2002	11:17:12 AM	25.731	23.032	25.323	25.152	22.838	45.447	48.263	9.965	36.233	-1.284	-6.982	50.658	0.067	0.001	0	1086.93	18.1156	46.8	12.4	40.8	2.816	0.010	0.010	0.000	0.242	0.21
983	10/2/2002	11:18:12 AM	25.716	23.033	25.219	25.128	22.818	45.124	47.83	9.811	36.28	-1.289	-6.979	51.173	0.068	0.001	0	1087.93	18.1322	46.4	12.5	40.7	2.806	0.010	0.010	0.000	0.248	0.21
984	10/2/2002	11:19:12 AM	25.696	23.017	25.118	25.242	22.828	45.182	47.803	9.676	36.466	-1.286	-6.987	50.695	0.067	0.001	0	1088.93	18.1489	46.3	12.4	40.8	2.815	0.010	0.010	0.000	0.244	0.21
985	10/2/2002	11:20:12 AM	25.669	23.006	25.157	25.266	22.817	45.695	48.409	9.22	37.379	-1.286	-6.996	49.145	0.068	0.001	0	1089.93	18.1656	46.9	12.0	41.5	2.864	0.010	0.010	0.000	0.243	0.21
986	10/2/2002	11:21:12 AM	25.656	23.008	25.124	25.197	22.824	45.908	48.763	9.116	37.676	-1.284	-6.979	49.233	0.069	0.001	0	1090.93	18.1822	47.3	12.1	41.8	2.881	0.011	0.011	0.000	0.246	0.21
987	10/2/2002	11:22:12 AM	25.627	22.989	25.09	25.259	22.825	44.219	46.858	10.172	35.027	-1.289	-6.993	52.809	0.068	0.001	0	1091.93	18.1989	45.4	12.9	39.6	2.732	0.010	0.010	0.000	0.255	0.22
988	10/2/2002	11:23:12 AM	25.608	22.984	25.17	25.24	22.79	44.378	47.104	10.24	35.062	-1.286	-7.042	52.356	0.065	0.001	0	1092.93	18.2156	45.6	12.8	39.7	2.739	0.010	0.010	0.000	0.243	0.21
989	10/2/2002	11:24:12 AM	25.582	22.969	25.12	25.154	22.79	44.563	47.284	10.191	35.302	-1.284	-7.025	51.129	0.065	0.001	0	1093.93	18.2322	45.8	12.5	39.9	2.753	0.010	0.010	0.000	0.242	0.21
990	10/2/2002	11:25:12 AM	25.566	22.967	25.114	25.193	22.763	44.314	46.934	10.055	35.289	-1.286	-7.028	52.616	0.065	0.001	0	1094.93	18.2489	45.5	12.9	39.8	2.744	0.010	0.010	0.000	0.243	0.21
991	10/2/2002	11:26:12 AM	25.554	22.95	25.167	25.101	22.741	44.718	47.491	9.892	35.781	-1.286	-7.025	51.985	0.066	0.001	0	1095.93	18.2656	46.0	12.7	40.2	2.775	0.010	0.010	0.000	0.243	0.21
992	10/2/2002	11:27:12 AM	25.548	22.949	25.11	25.08	22.735	44.95	47.785	9.878	36.026	-1.284	-7.013	51.433	0.066	0.001	0	1096.93	18.2822	46.3	12.6	40.5	2.792	0.010	0.010	0.000	0.242	0.21
993	10/2/2002	11:28:12 AM	25.542	22.949	25.13	25.059	22.729	44.867	47.704	9.896	36.805	-1.284	-6.982	51.365	0.066	0.001	0	1097.93	18.2989	46.2	12.6	40.3	2.781	0.010	0.010	0.000	0.243	0.21
994	10/2/2002	11:29:12 AM	25.526	22.932	25.184	24.867	22.713	44.498	47.253	9.799	35.666	-1.281	-7.022	50.909	0.066	0.001	0	1098.93	18.3156	45.8	12.5	40.1	2.763	0.010	0.010	0.000	0.244	0.21
995	10/2/2002	11:30:12 AM	25.515	22.926	25.117	24.861	22.707	44.968	47.671	9.803	36.143	-1.284	-7.042	51.429	0.066	0.001	0	1099.93	18.3322	45.2	12.6	40.6	2.796	0.010	0.010	0.000	0.242	0.21
996	10/2/2002	11:31:12 AM	25.503	22.92	25.121	24.84	22.695	44.776	47.625	9.755	35.934	-1.286	-7.025	51.186	0.066	0.001	0	1100.93	18.3489	46.2	12.5	40.4	2.782	0.010	0.010	0.000	0.243	0.21
997	10/2/2002	11:32:12 AM	25.508	22.919	25.185	24.869	22.71	44.621	47.4	10.224	35.302	-1.286	-7.031	51.24	0.066	0.001	0	1101.93	18.3656	45.9	12.6	40.0	2.755	0.010	0.010	0.000	0.245	0.21
998	10/2/2002	11:33:12 AM	25.492	22.903	25.105	24.969	22.674	45.066	47.669	10.124	35.901	-1.289	-7.054	52.

1041	10/2/2002	12:16:12 PM	25.49	22.7	25.252	25.562	22.521	44.529	47.749	10.172	35.201	-1.284	-7.074	51.838	0.061	0.001	0	1145.93	19.0989	46.3	12.7	39.9	2.749	0.009	0.009	0.000	0.227	0.19
1042	10/2/2002	12:17:12 PM	25.499	22.699	25.176	25.627	22.505	44.275	47.458	10.141	34.999	-1.284	-7.068	52.6	0.061	0.001	0	1146.93	19.1156	46.0	12.9	39.6	2.733	0.009	0.009	0.000	0.228	0.19
1043	10/2/2002	12:18:12 PM	25.493	22.688	25.226	25.606	22.499	44.125	47.214	10.054	35.089	-1.289	-7.071	51.972	0.061	0.001	0	1147.93	19.1322	45.7	12.7	39.6	2.731	0.009	0.009	0.000	0.228	0.19
1044	10/2/2002	12:19:12 PM	25.503	22.703	25.261	25.396	22.499	44.308	47.406	10.06	35.214	-1.281	-7.071	51.874	0.061	0.001	0	1148.93	19.1489	45.9	12.7	39.8	2.741	0.009	0.009	0.000	0.227	0.19
1045	10/2/2002	12:20:12 PM	25.518	22.703	25.195	25.425	22.493	44.716	47.874	10.032	35.594	-1.286	-7.071	51.977	0.061	0.001	0	1149.93	19.1656	46.4	12.7	40.2	2.769	0.009	0.009	0.000	0.225	0.19
1046	10/2/2002	12:21:12 PM	25.513	22.693	25.236	25.326	22.519	44.834	48.116	9.868	35.748	-1.286	-7.06	50.704	0.062	0.001	0	1150.93	19.1822	46.6	12.4	40.3	2.778	0.009	0.009	0.000	0.226	0.19
1047	10/2/2002	12:22:12 PM	25.498	22.693	25.235	25.105	22.524	44.658	47.735	9.838	35.736	-1.286	-7.063	50.731	0.061	0.001	0	1151.93	19.1989	46.3	12.4	40.2	2.771	0.009	0.009	0.000	0.225	0.19
1048	10/2/2002	12:23:12 PM	25.503	22.688	25.16	25.155	22.519	44.902	48.043	9.829	36.123	-1.286	-7.063	50.869	0.061	0.001	0	1152.93	19.2156	46.6	12.5	40.5	2.793	0.009	0.009	0.000	0.223	0.19
1049	10/2/2002	12:24:12 PM	25.492	22.682	25.225	25.079	22.508	44.44	47.619	9.689	35.625	-1.286	-7.063	50.418	0.061	0.001	0	1153.93	19.2322	46.1	12.4	40.0	2.760	0.009	0.009	0.000	0.226	0.19
1050	10/2/2002	12:25:12 PM	25.503	22.698	25.23	25.085	22.524	44.583	47.907	9.732	35.689	-1.286	-7.066	50.67	0.061	0.001	0	1154.93	19.2489	46.4	12.4	40.1	2.767	0.009	0.009	0.000	0.225	0.19
1051	10/2/2002	12:26:12 PM	25.493	22.698	25.155	25.05	22.524	44.824	47.965	9.725	36.086	-1.284	-7.057	51.01	0.061	0.001	0	1155.93	19.2656	46.5	12.5	40.5	2.789	0.009	0.009	0.000	0.224	0.19
1052	10/2/2002	12:27:12 PM	25.498	22.703	25.24	25.08	22.529	45.111	48.374	9.884	36.037	-1.286	-7.06	51.136	0.061	0.001	0	1156.93	19.2822	46.9	12.5	40.6	2.797	0.009	0.009	0.000	0.223	0.19
1053	10/2/2002	12:28:12 PM	25.503	22.703	25.216	25.115	22.549	44.674	47.783	9.754	35.918	-1.286	-7.057	50.928	0.061	0.001	0	1157.93	19.2989	46.3	12.3	40.3	2.778	0.009	0.009	0.000	0.224	0.19
1054	10/2/2002	12:29:12 PM	25.503	22.703	25.161	25.28	22.554	45.169	48.426	9.823	36.229	-1.284	-7.057	50.234	0.061	0.001	0	1158.93	19.3156	47.0	12.3	40.7	2.804	0.009	0.009	0.000	0.223	0.19
1055	10/2/2002	12:30:12 PM	25.503	22.708	25.246	25.326	22.57	44.695	47.956	9.752	35.881	-1.284	-7.057	50.15	0.061	0.001	0	1159.93	19.3322	46.5	12.3	40.3	2.778	0.009	0.009	0.000	0.224	0.19
1056	10/2/2002	12:31:12 PM	25.513	22.708	25.201	25.366	22.569	44.921	48.052	9.791	36.073	-1.281	-7.057	50.133	0.061	0.001	0	1160.93	19.3489	46.6	12.3	40.5	2.792	0.009	0.009	0.000	0.223	0.19
1057	10/2/2002	12:32:12 PM	25.514	22.714	25.166	25.476	22.58	44.21	47.559	10.029	35.066	-1.284	-7.06	51.436	0.061	0.001	0	1161.93	19.3656	46.1	12.6	39.6	2.733	0.009	0.009	0.000	0.228	0.19
1058	10/2/2002	12:33:12 PM	25.509	22.709	25.257	25.351	22.575	44.594	47.87	10.077	35.416	-1.284	-7.071	51.62	0.06	0.001	0	1162.93	19.3822	46.4	12.7	40.0	2.758	0.009	0.009	0.000	0.222	0.19
1059	10/2/2002	12:34:12 PM	25.508	22.713	25.211	25.175	22.6	44.324	47.52	9.822	35.388	-1.286	-7.068	50.397	0.06	0.001	0	1163.93	19.3989	46.0	12.4	39.9	2.748	0.009	0.009	0.000	0.223	0.19
1060	10/2/2002	12:35:12 PM	25.504	22.719	25.186	25.371	22.62	44.61	47.764	9.862	35.668	-1.286	-7.068	51.046	0.06	0.001	0	1164.93	19.4156	46.3	12.5	40.1	2.767	0.009	0.009	0.000	0.222	0.19
1061	10/2/2002	12:36:12 PM	25.51	22.72	25.267	25.452	22.631	44.602	47.758	9.904	35.568	-1.286	-7.048	50.32	0.056	0.001	0	1165.93	19.4322	46.3	12.3	40.1	2.764	0.008	0.008	0.000	0.207	0.18
1062	10/2/2002	12:37:12 PM	25.515	22.71	25.198	25.473	22.632	44.832	48.008	9.79	36.063	-1.284	-7.034	50.414	0.06	0.001	0	1166.93	19.4489	46.5	12.4	40.4	2.789	0.009	0.009	0.000	0.220	0.19
1063	10/2/2002	12:38:12 PM	25.536	22.741	25.218	25.593	22.617	44.89	48.205	9.805	36.065	-1.284	-7.034	51.062	0.06	0.001	0	1167.93	19.4656	46.7	12.5	40.5	2.791	0.009	0.009	0.000	0.220	0.19
1064	10/2/2002	12:39:12 PM	25.528	22.723	25.215	25.59	22.629	44.8	47.809	9.672	35.85	-1.286	-7.042	50.712	0.06	0.001	0	1168.93	19.4822	46.3	12.4	40.2	2.773	0.009	0.009	0.000	0.221	0.19
1065	10/2/2002	12:40:12 PM	25.531	22.731	25.108	25.693	22.647	44.654	47.95	9.719	35.817	-1.286	-7.04	51.15	0.06	0.001	0	1169.93	19.4989	46.5	12.5	40.2	2.774	0.009	0.009	0.000	0.222	0.19
1066	10/2/2002	12:41:12 PM	25.518	22.724	25.131	25.736	22.63	44.473	47.721	9.674	35.689	-1.284	-7.037	50.611	0.06	0.001	0	1170.93	19.5156	46.2	12.4	40.1	2.763	0.009	0.009	0.000	0.222	0.19
1067	10/2/2002	12:42:12 PM	25.505	22.72	25.172	25.817	22.601	44.815	48.155	9.679	36.098	-1.284	-7.037	50.112	0.06	0.001	0	1171.93	19.5322	46.7	12.3	40.5	2.789	0.009	0.009	0.000	0.220	0.19
1068	10/2/2002	12:43:12 PM	25.502	22.717	25.089	25.914	22.598	44.538	47.886	9.718	35.701	-1.286	-7.042	50.502	0.06	0.001	0	1172.93	19.5489	46.4	12.4	40.1	2.766	0.009	0.009	0.000	0.222	0.19
1069	10/2/2002	12:44:12 PM	25.498	22.728	25.12	25.941	22.609	45.515	48.714	9.618	37.05	-1.284	-7.034	50.207	0.06	0.001	0	1173.93	19.5656	47.2	12.3	41.3	2.846	0.009	0.009	0.000	0.216	0.18
1070	10/2/2002	12:45:12 PM	25.508	22.729	25.181	25.976	22.625	45.128	48.5	9.578	36.544	-1.284	-7.034	50.769	0.06	0.001	0	1174.93	19.5822	47.0	12.4	40.8	2.815	0.009	0.009	0.000	0.218	0.19
1071	10/2/2002	12:46:12 PM	25.498	22.724	25.076	25.956	22.625	45.318	48.511	9.487	36.778	-1.284	-7.031	50.257	0.06	0.001	0	1175.93	19.5989	47.0	12.3	41.0	2.830	0.009	0.009	0.000	0.217	0.19
1072	10/2/2002	12:47:12 PM	25.489	22.719	25.112	25.937	22.671	45.02	48.366	9.561	36.427	-1.284	-7.034	49.904	0.06	0.001	0	1176.93	19.6156	46.9	12.2	40.7	2.808	0.009	0.009	0.000	0.219	0.19
1073	10/2/2002	12:48:12 PM	25.48	22.715	25.132	26.012	22.671	44.966	48.352	9.54	36.313	-1.284	-7.034	49.978	0.06	0.001	0	1177.93	19.6322	46.9	12.2	40.6	2.802	0.009	0.009	0.000	0.219	0.19
1074	10/2/2002	12:49:12 PM	25.496	22.736	25.073	26.029	22.643	45.07	48.143	9.477	36.577	-1.284	-7.034	50.207	0.06	0.001	0	1178.93	19.6489	46.7	12.3	40.8	2.815	0.009	0.009	0.000	0.219	0.19
1075	10/2/2002	12:50:12 PM	25.497	22.732	25.125	25.95	22.624	45.248	48.67	9.479	36.714	-1.284	-7.031	50.295	0.061	0.001	0	1179.93	19.6656	47.2	12.3	41.0	2.825	0.009	0.009	0.000	0.221	0.19
1076	10/2/2002	12:51:13 PM	25.472	22.712	25.119	25.904	22.633	44.944	48.476	9.538	36.184	-1.284	-7.031	50.049	0.06	0.001	0	1180.95	19.6825	47.0	12.3	40.6	2.797	0.009	0.009	0.000	0.220	0.19
1077	10/2/2002	12:52:13 PM	25.482	22.722	25.055	25.96	22.669	45.396	48.664	9.484	36.945	-1.284	-7.034	49.949	0.06	0.001	0	1181.95	19.6992	47.2	12.2	41.2	2.839	0.009	0.009	0.000	0.217	0.18
1078	10/2/2002	12:53:13 PM	25.482	22.727	25.125	25.985	22.669	45.031	48.5	9.576	36.384	-1.286	-7.031	49.974	0.06	0.001	0	1182.95	19.7158	47.0	12.2	40.7	2.807	0.009	0.009	0.000	0.219	0.19
1079	10/2/2002	12:54:13 PM	25.483	22.733	25.125	25.775	22.675	45.231	48.616	9.503	36.663	-1.284	-7.031	49.798	0.06	0.001	0	1183.95	19.7325	47.1	12.2	40.9	2.823	0.009	0.009	0.000	0.218	0.19
1080	10/2/2002	12:55:13 PM	25.482	22.732	25.055	25.875	22.669	44.973	48.455	9.519	36.341	-1.284	-7.028	50.479	0.06	0.001	0	1184.95	19.7492	47.0	12.4	40.7	2.803	0.009	0.009	0.000	0.220	0.19
1081	10/2/2002	12:56:13 PM	25.478	22.743	25.12	25.916	22.67	45.263	48.54	9.545	36.808	-1.284	-7.028	50.076	0.06	0.001	0	1185.95	19.7658	47.1	12.3	41.0	2.829	0.009	0.009	0.000	0.217	0.19
1082	10/2/2002	12:57:13 PM	25.482	22.737	25.089	25.899	22.678	44.917	48.325	9.479	36.395	-1.289	-7.034	49.986	0.06	0.001	0	1186.95	19.7825	46.9	12.2	40.7	2.803	0.009	0.009	0.000	0.219	0.19
1083	10/2/2002	12:58:13 PM	25.48	22.745	25.042	25.797	22.676	45.089	48.436	9.498	36.552	-1.284	-7.025	49.693	0.06	0.001	0	1187.95	19.7992	47.0	12.2	40.8	2.814	0.009	0.009	0.000	0.219	0.19
1084	10/2/2002	12:59:13 PM	25.479	22.749	25.117	25.607	22.691	44.776	48.174	9.576	36.174	-1.284	-7.028	50.118	0.06	0.001	0	1188.95	19.8158	46.7	12.3	40.5	2.791	0.009	0.009	0.000	0.220	0.19
1085	10/2/2002	1:00:13 PM	25.483	22.753	25.115	25.44	22.7	43.695	47.17	9.941	34.73	-1.284	-7.051	53.158	0.058	0.001	0	1189.95	19.8325	45.7	13.0	39.2	2.704	0.009	0.009	0.000	0.220	0.19
1086	10/2/2002	1:01:13 PM	25.483	22.764	25.101	25.541	22.715	44.088	47.534	10.022	35.007	-1.284	-7.045	51.545	0.058	0.001	0	1190.95	19.8492	46.1	12.6	39.5	2.727	0.009	0.009	0.000	0.218	0.19
1087	10/2/2002	1:02:13 PM	25.49	22.78	25.182	25.502	22.747	43.823	47.307	10.049	34.597	-1.284	-7.045	52.027	0.058	0.001	0	1191.95	19.8658	45.8	12.8	39.2	2.703	0.009	0.009	0.000	0.219	0.19
1088	10/2/2002	1:03:13 PM	25.487	22.783	25.145	25.369	22.785	44.105	47.536	10.015	35.019	-1.286	-7.045	52.184	0.058	0.001	0	1192.95	19.8825	46.1	12.8	39.6	2.728	0.009	0.009	0.000	0.218	0.19
1089	10/2/2002	1:04:13 PM	25.48	22.786	25.138	25.378	22.806	43.937	47.359	10.073	34.794	-1.286	-7.045	52.149	0.058	0.001	0	1193.95	19.8992	45.9	12.8	39.4	2.714	0.009	0.009	0.000	0.219	0.19
1090	10/2/2002	1:05:13 PM	25.481	22.785	25.194	25.292	22.813	44.49	47.9	9.641	35.733	-1.286	-7.031	50.46	0.059	0.001	0	1194.95	19.9158	46.4	12.4	40.1	2.766	0.009	0.009	0.000	0.218	0.19
1091	10/2/2002	1:06:13 PM	25.481	22.791	25.149	25.268	22.824	44.496	47.977	9.759	35.584	-1.278	-7.028	51.192	0.059	0.001	0	1195.96	19.9325	46.5	12.5	40.0	2.761	0.009	0.009	0.000	0.219	0.19
1092	10/2/2002	1:07:13 PM	25.47	22.785	25.117	25.332	22.842	44.674	48.182	9.766	35.738	-1.284	-7.028	50.454	0.059	0.001	0	1196.95	19.9492	46.7	12.4	40.2	2.772	0.009	0.009	0.000	0.218	0.19
1093	10/2/2002	1:08:13 PM	25.484	22.795	25.182	25.256	22.847	44.128	47.661	9.789	35.097	-1.284	-7.025	50.104	0.059	0.001	0	1197.95	19.9658	46.2	12.3	39.6	2.731	0.009	0.009	0.000	0.221	0.19
1094	10/2/2002	1:09:13 PM	25.488	22.799	25.121	25.331	22.841	44.548	48.157	9.736	35.703	-1.286	-7.028	50.651	0.058	0.001	0	1198.95	19.9825	46.7	12.4	40.1	2.767	0.009	0.009	0.000	0.215	0.18
1095	10/2/2002	1:10:13 PM	25.493	22.798	25.125	25.515	22.85	44.589	48.163	9.735	35.826	-1.289	-7.04	50.727	0.058	0.001	0	1199.95	19.9992	46.7	12.4	40.2	2.772	0.009	0.009	0.000	0.214	0.18
1096	10/2/2002	1:11:13 PM	25.507	22.823	25.185	25.545	22.865	44.128	47.617	9.668	35.295	-1.286	-7.028	50.563	0.058	0.001	0	1200.95	20.0158	46.1	12.4	39.7	2.738	0.009	0.009	0.000	0.217	0.18
1097	10/2/2002	1:12:13 PM	25.502	22.822	25.109	25.459	22.864	44.697	48.265	9.749	35.813	-1.284	-7.025	50.746	0.058	0.001	0	1201.95	20.0325	46.8	12.4	40.3	2.775	0.009	0.009	0.000	0.214	0.18
1098	10/2/2002	1:13:13 PM	25.511	22.837	25.143	25.593	22.889	44.629	48.207	9.701	35.819	-1.286	-7.025	50.813	0.058	0.001	0	1202.95	20.0492	46.7	12.5	40.2	2.773	0.009	0.009	0.000	0.214	0.18
1099	10/2/2002	1:14:13 PM	25.51	22.846	25.198	25.538	22.913	44.571	47.996	9.669	35.969	-1.286	-7.022	50.139	0.058	0.001	0	1203.95	20.0658	46.5	12.3	40.3	2.776	0.009	0.009	0.000	0.214	0.18
1100	10/2/2002	1:15:13 PM	25.515	22.856	25.118	25.528	22.933	44.473	48.012	9.668	35.596	-1.286	-7.022	50.658	0.058	0.001	0	1204.95	20.0825	46.5	12.4	40.0	2.760	0.009	0.009	0.000	0.216	0.18
1101	10/2/2002	1:16:13 PM	25.521	22.867	25.163	25.598	22.959	44.357	47.789	9.642	35.57	-1.286	-7.022	51.469	0.058	0.001	0	1205.95	20.0992	46.3	12.6	40.0	2.755	0.009	0.009	0.000	0.215	0.18
1102	10/2/2002	1:17:13 PM	25.526	22.867	25.209	25.548	22.969	44.745	48.442	9.782	35.795	-1.284	-7.022	49.947	0.058	0.001	0	1206.95	20.1158	47.0	12.2	40.3	2.776	0.009	0.009	0.000	0.213	0.18
1103	10/2/2002	1:18:13 PM	25.532	22.888	25.125	25.56	22.98	44.264	47.857	9.581	35.654	-1.289	-7.022	49.944	0.058	0.001	0	1207.95	20.1325	46.4	12.2	40.0	2.755	0.009	0.009	0.000	0.216	0.18
1104	10/2/2002	1:19:13 PM	25.528	22.884	25.18	25.615	22.981	44.737	48.275	9.727	35.891	-1.286	-7.016	50.202	0.058	0.001	0	1208.95	20.1492	46.8	12.3	40.3	2.780	0.009	0.009	0.000	0.213	0.18
1105	10/2/2002	1:20:13 PM	25.539	22.894	25.201	25.616	22.982	44.188	47.803	9.645	35.469	-1.286	-7.019	50.486	0.058	0.001	0	1209.95	20.1658	46.3	12.4	39.8	2.746	0.009	0.009	0.000	0.216	0.18
1106	10/2/2002	1:21:13 PM	25.529	22.895	25.117	25.647	22.992	44.244	47.743	9.692	35.486	-1.286	-7.016	50.104	0.058	0.001	0	1210.95	20.1825	46.3	12.3	39.9	2.749	0.009	0.009	0.000	0.216	0.18
1107	10/2/2002	1:22:13 PM	25.541	22.912	25.194	25.649	23.004	44.563	48.226	9.595	35.975	-1.284	-7.016	50.836	0.058	0.001	0	1211.95	20.1992	46.8	12.5	40.3	2.776	0.009	0.009	0.000	0.214	0.18
1108	10/2/2002	1:23:13 PM	25.542	22.913	25.2	25.58	23.001	44.714	48.287	9.539	36.098	-1.286	-7.016	50.027	0.058	0.001	0	1212.95	20.2158	46.8	12.3	40.4	2.786	0.009	0.009	0.000	0.213	0.18
1109	10/2/2002	1:24:13 PM	25.554	22.925	25.137	25.577	23.033	44.229	47.822	9.631	35.492	-1.286	-7.016	50.93	0.058	0.001	0	1213.95	20.2325	46.3	12.5	39.9	2.748	0.009	0.009	0.000	0.216	0.18
1110	10/2/2002	1:25:13 PM	25.55	22.931	25.207	25.547	23.033	44.533	48.163	9.731	35.631	-1.284	-7.011	50.154	0.058	0.001	0	1214.95	20.2492	46.7	12.3	40.1	2.764	0.009	0.009	0.000	0.214	0.18
1111	10/2/2002	1:26:13 PM	25.551	22.937	25.184	25.599	23.03	44.376	47.919	9.611	35.777	-1.286	-7.011	50.544	0.057	0.001	0	1215.96	20.2658	46.4	12.4	40.1	2.763	0.008	0.008	0.000	0.211	0.18
1112	10/2/2002	1:27:13 PM	25.562	22.954	25.145	25.625	23.041	44.772	48.368	9.686	36.069	-1.284	-7.011	50.544	0.058	0.001	0	1216.95	20.2825	46.9	12.4	40.4	2.787	0.009	0.009	0.000	0.213	0.18
1113	10/2/2002	1:28:13 PM	25.564	22.955	25.216	25.641	23.037	44.743	48.265	9.674	36.01	-1.289	-7.011	50.588	0.058	0.001	0	1217.95	20.2992	46.8	12.4	40.4	2.784	0.009	0.009	0.000	0.213	0.18
1114	10/2/2002	1:29:13 PM	25.571	22.962	25.178	25.673	23.049	44.007	47.584	9.65	35.336	-1.286	-7.011	50.366	0.057	0.001	0	1218.95	20.3158	46.1	12.3	39.7	2.735	0.008	0.008	0.000	0.213	0.18
1115	10/2/2002	1:30:13 PM	25.583	22.979	25.165	25.765	23.066	44.815	48.37	9.651	36.084	-1.284	-7.011	50.884	0.057	0.001	0	1219.95	20.3325	46.9	12.5	40.4	2.789	0.008	0.008	0.000	0.209	0.18
1116	10/2/2002	1:31:13 PM	25.569	22.981	25.217	25.697	23.063	44.214	47.816	9.726	35.435	-1.292	-7.008	50.947	0.057	0.001	0	1220.95	20.3492	46.3	12.6	39.8	2.746	0.008	0.008	0.000	0.212	0.18
1117	10/2/2002	1:32:13 PM	25.586	22.982	25.163	25.538	23.074	44.467	48.163	9.669	35.717	-1.289	-7.013	50.605	0.057	0.001	0	1221.95	20.3658	46.7	12.4	40.1	2.764	0.008	0.008	0.000	0.211	0.18
1118	10/2/2002	1:33:13 PM	25.583	22.999	25.175	25.525	23.091	44.343	48.039	9.823	35.42	-1.286	-7.016	50.901	0.057	0.001	0	1222.95	20.3825	46.6	12.5	39.9	2.750	0.008	0.008	0.000	0.212	0.18
1119	10/2/2002	1:34:13 PM	25.584	23.005	25.252	25.581	23.103	44.478	48.054	9.8	35.686	-1.286	-7.016	50.741	0.057	0.001	0	1223.95	20.3992	46.6	12.4	40.1	2.764	0.008	0.008	0.000	0.211	0.18
1120	10/2/2002	1:35:13 PM	25.59	23.017	25.183	25.588	23.124	44.828	48.44	9.67	36.149	-1.284	-7.011	50.165	0.057	0.001	0	1224.95	20.4158	47.0	12.3	40.5	2.792	0.008	0.008	0.000	0.209	0.18
1121	10/2/2002	1:36:13 PM	25.592	23.018	25.189	25.754	23.125	44.505	48.147	9.839	35.662	-1.286	-7.008	51.708	0.057	0.001	0	1225.95	20.4325	46.7	12.7	40.1	2.764	0.008	0.008	0.000	0.211	0.18
1122	10/2/2002	1:37:13 PM	25.602	23.029	25.255	25.835	23.131	44.453	48.219	9.69	35.785	-1.286	-7.008	50.347	0.057	0.001	0	1226.95	20.4492	46.7	12.3	40.1	2.766	0.008	0.008	0.000	0.210	0.18
1123	10/2/2002	1:38:13 PM	25.603	23.024	25.16	26.031	23.132	44.229	47.969	9.718	35.435	-1.292	-7.016	50.788	0.057	0.001	0	1227.95	20.4658	46.5	12.4	39.8	2.746	0.008	0.008	0.000	0.212	0.18
1124	10/2/2002	1:39:13 PM	25.614	23.041	25.217	26.232	23.126	44.511	48.267	9.64	35.815	-1.286	-7.008	50.488	0.057	0.001	0	1228.95	20.4825	46.8	12.4	40.2	2.769	0.008	0.008	0.000	0.210	0.18
1125	10/2/2002	1:40:13 PM	25.62	23.041	25.262	26.182	23.114	44.72	48.401	9.641	36.012	-1.286	-6.987	50.11	0.057	0.001	0	1229.95	20.4992	46.9	12.3	40.4	2.783	0.008	0.008	0.000	0.209	0.18
1126	10/2/2002	1:41:13 PM	25.63	23.047	25.168	26.343	23.119	44.546	48.26	9.685	36.752	-1.284	-7.008	50.068	0.057	0.001	0	1230.95	20.5158	46.8	12.3	40.1	2.768	0.008	0.008	0.000	0.211	0.18
1127	10/2/2002	1:42:13 PM	25.637	23.053	25.229	26.444	23.111	44.647	48.474	9.727	35.776	-1.286	-7.002	50.141	0.057	0.001	0	1231.95	20.5325	47.0	12.3	40.2	2.772	0.008	0.008	0.

1171	10/2/2002	2:26:13 PM	25.814	23.357	25.342	27.171	23.449	44.194	48.163	10.143	34.978	-1.286	-7.013	51.943	0.054	0.001	0	1275.95	21.2658	46.7	12.7	39.6	2.729	0.008	0.008	0.000	0.201	0.17
1172	10/2/2002	2:27:13 PM	25.816	23.363	25.258	27.127	23.466	43.993	47.76	10.007	34.925	-1.286	-7.011	51.318	0.054	0.001	0	1276.95	21.2825	46.3	12.6	39.5	2.721	0.008	0.008	0.000	0.203	0.17
1173	10/2/2002	2:28:13 PM	25.836	23.389	25.364	27.188	23.466	43.827	47.812	10.093	34.638	-1.286	-7.002	51.694	0.054	0.001	0	1277.95	21.2992	46.3	12.7	39.2	2.705	0.008	0.008	0.000	0.203	0.17
1174	10/2/2002	2:29:13 PM	25.822	23.385	25.35	27.164	23.482	43.587	47.433	10.149	34.327	-1.284	-6.999	51.656	0.054	0.001	0	1278.95	21.3158	46.0	12.7	39.0	2.686	0.008	0.008	0.000	0.205	0.17
1175	10/2/2002	2:30:13 PM	25.833	23.396	25.286	27.19	23.483	43.267	47.311	10.087	34.018	-1.286	-6.999	51.622	0.054	0.001	0	1279.95	21.3325	45.8	12.7	38.7	2.665	0.008	0.008	0.000	0.207	0.18
1176	10/2/2002	2:31:13 PM	25.836	23.409	25.364	27.203	23.491	43.411	47.334	10.031	34.387	-1.286	-7.002	50.889	0.054	0.001	0	1280.95	21.3492	45.9	12.4	38.9	2.682	0.008	0.008	0.000	0.205	0.17
1177	10/2/2002	2:32:13 PM	25.832	23.395	25.33	27.164	23.488	43.483	47.379	9.995	34.425	-1.292	-7.005	51.438	0.054	0.001	0	1281.95	21.3658	45.9	12.6	39.0	2.686	0.008	0.008	0.000	0.205	0.17
1178	10/2/2002	2:33:13 PM	25.839	23.412	25.286	27.275	23.494	43.695	47.669	10.041	34.657	-1.284	-6.999	51.658	0.054	0.001	0	1282.95	21.3825	46.2	12.7	39.2	2.701	0.008	0.008	0.000	0.204	0.17
1179	10/2/2002	2:34:13 PM	25.851	23.424	25.378	27.197	23.496	43.865	48.008	10.062	34.659	-1.286	-6.999	51.566	0.054	0.001	0	1283.95	21.3992	46.5	12.6	39.3	2.707	0.008	0.008	0.000	0.203	0.17
1180	10/2/2002	2:35:13 PM	25.858	23.426	25.35	27.269	23.508	43.823	47.961	9.986	34.765	-1.286	-7.002	50.888	0.054	0.001	0	1284.95	21.4158	46.5	12.5	39.3	2.709	0.008	0.008	0.000	0.203	0.17
1181	10/2/2002	2:36:13 PM	25.86	23.438	25.307	27.236	23.52	43.552	47.672	9.935	34.532	-1.286	-6.996	51.153	0.054	0.001	0	1285.95	21.4325	46.0	12.5	39.0	2.692	0.008	0.008	0.000	0.204	0.17
1182	10/2/2002	2:37:13 PM	25.855	23.433	25.378	27.087	23.531	43.688	47.797	9.987	34.534	-1.284	-6.993	51.345	0.054	0.001	0	1286.95	21.4492	46.3	12.6	39.1	2.697	0.008	0.008	0.000	0.204	0.17
1183	10/2/2002	2:38:13 PM	25.855	23.443	25.307	26.892	23.51	43.678	47.617	9.842	34.884	-1.286	-6.993	50.794	0.054	0.001	0	1287.95	21.4658	46.1	12.4	39.3	2.708	0.008	0.008	0.000	0.203	0.17
1184	10/2/2002	2:39:13 PM	25.849	23.437	25.287	26.751	23.524	43.869	48.078	9.742	34.968	-1.286	-6.987	50.852	0.054	0.001	0	1288.95	21.4825	46.6	12.5	39.4	2.718	0.008	0.008	0.000	0.203	0.17
1185	10/2/2002	2:40:13 PM	25.869	23.457	25.367	26.716	23.519	43.784	47.747	9.739	34.868	-1.289	-6.982	50.97	0.055	0.001	0	1289.95	21.4992	46.3	12.5	39.3	2.711	0.008	0.008	0.000	0.206	0.18
1186	10/2/2002	2:41:13 PM	25.865	23.468	25.287	26.662	23.53	43.879	47.661	9.696	35.123	-1.286	-6.99	50.561	0.054	0.001	0	1290.95	21.5158	46.2	12.4	39.5	2.723	0.008	0.008	0.000	0.202	0.17
1187	10/2/2002	2:42:13 PM	25.87	23.463	25.307	26.662	23.545	43.927	47.938	9.786	35.052	-1.289	-6.987	50.207	0.054	0.001	0	1291.95	21.5325	46.5	12.3	39.5	2.723	0.008	0.008	0.000	0.202	0.17
1188	10/2/2002	2:43:13 PM	25.88	23.494	25.393	26.718	23.566	44.237	48.258	9.823	35.32	-1.284	-6.979	50.555	0.054	0.001	0	1292.95	21.5492	46.8	12.4	39.8	2.743	0.008	0.008	0.000	0.200	0.17
1189	10/2/2002	2:44:13 PM	25.87	23.484	25.278	26.523	23.566	44.125	48.231	9.78	35.254	-1.286	-6.985	51.029	0.054	0.001	0	1293.95	21.5658	46.8	12.5	39.7	2.736	0.008	0.008	0.000	0.201	0.17
1190	10/2/2002	2:45:13 PM	25.865	23.478	25.312	26.512	23.55	44.295	48.343	9.792	35.426	-1.286	-6.976	50.36	0.054	0.001	0	1294.95	21.5825	46.9	12.3	39.9	2.748	0.008	0.008	0.000	0.200	0.17
1191	10/2/2002	2:46:13 PM	25.865	23.483	25.347	26.457	23.55	44.173	48.368	9.765	35.324	-1.289	-6.979	50.687	0.054	0.001	0	1295.95	21.5992	46.9	12.4	39.7	2.741	0.008	0.008	0.000	0.201	0.17
1192	10/2/2002	2:47:13 PM	25.869	23.487	25.267	26.496	23.565	44.125	48.167	9.822	35.197	-1.286	-6.979	48.738	0.054	0.001	0	1296.95	21.6158	46.7	11.9	39.7	2.734	0.008	0.008	0.000	0.202	0.17
1193	10/2/2002	2:48:13 PM	25.869	23.492	25.327	26.561	23.555	44.316	48.461	9.721	35.613	-1.281	-6.976	50.225	0.054	0.001	0	1297.95	21.6325	47.0	12.3	40.0	2.755	0.008	0.008	0.000	0.200	0.17
1194	10/2/2002	2:49:13 PM	25.864	23.492	25.332	26.386	23.565	44.364	48.335	9.731	35.564	-1.286	-6.975	50.311	0.054	0.001	0	1298.95	21.6492	46.9	12.3	40.0	2.755	0.008	0.008	0.000	0.200	0.17
1195	10/2/2002	2:50:13 PM	25.853	23.486	25.245	26.365	23.543	44.101	48.08	9.755	35.25	-1.284	-6.973	50.221	0.054	0.001	0	1299.95	21.6658	46.6	12.3	39.7	2.735	0.008	0.008	0.000	0.202	0.17
1196	10/2/2002	2:51:13 PM	25.862	23.49	25.315	26.309	23.537	44.231	48.374	9.716	35.426	-1.286	-6.97	50.372	0.054	0.001	0	1300.95	21.6825	46.9	12.3	39.8	2.746	0.008	0.008	0.000	0.200	0.17
1197	10/2/2002	2:52:13 PM	25.861	23.49	25.309	26.254	23.542	44.02	48.331	9.796	35.093	-1.286	-6.97	51.207	0.054	0.001	0	1301.95	21.6992	46.9	12.5	39.6	2.727	0.008	0.008	0.000	0.202	0.17
1198	10/2/2002	2:53:13 PM	25.861	23.495	25.249	26.359	23.542	43.616	47.733	9.682	34.747	-1.286	-6.97	50.42	0.054	0.001	0	1302.95	21.7158	46.3	12.4	39.2	2.701	0.008	0.008	0.000	0.204	0.17
1199	10/2/2002	2:54:13 PM	25.856	23.504	25.328	26.338	23.536	43.728	47.789	9.779	34.802	-1.284	-6.967	50.148	0.054	0.001	0	1303.95	21.7325	46.3	12.3	39.3	2.707	0.008	0.008	0.000	0.203	0.17
1200	10/2/2002	2:55:13 PM	25.86	23.508	25.288	26.187	23.62	43.947	48.089	9.804	34.952	-1.286	-6.964	50.773	0.054	0.001	0	1304.95	21.7492	46.6	12.4	39.4	2.720	0.008	0.008	0.000	0.202	0.17
1201	10/2/2002	2:56:13 PM	25.854	23.498	25.262	26.207	23.49	44.442	48.682	9.798	35.582	-1.286	-6.961	49.925	0.054	0.001	0	1305.95	21.7658	47.2	12.2	40.0	2.759	0.008	0.008	0.000	0.200	0.17
1202	10/2/2002	2:57:13 PM	25.86	23.513	25.353	26.137	23.6	44.694	48.835	9.753	35.916	-1.286	-6.961	50.571	0.053	0.001	0	1306.95	21.7825	47.2	12.4	40.3	2.775	0.008	0.008	0.000	0.194	0.17
1203	10/2/2002	2:58:13 PM	25.854	23.513	25.287	26.087	23.495	44.136	48.277	9.749	35.363	-1.284	-6.956	49.856	0.053	0.001	0	1307.95	21.7992	46.8	12.2	39.7	2.741	0.008	0.008	0.000	0.197	0.17
1204	10/2/2002	2:59:13 PM	25.864	23.513	25.282	26.192	23.5	44.101	48.312	9.719	35.283	-1.286	-6.958	50.601	0.054	0.001	0	1308.95	21.8158	46.8	12.4	39.7	2.737	0.008	0.008	0.000	0.201	0.17
1205	10/2/2002	3:00:13 PM	25.854	23.513	25.352	26.082	23.485	43.817	48.002	9.704	34.923	-1.286	-6.958	50.45	0.053	0.001	0	1309.95	21.8325	46.5	12.4	39.4	2.714	0.008	0.008	0.000	0.199	0.17
1206	10/2/2002	3:01:15 PM	25.865	23.523	25.283	26.007	23.465	43.771	47.998	9.734	34.951	-1.284	-6.956	51.048	0.053	0.001	0	1310.98	21.8497	46.5	12.5	39.4	2.714	0.008	0.008	0.000	0.199	0.17
1207	10/2/2002	3:02:15 PM	25.856	23.519	25.303	26.053	23.466	43.065	47.224	10.437	33.608	-1.286	-6.958	52.744	0.053	0.001	0	1311.98	21.8664	45.8	12.9	38.3	2.640	0.008	0.008	0.000	0.205	0.17
1208	10/2/2002	3:03:15 PM	25.856	23.525	25.384	26.064	23.471	44.513	48.664	10.032	35.373	-1.284	-6.958	50.928	0.052	0.001	0	1312.98	21.8831	47.2	12.5	39.9	2.754	0.008	0.008	0.000	0.192	0.16
1209	10/2/2002	3:04:15 PM	25.836	23.51	25.264	26.034	23.456	44.805	48.894	10.025	35.654	-1.289	-6.941	51.222	0.054	0.001	0	1313.98	21.8997	47.4	12.6	40.2	2.774	0.008	0.008	0.000	0.199	0.17
1210	10/2/2002	3:05:15 PM	25.846	23.525	25.369	25.979	23.456	44.968	49.297	10.002	35.711	-1.284	-6.929	51.427	0.054	0.001	0	1314.98	21.9164	47.8	12.6	40.3	2.781	0.008	0.008	0.000	0.198	0.17
1211	10/2/2002	3:06:15 PM	25.853	23.521	25.415	26.08	23.463	45.138	49.386	9.973	36.036	-1.286	-6.933	50.655	0.054	0.001	0	1315.98	21.9331	47.9	12.4	40.6	2.798	0.008	0.008	0.000	0.196	0.17
1212	10/2/2002	3:07:15 PM	25.838	23.501	25.31	26.016	23.473	45.662	49.781	9.42	37.244	-1.289	-6.929	50.284	0.055	0.001	0	1316.98	21.9497	48.3	12.3	41.5	2.858	0.008	0.008	0.000	0.196	0.17
1213	10/2/2002	3:08:15 PM	25.873	23.531	25.415	26.02	23.473	46.149	50.308	9.535	37.598	-1.284	-6.912	49.267	0.056	0.001	0	1317.98	21.9664	48.8	12.1	41.9	2.887	0.008	0.008	0.000	0.197	0.17
1214	10/2/2002	3:09:15 PM	25.867	23.52	25.4	25.979	23.477	46.226	50.563	9.367	37.775	-1.289	-6.912	49.525	0.056	0.001	0	1318.98	21.9831	49.1	12.1	42.0	2.896	0.008	0.008	0.000	0.197	0.17
1215	10/2/2002	3:10:15 PM	25.887	23.531	25.33	26.129	23.497	45.768	49.947	9.329	37.242	-1.284	-6.903	48.571	0.056	0.001	0	1319.98	21.9997	48.5	11.9	41.5	2.862	0.008	0.008	0.000	0.199	0.17
1216	10/2/2002	3:11:15 PM	25.886	23.525	25.399	26.239	23.502	46.367	50.567	9.242	38.022	-1.289	-6.903	48.352	0.056	0.001	0	1320.98	22.0164	49.1	11.8	42.2	2.909	0.008	0.008	0.000	0.196	0.17
1217	10/2/2002	3:12:15 PM	25.891	23.524	25.378	26.158	23.511	46.259	50.731	9.331	37.832	-1.286	-6.901	48.472	0.056	0.001	0	1321.98	22.0331	49.3	11.9	42.0	2.899	0.008	0.008	0.000	0.196	0.17
1218	10/2/2002	3:13:15 PM	25.89	23.523	25.323	26.197	23.51	46.124	50.443	9.267	37.732	-1.289	-6.901	48.728	0.056	0.001	0	1322.98	22.0497	49.0	11.9	41.9	2.891	0.008	0.008	0.000	0.197	0.17
1219	10/2/2002	3:14:15 PM	25.884	23.523	25.407	26.302	23.516	46.079	50.499	9.228	37.725	-1.286	-6.898	48.673	0.056	0.001	0	1323.98	22.0664	49.0	11.9	41.9	2.889	0.008	0.008	0.000	0.197	0.17
1220	10/2/2002	3:15:15 PM	25.889	23.523	25.312	26.307	23.515	46.816	51.266	8.779	38.988	-1.292	-6.892	46.756	0.058	0.001	0	1324.98	22.0831	49.8	11.5	42.9	2.968	0.009	0.009	0.000	0.200	0.17
1221	10/2/2002	3:16:15 PM	25.894	23.523	25.312	26.497	23.495	46.694	50.944	8.809	38.642	-1.289	-6.874	46.431	0.057	0.001	0	1325.98	22.0997	49.5	11.4	42.7	2.942	0.008	0.008	0.000	0.197	0.17
1222	10/2/2002	3:17:15 PM	25.904	23.533	25.382	26.607	23.485	46.725	50.927	8.733	38.864	-1.284	-6.88	46.964	0.057	0.001	0	1326.98	22.1164	49.5	11.5	42.8	2.951	0.008	0.008	0.000	0.196	0.17
1223	10/2/2002	3:18:15 PM	25.909	23.522	25.276	26.621	23.489	46.57	50.968	8.701	38.739	-1.286	-6.88	46.962	0.057	0.001	0	1327.98	22.1331	49.5	11.5	42.7	2.941	0.008	0.008	0.000	0.198	0.17
1224	10/2/2002	3:19:15 PM	25.918	23.531	25.331	26.745	23.488	46.503	50.83	8.67	38.724	-1.284	-6.88	46.572	0.058	0.001	0	1328.98	22.1497	49.4	11.4	42.6	2.938	0.009	0.009	0.000	0.201	0.17
1225	10/2/2002	3:20:15 PM	25.902	23.526	25.39	26.715	23.477	44.051	48.159	10.455	34.647	-1.286	-6.927	52.382	0.054	0.001	0	1329.98	22.1664	46.7	12.8	39.3	2.713	0.008	0.008	0.000	0.202	0.17
1226	10/2/2002	3:21:15 PM	25.929	23.552	25.366	26.666	23.494	43.979	48.813	10.565	34.253	-1.284	16.947	52.413	0.037	0.001	0	1330.98	22.1831	47.3	12.8	39.1	2.697	0.006	0.005	0.000	0.140	0.12
1227	10/2/2002	3:25:34 PM	25.694	23.558	25.477	26.507	23.61	7.022	48.953	10.189	-2.241	36.069	77.897	51.379	0.162	0.001	0.001	1335.30	22.255	47.5	12.6	2.4	0.165	0.024	0.024	0.010	9.969	8.49
1228	10/2/2002	3:26:02 PM	25.741	23.549	25.479	26.448	23.516	7.907	49.549	10.278	-1.533	35.624	22.607	51.914	0.011	0.001	0.001	1335.77	22.2628	48.1	12.7	3.2	0.220	0.002	0.002	0.001	0.506	0.43
1229	10/2/2002	3:45:08 PM	25.795	23.649	27.411	26.497	23.61	10.148	35.595	17.817	-6.472	19.631	68.463	72.791	0.237	0.001	0	1354.87	22.6811	34.1	17.8	1.8	0.127	0.035	0.033	0.018	17.973	15.30
1230	10/2/2002	3:45:20 PM	25.81	23.654	27.457	26.468	23.596	12.006	36.011	17.77	-4.777	18.073	44.538	72.755	0.043	0.001	0.002	1355.07	22.5844	34.5	17.8	3.6	0.249	0.006	0.006	0.002	1.656	1.41
1231	10/2/2002	4:00:52 PM	27.729	23.725	26.379	26.368	23.792	49.581	52.522	9.651	41.099	-1.286	-2.919	51.236	0.137	0.001	0	1370.60	22.8433	51.0	12.6	45.3	3.126	0.020	0.020	0.000	0.433	0.37
1232	10/2/2002	4:01:52 PM	27.597	23.738	26.232	26.361	23.79	53.05	54.113	9.705	44.184	-1.286	-5.731	50.454	0.077	0.001	0	1371.60	22.86	52.6	12.4	48.6	3.352	0.011	0.011	0.000	0.228	0.19
1233	10/2/2002	4:02:52 PM	27.501	23.746	26.25	26.37	23.784	54.003	55.001	9.713	45.249	-1.284	-5.867	50.892	0.063	0.001	0	1372.60	22.8767	53.5	12.5	49.6	3.422	0.009	0.009	0.000	0.183	0.16
1234	10/2/2002	4:03:52 PM	27.415	23.771	26.234	26.379	23.818	45.2	45.739	9.952	36.178	-1.286	-6.843	51.471	0.059	0.001	0	1373.60	22.8933	44.3	12.6	40.7	2.805	0.009	0.008	0.000	0.209	0.18
1235	10/2/2002	4:04:52 PM	27.264	23.759	26.057	26.372	23.801	45.14	45.703	9.842	36.319	-1.289	-6.822	51.201	0.059	0.001	0	1374.60	22.91	44.2	12.5	40.7	2.808	0.009	0.009	0.000	0.210	0.18
1236	10/2/2002	4:05:52 PM	27.157	23.757	26.015	26.43	23.799	45.07	45.588	9.842	36.163	-1.284	-6.912	50.779	0.058	0.001	0	1375.60	22.9267	44.1	12.4	40.6	2.800	0.009	0.008	0.000	0.207	0.18
1237	10/2/2002	4:06:52 PM	27.065	23.76	25.849	26.368	23.803	45.261	45.767	9.748	36.554	-1.289	-7.026	51.299	0.052	0.001	0	1376.60	22.9433	44.3	12.6	40.9	2.820	0.009	0.008	0.000	0.195	0.16
1238	10/2/2002	4:07:52 PM	26.963	23.763	25.816	26.386	23.82	45.174	45.832	9.76	36.342	-1.289	-7.005	51.448	0.052	0.001	0	1377.60	22.96	44.4	12.6	40.8	2.810	0.009	0.009	0.000	0.222	0.19
1239	10/2/2002	4:08:52 PM	26.891	23.766	25.785	26.309	23.806	45.213	45.883	9.712	36.448	-1.281	-7.092	50.152	0.056	0.001	0	1378.60	22.9767	44.4	12.3	40.8	2.815	0.008	0.008	0.000	0.200	0.17
1240	10/2/2002	4:09:52 PM	26.809	23.759	25.628	26.372	23.801	45.393	46.008	9.717	36.638	-1.286	-7.1	50.67	0.056	0.001	0	1379.60	22.9933	44.5	12.4	41.0	2.828	0.008	0.008	0.000	0.200	0.17
1241	10/2/2002	4:10:52 PM	26.738	23.758	25.631	26.261	23.805	45.381	46.086	9.715	36.655	-1.289	-7.1	50.71	0.055	0.001	0	1380.60	23.01	44.6	12.4	41.0	2.828	0.008	0.008	0.000	0.196	0.17
1242	10/2/2002	4:11:52 PM	26.687	23.777	25.586	26.245	23.814	45.335	46.045	9.769	36.485	-1.284	-7.095	51.454	0.055	0.001	0	1381.60	23.0267	44.6	12.6	40.9	2.821	0.008	0.008	0.000	0.197	0.17
1243	10/2/2002	4:12:52 PM	26.6	23.765	25.474	26.258	23.797	45.186	45.902	9.805	36.215	-1.284	-7.097	50.739	0.055	0.001	0	1382.60	23.0433	44.4	12.4	40.7	2.806	0.008	0.008	0.000	0.199	0.17
1244	10/2/2002	4:13:52 PM	26.54	23.769	25.603	26.347	23.801	45.109	45.914	9.726	36.303	-1.286	-7.08	49.997	0.059	0.001	0	1383.60	23.06	44.4	12.3	40.7	2.807	0.009	0.009	0.000	0.213	0.18
1245	10/2/2002	4:14:52 PM	26.484	23.774	25.407	26.362	23.796	45.461	46.152	9.744	36.802	-1.286	-7.118	50.509	0.054	0.001	0	1384.60	23.0767	44.7	12.4	41.1	2.836	0.008	0.008	0.000	0.194	0.16
1246	10/2/2002	4:15:52 PM	26.418	23.768	25.346	26.405	23.8	44.904	45.798	9.669	36.143	-1.289	-7.115	50.67	0.055	0.001	0	1385.60	23.0933	44.3	12.4	40.5	2.794	0.008	0.008	0.000	0.200	0.17
1247	10/2/2002	4:16:52 PM	26.367	23.772	25.37	26.396	23.794	45.457	46.374	9.776	36.526	-1.289	-7.115	50.464	0.054	0.001	0	1386.60	23.11	44.9	12.4	41.0	2.826	0.008	0.008	0.000	0.194	0.17
1248	10/2/2002	4:17:52 PM	26.321	23.775	25.269	26.388	23.797	45.281	46.109	9.67	36.591	-1.286	-7.115	49.634	0.054	0.001	0	1387.60	23.1267	44.6	12.2	40.9	2.822	0.008	0.008	0.000	0.195	0.17
1249	10/2/2002	4:18:52 PM	26.271	23.766	25.254	26.569	23.808	45.19	45.952	9.73	36.479	-1.286	-7.123	51.029	0.054	0.001	0	1388.60	23.1433	44.5	12.5	40.8	2.815	0.008	0.008	0.000	0.196	0.17
1250	10/2/2002	4:19:52 PM	26.251	23.781	25.304	26.639	23.803	44.782	45.61	9.7	36.075	-1.281	-7.115	50.465	0.054	0.001	0	1389.60	23.16	44.1	12.4	40.4	2.787	0.008	0.008	0.000	0.197	0.17
1251	10/2/2002	4:20:52 PM	26.191	23.766	25.164	26.654	23.793	45.066	46.045	9.758	36.307	-1.289	-7.123	50.471	0.053	0.001	0	1390.60	23.1767	44.6	12.4	40.7	2.805	0.008	0.008	0.000	0.193	0.16
1252	10/2/2002	4:21:52 PM	26.166	23.766	25.194	26.829	23.788	45.126	45.991	9.702	36.358	-1.289	-7.051	50.83	0.053	0.001	0	1391.60	23.1933	44.5	12.5	40.7	2.809	0.008	0.008	0.000	0.193	0.16
1253	10/2/2002	4:22:52 PM	26.136	23.78	25.213	26.768	23.777	45.157	46.132	9.77	36.28	-1.286	-7.071	50.83	0.054	0.001	0	1392.60	23.21	44.7	12.5	40.7	2.807	0.008	0.008	0.000	0.197	0.17
1254	10/2/2002	4:23:52 PM	26.106	23.786	25.123	26.733	23.787	45.033	45.873	9.676	36.292	-1.289	-7.077	52.128	0.053	0.001	0	1393.60	23.2267	44.4	12.8	40.7	2.804	0.008	0.008	0.000	0.194	0.16
1255	10/2/2002	4:24:52 PM	26.081	23.786	25.164	26.689	23.803	45.145	46.095	9.739	36.362	-1.286	-7.077	50.591	0.054	0.001	0	1394.60	23.2433	44.6	12.3	40.8	2.810	0.008	0.008	0.000	0.197	0.17
1256	10/2/2002	4:25:52 PM	26.051	23.785	25.153	26.628	23.787	45.145	46.146	9.69	36.393	-1.286	-7.08	50.727	0.054	0.001	0	1395.60	23.26	44.7	12.4	40.8	2.811	0.008	0.008	0.000	0.197	0.17
1257	10/2/2002	4:26:52 PM	26.02	23.79	25.068	26.592	23.791	44.913	45.867	9.67	36.172	-1.286	-7.077	50.701	0.054	0.001	0	1396.60	23.2767	44.4	12.4	40.5	2.795	0.008	0.008

1301	10/2/2002	5:10:52 PM	25.634	23.673	24.932	27.066	23.434	45.511	47.129	9.489	36.886	-1.286	-6.947	49.529	0.051	0.001	0	1440.60	24.01	45.7	12.1	41.2	2.840	0.008	0.008	0.000	0.185	0.16
1302	10/2/2002	5:11:52 PM	25.628	23.667	24.875	27.015	23.423	45.093	46.566	9.417	36.616	-1.286	-6.95	49.152	0.051	0.001	0	1441.60	24.0267	45.1	12.0	40.9	2.817	0.008	0.008	0.000	0.187	0.16
1303	10/2/2002	5:12:52 PM	25.617	23.656	24.859	27.044	23.417	45.109	46.407	9.365	36.79	-1.284	-6.947	48.745	0.051	0.001	0	1442.60	24.0433	44.9	11.9	40.9	2.823	0.008	0.008	0.000	0.186	0.16
1304	10/2/2002	5:13:52 PM	25.611	23.661	24.934	27.063	23.401	45.093	46.49	9.361	36.767	-1.284	-6.953	49.137	0.051	0.001	0	1443.60	24.06	45.0	12.0	40.9	2.822	0.008	0.008	0.000	0.186	0.16
1305	10/2/2002	5:14:52 PM	25.616	23.65	24.868	27.028	23.391	45.263	46.837	9.461	36.784	-1.286	-6.953	49.579	0.051	0.001	0	1444.60	24.0767	45.4	12.2	41.0	2.828	0.008	0.008	0.000	0.186	0.16
1306	10/2/2002	5:15:52 PM	25.61	23.649	24.882	26.957	23.39	44.975	46.409	9.402	36.489	-1.286	-6.956	49.281	0.051	0.001	0	1445.60	24.0933	44.9	11.8	40.7	2.808	0.008	0.008	0.000	0.187	0.16
1307	10/2/2002	5:16:52 PM	25.599	23.634	24.922	27.017	23.374	44.823	46.185	9.384	36.505	-1.286	-6.961	48.805	0.051	0.001	0	1446.60	24.11	44.7	12.0	40.7	2.804	0.008	0.008	0.000	0.187	0.16
1308	10/2/2002	5:17:52 PM	25.615	23.644	24.862	27.097	23.37	45.337	46.661	9.441	36.982	-1.286	-6.944	48.537	0.05	0.001	0	1447.60	24.1267	45.2	11.9	41.2	2.838	0.007	0.007	0.000	0.182	0.15
1309	10/2/2002	5:18:52 PM	25.609	23.628	24.896	27.076	23.369	45.134	46.661	9.412	36.737	-1.286	-6.944	49.37	0.05	0.001	0	1448.60	24.1433	45.2	12.1	40.9	2.822	0.007	0.007	0.000	0.183	0.16
1310	10/2/2002	5:19:52 PM	25.608	23.632	24.941	27.08	23.363	44.859	46.262	9.386	36.423	-1.286	-6.947	50.335	0.05	0.001	0	1449.60	24.16	44.8	12.3	40.6	2.802	0.007	0.007	0.000	0.184	0.16
1311	10/2/2002	5:20:52 PM	25.597	23.616	24.844	27.124	23.352	45.194	46.707	9.451	36.737	-1.284	-6.944	49.827	0.05	0.001	0	1450.60	24.1767	45.2	12.2	41.0	2.824	0.007	0.007	0.000	0.183	0.16
1312	10/2/2002	5:21:52 PM	25.597	23.621	24.924	27.034	23.352	45.391	46.97	9.406	36.96	-1.284	-6.947	49.143	0.05	0.001	0	1451.60	24.1933	45.5	12.0	41.2	2.839	0.007	0.007	0.000	0.181	0.15
1313	10/2/2002	5:22:52 PM	25.596	23.62	24.918	27.038	23.366	45.534	46.961	9.405	37.209	-1.284	-6.947	51.331	0.05	0.001	0	1452.60	24.21	45.5	12.6	41.4	2.852	0.007	0.007	0.000	0.181	0.15
1314	10/2/2002	5:23:52 PM	25.595	23.609	24.843	27.037	23.36	45.221	46.862	9.474	36.765	-1.286	-6.927	49.393	0.05	0.001	0	1453.60	24.2267	45.4	12.1	41.0	2.826	0.007	0.007	0.000	0.183	0.16
1315	10/2/2002	5:24:52 PM	25.595	23.604	24.922	27.037	23.345	45.014	46.643	9.368	36.558	-1.286	-6.932	48.51	0.052	0.001	0	1454.60	24.2433	45.1	11.9	40.8	2.812	0.008	0.008	0.000	0.191	0.16
1316	10/2/2002	5:25:52 PM	25.598	23.607	24.911	26.986	23.348	44.287	45.805	9.976	35.326	-1.286	-6.956	51.043	0.049	0.001	0	1455.60	24.26	44.3	12.5	39.8	2.745	0.007	0.007	0.000	0.184	0.16
1317	10/2/2002	5:26:52 PM	25.577	23.596	24.874	27.024	23.357	44.602	46.016	9.97	35.633	-1.284	-6.956	51.578	0.049	0.001	0	1456.60	24.2767	44.5	12.6	40.1	2.766	0.007	0.007	0.000	0.183	0.16
1318	10/2/2002	5:27:52 PM	25.572	23.581	24.934	26.934	23.342	44.291	45.867	9.883	35.404	-1.286	-6.956	51.243	0.049	0.001	0	1457.60	24.2933	44.4	12.6	39.8	2.747	0.007	0.007	0.000	0.184	0.16
1319	10/2/2002	5:28:52 PM	25.586	23.59	24.919	26.819	23.366	44.333	46.018	9.901	35.437	-1.286	-6.961	51.073	0.049	0.002	0	1458.60	24.31	44.5	12.5	39.9	2.750	0.007	0.007	0.000	0.184	0.16
1320	10/2/2002	5:29:52 PM	25.591	23.595	24.914	26.839	23.346	44.606	46.165	9.789	35.801	-1.286	-6.958	50.748	0.049	0.002	0	1459.60	24.3267	44.7	12.4	40.2	2.772	0.007	0.007	0.000	0.182	0.16
1321	10/2/2002	5:30:52 PM	25.58	23.579	24.978	26.852	23.345	44.312	45.749	9.852	35.342	-1.286	-6.958	50.788	0.049	0.001	0	1460.60	24.3433	44.3	12.4	39.8	2.746	0.007	0.007	0.000	0.184	0.16
1322	10/2/2002	5:31:52 PM	25.595	23.589	24.927	26.877	23.346	44.598	46.097	9.893	35.709	-1.289	-6.958	50.668	0.049	0.001	0	1461.60	24.36	44.6	12.4	40.2	2.768	0.007	0.007	0.000	0.182	0.16
1323	10/2/2002	5:32:52 PM	25.574	23.568	24.912	26.827	23.347	44.411	46.03	9.909	35.386	-1.289	-6.961	50.792	0.049	0.001	0	1462.60	24.3767	44.6	12.4	39.9	2.751	0.007	0.007	0.000	0.184	0.16
1324	10/2/2002	5:33:52 PM	25.594	23.578	25.001	26.836	23.344	44.415	45.941	9.816	35.67	-1.286	-6.958	50.618	0.049	0.001	0	1463.60	24.3933	44.5	12.4	40.0	2.761	0.007	0.007	0.000	0.182	0.16
1325	10/2/2002	5:34:52 PM	25.587	23.571	24.915	26.73	23.317	44.268	45.945	9.78	35.455	-1.289	-6.958	49.888	0.049	0.001	0	1464.60	24.41	44.5	12.2	39.9	2.748	0.007	0.007	0.000	0.184	0.16
1326	10/2/2002	5:35:52 PM	25.586	23.56	24.953	26.773	23.311	44.304	45.877	9.821	35.431	-1.286	-6.958	50.441	0.049	0.001	0	1465.60	24.4267	44.4	12.4	39.9	2.749	0.007	0.007	0.000	0.183	0.16
1327	10/2/2002	5:36:52 PM	25.585	23.559	24.997	26.822	23.299	44.836	46.531	9.875	35.862	-1.286	-6.961	50.804	0.049	0.001	0	1466.60	24.4433	45.1	12.6	40.3	2.782	0.007	0.007	0.000	0.181	0.15
1328	10/2/2002	5:37:52 PM	25.583	23.557	24.916	26.666	23.308	44.132	45.681	9.796	35.326	-1.286	-6.961	50.649	0.049	0.001	0	1467.60	24.46	44.2	12.4	39.7	2.739	0.007	0.007	0.000	0.184	0.16
1329	10/2/2002	5:38:52 PM	25.578	23.547	24.966	26.661	23.298	43.941	45.486	9.733	35.211	-1.286	-6.979	50.198	0.049	0.001	0	1468.60	24.4767	44.0	12.3	39.6	2.729	0.007	0.007	0.000	0.185	0.16
1330	10/2/2002	5:39:52 PM	25.586	23.545	25.004	26.654	23.281	44.562	46.274	9.779	35.799	-1.286	-6.979	50.626	0.049	0.001	0	1469.60	24.4933	44.8	12.4	40.2	2.770	0.007	0.007	0.000	0.182	0.15
1331	10/2/2002	5:40:52 PM	25.591	23.55	24.938	26.673	23.265	44.56	46.363	9.772	35.703	-1.286	-6.979	50.1	0.049	0.001	0	1470.60	24.51	44.9	12.3	40.1	2.767	0.007	0.007	0.000	0.182	0.16
1332	10/2/2002	5:41:52 PM	25.596	23.565	25.023	26.708	23.266	44.595	46.369	9.711	35.903	-1.281	-6.973	50.171	0.049	0.001	0	1471.60	24.5267	44.9	12.3	40.3	2.778	0.007	0.007	0.000	0.181	0.15
1333	10/2/2002	5:42:52 PM	25.6	23.564	25.023	26.678	23.27	44.654	46.177	9.64	35.985	-1.281	-6.979	50.408	0.049	0.001	0	1472.60	24.5433	44.7	12.4	40.3	2.780	0.007	0.007	0.000	0.181	0.15
1334	10/2/2002	5:43:52 PM	25.59	23.544	24.922	26.558	23.25	44.656	46.56	9.785	35.817	-1.292	-6.987	50.402	0.048	0.001	0	1473.60	24.56	45.1	12.4	40.2	2.774	0.007	0.007	0.000	0.178	0.15
1335	10/2/2002	5:44:52 PM	25.595	23.554	25.018	26.663	23.26	44.598	46.31	9.659	35.981	-1.286	-6.985	50.035	0.048	0.001	0	1474.60	24.5767	44.8	12.3	40.3	2.778	0.007	0.007	0.000	0.178	0.15
1336	10/2/2002	5:45:52 PM	25.601	23.55	24.983	26.678	23.265	44.221	45.817	9.716	35.545	-1.286	-6.985	50.184	0.048	0.001	0	1475.60	24.5933	44.3	12.3	39.9	2.750	0.007	0.007	0.000	0.180	0.15
1337	10/2/2002	5:46:52 PM	25.601	23.56	24.974	26.774	23.266	44.378	45.987	9.716	35.666	-1.286	-6.987	51.22	0.048	0.001	0	1476.60	24.61	44.5	12.6	40.0	2.759	0.007	0.007	0.000	0.179	0.15
1338	10/2/2002	5:47:52 PM	25.591	23.545	25.033	26.783	23.245	44.627	46.258	9.739	35.926	-1.286	-6.987	50.387	0.048	0.001	0	1477.60	24.6267	44.8	12.3	40.3	2.777	0.007	0.007	0.000	0.178	0.15
1339	10/2/2002	5:48:52 PM	25.594	23.538	24.967	26.807	23.244	43.902	45.646	9.728	35.085	-1.286	-6.985	50.37	0.048	0.001	0	1478.60	24.6433	44.2	12.3	39.5	2.723	0.007	0.007	0.000	0.181	0.15
1340	10/2/2002	5:49:52 PM	25.6	23.539	24.983	26.847	23.244	44.67	46.456	9.773	35.828	-1.286	-6.985	50.15	0.048	0.001	0	1479.60	24.66	45.0	12.3	40.2	2.775	0.007	0.007	0.000	0.178	0.15
1341	10/2/2002	5:50:52 PM	25.606	23.545	25.043	26.843	23.24	44.664	46.287	9.74	35.922	-1.286	-6.987	49.846	0.048	0.001	0	1480.60	24.6767	44.8	12.2	40.3	2.778	0.007	0.007	0.000	0.177	0.15
1342	10/2/2002	5:51:52 PM	25.601	23.535	24.968	26.858	23.225	44.165	45.917	9.718	35.39	-1.286	-6.987	49.783	0.048	0.001	0	1481.60	24.6933	44.4	12.2	39.8	2.743	0.007	0.007	0.000	0.180	0.15
1343	10/2/2002	5:52:52 PM	25.606	23.545	25.003	26.878	23.225	44.722	46.572	9.695	35.985	-1.286	-6.99	49.624	0.048	0.001	0	1482.60	24.71	45.1	12.2	40.4	2.782	0.007	0.007	0.000	0.177	0.15
1344	10/2/2002	5:53:52 PM	25.601	23.535	25.043	26.893	23.235	44.519	46.312	9.679	35.772	-1.286	-6.985	49.921	0.048	0.001	0	1483.60	24.7267	44.8	12.2	40.1	2.768	0.007	0.007	0.000	0.178	0.15
1345	10/2/2002	5:54:52 PM	25.605	23.524	24.937	26.937	23.244	44.556	46.171	9.707	35.895	-1.289	-6.993	50.11	0.048	0.001	0	1484.60	24.7433	44.7	12.3	40.2	2.773	0.007	0.007	0.000	0.178	0.15
1346	10/2/2002	5:55:52 PM	25.619	23.533	25.027	26.972	23.234	44.515	46.306	9.676	35.863	-1.284	-6.987	49.414	0.048	0.001	0	1485.60	24.76	44.8	12.1	40.2	2.771	0.007	0.007	0.000	0.178	0.15
1347	10/2/2002	5:56:52 PM	25.609	23.528	25.032	26.977	23.234	44.668	46.469	9.767	35.777	-1.286	-6.987	50.42	0.048	0.001	0	1486.60	24.7767	45.0	12.4	40.2	2.773	0.007	0.007	0.000	0.178	0.15
1348	10/2/2002	5:57:52 PM	25.623	23.527	24.961	27.03	23.222	44.861	46.754	9.756	35.938	-1.286	-6.987	49.68	0.048	0.001	0	1487.60	24.7933	45.3	12.2	40.4	2.785	0.007	0.007	0.000	0.177	0.15
1349	10/2/2002	5:58:52 PM	25.613	23.517	25.031	27.045	23.202	44.699	46.374	9.712	35.998	-1.284	-6.987	49.765	0.048	0.001	0	1488.60	24.81	44.9	12.2	40.3	2.782	0.007	0.007	0.000	0.177	0.15
1350	10/2/2002	5:59:52 PM	25.612	23.51	25.014	26.994	23.206	44.333	46.065	9.658	35.592	-1.286	-6.99	49.932	0.048	0.001	0	1489.60	24.8267	44.6	12.2	40.0	2.755	0.007	0.007	0.000	0.179	0.15
1351	10/2/2002	6:00:52 PM	25.621	23.51	24.954	27.028	23.205	44.699	46.506	9.695	35.91	-1.286	-6.993	49.554	0.048	0.001	0	1490.60	24.8433	45.0	12.1	40.3	2.779	0.007	0.007	0.000	0.178	0.15
1352	10/2/2002	6:01:52 PM	25.615	23.509	25.018	27.073	23.22	44.759	46.568	9.738	35.977	-1.286	-6.99	49.988	0.048	0.001	0	1491.10	24.8517	45.1	12.3	40.4	2.783	0.007	0.007	0.000	0.177	0.15
1353	10/2/2002	6:02:52 PM	25.606	23.495	24.944	27.013	23.225	44.521	46.366	9.719	35.738	-1.289	-6.993	50.005	0.048	0.001	0	1492.10	24.8683	44.9	12.3	40.1	2.767	0.007	0.007	0.000	0.179	0.15
1354	10/2/2002	6:03:52 PM	25.621	23.505	25.049	27.048	23.225	44.281	45.989	9.61	35.701	-1.284	-6.929	49.997	0.048	0.001	0	1493.10	24.895	44.5	12.3	40.0	2.757	0.007	0.007	0.000	0.179	0.15
1355	10/2/2002	6:04:52 PM	25.626	23.505	24.999	27.108	23.225	44.467	46.336	9.683	35.748	-1.286	-6.961	50.54	0.048	0.001	0	1494.10	24.9017	44.9	12.4	40.1	2.765	0.007	0.007	0.000	0.178	0.15
1356	10/2/2002	6:05:52 PM	25.621	23.496	24.984	27.103	23.225	44.612	46.49	9.669	35.948	-1.284	-6.961	50.341	0.048	0.001	0	1495.10	24.9183	45.0	12.3	40.3	2.777	0.007	0.007	0.000	0.178	0.15
1357	10/2/2002	6:06:52 PM	25.632	23.505	25.054	27.084	23.221	44.911	46.823	9.746	36.145	-1.286	-6.964	50.087	0.048	0.001	0	1496.10	24.935	45.4	12.3	40.5	2.794	0.007	0.007	0.000	0.176	0.15
1358	10/2/2002	6:07:52 PM	25.637	23.495	24.999	27.129	23.241	44.573	46.537	9.687	35.805	-1.286	-6.964	50.374	0.048	0.001	0	1497.10	24.9517	45.1	12.3	40.2	2.771	0.007	0.007	0.000	0.176	0.15
1359	10/2/2002	6:08:52 PM	25.622	23.475	24.989	27.134	23.231	44.963	46.951	9.764	36.147	-1.289	-6.961	49.739	0.048	0.001	0	1498.10	24.9683	45.5	12.2	40.6	2.797	0.007	0.007	0.000	0.176	0.15
1360	10/2/2002	6:09:52 PM	25.638	23.492	25.071	27.125	23.258	44.728	46.628	9.747	35.993	-1.286	-6.961	50.087	0.048	0.001	0	1499.10	24.985	45.2	12.3	40.4	2.783	0.007	0.007	0.000	0.177	0.15
1361	10/2/2002	6:10:52 PM	25.629	23.482	24.981	27.141	23.248	44.813	46.525	9.673	36.294	-1.286	-6.961	49.594	0.048	0.001	0	1500.10	25.0017	45.1	12.2	40.6	2.796	0.007	0.007	0.000	0.177	0.15
1362	10/2/2002	6:11:52 PM	25.63	23.489	25.028	27.092	23.25	44.32	46.13	9.693	35.66	-1.286	-6.961	49.116	0.048	0.001	0	1501.10	25.0183	44.7	12.0	40.0	2.757	0.007	0.007	0.000	0.179	0.15
1363	10/2/2002	6:12:52 PM	25.637	23.491	25.08	27.049	23.252	44.152	46.146	9.648	35.449	-1.286	-6.964	50.293	0.048	0.001	0	1502.10	25.035	44.7	12.3	39.8	2.744	0.007	0.007	0.000	0.179	0.15
1364	10/2/2002	6:13:52 PM	25.633	23.482	24.986	27.09	23.233	44.486	46.504	9.697	35.719	-1.286	-6.961	49.663	0.047	0.001	0	1503.10	25.0517	45.0	12.2	40.1	2.765	0.007	0.007	0.000	0.175	0.15
1365	10/2/2002	6:14:52 PM	25.623	23.472	25.031	27.031	23.233	44.848	46.81	9.65	36.192	-1.284	-6.964	49.99	0.048	0.001	0	1504.10	25.0683	45.3	12.3	40.5	2.794	0.007	0.007	0.000	0.176	0.15
1366	10/2/2002	6:15:52 PM	25.635	23.483	25.067	27.062	23.234	44.743	46.548	9.711	36.002	-1.284	-6.961	50.095	0.048	0.001	0	1505.10	25.085	45.1	12.3	40.4	2.784	0.007	0.007	0.000	0.177	0.15
1367	10/2/2002	6:16:52 PM	25.625	23.474	24.983	27.033	23.236	44.324	46.177	9.811	36.484	-1.286	-6.967	49.974	0.047	0.001	0	1506.10	25.1017	44.7	12.2	39.9	2.751	0.007	0.007	0.000	0.176	0.15
1368	10/2/2002	6:17:52 PM	25.631	23.475	25.059	26.953	23.23	44.635	46.705	9.855	35.666	-1.286	-6.967	49.596	0.047	0.001	0	1507.10	25.1183	45.2	12.2	40.2	2.768	0.007	0.007	0.000	0.174	0.15
1369	10/2/2002	6:18:52 PM	25.636	23.465	25.044	26.923	23.2	44.186	46.181	9.766	35.361	-1.286	-6.97	50.55	0.047	0.001	0	1508.10	25.135	44.7	12.4	39.8	2.742	0.007	0.007	0.000	0.176	0.15
1370	10/2/2002	6:19:52 PM	25.636	23.465	24.989	26.988	23.215	44.422	46.349	9.744	35.533	-1.286	-6.973	49.879	0.047	0.001	0	1509.10	25.1517	44.9	12.2	40.0	2.756	0.007	0.007	0.000	0.175	0.15
1371	10/2/2002	6:20:52 PM	25.636	23.46	25.084	27.018	23.22	44.509	46.351	9.668	35.879	-1.284	-6.967	49.774	0.047	0.001	0	1510.10	25.1683	44.9	12.2	40.2	2.771	0.007	0.007	0.000	0.174	0.15
1372	10/2/2002	6:21:52 PM	25.647	23.455	25.029	27.009	23.221	44.088	46.08	9.694	35.322	-1.286	-6.976	49.768	0.047	0.001	0	1511.10	25.185	44.6	12.2	39.7	2.738	0.007	0.007	0.000	0.176	0.15
1373	10/2/2002	6:22:52 PM	25.64	23.459	25.008	26.998	23.205	44.335	46.394	9.757	35.515	-1.284	-6.973	50.2	0.047	0.001	0	1512.10	25.2017	44.9	12.3	39.9	2.753	0.007	0.007	0.000	0.175	0.15
1374	10/2/2002	6:23:52 PM	25.64	23.454	25.088	26.973	23.205	44.194	46.202	9.687	35.359	-1.286	-6.973	49.483	0.047	0.001	0	1513.10	25.2183	44.7	12.1	39.8	2.742	0.007	0.007	0.000	0.176	0.15
1375	10/2/2002	6:24:52 PM	25.645	23.453	25.027	26.987	23.179	44.486	46.548	9.806	35.506	-1.286	-6.97	50.347	0.047	0.001	0	1514.10	25.235	45.1	12.3	40.0	2.758	0.007	0.007	0.000	0.175	0.15
1376	10/2/2002	6:25:52 PM	25.64	23.443	25.032	26.947	23.169	44.405	46.629	9.771	35.619	-1.286	-6.924	49.667	0.047	0.001	0	1515.10	25.2517	45.1	12.1	40.0	2.761	0.007	0.007	0.000	0.175	0.15
1377	10/2/2002	6:26:52 PM	25.629	23.432	25.072	26.906	23.173	44.099	46.15	9.784	35.173	-1.286	-6.944	49.81	0.047	0.001	0	1516.10	25.2683	44.7	12.2	39.6	2.733	0.007	0.007	0.000	0.176	0.15
1378	10/2/2002	6:27:52 PM	25.623	23.411	24.97	26.935	23.152	44.229	46.231	9.695	35.48	-1.286	-6.953	49.764	0.047	0.001	0	1517.10	25.285	44.8	12.2	39.9	2.748	0.007	0.007	0.000	0.176	0.15
1379	10/2/2002	6:28:52 PM	25.638	23.426	25.035	26.955	23.162	44.606	46.703	9.808	35.688	-1.284	-6.95	50.108	0.047	0.001	0	1518.10	25.3017	45.2	12.3	40.1	2.768	0.007	0.007	0.000	0.174	0.15
1380	10/2/2002	6:29:52 PM	25.658	23.442	25.111	26.956	23.167	44.538	46.552	9.805	35.674	-1.284	-6.953	49.735	0.047	0.001	0	1519.10	25.3183	45.1	12.2	40.1	2.765	0.007	0.007	0.000	0.174	0.15
1381	10/2/2002	6:30:52 PM	25.644	23.432	25.002	26.961	23.173	44.469	46.345	9.708	35.746	-1.286	-6.961	49.913	0.047	0.001	0	1520.10	25.335	44.9	12.2	40.1	2.765	0.007	0.007	0.000	0.175	0.15
1382	10/2/2002	6:31:52 PM	25.65	23.433	25.077	26.907	23.179	44.445	46.409	9.748	35.656	-1.284	-6.958	49.911	0.047	0.001	0	1521.10	25.3517	44.9	12.2	40.1	2.761	0.007	0.007	0.000	0.175	0.15
1383	10/2/2002	6:32:52 PM	25.65	23.434	25.088	26.908	23.18	44.165	46.221	9.699	35.535	-1.289	-6.964	49.917	0.047	0.001	0	1522.10	25.3683	44.7	12.2	39.9	2.748	0.007	0.007	0.000	0.175	0.15
1384	10/2/2002	6:33:52 PM	25.636	23.419	25.004	26.938	23.186	44.074	45.886	9.701	35.388	-1.284	-6.961	49.867	0.047	0.001	0	1523.10	25.385	44.4	12.2	39.7	2.739	0.007	0.007	0.000	0.176	0.15
1385	10/2/2002	6:34:52 PM	25.637	23.415	25.089	26.947	23.176	44.329	46.279	9.696	35.637	-1.284	-6.958	49.997	0.047	0.001	0	1524.10	25.4017	44.8	12.3	40.0	2.767	0.007	0.007	0.000	0.176	0.15
1386	10/2/2002	6:35:52 PM	25.641	23.429	25.099	26.853	23.16	44.125	46.394	9.759	35.203	-1.281	-6.958	50.114	0.047	0.001	0	1525.10	25.4183	44.9	12.3	39.7	2.735	0.007	0.007	0.000	0.176	0.15
1387	10/2/2002	6:36:52 PM	25.631	23.409	25.009	26.788	23.15	44.393	46.564	9.762	35.545	-1.286	-6.964	49.984	0.047	0.001	0	1526.10	25.435	45.1	12.2	40.0	2.756	0.007	0.007	0.000	0.175	0.15
1388

1431	10/2/2002	7:20:22 PM	25.505	23.057	25.112	25.157	22.269	44.117	46.45	9.721	35.398	-1.284	-6.967	49.592	0.046	0.001	0	1570.10	26.1683	45.0	12.2	39.8	2.741	0.007	0.007	0.000	0.172	0.15
1432	10/2/2002	7:21:22 PM	25.51	23.051	25.027	25.011	22.264	43.693	45.892	9.653	35.009	-1.281	-6.97	50.249	0.046	0.001	0	1571.10	26.185	44.4	12.3	39.4	2.713	0.007	0.007	0.000	0.174	0.15
1433	10/2/2002	7:22:22 PM	25.495	23.026	26.052	25.026	22.229	44.074	46.55	9.718	35.211	-1.284	-6.976	49.026	0.046	0.001	0	1572.10	26.2017	45.1	12.0	39.6	2.733	0.007	0.007	0.000	0.173	0.15
1434	10/2/2002	7:23:22 PM	25.501	23.038	25.123	24.887	22.245	44.096	46.33	9.651	35.476	-1.284	-6.976	49.613	0.046	0.001	0	1573.10	26.2183	44.9	12.2	39.8	2.743	0.007	0.007	0.000	0.172	0.15
1435	10/2/2002	7:24:22 PM	25.476	23.012	25.003	24.817	22.23	44.036	46.289	9.724	35.218	-1.286	-6.982	49.621	0.046	0.001	0	1574.10	26.236	44.8	12.2	39.6	2.732	0.007	0.007	0.000	0.173	0.15
1436	10/2/2002	7:25:22 PM	25.486	23.013	25.094	24.888	22.201	44.575	46.819	9.779	35.768	-1.284	-6.979	49.888	0.046	0.001	0	1575.10	26.2517	45.3	12.2	40.2	2.770	0.007	0.007	0.000	0.170	0.14
1437	10/2/2002	7:26:22 PM	25.492	23.009	25.099	24.818	22.216	44.507	46.585	9.749	35.842	-1.286	-6.985	49.535	0.046	0.001	0	1576.10	26.2683	45.1	12.1	40.2	2.770	0.007	0.007	0.000	0.170	0.14
1438	10/2/2002	7:27:22 PM	25.488	22.999	25.035	24.859	22.187	44.188	46.525	9.765	35.416	-1.284	-6.976	49.462	0.046	0.001	0	1577.10	26.285	45.1	12.1	39.8	2.744	0.007	0.007	0.000	0.172	0.15
1439	10/2/2002	7:28:22 PM	25.48	22.991	25.122	24.866	22.174	44.287	46.558	9.753	35.564	-1.284	-6.982	49.403	0.046	0.002	0	1578.10	26.3017	45.1	12.1	39.9	2.753	0.007	0.007	0.000	0.171	0.15
1440	10/2/2002	7:29:22 PM	25.48	22.982	25.103	24.802	22.154	44.316	46.727	9.722	35.682	-1.284	-6.985	49.783	0.045	0.001	0	1579.10	26.3183	45.3	12.2	40.0	2.758	0.007	0.007	0.000	0.167	0.14
1441	10/2/2002	7:30:22 PM	25.472	22.969	25.055	24.784	22.146	44.268	46.754	9.746	35.476	-1.284	-6.979	49.571	0.046	0.001	0	1580.10	26.335	45.3	12.1	39.9	2.749	0.007	0.007	0.000	0.172	0.15
1442	10/2/2002	7:31:22 PM	25.468	22.954	25.14	24.769	22.122	44.215	46.75	9.734	35.472	-1.284	-6.976	50.022	0.046	0.001	0	1581.10	26.3517	45.3	12.3	39.8	2.747	0.007	0.007	0.000	0.171	0.15
1443	10/2/2002	7:32:22 PM	25.469	22.956	25.102	24.675	22.123	44.44	46.769	9.715	35.76	-1.281	-6.985	49.737	0.045	0.001	0	1582.10	26.3683	45.3	12.2	40.1	2.765	0.007	0.007	0.000	0.167	0.14
1444	10/2/2002	7:33:22 PM	25.461	22.938	25.088	24.652	22.115	44.082	46.463	9.753	35.271	-1.281	-6.985	49.795	0.045	0.001	0	1583.10	26.385	45.0	12.2	39.7	2.736	0.007	0.007	0.000	0.169	0.14
1445	10/2/2002	7:34:22 PM	25.448	22.919	25.135	24.634	22.097	44.045	46.521	9.725	35.238	-1.289	-6.987	49.649	0.045	0.001	0	1584.10	26.4017	45.0	12.2	39.6	2.733	0.007	0.007	0.000	0.169	0.14
1446	10/2/2002	7:35:22 PM	25.46	22.921	25.077	24.585	22.103	44.219	46.717	9.758	35.408	-1.286	-6.99	49.51	0.045	0.001	0	1585.10	26.4183	45.2	12.1	39.8	2.745	0.007	0.007	0.000	0.168	0.14
1447	10/2/2002	7:36:22 PM	25.446	22.918	25.109	24.632	22.09	44.598	46.955	9.755	35.805	-1.284	-6.985	49.559	0.046	0.001	0	1586.10	26.435	45.5	12.1	40.2	2.772	0.007	0.007	0.000	0.170	0.14
1448	10/2/2002	7:37:22 PM	25.438	22.889	25.16	24.589	22.071	44.204	46.649	9.724	35.486	-1.284	-6.987	49.877	0.045	0.001	0	1587.10	26.4517	45.2	12.2	39.8	2.747	0.007	0.007	0.000	0.168	0.14
1449	10/2/2002	7:38:22 PM	25.445	22.892	25.078	24.566	22.079	44.212	46.55	9.732	35.371	-1.284	-6.99	49.122	0.045	0.001	0	1588.10	26.4683	45.1	12.0	39.8	2.743	0.007	0.007	0.000	0.168	0.14
1450	10/2/2002	7:39:22 PM	25.437	22.884	25.13	24.593	22.061	44.552	47.019	9.748	35.736	-1.284	-6.987	49.548	0.045	0.001	0	1589.10	26.485	45.5	12.1	40.1	2.768	0.007	0.007	0.000	0.167	0.14
1451	10/2/2002	7:40:22 PM	25.429	22.87	25.162	24.505	22.037	44.198	46.665	9.811	35.281	-1.286	-6.993	49.357	0.045	0.001	0	1590.10	26.5017	45.2	12.1	39.7	2.740	0.007	0.007	0.000	0.168	0.14
1452	10/2/2002	7:41:22 PM	25.431	22.852	25.064	24.487	22.034	44.463	46.897	9.816	35.592	-1.284	-6.987	49.517	0.045	0.001	0	1591.10	26.5183	45.4	12.1	40.0	2.760	0.007	0.007	0.000	0.167	0.14
1453	10/2/2002	7:42:22 PM	25.434	22.85	25.151	24.505	22.012	44.568	47.087	9.856	35.723	-1.286	-6.99	49.626	0.045	0.001	0	1592.10	26.535	45.6	12.2	40.1	2.768	0.007	0.007	0.000	0.166	0.14
1454	10/2/2002	7:43:22 PM	25.427	22.832	25.144	24.377	22.01	44.329	46.897	9.831	35.441	-1.286	-6.941	49.621	0.045	0.001	0	1593.10	26.5517	45.4	12.2	39.9	2.760	0.007	0.007	0.000	0.168	0.14
1455	10/2/2002	7:44:22 PM	25.424	22.825	25.081	24.39	21.997	44.065	46.634	9.743	35.318	-1.284	-6.953	49.038	0.045	0.001	0	1594.10	26.5683	45.2	12.0	39.7	2.737	0.007	0.007	0.000	0.169	0.14
1456	10/2/2002	7:45:22 PM	25.416	22.812	25.168	24.331	21.989	44.283	46.713	9.695	35.654	-1.284	-6.956	50.043	0.045	0.002	0	1595.10	26.585	45.2	12.3	40.0	2.756	0.007	0.007	0.000	0.167	0.14
1457	10/2/2002	7:46:22 PM	25.407	22.798	25.119	24.207	21.97	44.494	46.994	9.837	35.605	-1.284	-6.961	49.873	0.045	0.001	0	1596.10	26.6017	45.5	12.2	40.0	2.761	0.007	0.007	0.000	0.167	0.14
1458	10/2/2002	7:47:22 PM	25.404	22.78	25.076	24.234	21.962	43.778	46.047	9.63	35.181	-1.286	-6.961	49.359	0.045	0.001	0	1597.10	26.6183	44.6	12.1	39.5	2.722	0.007	0.007	0.000	0.170	0.14
1459	10/2/2002	7:48:22 PM	25.401	22.776	25.188	24.2	21.938	44.217	46.508	9.73	35.469	-1.278	-6.958	49.688	0.045	0.001	0	1598.10	26.635	45.0	12.2	39.8	2.747	0.007	0.007	0.000	0.168	0.14
1460	10/2/2002	7:49:22 PM	25.398	22.763	25.105	24.112	21.92	43.724	46.181	9.728	34.916	-1.284	-6.967	49.483	0.045	0.001	0	1599.10	26.6517	44.7	12.1	39.3	2.711	0.007	0.007	0.000	0.170	0.14
1461	10/2/2002	7:50:22 PM	25.385	22.755	25.122	24.139	21.902	44.246	46.663	9.709	35.461	-1.284	-6.961	49.542	0.045	0.001	0	1600.10	26.6683	45.2	12.1	39.9	2.748	0.007	0.007	0.000	0.168	0.14
1462	10/2/2002	7:51:22 PM	25.384	22.75	25.191	24.074	21.896	44.084	46.639	9.752	35.349	-1.284	-6.967	49.363	0.045	0.001	0	1601.10	26.685	45.2	11.9	39.7	2.738	0.007	0.007	0.000	0.168	0.14
1463	10/2/2002	7:52:22 PM	25.409	22.77	25.156	24.119	21.886	44.072	46.529	9.744	35.453	-1.281	-6.961	49.319	0.045	0.001	0	1602.10	26.7017	45.1	12.1	39.8	2.741	0.007	0.007	0.000	0.168	0.14
1464	10/2/2002	7:53:22 PM	25.384	22.745	25.171	24.089	21.866	44.109	46.713	9.742	35.351	-1.284	-6.964	49.527	0.045	0.001	0	1603.10	26.7183	45.2	12.1	39.7	2.739	0.007	0.007	0.000	0.168	0.14
1465	10/2/2002	7:54:22 PM	25.393	22.744	25.246	24.068	21.84	44.426	46.963	9.781	35.65	-1.281	-6.961	49.431	0.045	0.001	0	1604.10	26.735	45.5	12.1	40.0	2.760	0.007	0.007	0.000	0.166	0.14
1466	10/2/2002	7:55:22 PM	25.367	22.702	25.089	24.021	21.823	44.165	46.812	9.824	35.306	-1.286	-6.967	49.141	0.045	0.001	0	1605.10	26.7517	45.3	12.0	39.7	2.740	0.007	0.007	0.000	0.168	0.14
1467	10/2/2002	7:56:22 PM	25.359	22.679	25.161	24.003	21.805	43.904	46.477	9.639	35.109	-1.284	-6.97	49.363	0.045	0.001	0	1606.10	26.7683	45.0	12.1	39.5	2.724	0.007	0.007	0.000	0.169	0.14
1468	10/2/2002	7:57:22 PM	25.357	22.672	25.194	23.956	21.809	43.999	46.665	9.733	35.091	-1.284	-6.967	49.355	0.045	0.001	0	1607.10	26.785	45.2	12.1	39.5	2.726	0.007	0.007	0.000	0.169	0.14
1469	10/2/2002	7:58:22 PM	25.36	22.665	25.117	23.969	21.776	44.148	46.457	9.565	35.74	-1.281	-6.967	49.602	0.045	0.001	0	1608.10	26.8017	45.0	12.2	39.9	2.754	0.007	0.007	0.000	0.167	0.14
1470	10/2/2002	7:59:22 PM	25.362	22.642	25.159	23.971	21.738	44.059	46.697	9.59	35.424	-1.281	-6.97	50.154	0.045	0.001	0	1609.10	26.8183	45.2	12.3	39.7	2.740	0.007	0.007	0.000	0.168	0.14
1471	10/2/2002	8:00:22 PM	25.351	22.635	25.128	23.869	21.732	43.438	45.991	9.583	34.743	-1.284	-6.97	48.95	0.045	0.001	0	1610.10	26.835	44.5	12.0	39.1	2.695	0.007	0.007	0.000	0.171	0.15
1472	10/2/2002	8:00:26 PM	25.35	22.63	25.127	23.864	21.721	43.831	46.415	9.544	35.289	-1.286	-6.967	49.898	0.045	0.001	0	1610.15	26.8358	44.9	12.2	39.6	2.728	0.007	0.007	0.000	0.169	0.14
1473	10/2/2002	8:01:25 PM	25.339	22.624	25.046	23.923	21.73	43.742	46.295	9.513	35.248	-1.284	-6.97	49.644	0.045	0.001	0	1611.15	26.8525	44.8	12.2	39.5	2.723	0.007	0.007	0.000	0.170	0.14
1474	10/2/2002	8:02:25 PM	25.323	22.612	25.305	23.937	21.714	45.391	47.888	9.707	36.796	-1.281	-6.958	51.241	0.045	0.001	0	1612.15	26.8692	46.4	12.6	41.1	2.833	0.007	0.007	0.000	0.162	0.14
1475	10/2/2002	8:03:25 PM	25.311	22.591	25.488	23.875	21.702	45.155	47.63	9.851	36.307	-1.284	-6.956	50.899	0.046	0.001	0	1613.15	26.8858	46.2	12.5	40.7	2.808	0.007	0.007	0.000	0.166	0.14
1476	10/2/2002	8:04:25 PM	25.314	22.573	25.671	23.862	21.669	44.567	47.137	9.919	35.582	-1.284	-6.956	50.762	0.046	0.001	0	1614.15	26.9025	45.7	12.4	40.1	2.763	0.007	0.007	0.000	0.168	0.14
1477	10/2/2002	8:05:25 PM	25.336	22.556	25.919	23.875	21.657	44.639	47.125	9.861	35.619	-1.284	-6.953	51.125	0.046	0.001	0	1615.15	26.9192	45.7	12.5	40.1	2.767	0.007	0.007	0.000	0.167	0.14
1478	10/2/2002	8:06:25 PM	25.385	22.549	26.022	23.843	21.625	44.548	47.147	9.796	35.774	-1.284	-6.953	51.301	0.046	0.001	0	1616.15	26.9358	45.7	12.6	40.2	2.769	0.007	0.007	0.000	0.166	0.14
1479	10/2/2002	8:07:25 PM	25.438	22.542	26.175	23.837	21.622	44.799	47.503	9.955	35.631	-1.284	-6.95	50.968	0.047	0.001	0	1617.15	26.9525	46.0	12.5	40.2	2.773	0.007	0.007	0.000	0.169	0.14
1480	10/2/2002	8:08:25 PM	25.505	22.524	26.102	23.833	21.41	44.736	47.435	9.859	35.815	-1.284	-6.957	50.622	0.047	0.001	0	1618.15	26.9692	46.0	12.4	40.3	2.777	0.007	0.007	0.000	0.169	0.14
1481	10/2/2002	8:09:25 PM	25.578	22.517	26.205	23.871	21.603	45.039	47.507	9.793	36.215	-1.284	-6.95	51.022	0.047	0.001	0	1619.15	26.9858	46.0	12.5	40.6	2.801	0.007	0.007	0.000	0.167	0.14
1482	10/2/2002	8:10:25 PM	25.626	22.505	26.128	23.854	21.59	45.051	47.733	9.64	36.442	-1.281	-6.944	49.823	0.047	0.001	0	1620.15	27.0025	46.3	12.2	40.7	2.809	0.007	0.007	0.000	0.167	0.14
1483	10/2/2002	8:11:25 PM	25.669	22.503	26.231	23.817	21.574	44.917	47.607	9.761	36.151	-1.284	-6.947	51.006	0.047	0.001	0	1621.15	27.0192	46.1	12.5	40.5	2.795	0.007	0.007	0.000	0.167	0.14
1484	10/2/2002	8:12:25 PM	25.701	22.479	26.128	23.869	21.52	44.939	47.555	9.738	36.149	-1.284	-6.944	50.227	0.047	0.001	0	1622.15	27.0358	46.1	12.3	40.5	2.795	0.007	0.007	0.000	0.167	0.14
1485	10/2/2002	8:13:25 PM	25.738	22.471	26.005	23.911	21.512	44.954	47.702	9.833	36.02	-1.281	-6.944	50.672	0.047	0.001	0	1623.15	27.0525	46.2	12.4	40.5	2.791	0.007	0.007	0.000	0.168	0.14
1486	10/2/2002	8:14:25 PM	25.77	22.463	25.837	23.923	21.504	44.826	47.439	9.764	36.037	-1.284	-6.95	49.445	0.046	0.001	0	1624.15	27.0692	46.0	12.1	40.4	2.788	0.007	0.007	0.000	0.166	0.14
1487	10/2/2002	8:15:25 PM	25.771	22.44	25.668	23.93	21.521	44.998	47.615	9.821	36.996	-1.284	-6.953	49.94	0.046	0.001	0	1625.15	27.0858	46.1	12.2	40.5	2.792	0.007	0.007	0.000	0.166	0.14
1488	10/2/2002	8:16:25 PM	25.764	22.438	25.596	23.906	21.496	44.871	47.478	9.777	36.008	-1.284	-6.952	50.926	0.046	0.001	0	1626.15	27.1025	46.0	12.5	40.4	2.788	0.007	0.007	0.000	0.167	0.14
1489	10/2/2002	8:17:25 PM	25.767	22.44	25.594	23.866	21.486	44.801	47.59	9.807	35.969	-1.284	-6.956	50.521	0.046	0.001	0	1627.15	27.1192	46.1	12.4	40.4	2.784	0.007	0.007	0.000	0.167	0.14
1490	10/2/2002	8:18:25 PM	25.724	22.422	25.476	23.873	21.508	45.198	47.9	9.836	36.272	-1.284	-6.956	50.689	0.046	0.001	0	1628.15	27.1358	46.4	12.4	40.7	2.809	0.007	0.007	0.000	0.166	0.14
1491	10/2/2002	8:19:25 PM	25.702	22.415	25.349	23.92	21.526	44.896	47.75	9.839	35.877	-1.281	-6.956	50.924	0.045	0.001	0	1629.15	27.1525	46.3	12.5	40.4	2.785	0.007	0.007	0.000	0.165	0.14
1492	10/2/2002	8:20:25 PM	25.68	22.413	25.402	23.869	21.519	45.043	47.636	9.809	36.274	-1.284	-6.958	50.152	0.045	0.001	0	1630.15	27.1692	46.2	12.3	40.7	2.803	0.007	0.007	0.000	0.163	0.14
1493	10/2/2002	8:21:25 PM	25.637	22.391	25.329	23.841	21.506	44.784	47.292	9.737	35.953	-1.286	-6.961	50.232	0.045	0.001	0	1631.15	27.1858	45.8	12.3	40.4	2.783	0.007	0.007	0.000	0.165	0.14
1494	10/2/2002	8:22:25 PM	25.615	22.383	25.217	23.858	21.509	44.674	47.363	9.792	35.766	-1.284	-6.961	50.118	0.045	0.001	0	1632.15	27.2025	45.9	12.3	40.2	2.773	0.007	0.007	0.000	0.166	0.14
1495	10/2/2002	8:23:25 PM	25.583	22.371	25.264	23.756	21.517	44.971	47.601	9.858	36.02	-1.286	-6.964	51.788	0.045	0.001	0	1633.15	27.2192	46.1	12.7	40.5	2.792	0.007	0.007	0.000	0.164	0.14
1496	10/2/2002	8:24:25 PM	25.556	22.374	25.228	23.779	21.51	44.666	47.433	9.821	35.748	-1.284	-6.961	50.089	0.045	0.001	0	1634.15	27.2358	46.0	12.3	40.4	2.772	0.007	0.007	0.000	0.166	0.14
1497	10/2/2002	8:25:25 PM	25.518	22.366	25.12	23.812	21.497	44.966	47.605	9.763	36.174	-1.278	-6.956	50.69	0.046	0.001	0	1635.15	27.2525	46.1	12.4	40.6	2.797	0.007	0.007	0.000	0.166	0.14
1498	10/2/2002	8:26:25 PM	25.491	22.36	25.203	23.735	21.486	44.799	47.57	9.799	35.817	-1.286	-6.961	50.119	0.045	0.001	0	1636.15	27.2692	46.1	12.3	40.3	2.779	0.007	0.007	0.000	0.165	0.14
1499	10/2/2002	8:27:25 PM	25.454	22.347	25.141	23.737	21.478	44.85	47.52	9.786	36.024	-1.284	-6.961	52.121	0.045	0.001	0	1637.15	27.2858	46.0	12.8	40.4	2.788	0.007	0.007	0.000	0.165	0.14
1500	10/2/2002	8:28:25 PM	25.433	22.341	25.05	23.807	21.492	44.939	47.675	9.837	35.991	-1.284	-6.964	50.714	0.045	0.001	0	1638.15	27.3025	46.2	12.4	40.5	2.790	0.007	0.007	0.000	0.166	0.14
1501	10/2/2002	8:29:25 PM	25.391	22.32	25.138	23.76	21.476	44.517	47.265	9.762	35.691	-1.284	-6.964	50.274	0.045	0.001	0	1639.15	27.3192	45.8	12.3	40.1	2.765	0.007	0.007	0.000	0.167	0.14
1502	10/2/2002	8:30:25 PM	25.364	22.312	25.071	23.763	21.453	44.747	47.315	9.839	35.801	-1.286	-6.964	50.393	0.045	0.001	0	1640.15	27.3358	45.8	12.3	40.3	2.777	0.007	0.007	0.000	0.166	0.14
1503	10/2/2002	8:31:25 PM	25.342	22.306	25.004	23.766	21.462	44.554	47.309	9.742	35.721	-1.284	-6.97	50.507	0.045	0.001	0	1641.15	27.3525	45.8	12.4	40.1	2.767	0.007	0.007	0.000	0.167	0.14
1504	10/2/2002	8:32:25 PM	25.316	22.294	25.088	23.704	21.46	44.753	47.396	9.88	35.693	-1.284	-6.967	50.668	0.045	0.001	0	1642.15	27.3692	45.9	12.4	40.2	2.773	0.007	0.007	0.000	0.166	0.14
1505	10/2/2002	8:33:25 PM	25.299	22.277	25.006	23.697	21.443	44.743	47.404	9.753	35.969	-1.284	-6.967	49.932	0.045	0.001	0	1643.15	27.3858	45.9	12.2	40.4	2.782	0.007	0.007	0.000	0.166	0.14
1506	10/2/2002	8:34:25 PM	25.288	22.276	25.026	23.646	21.432	44.802	47.499	9.786	35.979	-1.284	-6.97	50.343	0.044	0.001	0	1644.15	27.4025	46.0	12.5	40.4	2.788	0.007	0.007	0.000	0.163	0.14
1507	10/2/2002	8:35:25 PM	25.256	22.264	25.047	23.669	21.41	44.834	47.547	9.839	35.942	-1.278	-6.964	50.083	0.044	0.001	0	1645.15	27.4192	46.1	12.3	40.4	2.785	0.007	0.007	0.000	0.162	0.14
1508	10/2/2002	8:36:25 PM	25.234	22.252	24.951	23.682	21.408	44.797	47.601	9.877	35.852	-1.284	-6.97	49.894	0.044	0.001	0	1646.15	27.4358	46.1	12.2	40.3	2.780	0.007	0.007	0.000	0.163	0.14
1509	10/2/2002	8:37:25 PM	25.223	22.241	25.06	23.586	21.422	44.898	47.603	9.791	36.082	-1.281	-6.967	50.666	0.044	0.001	0	1647.15	27.4525	46.1	12.4	40.5	2.792	0.007	0.007	0.000	0.162	0.14
1510	10/2/2002	8:38:25 PM	25.196	22.224	24.993	23.624	21.405	45.047	47.805	9.697	36.333	-1.284	-6.967	49.991	0.045	0.001	0	1648.15	27.4692	46.3	12.3	40.7	2.805	0.007	0.007	0.000	0.165	0.14
1511	10/2/2002	8:39:25 PM	25.185	22.218	24.927	23.633	21.374	44.819	47.491	9.663	36.133	-1.284	-6.967	50.246	0.044	0.001	0	1649.15	27.4858	46.0	12.3	40.5	2.791	0.007	0.007	0.000	0.162	0.14
1512	10/2/2002	8:40:25 PM	25.153	22.201	25.02	23.551	21.372	44.751	47.472	9.609	36.112	-1.281	-6.964	49.986	0.045	0.001	0	1650.15	27.5025	46.0	12.2	40.4	2.788	0.007	0.007	0.000	0.166	0.14
1513	10/2/2002	8:41:25 PM	25.157	22.19	24.939	23.595	21.361	44.995	47.667	9.723	36.151	-1.284	-6.967	50.349	0.044	0.001	0	1651.15	27.5192	46.2	12.3	40.6	2.797	0.007	0.007	0.000	0.162	0.14
1514	10/2/2002	8:42:25 PM	25.151	22.178	24.982	23.589	21.364	45.058	47.838	9.81	36.096	-1.284	-6.97	49.718	0.044	0.001	0	1652.15	27.5358	46.4	12.2	40.6	2.798	0.007	0.007	0.000	0.162	0.14
1515	10/2/2002	8:43:25 PM	25.123	22.161	24.975	23.602	21.357	45.002	47.677	9.744	36.211	-1.281	-6.967	50.592	0.044	0.001	0	1653.15	27.5525	46.2	12.4	40.6	2.800	0.007	0.007	0.000	0.165	0.14
1516	10/2/2002	8:44:25 PM	25.112	22.15	24.884	23.565	21.366	45.029	47.689	9.726	36.268	-1.286	-6.979	50.217	0.044	0.001	0	1654.15	27.5692	46.2	12.3	40.6	2.803	0.007	0.007	0.000	0.162	0.14
1517	10/2/2002	8:45:25 PM	25.106	22.143	25.008	23.519	21.349	44.743	47.404	9.677	36.002	-1.284	-6.967	50.443	0.044	0.001	0	1655.15	27.5858	45.9	12.4	40.4	2.784	0.007	0.007	0



1561	10/2/2002	9:29:25 PM	24.968	21.718	25	23.069	21.01	44.894	47.696	9.751	36.129	-1.284	-6.967	50.265	0.043	0.001	0	1699.15	28.3192	46.2	12.3	40.5	2.793	0.006	0.006	0.000	0.158	0.13
1562	10/2/2002	9:30:25 PM	24.957	21.702	25.129	23.048	20.968	44.714	47.576	9.753	35.955	-1.281	-6.958	48.883	0.043	0.001	0	1700.15	28.3358	46.1	12.0	40.3	2.781	0.006	0.006	0.000	0.158	0.13
1563	10/2/2002	9:31:25 PM	24.961	21.695	26.043	22.996	20.951	44.79	47.716	9.762	35.944	-1.284	-6.967	49.569	0.043	0.001	0	1701.15	28.3525	46.2	12.1	40.4	2.783	0.006	0.006	0.000	0.159	0.13
1564	10/2/2002	9:32:25 PM	24.965	21.685	25.117	22.981	20.931	44.689	47.781	9.741	35.879	-1.284	-6.967	50.062	0.043	0.001	0	1702.15	28.3692	46.3	12.3	40.3	2.777	0.006	0.006	0.000	0.159	0.13
1565	10/2/2002	9:33:25 PM	24.954	21.674	25.091	22.98	20.926	44.699	47.59	9.727	35.864	-1.284	-6.967	50.175	0.043	0.001	0	1703.15	28.3868	46.1	12.3	40.3	2.777	0.006	0.006	0.000	0.159	0.14
1566	10/2/2002	9:34:25 PM	24.942	21.657	25.019	23.049	20.906	45.045	47.987	9.832	36.219	-1.284	-6.967	50.328	0.042	0.001	0	1704.15	28.4025	46.5	12.3	40.6	2.801	0.006	0.006	0.000	0.154	0.13
1567	10/2/2002	9:35:25 PM	24.951	21.656	25.138	22.997	20.912	44.805	47.69	9.748	36.03	-1.281	-6.964	49.487	0.043	0.001	0	1705.15	28.4192	46.2	12.1	40.4	2.787	0.006	0.006	0.000	0.158	0.13
1568	10/2/2002	9:36:25 PM	24.961	21.65	25.063	23.002	20.911	44.925	47.874	9.752	36.155	-1.284	-6.967	49.395	0.042	0.001	0	1706.15	28.4358	46.4	12.1	40.5	2.795	0.006	0.006	0.000	0.154	0.13
1569	10/2/2002	9:37:25 PM	24.959	21.639	25.136	22.99	20.91	44.836	47.756	9.696	36.151	-1.284	-6.964	49.634	0.042	0.001	0	1707.15	28.4525	46.3	12.2	40.5	2.792	0.006	0.006	0.000	0.154	0.13
1570	10/2/2002	9:38:25 PM	24.953	21.628	25.105	22.994	20.884	44.824	47.803	9.794	36.002	-1.284	-6.964	49.621	0.042	0.001	0	1708.15	28.4692	46.3	12.2	40.4	2.786	0.006	0.006	0.000	0.154	0.13
1571	10/2/2002	9:39:25 PM	24.962	21.622	25.049	23.038	20.862	44.736	47.841	9.788	35.734	-1.281	-6.964	50.097	0.042	0.001	0	1709.15	28.4858	46.4	12.3	40.2	2.774	0.006	0.006	0.000	0.155	0.13
1572	10/2/2002	9:40:25 PM	24.947	21.611	25.144	22.962	20.867	44.705	47.7	9.801	35.783	-1.281	-6.964	49.38	0.042	0.001	0	1710.15	28.5025	46.2	12.1	40.2	2.775	0.006	0.006	0.000	0.155	0.13
1573	10/2/2002	9:41:25 PM	24.941	21.595	25.043	22.977	20.861	44.61	47.629	9.719	35.891	-1.269	-6.967	49.646	0.042	0.001	0	1711.15	28.5192	46.2	12.2	40.3	2.775	0.006	0.006	0.000	0.155	0.13
1574	10/2/2002	9:42:25 PM	24.946	21.605	25.163	22.971	20.861	44.662	47.681	9.845	35.709	-1.281	-6.953	50.033	0.043	0.001	0	1712.15	28.5358	46.2	12.3	40.2	2.771	0.006	0.006	0.000	0.159	0.14
1575	10/2/2002	9:43:25 PM	24.95	21.599	25.117	22.995	20.866	45.101	48.016	9.782	36.245	-1.278	-6.961	50.309	0.042	0.001	0	1713.15	28.5525	46.5	12.3	40.7	2.804	0.006	0.006	0.000	0.153	0.13
1576	10/2/2002	9:44:25 PM	24.944	21.578	25.066	22.964	20.854	44.621	47.642	9.716	35.903	-1.284	-6.97	49.917	0.042	0.001	0	1714.15	28.5692	46.2	12.2	40.3	2.776	0.006	0.006	0.000	0.155	0.13
1577	10/2/2002	9:45:25 PM	24.937	21.566	25.139	22.892	20.837	44.736	47.667	9.753	35.94	-1.284	-6.97	50.058	0.042	0.001	0	1715.15	28.5858	46.2	12.3	40.3	2.781	0.006	0.006	0.000	0.155	0.13
1578	10/2/2002	9:46:25 PM	24.952	21.56	25.048	22.942	20.847	44.554	47.329	9.694	35.762	-1.281	-6.97	49.709	0.042	0.001	0	1716.15	28.6025	45.9	12.2	40.2	2.769	0.006	0.006	0.000	0.156	0.13
1579	10/2/2002	9:47:25 PM	24.935	21.549	25.158	22.881	20.861	44.884	48.049	9.77	36.043	-1.281	-6.973	49.965	0.042	0.001	0	1717.15	28.6192	46.6	12.2	40.5	2.790	0.006	0.006	0.000	0.154	0.13
1580	10/2/2002	9:48:25 PM	24.939	21.538	25.091	22.905	20.849	44.881	47.89	9.815	35.993	-1.284	-6.97	49.573	0.042	0.001	0	1718.15	28.6358	46.4	12.1	40.4	2.788	0.006	0.006	0.000	0.154	0.13
1581	10/2/2002	9:49:25 PM	24.953	21.547	25.105	22.903	20.843	44.898	47.942	9.828	36.03	-1.278	-6.97	49.292	0.042	0.001	0	1719.15	28.6525	46.5	12.1	40.5	2.790	0.006	0.006	0.000	0.154	0.13
1582	10/2/2002	9:50:25 PM	24.943	21.547	25.165	22.908	20.843	44.817	47.872	9.779	36.051	-1.278	-6.967	50.184	0.042	0.001	0	1720.15	28.6692	46.4	12.3	40.4	2.788	0.006	0.006	0.000	0.154	0.13
1583	10/2/2002	9:51:25 PM	24.947	21.541	25.074	22.902	20.853	44.904	48.051	9.812	36.03	-1.278	-6.967	50.144	0.042	0.001	0	1721.15	28.6858	46.6	12.3	40.5	2.790	0.006	0.006	0.000	0.154	0.13
1584	10/2/2002	9:52:25 PM	24.946	21.52	25.183	22.877	20.856	44.95	47.857	9.787	36.11	-1.281	-6.97	49.942	0.042	0.001	0	1722.15	28.7025	46.4	12.2	40.5	2.794	0.006	0.006	0.000	0.154	0.13
1585	10/2/2002	9:53:25 PM	24.94	21.514	25.107	22.886	20.835	44.358	47.294	9.825	35.498	-1.281	-6.97	50.041	0.042	0.001	0	1723.15	28.7192	45.8	12.3	39.9	2.753	0.006	0.006	0.000	0.156	0.13
1586	10/2/2002	9:54:25 PM	24.95	21.503	25.157	22.865	20.815	44.809	47.758	9.8	36.047	-1.281	-6.97	49.632	0.042	0.001	0	1724.15	28.7358	46.3	12.2	40.4	2.787	0.006	0.006	0.000	0.154	0.13
1587	10/2/2002	9:55:25 PM	24.939	21.492	25.151	22.834	20.788	44.674	47.648	9.838	35.789	-1.284	-6.97	49.242	0.042	0.001	0	1725.15	28.7525	46.2	12.1	40.2	2.774	0.006	0.006	0.000	0.155	0.13
1588	10/2/2002	9:56:25 PM	24.948	21.491	25.07	22.888	20.797	44.78	47.843	9.858	35.84	-1.281	-6.97	49.953	0.042	0.001	0	1726.15	28.7692	46.4	12.2	40.3	2.779	0.006	0.006	0.000	0.155	0.13
1589	10/2/2002	9:57:25 PM	24.942	21.486	25.189	22.842	20.807	44.879	47.934	9.852	36.006	-1.281	-6.967	50.026	0.042	0.001	0	1727.15	28.7858	46.5	12.3	40.4	2.788	0.006	0.006	0.000	0.154	0.13
1590	10/2/2002	9:58:25 PM	24.947	21.47	25.109	22.852	20.796	44.474	47.536	9.832	35.692	-1.284	-6.967	50.429	0.042	0.001	0	1728.15	28.8025	46.1	12.4	40.0	2.760	0.006	0.006	0.000	0.156	0.13
1591	10/2/2002	9:59:25 PM	24.962	21.475	25.194	22.807	20.786	44.795	47.799	9.839	35.975	-1.281	-6.97	49.477	0.042	0.001	0	1729.15	28.8192	46.3	12.1	40.4	2.784	0.006	0.006	0.000	0.154	0.13
1592	10/2/2002	9:59:31 PM	24.946	21.469	25.196	22.786	20.781	44.813	47.901	9.803	35.932	-1.281	-6.964	49.743	0.041	0.001	0	1729.25	28.8208	46.4	12.2	40.4	2.784	0.006	0.006	0.000	0.161	0.13
1593	10/2/2002	10:00:31 PM	24.946	21.454	25.143	22.785	20.755	44.813	47.816	9.786	36.045	-1.284	-6.97	50.146	0.041	0.001	0	1729.25	28.8375	46.3	12.3	40.4	2.787	0.006	0.006	0.000	0.151	0.13
1594	10/2/2002	10:01:31 PM	24.96	21.458	25.122	22.82	20.729	44.482	47.619	9.872	35.572	-1.281	-6.97	50.035	0.041	0.001	0	1731.25	28.8542	46.1	12.3	40.0	2.760	0.006	0.006	0.000	0.152	0.13
1595	10/2/2002	10:02:31 PM	24.961	21.449	25.203	22.791	20.71	44.882	47.874	9.825	36.043	-1.284	-6.964	50.003	0.042	0.001	0	1732.25	28.8708	46.4	12.3	40.5	2.790	0.006	0.006	0.000	0.154	0.13
1596	10/2/2002	10:03:31 PM	24.945	21.418	25.092	22.8	20.669	44.703	47.783	9.809	35.842	-1.286	-6.976	49.739	0.041	0.001	0	1733.25	28.8875	46.3	12.2	40.3	2.777	0.006	0.006	0.000	0.151	0.13
1597	10/2/2002	10:04:31 PM	24.935	21.408	25.212	22.725	20.669	44.517	47.576	9.796	35.639	-1.284	-6.967	49.953	0.041	0.001	0	1734.25	28.9042	46.1	12.2	40.1	2.763	0.006	0.006	0.000	0.152	0.13
1598	10/2/2002	10:05:31 PM	24.94	21.397	25.152	22.739	20.658	44.529	47.493	9.763	35.764	-1.278	-6.958	49.621	0.041	0.001	0	1735.25	28.9208	46.0	12.2	40.1	2.768	0.006	0.006	0.000	0.152	0.13
1599	10/2/2002	10:06:31 PM	24.938	21.376	25.13	22.748	20.641	44.536	47.64	9.783	35.74	-1.281	-6.964	50.007	0.041	0.001	0	1736.25	28.9375	46.2	12.3	40.1	2.767	0.006	0.006	0.000	0.152	0.13
1600	10/2/2002	10:07:31 PM	24.937	21.365	25.179	22.721	20.635	44.801	47.932	9.784	36.01	-1.284	-6.964	49.342	0.041	0.001	0	1737.25	28.9542	46.5	12.1	40.4	2.786	0.006	0.006	0.000	0.151	0.13
1601	10/2/2002	10:08:31 PM	24.956	21.374	25.103	22.74	20.614	44.426	47.512	9.793	35.56	-1.281	-6.964	49.85	0.041	0.001	0	1738.25	28.9708	46.0	12.2	40.0	2.767	0.006	0.006	0.000	0.152	0.13
1602	10/2/2002	10:09:31 PM	24.945	21.362	25.222	22.684	20.603	44.681	47.863	9.785	35.881	-1.281	-6.964	49.816	0.041	0.001	0	1739.25	28.9875	46.4	12.2	40.3	2.777	0.006	0.006	0.000	0.151	0.13
1603	10/2/2002	10:10:31 PM	24.928	21.341	25.135	22.673	20.586	44.892	48.008	9.788	36.088	-1.284	-6.967	49.972	0.041	0.001	0	1740.25	29.0042	46.5	12.2	40.5	2.792	0.006	0.006	0.000	0.150	0.13
1604	10/2/2002	10:11:31 PM	24.933	21.32	25.175	22.632	20.55	44.749	47.841	9.75	36.012	-1.286	-6.967	49.896	0.041	0.001	0	1741.25	29.0208	46.4	12.2	40.4	2.784	0.006	0.006	0.000	0.151	0.13
1605	10/2/2002	10:12:31 PM	24.927	21.319	25.174	22.661	20.575	44.674	47.772	9.805	35.738	-1.281	-6.961	50.701	0.041	0.001	0	1742.25	29.0375	46.3	12.4	40.2	2.772	0.006	0.006	0.000	0.151	0.13
1606	10/2/2002	10:13:31 PM	24.905	21.282	25.067	22.664	20.563	44.444	47.53	9.809	35.594	-1.286	-6.967	49.554	0.041	0.001	0	1743.25	29.0542	46.1	12.1	40.0	2.759	0.006	0.006	0.000	0.152	0.13
1607	10/2/2002	10:14:31 PM	24.925	21.292	25.207	22.594	20.557	44.654	47.925	9.85	35.637	-1.284	-6.964	50.089	0.041	0.001	0	1744.25	29.0708	46.5	12.3	40.1	2.768	0.006	0.006	0.000	0.151	0.13
1608	10/2/2002	10:15:31 PM	24.924	21.286	25.146	22.663	20.542	44.579	47.679	9.902	35.549	-1.281	-6.961	49.795	0.041	0.001	0	1745.25	29.0875	46.2	12.2	40.1	2.762	0.006	0.006	0.000	0.152	0.13
1609	10/2/2002	10:16:31 PM	24.94	21.297	25.242	22.654	20.543	44.884	47.923	9.826	36.059	-1.281	-6.958	49.749	0.041	0.001	0	1746.25	29.1042	46.5	12.2	40.5	2.790	0.006	0.006	0.000	0.150	0.13
1610	10/2/2002	10:17:31 PM	24.932	21.294	25.214	22.661	20.548	44.962	47.958	9.804	36.135	-1.281	-6.958	50.293	0.041	0.001	0	1747.25	29.1208	46.5	12.3	40.5	2.796	0.006	0.006	0.000	0.150	0.13
1611	10/2/2002	10:18:31 PM	24.933	21.285	25.17	22.682	20.55	44.757	47.826	9.874	35.846	-1.281	-6.961	49.567	0.041	0.001	0	1748.25	29.1375	46.4	12.1	40.3	2.779	0.006	0.006	0.000	0.151	0.13
1612	10/2/2002	10:19:31 PM	24.918	21.26	25.24	22.592	20.546	44.732	47.998	9.884	35.764	-1.281	-6.958	49.556	0.041	0.001	0	1749.25	29.1542	46.5	12.1	40.2	2.775	0.006	0.006	0.000	0.151	0.13
1613	10/2/2002	10:20:31 PM	24.934	21.256	25.151	22.628	20.527	44.641	47.69	9.769	35.886	-1.284	-6.958	49.665	0.041	0.001	0	1750.25	29.1708	46.2	12.2	40.3	2.776	0.006	0.006	0.000	0.151	0.13
1614	10/2/2002	10:21:31 PM	24.956	21.277	25.303	22.594	20.553	44.608	47.762	9.799	35.777	-1.281	-6.947	49.313	0.041	0.001	0	1751.25	29.1875	46.3	12.1	40.2	2.771	0.006	0.006	0.000	0.151	0.13
1615	10/2/2002	10:22:31 PM	24.931	21.243	25.208	22.6	20.533	44.954	48.116	9.883	36.1	-1.284	-6.953	49.37	0.041	0.001	0	1752.25	29.2042	46.6	12.1	40.5	2.794	0.006	0.006	0.000	0.150	0.13
1616	10/2/2002	10:23:31 PM	24.947	21.244	25.259	22.641	20.494	44.693	47.872	9.838	35.774	-1.278	-6.953	49.684	0.041	0.001	0	1753.25	29.2208	46.4	12.2	40.2	2.774	0.006	0.006	0.000	0.151	0.13
1617	10/2/2002	10:24:31 PM	24.928	21.219	25.26	22.581	20.5	45.01	48.192	9.868	36.086	-1.281	-6.95	49.747	0.041	0.001	0	1754.25	29.2375	46.7	12.2	40.5	2.796	0.006	0.006	0.000	0.150	0.13
1618	10/2/2002	10:25:31 PM	24.933	21.204	25.175	22.622	20.46	44.844	47.999	9.746	36.108	-1.281	-6.953	49.695	0.041	0.001	0	1755.25	29.2542	46.5	12.2	40.5	2.791	0.006	0.006	0.000	0.150	0.13
1619	10/2/2002	10:26:31 PM	24.912	21.189	25.286	22.666	20.46	45.267	48.498	9.836	36.442	-1.281	-6.95	49.77	0.041	0.001	0	1756.25	29.2708	47.0	12.2	40.9	2.817	0.006	0.006	0.000	0.148	0.13
1620	10/2/2002	10:27:31 PM	24.917	21.188	25.199	22.54	20.484	44.817	48.089	9.793	35.932	-1.284	-6.953	49.072	0.04	0.001	0	1757.25	29.2875	46.6	12.0	40.4	2.784	0.006	0.006	0.000	0.147	0.13
1621	10/2/2002	10:28:31 PM	24.931	21.177	25.283	22.509	20.483	44.799	48.109	9.861	35.908	-1.284	-6.95	49.701	0.041	0.001	0	1758.25	29.3042	46.6	12.2	40.4	2.782	0.006	0.006	0.000	0.150	0.13
1622	10/2/2002	10:29:31 PM	24.925	21.171	25.247	22.508	20.452	44.652	47.911	9.822	35.75	-1.284	-6.95	49.806	0.04	0.001	0	1759.25	29.3208	46.4	12.2	40.2	2.772	0.006	0.006	0.000	0.147	0.13
1623	10/2/2002	10:30:31 PM	24.939	21.165	25.206	22.527	20.43	44.879	48.091	9.846	35.928	-1.284	-6.953	49.602	0.04	0.001	0	1760.25	29.3375	46.6	12.2	40.4	2.786	0.006	0.006	0.000	0.147	0.12
1624	10/2/2002	10:31:31 PM	24.933	21.154	25.291	22.471	20.435	45.145	48.412	9.866	36.223	-1.281	-6.938	49.177	0.041	0.001	0	1761.25	29.3542	46.9	12.1	40.7	2.805	0.006	0.006	0.000	0.149	0.13
1625	10/2/2002	10:32:31 PM	24.927	21.138	25.169	22.511	20.409	45.281	48.523	9.959	36.325	-1.286	-6.938	49.969	0.041	0.001	0	1762.25	29.3708	47.1	12.2	40.8	2.813	0.006	0.006	0.000	0.149	0.13
1626	10/2/2002	10:33:31 PM	24.921	21.122	25.278	22.454	20.407	45.41	48.736	9.993	36.391	-1.284	-6.924	50.16	0.041	0.001	0	1763.25	29.3875	47.3	12.3	40.9	2.820	0.006	0.006	0.000	0.148	0.13
1627	10/2/2002	10:34:31 PM	24.945	21.106	25.232	22.503	20.396	45.045	48.341	9.946	36.045	-1.281	-6.918	49.814	0.041	0.001	0	1764.25	29.4042	46.9	12.2	40.5	2.795	0.006	0.006	0.000	0.150	0.13
1628	10/2/2002	10:35:31 PM	24.953	21.129	25.245	22.471	20.374	45.209	48.298	9.876	36.268	-1.284	-6.924	50.074	0.041	0.001	0	1765.25	29.4208	46.8	12.3	40.8	2.812	0.006	0.006	0.000	0.149	0.13
1629	10/2/2002	10:36:31 PM	24.942	21.108	25.234	22.43	20.368	45.476	48.767	9.921	36.563	-1.286	-6.921	50.467	0.041	0.001	0	1766.25	29.4375	47.3	12.4	41.0	2.828	0.006	0.006	0.000	0.148	0.13
1630	10/2/2002	10:37:31 PM	24.946	21.112	25.168	22.409	20.392	45.147	48.492	9.902	36.18	-1.284	-6.924	50.295	0.041	0.001	0	1767.25	29.4542	47.0	12.3	40.7	2.804	0.006	0.006	0.000	0.150	0.13
1631	10/2/2002	10:38:31 PM	24.93	21.096	25.272	22.388	20.371	45.406	48.693	9.941	36.466	-1.284	-6.927	49.842	0.041	0.001	0	1768.25	29.4708	47.2	12.2	40.9	2.822	0.006	0.006	0.000	0.148	0.13
1632	10/2/2002	10:39:31 PM	24.949	21.1	25.191	22.422	20.37	45.577	48.877	10.027	36.491	-1.281	-6.944	49.735	0.041	0.001	0	1769.25	29.4875	47.4	12.2	41.0	2.829	0.006	0.006	0.000	0.148	0.13
1633	10/2/2002	10:40:31 PM	24.938	21.089	25.3	22.34	20.364	45.397	48.608	9.996	36.323	-1.281	-6.953	49.821	0.041	0.001	0	1770.25	29.5042	47.1	12.2	40.9	2.817	0.006	0.006	0.000	0.148	0.13
1634	10/2/2002	10:41:31 PM	24.943	21.083	25.25	22.37	20.369	45.238	48.645	9.955	36.184	-1.284	-6.97	50.36	0.041	0.001	0	1771.25	29.5208	47.2	12.3	40.7	2.807	0.006	0.006	0.000	0.149	0.13
1635	10/2/2002	10:42:31 PM	24.952	21.083	25.234	22.425	20.353	45.461	48.776	10.057	36.274	-1.278	-6.97	50.146	0.04	0.001	0	1772.25	29.5375	47.3	12.3	40.9	2.818	0.006	0.006	0.000	0.145	0.12
1636	10/2/2002	10:43:31 PM	24.942	21.093	25.319	22.381	20.348	45.447	48.255	9.961	36.993	-1.284	-6.967	50.269	0.04	0.001	0	1773.25	29.5542	46.8	12.3	40.5	2.794	0.006	0.006	0.000	0.150	0.13
1637	10/2/2002	10:44:31 PM	24.942	21.067	25.209	22.389	20.347	45.325	48.608	9.863	36.399	-1.281	-6.979	49.68	0.041	0.001	0	1774.25	29.5708	47.1	12.2	40.9	2.817	0.006	0.006	0.000	0.149	0.13
1638	10/2/2002	10:45:31 PM	24.937	21.047	25.324	22.344	20.337	45.248	48.542	10.004	36.161	-1.286	-6.976	50.435	0.04	0.001	0	1775.25	29.5875	47.1	12.4	40.7	2.806	0.006	0.006	0.000	0.145	0.12
1639	10/2/2002	10:46:31 PM	24.941	21.046	25.243	22.384	20.357	45.261	48.552	10.007	36.21	-1.284	-6.999	49.982	0.041	0.001	0	1776.25	29.6042	47.1	12.2	40.7	2.809	0.006	0.006	0.000	0.149	0.13
1640	10/2/2002	10:47:31 PM	24.935	21.03	25.307	22.347	20.331	45.258	48.455	9.975	36.256	-1.281	-7.011	49.754	0.041	0.001	0	1777.25	29.6208	47.0	12.2	40.8	2.810	0.006	0.006	0.000	0.149	0.13
1641	10/2/2002	10:48:31 PM	24.925	21.025	25.277	22.352	20.326	45.689	49.016	10.029	36.571	-1.281	-6.996	49.689	0.04	0.001	0	1778.25	29.6375	47.5	12.2	41.1	2.836	0.006	0.006	0.000	0.144	0.12
1642	10/2/2002	10:49:31 PM	24.94	21.009	25.232	22.382	20.325	45.584	48.879	9.983	36.524	-1.278	-7.002	50.133	0.041	0.001	0	1779.25	29.6542	47.4	12.3	41.1	2.831	0.006	0.006	0.000	0.148	0.13
1643	10/2/2002	10:50:31 PM	24.918	20.998	25.31	22.29	20.293	45.358	48.72	9.978	36.278	-1.281	-6.999	50.173	0.041	0.001	0	1780.25	29.6708	47.2	12.3	40.8	2.814	0.006	0.006	0.000	0.148	0.13
1644	10/2/2002	10:51:31 PM	24.938	20.997	25.23	22.285	20.293	45.35	48.774	9.919	36.342	-1.281	-7.002	49.881	0.041	0.001	0	1781.25	29.6875	47.3	12.2	40.8	2.816	0.006	0.006	0.000	0.149	0.13
1645	10/2/2002	10:52:31 PM	24.926	20.986	25.243	22.218	20.271	45.534	48.922	10.054	36.313	-1.284	-7.011	50.133	0.04	0.001	0	1782.25	29.7042	47.4	12.3	40.9	2.822	0.006	0.006	0.000	0.148	0.13
1646	10/2/2002	10:53:31 PM	24.93	20.974	25.257	22.271	20.265	45.681	49.018	10.007	36.53	-1.286	-7.011	49.814	0.04	0.001	0	1783.25	29.7208	47.5	12.2	41.1	2.834	0.006	0.006	0.000	0.144	0.12
1647	10/2/2002	10:54:31 PM	24.943	20.973	25.37	22.235	20.268	45.312	48.716	9.981	36.239	-1.284	-7.005	50.129	0.04	0.001	0	1784.25	29.7375	47.2	12.

1691	10/2/2002	11:38:31 PM	25.125	20.642	25.657	22.02	20.053	45.161	48.67	9.799	36.385	-1.281	-6.973	49.519	0.039	0.001	0	1828.25	30.4708	47.2	12.1	40.8	2.811	0.006	0.006	0.000	0.140	0.12
1692	10/2/2002	11:39:31 PM	25.149	20.646	25.771	21.959	20.052	45.364	48.962	9.886	36.503	-1.281	-6.97	49.414	0.039	0.001	0	1829.25	30.4875	47.5	12.1	40.9	2.822	0.006	0.006	0.000	0.139	0.12
1693	10/2/2002	11:40:31 PM	25.144	20.635	25.71	21.963	19.996	45.515	49.272	9.951	36.489	-1.281	-6.97	49.005	0.039	0.001	0	1830.25	30.5042	47.8	12.0	41.0	2.827	0.006	0.006	0.000	0.139	0.12
1694	10/2/2002	11:41:31 PM	25.138	20.624	25.744	21.997	19.986	45.401	49.171	9.959	36.331	-1.278	-6.967	49.244	0.039	0.001	0	1831.25	30.5208	47.7	12.1	40.9	2.818	0.006	0.006	0.000	0.139	0.12
1695	10/2/2002	11:42:31 PM	25.147	20.608	25.728	21.986	20.004	44.915	48.627	9.809	36.036	-1.281	-6.97	49.183	0.039	0.001	0	1832.25	30.5375	47.2	12.1	40.6	2.791	0.006	0.006	0.000	0.141	0.12
1696	10/2/2002	11:43:31 PM	25.162	20.608	25.693	22.007	20.069	45.149	48.862	9.839	36.21	-1.281	-6.97	49.233	0.039	0.001	0	1833.25	30.5542	47.4	12.1	40.7	2.805	0.006	0.006	0.000	0.140	0.12
1697	10/2/2002	11:44:31 PM	25.162	20.623	25.789	22.032	20.141	44.888	48.767	9.842	35.901	-1.284	-6.964	49.08	0.039	0.001	0	1834.25	30.5708	47.3	12.0	40.4	2.785	0.006	0.006	0.000	0.141	0.12
1698	10/2/2002	11:45:31 PM	25.184	20.625	25.7	22.134	20.238	45.184	48.846	9.821	36.288	-1.284	-6.964	49.236	0.039	0.001	0	1835.25	30.5875	47.4	12.1	40.7	2.809	0.006	0.006	0.000	0.140	0.12
1699	10/2/2002	11:46:31 PM	25.18	20.636	25.842	22.267	20.325	45.227	49.03	9.824	36.317	-1.284	-6.958	49.296	0.04	0.001	0	1836.25	30.6042	47.6	12.1	40.8	2.811	0.006	0.006	0.000	0.143	0.12
1700	10/2/2002	11:47:31 PM	25.203	20.644	25.739	22.455	20.418	45.271	48.918	9.83	36.372	-1.281	-6.956	48.898	0.039	0.001	0	1837.25	30.6208	47.4	12.0	40.8	2.814	0.006	0.006	0.000	0.140	0.12
1701	10/2/2002	11:48:31 PM	25.226	20.667	25.882	22.569	20.497	45.113	48.91	9.801	36.227	-1.281	-6.953	48.831	0.04	0.001	0	1838.25	30.6375	47.4	12.0	40.7	2.804	0.006	0.006	0.000	0.143	0.12
1702	10/2/2002	11:49:31 PM	25.23	20.676	25.796	22.708	20.582	45.426	49.274	9.865	36.448	-1.281	-6.953	48.719	0.039	0.001	0	1839.25	30.6542	47.8	11.9	40.9	2.822	0.006	0.006	0.000	0.139	0.12
1703	10/2/2002	11:50:31 PM	25.259	20.696	25.821	22.889	20.667	45.329	49.045	9.804	36.522	-1.281	-6.96	48.803	0.039	0.001	0	1840.25	30.6708	47.6	12.0	40.9	2.822	0.006	0.006	0.000	0.139	0.12
1704	10/2/2002	11:51:31 PM	25.279	20.731	25.871	23.07	20.746	45.242	48.982	9.826	36.372	-1.278	-6.944	48.936	0.039	0.001	0	1841.25	30.6875	47.5	12.0	40.8	2.813	0.006	0.006	0.000	0.139	0.12
1705	10/2/2002	11:52:31 PM	25.279	20.746	25.751	23.115	20.884	45.076	48.882	9.757	36.372	-1.284	-6.947	47.36	0.039	0.001	0	1842.25	30.7042	47.2	11.6	40.7	2.808	0.006	0.006	0.000	0.140	0.12
1706	10/2/2002	11:53:31 PM	25.29	20.767	25.886	23.166	20.975	45.039	48.862	9.696	36.303	-1.284	-6.938	48.95	0.039	0.001	0	1843.25	30.7208	47.4	12.0	40.7	2.804	0.006	0.006	0.000	0.139	0.12
1707	10/2/2002	11:54:31 PM	25.311	20.798	25.807	23.322	21.092	44.84	48.718	9.74	36.028	-1.284	-6.944	49.097	0.039	0.001	0	1844.25	30.7375	47.2	12.0	40.4	2.788	0.006	0.006	0.000	0.141	0.12
1708	10/2/2002	11:55:31 PM	25.332	20.845	25.914	23.419	21.204	45.006	48.831	9.829	36.028	-1.281	-6.929	49.068	0.039	0.001	0	1845.25	30.7542	47.4	12.0	40.5	2.794	0.006	0.006	0.000	0.140	0.12
1709	10/2/2002	11:56:31 PM	25.328	20.866	25.86	23.486	21.306	45.066	48.852	9.789	36.215	-1.284	-6.932	48.829	0.039	0.001	0	1846.25	30.7708	47.4	12.0	40.6	2.802	0.006	0.006	0.000	0.140	0.12
1710	10/2/2002	11:57:31 PM	25.345	20.914	25.787	23.593	21.429	45.277	49.15	9.783	36.372	-1.281	-6.929	48.468	0.039	0.001	0	1847.25	30.7875	47.7	11.9	40.8	2.815	0.006	0.006	0.000	0.139	0.12
1711	10/2/2002	11:58:09 PM	25.35	20.933	25.907	23.648	21.494	45.097	48.953	9.82	36.2	-1.284	-6.921	49.141	0.039	0.001	0	1847.88	30.7981	47.5	12.0	40.6	2.803	0.006	0.006	0.000	0.139	0.12
1712	10/2/2002	11:59:09 PM	25.367	20.966	25.854	23.786	21.592	44.948	48.821	9.693	36.178	-1.281	-6.912	48.375	0.04	0.001	0	1848.88	30.8147	47.3	11.9	40.6	2.797	0.006	0.006	0.000	0.144	0.12
1713	10/2/2002	12:00:09 AM	25.395	21.009	25.787	23.909	21.71	45.174	48.985	9.754	36.407	-1.284	-6.944	48.648	0.039	0.001	0	1849.88	30.8313	47.5	11.9	40.8	2.812	0.006	0.006	0.000	0.139	0.12
1714	10/2/2002	12:01:09 AM	25.383	21.042	25.909	23.932	21.794	45.327	49.16	9.826	36.448	-1.284	-6.938	47.753	0.039	0.001	0	1850.88	30.848	47.7	11.7	40.9	2.819	0.006	0.006	0.000	0.139	0.12
1715	10/3/2002	12:02:09 AM	25.401	21.091	25.818	24.045	21.893	45.037	48.978	9.723	36.206	-1.286	-6.941	48.344	0.039	0.001	0	1851.88	30.8647	47.5	11.8	40.6	2.801	0.006	0.006	0.000	0.140	0.12
1716	10/3/2002	12:03:09 AM	25.419	21.129	25.906	24.058	21.996	44.768	48.643	9.626	36.094	-1.284	-6.932	48.294	0.039	0.001	0	1852.88	30.8813	47.2	11.8	40.4	2.788	0.006	0.006	0.000	0.140	0.12
1717	10/3/2002	12:04:09 AM	25.432	21.168	25.879	24.112	22.09	45.219	49.14	9.748	36.436	-1.284	-6.935	48.508	0.039	0.001	0	1853.88	30.898	47.7	11.9	40.8	2.815	0.006	0.006	0.000	0.139	0.12
1718	10/3/2002	12:05:09 AM	25.44	21.211	25.792	24.306	22.184	44.997	48.817	9.677	36.339	-1.278	-6.927	48.961	0.039	0.001	0	1854.88	30.9147	47.3	12.0	40.7	2.804	0.006	0.006	0.000	0.140	0.12
1719	10/3/2002	12:06:09 AM	25.453	21.249	25.92	24.288	22.267	45.004	48.997	9.759	36.12	-1.284	-6.927	47.748	0.039	0.001	0	1855.88	30.9313	47.5	11.7	40.6	2.797	0.006	0.006	0.000	0.140	0.12
1720	10/3/2002	12:07:09 AM	25.461	21.287	25.843	24.426	22.35	44.911	48.734	9.631	36.307	-1.284	-7.037	48.147	0.038	0.001	0	1856.88	30.948	47.3	11.8	40.6	2.800	0.006	0.006	0.000	0.136	0.12
1721	10/3/2002	12:08:09 AM	25.484	21.346	25.851	24.48	22.454	44.954	48.763	9.707	36.239	-1.281	-6.987	48.235	0.039	0.001	0	1857.88	30.9647	47.3	11.8	40.6	2.799	0.006	0.006	0.000	0.140	0.12
1722	10/3/2002	12:09:09 AM	25.491	21.373	25.898	24.462	22.532	44.979	48.813	9.626	36.38	-1.281	-6.982	48.491	0.039	0.001	0	1858.88	30.9813	47.3	11.9	40.7	2.805	0.006	0.006	0.000	0.139	0.12
1723	10/3/2002	12:10:09 AM	25.515	21.427	25.817	24.581	22.636	45.089	49.148	9.714	36.278	-1.281	-6.982	48.201	0.039	0.001	0	1859.88	30.998	47.7	11.8	40.7	2.805	0.006	0.006	0.000	0.140	0.12
1724	10/3/2002	12:11:09 AM	25.538	21.476	25.93	24.609	22.74	44.774	48.726	9.715	35.963	-1.286	-6.982	48.002	0.039	0.001	0	1860.88	31.0147	47.3	11.8	40.4	2.783	0.006	0.006	0.000	0.140	0.12
1725	10/3/2002	12:12:09 AM	25.557	21.519	25.894	24.683	22.824	45.016	49.03	9.644	36.331	-1.284	-6.976	48.401	0.039	0.001	0	1861.88	31.0313	47.6	11.9	40.7	2.804	0.006	0.006	0.000	0.139	0.12
1726	10/3/2002	12:13:09 AM	25.555	21.563	25.802	24.741	22.912	45.002	48.953	9.601	36.382	-1.284	-6.976	48.082	0.039	0.001	0	1862.88	31.048	47.5	11.8	40.7	2.806	0.006	0.006	0.000	0.140	0.12
1727	10/3/2002	12:14:09 AM	25.573	21.607	25.95	24.759	23.001	44.712	48.629	9.56	36.208	-1.281	-6.964	48.461	0.039	0.001	0	1863.88	31.0647	47.2	11.9	40.5	2.790	0.006	0.006	0.000	0.140	0.12
1728	10/3/2002	12:15:09 AM	25.597	21.67	25.884	24.843	23.085	44.807	48.885	9.656	35.994	-1.278	-6.964	46.624	0.039	0.001	0	1864.88	31.0813	47.4	11.4	40.4	2.785	0.006	0.006	0.000	0.140	0.12
1729	10/3/2002	12:16:09 AM	25.61	21.704	25.852	24.861	23.163	44.931	48.916	9.626	36.235	-1.284	-6.967	48.057	0.039	0.001	0	1865.88	31.098	47.4	11.8	40.6	2.798	0.006	0.006	0.000	0.140	0.12
1730	10/3/2002	12:17:09 AM	25.618	21.742	25.92	24.889	23.232	45.221	49.187	9.663	36.567	-1.284	-6.961	48.202	0.039	0.001	0	1866.88	31.1147	47.7	11.8	40.9	2.819	0.006	0.006	0.000	0.139	0.12
1731	10/3/2002	12:18:09 AM	25.625	21.79	25.847	24.997	23.32	44.736	48.74	9.744	36.147	-1.286	-6.976	47.302	0.039	0.001	0	1867.88	31.1313	47.3	11.6	40.4	2.788	0.006	0.006	0.000	0.140	0.12
1732	10/3/2002	12:19:09 AM	25.639	21.824	25.921	24.965	23.388	44.722	48.844	9.617	36.004	-1.289	-6.979	47.732	0.039	0.001	0	1868.88	31.148	47.4	11.7	40.4	2.783	0.006	0.006	0.000	0.140	0.12
1733	10/3/2002	12:20:09 AM	25.651	21.876	25.904	25.003	23.441	44.881	48.894	9.574	36.319	-1.284	-6.973	47.914	0.039	0.001	0	1869.88	31.1647	47.4	11.7	40.6	2.799	0.006	0.006	0.000	0.140	0.12
1734	10/3/2002	12:21:09 AM	25.664	21.914	25.811	25.096	23.514	44.77	48.821	9.533	36.262	-1.286	-6.976	48.034	0.039	0.001	0	1870.88	31.1813	47.3	11.8	40.5	2.793	0.006	0.006	0.000	0.140	0.12
1735	10/3/2002	12:22:09 AM	25.688	21.968	25.97	25.075	23.608	44.788	49.038	9.571	36.045	-1.281	-6.964	47.407	0.039	0.001	0	1871.88	31.198	47.6	11.6	40.4	2.787	0.006	0.006	0.000	0.140	0.12
1736	10/3/2002	12:23:09 AM	25.691	22.006	25.888	25.127	23.681	44.846	49.049	9.596	36.157	-1.289	-6.961	47.797	0.039	0.001	0	1872.88	31.2147	47.6	11.7	40.5	2.792	0.006	0.006	0.000	0.140	0.12
1737	10/3/2002	12:24:09 AM	25.713	22.054	25.831	25.175	23.744	44.618	48.693	9.48	36.096	-1.286	-6.958	48.122	0.039	0.001	0	1873.88	31.2313	47.2	11.8	40.4	2.782	0.006	0.006	0.000	0.141	0.12
1738	10/3/2002	12:25:09 AM	25.726	22.097	25.958	25.163	23.812	44.817	49.073	9.603	36.096	-1.286	-6.953	47.87	0.039	0.001	0	1874.88	31.248	47.6	11.7	40.5	2.789	0.006	0.006	0.000	0.140	0.12
1739	10/3/2002	12:26:09 AM	25.723	22.135	25.866	25.185	23.866	44.567	48.589	9.401	36.178	-1.284	-6.947	48.13	0.039	0.001	0	1875.88	31.2647	47.1	11.8	40.4	2.784	0.006	0.006	0.000	0.141	0.12
1740	10/3/2002	12:27:09 AM	25.741	22.183	25.889	25.223	23.916	44.795	48.846	9.498	36.299	-1.289	-6.957	47.772	0.039	0.001	0	1876.88	31.2813	47.4	11.7	40.5	2.796	0.006	0.006	0.000	0.140	0.12
1741	10/3/2002	12:28:09 AM	25.748	22.22	25.911	25.2	23.985	44.707	48.939	9.512	36.08	-1.289	-6.947	47.788	0.039	0.001	0	1877.88	31.298	47.5	11.7	40.4	2.785	0.006	0.006	0.000	0.140	0.12
1742	10/3/2002	12:29:09 AM	25.755	22.267	25.843	25.322	24.047	44.594	48.732	9.361	36.21	-1.286	-6.941	47.826	0.038	0.001	0	1878.88	31.3147	47.3	11.7	40.4	2.786	0.006	0.006	0.000	0.137	0.12
1743	10/3/2002	12:30:09 AM	25.773	22.316	25.951	25.33	24.11	44.763	48.908	9.492	36.28	-1.286	-6.938	47.325	0.038	0.001	0	1879.88	31.3313	47.4	11.6	40.5	2.794	0.006	0.006	0.000	0.136	0.12
1744	10/3/2002	12:31:09 AM	25.791	22.363	25.928	25.393	24.178	44.494	48.798	9.454	35.912	-1.281	-6.932	47.48	0.038	0.001	0	1880.88	31.348	47.3	11.6	40.2	2.772	0.006	0.006	0.000	0.137	0.12
1745	10/3/2002	12:32:09 AM	25.803	22.406	25.816	25.44	24.256	44.73	49.034	9.488	36.127	-1.286	-6.938	47.104	0.038	0.001	0	1881.88	31.3647	47.6	11.5	40.4	2.787	0.006	0.006	0.000	0.137	0.12
1746	10/3/2002	12:33:09 AM	25.81	22.443	25.957	25.442	24.298	44.737	48.956	9.461	36.253	-1.284	-6.935	47.581	0.038	0.001	0	1882.88	31.3813	47.5	11.7	40.5	2.792	0.006	0.006	0.000	0.136	0.12
1747	10/3/2002	12:34:09 AM	25.822	22.486	25.905	25.459	24.345	44.716	48.894	9.396	36.342	-1.284	-6.932	47.451	0.038	0.001	0	1883.88	31.398	47.4	11.6	40.5	2.794	0.006	0.006	0.000	0.136	0.12
1748	10/3/2002	12:35:09 AM	25.824	22.517	25.831	25.471	24.402	44.391	48.689	9.398	35.946	-1.284	-6.927	47.383	0.038	0.001	0	1884.88	31.4147	47.2	11.6	40.2	2.769	0.006	0.006	0.000	0.136	0.12
1749	10/3/2002	12:36:09 AM	25.843	22.565	25.953	25.473	24.439	44.194	48.633	9.418	35.602	-1.289	-6.896	47.207	0.038	0.001	0	1885.88	31.4313	47.2	11.6	39.9	2.761	0.006	0.006	0.000	0.138	0.12
1750	10/3/2002	12:37:09 AM	25.853	22.612	25.87	25.56	24.486	44.473	48.786	9.284	36.153	-1.286	-6.901	47.134	0.038	0.001	0	1886.88	31.448	47.3	11.6	40.3	2.779	0.006	0.006	0.000	0.137	0.12
1751	10/3/2002	12:38:09 AM	25.859	22.643	25.892	25.576	24.537	44.596	48.947	9.373	36.137	-1.284	-6.916	47.337	0.038	0.001	0	1887.88	31.4647	47.5	11.6	40.4	2.783	0.006	0.006	0.000	0.137	0.12
1752	10/3/2002	12:39:09 AM	25.871	22.686	25.924	25.558	24.585	44.277	48.643	9.296	35.906	-1.286	-6.909	46.637	0.038	0.001	0	1888.88	31.4813	47.2	11.4	40.1	2.764	0.006	0.006	0.000	0.138	0.12
1753	10/3/2002	12:40:09 AM	25.883	22.727	25.84	25.66	24.641	44.353	48.689	9.287	35.967	-1.284	-6.912	47.153	0.038	0.001	0	1889.88	31.498	47.2	11.6	40.2	2.769	0.006	0.006	0.000	0.138	0.12
1754	10/3/2002	12:41:09 AM	25.89	22.775	25.942	25.652	24.713	44.25	48.567	9.31	35.875	-1.286	-6.912	46.802	0.038	0.001	0	1890.88	31.5147	47.1	11.5	40.1	2.762	0.006	0.006	0.000	0.138	0.12
1755	10/3/2002	12:42:09 AM	25.896	22.801	25.904	25.668	24.755	44.415	48.685	9.266	36.139	-1.284	-6.903	47.581	0.038	0.001	0	1891.88	31.5313	47.2	11.7	40.3	2.777	0.006	0.006	0.000	0.137	0.12
1756	10/3/2002	12:43:09 AM	25.908	22.848	25.806	25.71	24.817	44.231	48.542	9.261	35.985	-1.286	-6.915	46.807	0.038	0.001	0	1892.88	31.548	47.1	11.5	40.1	2.765	0.006	0.006	0.000	0.138	0.12
1757	10/3/2002	12:44:09 AM	25.909	22.88	25.947	25.667	24.853	44.198	48.602	9.267	35.846	-1.286	-6.901	46.517	0.038	0.001	0	1893.88	31.5647	47.1	11.4	40.0	2.759	0.006	0.006	0.000	0.138	0.12
1758	10/3/2002	12:45:09 AM	25.926	22.927	25.874	25.758	24.89	44.407	48.662	9.228	36.053	-1.289	-6.901	46.931	0.038	0.001	0	1894.88	31.5813	47.2	11.5	40.3	2.781	0.006	0.006	0.000	0.137	0.12
1759	10/3/2002	12:46:09 AM	25.942	22.978	25.81	25.794	24.941	44.086	48.593	9.233	35.701	-1.286	-6.898	46.245	0.038	0.001	0	1895.88	31.598	47.1	11.3	39.9	2.751	0.006	0.006	0.000	0.139	0.12
1760	10/3/2002	12:47:09 AM	25.949	23.005	25.942	25.762	24.954	44.169	48.68	9.269	35.795	-1.284	-6.895	46.501	0.038	0.001	0	1896.88	31.6147	47.2	11.4	40.0	2.757	0.006	0.006	0.000	0.138	0.12
1761	10/3/2002	12:48:09 AM	25.95	23.052	25.853	25.823	24.996	43.873	48.196	9.082	35.836	-1.284	-6.895	46.57	0.038	0.001	0	1897.88	31.6313	46.7	11.4	39.9	2.748	0.006	0.006	0.000	0.139	0.12
1762	10/3/2002	12:49:09 AM	25.956	23.083	25.824	25.849	25.056	43.883	48.345	9.211	35.562	-1.289	-6.898	46.475	0.038	0.001	0	1898.88	31.648	46.9	11.4	39.7	2.739	0.006	0.006	0.000	0.139	0.12
1763	10/3/2002	12:50:09 AM	25.957	23.123	25.91	25.829	25.051	44.246	48.751	9.225	35.932	-1.286	-6.892	45.527	0.038	0.001	0	1899.88	31.6647	47.3	11.2	40.1	2.764	0.006	0.006	0.000	0.138	0.12
1764	10/3/2002	12:51:09 AM	25.957	23.139	25.795	25.879	25.112	44.01	48.488	9.155	35.797	-1.289	-6.895	46.175	0.037	0.001	0	1900.88	31.6813	47.0	11.3	39.9	2.751	0.006	0.005	0.000	0.135	0.12
1765	10/3/2002	12:52:09 AM	25.973	23.195	25.891	25.895	25.157	43.736	48.273	9.027	35.627	-1.284	-6.883	46.171	0.037	0.001	0	1901.88	31.698	46.8	11.3	39.7	2.736	0.006	0.005	0.000	0.136	0.12
1766	10/3/2002	12:53:09 AM	25.978	23.225	25.966	25.91	25.202	44.018	48.687	9.162	35.701	-1.289	-6.886	46.435	0.037	0.001	0	1902.88	31.7147	47.2	11.4	39.9	2.749	0.006	0.005	0.000	0.136	0.12
1767	10/3/2002	12:54:09 AM	25.994	23.272	25.782	25.937	25.259	43.848	48.302	9.056	35.779	-1.289	-6.889	46.278	0.037	0.001	0	1903.88	31.7313	46.8	11.3	39.8	2.745	0.006	0.005	0.000	0.136	0.12
1768	10/3/2002	12:55:09 AM	25.98	23.292	25.893	25.922	25.315	44.184	48.742	9.212	35.84	-1.292	-6.883	46.509	0.037	0.001	0	1904.88	31.748	47.3	11.4	40.0	2.759	0.006	0.005	0.000	0.134	0.11
1769	10/3/2002	12:56:09 AM	26.011	23.349	25.864	25.983	25.366	43.668	48.089	8.99	35.744	-1.284	-6.877	46.438	0.037	0.001	0	1905.88	31.7647	46.6	11.4	39.7	2.738	0.006	0.005	0.000	0.136	0.12
1770	10/3/2002	12:57:09 AM	26.011	23.384	25.764	26.038	25.386	43.63	48.145	8.988	35.631	-1.286	-6.88	45.42	0.037	0.001	0	1906.88	31.7813	46.7	11.1	39.6	2.732	0.006	0.005	0.000	0.136	0.12
1771	10/3/2002	12:58:09 AM	26.016	23.414	25.904	25.979	25.421	43.825	48.416	9.064	35.736	-1.289	-6.88	45.81	0.037	0.001	0	1907.88	31.798	46.9	11.2	39.8	2.743	0.006	0.005	0.000	0.135	0.12
1772	10/3/2002	12:59:09 AM	26.017	23.45	25.825	26.034	25.467	43.639	48.201	9.004	35.59	-1.286	-6.874	46.24	0.037	0.001	0	1908.88	31.8147	46.7	11.3	39.6	2.731	0.006	0.005	0.000	0.136	0.12
1773	10/3/2002	1:00:09 AM	26.028	23.486	25.786	26.071	25.518	43.738	48.407	9.118	35.48	-1.286	-6.872	46.257	0.037	0.001	0	1909.88	31.8313	46.9	11.3	39.6	2.731	0.006	0.005	0.000	0.136	0.12
1774	10/3/2002	1:01:09 AM	26.038	23.522	25.891	26.055	25.533	43.666	48.252	9.079	35.562	-1.286	-6.872	45.63	0.037	0.001	0	1910.88	31.848	46.8	11.2	39.6	2.731	0.006	0.005	0.000	0.136	0.12
1775	10/3/2002	1:02:09 AM	26.044	23.562	25.837	26.116	25.569	43.537	48.239	9.017	35.369	-1.284	-6.872	45.634	0.037	0.001	0	1911.88	31.8647	46.8	11.2	39.4	2.720	0.006	0.005	0.000	0.137	0.12
1776	10/3/2002	1:03:09 AM	26.054	23.592	25.847	26.176	25.614	43.283	47.946	8.942	35.297	-1.289	-6.869	45.435	0.037	0.001	0	1912.88	31.8813	45.5	11.1	39.3	2.709	0.006	0.005	0.000	0.137	0.12
1777	10/3/2002	1:04:09 AM	26.053	23.617	25.841	26.1	25.613	43.693	48.436	9.046	35.529	-1.289	-6.869	45.905	0.037	0.001	0	1913.88	31.898	47.0	11.2	39.6	2.731	0.006	0.005	0.000	0.136	0.12

1821	10/3/2002	1:48:09 AM	25.892	24.869	25.376	26.679	26.627	39.323	44.419	10.582	29.664	-1.165	-6.744	50.15	0.031	0.001	0	1957.88	32.6313	42.9	12.3	34.5	2.378	0.005	0.005	0.000	0.133	0.11
1822	10/3/2002	1:49:09 AM	25.896	24.884	25.375	26.683	26.636	45.451	50.757	11.206	34.972	-1.162	-6.782	52.486	0.035	0.001	0	1958.88	32.648	49.3	12.9	40.2	2.772	0.005	0.005	0.000	0.128	0.11
1823	10/3/2002	1:50:09 AM	25.929	24.907	25.593	26.681	26.66	45.981	51.268	11.098	35.738	-1.006	-6.724	53.298	0.04	0.001	0	1959.88	32.6647	49.8	13.1	40.9	2.817	0.006	0.006	0.000	0.144	0.12
1824	10/3/2002	1:51:09 AM	25.973	24.946	25.792	26.685	26.669	45.998	51.302	9.976	36.9	-1.006	-6.741	50.402	0.039	0.001	0	1960.88	32.6813	49.8	12.4	41.4	2.858	0.006	0.006	0.000	0.137	0.12
1825	10/3/2002	1:52:09 AM	26	24.947	25.784	26.712	26.68	45.671	50.97	9.698	37.05	-1.012	-6.744	48.948	0.038	0.001	0	1961.88	32.698	49.5	12.0	41.4	2.852	0.006	0.006	0.000	0.134	0.11
1826	10/3/2002	1:53:09 AM	26.033	24.971	25.922	26.725	26.703	45.646	50.958	9.525	36.978	-1.003	-6.733	48.931	0.036	0.001	0	1962.88	32.7147	49.5	12.0	41.3	2.848	0.006	0.006	0.000	0.137	0.12
1827	10/3/2002	1:54:09 AM	26.08	24.983	25.954	26.708	26.701	45.043	50.404	9.63	36.243	-1.009	-6.738	49.405	0.038	0.001	0	1963.88	32.7313	48.9	12.1	40.6	2.802	0.006	0.006	0.000	0.136	0.12
1828	10/3/2002	1:55:09 AM	26.133	25.016	26.007	26.795	26.698	45.472	50.675	9.441	36.974	-0.997	-6.733	49.16	0.038	0.001	0	1964.88	32.748	49.2	12.0	41.2	2.842	0.006	0.006	0.000	0.134	0.11
1829	10/3/2002	1:56:09 AM	26.186	25.049	26.005	26.853	26.726	45.142	50.435	9.442	36.628	-0.954	-6.733	49.143	0.038	0.001	0	1965.88	32.7647	49.0	12.0	40.9	2.819	0.006	0.006	0.000	0.135	0.11
1830	10/3/2002	1:57:09 AM	26.208	25.046	25.958	26.851	26.729	45.161	50.379	9.501	36.679	-0.954	-6.733	48.962	0.038	0.001	0	1966.88	32.7813	48.9	12.0	40.9	2.821	0.006	0.006	0.000	0.135	0.11
1831	10/3/2002	1:57:35 AM	26.235	25.068	25.974	26.887	26.74	45.41	50.776	9.523	36.761	-0.954	-6.73	49.296	0.038	0.001	0	1967.31	32.7886	49.3	12.1	41.1	2.833	0.006	0.006	0.000	0.134	0.11
1832	10/3/2002	1:58:35 AM	26.263	25.09	26.142	26.835	26.758	45.722	51.06	9.611	37.042	-0.917	-6.718	49.558	0.039	0.001	0	1968.31	32.8052	49.6	12.1	41.4	2.853	0.006	0.006	0.000	0.136	0.12
1833	10/3/2002	1:59:35 AM	26.302	25.115	26.171	26.869	26.777	46.066	51.32	9.491	37.51	-0.896	-6.712	49.2	0.039	0.001	0	1969.31	32.8219	49.8	12.1	41.8	2.881	0.006	0.006	0.000	0.135	0.11
1834	10/3/2002	2:00:35 AM	26.34	25.143	26.169	26.907	26.79	45.816	51.192	9.533	37.246	-0.888	-6.715	49.376	0.039	0.001	0	1970.31	32.8386	49.7	12.1	41.5	2.863	0.006	0.006	0.000	0.135	0.12
1835	10/3/2002	2:01:35 AM	26.372	25.165	26.146	26.924	26.796	45.986	51.242	9.507	37.383	-0.888	-6.712	49.409	0.039	0.001	0	1971.31	32.8552	49.8	12.1	41.7	2.874	0.006	0.006	0.000	0.135	0.11
1836	10/3/2002	2:02:35 AM	26.406	25.169	26.09	26.963	26.801	45.869	51.202	9.497	37.265	-0.893	-6.715	49.08	0.039	0.001	0	1972.31	32.8719	49.7	12.0	41.6	2.866	0.006	0.006	0.000	0.136	0.12
1837	10/3/2002	2:03:35 AM	26.438	25.196	26.072	27.04	26.828	45.913	51.395	9.483	37.255	-0.888	-6.712	49.466	0.039	0.001	0	1973.31	32.8886	49.9	12.1	41.6	2.867	0.006	0.006	0.000	0.136	0.12
1838	10/3/2002	2:04:35 AM	26.45	25.214	26.04	27.052	26.846	45.832	51.194	9.393	37.369	-0.859	-6.707	49.179	0.039	0.001	0	1974.31	32.9052	49.7	12.1	41.6	2.868	0.006	0.006	0.000	0.136	0.12
1839	10/3/2002	2:05:35 AM	26.469	25.237	26.013	27.086	26.859	45.816	51.27	9.561	37.185	-0.85	-6.704	49.947	0.039	0.001	0	1975.31	32.9219	49.8	12.2	41.5	2.861	0.006	0.006	0.000	0.136	0.12
1840	10/3/2002	2:06:35 AM	26.477	25.26	25.986	27.104	26.882	46.108	51.606	9.479	37.508	-0.838	-6.709	48.634	0.039	0.001	0	1976.31	32.9386	50.1	11.9	41.8	2.883	0.006	0.006	0.000	0.135	0.12
1841	10/3/2002	2:07:35 AM	26.485	25.278	25.949	27.087	26.886	46.097	51.68	9.539	37.349	-0.841	-6.709	48.47	0.039	0.001	0	1977.31	32.9552	50.2	11.9	41.7	2.877	0.006	0.006	0.000	0.136	0.12
1842	10/3/2002	2:08:35 AM	26.487	25.3	25.916	27.094	26.897	46.027	51.488	9.546	37.408	-0.841	-6.701	48.99	0.038	0.001	0	1978.31	32.9719	50.0	12.0	41.7	2.876	0.006	0.006	0.000	0.132	0.11
1843	10/3/2002	2:09:35 AM	26.484	25.323	25.904	27.151	26.91	45.947	51.403	9.508	37.171	-0.799	-6.675	49.457	0.039	0.001	0	1979.31	32.9886	49.9	11.9	41.5	2.862	0.006	0.006	0.000	0.137	0.12
1844	10/3/2002	2:10:35 AM	26.477	25.33	25.861	27.134	26.937	46.041	51.597	9.482	37.49	-0.778	-6.678	49.015	0.038	0.001	0	1980.31	33.0052	50.1	12.0	41.8	2.880	0.006	0.006	0.000	0.132	0.11
1845	10/3/2002	2:11:35 AM	26.484	25.363	25.854	27.166	26.94	45.934	51.341	9.406	37.519	-0.772	-6.675	48.77	0.038	0.001	0	1981.31	33.0219	49.9	12.0	41.7	2.877	0.006	0.006	0.000	0.133	0.11
1846	10/3/2002	2:12:35 AM	26.487	25.39	25.846	27.179	26.957	45.82	51.339	9.439	37.285	-0.775	-6.669	48.556	0.038	0.001	0	1982.31	33.0386	49.9	11.9	41.6	2.865	0.006	0.006	0.000	0.133	0.11
1847	10/3/2002	2:13:35 AM	26.469	25.403	26.014	27.096	26.964	45.724	51.262	9.387	37.216	-0.772	-6.666	49.248	0.038	0.001	0	1983.31	33.0552	49.8	12.1	41.5	2.859	0.006	0.006	0.000	0.133	0.11
1848	10/3/2002	2:14:35 AM	26.467	25.415	26.061	27.079	26.982	45.602	51.148	9.609	36.927	-0.72	-6.657	49.867	0.039	0.001	0	1984.31	33.0719	49.7	12.2	41.3	2.845	0.006	0.006	0.000	0.137	0.12
1849	10/3/2002	2:15:35 AM	26.489	25.443	26.104	27.076	26.999	44.836	50.337	9.806	36.008	-0.72	-6.666	50.163	0.038	0.001	0	1985.31	33.0886	48.9	12.3	40.4	2.787	0.006	0.006	0.000	0.136	0.12
1850	10/3/2002	2:16:35 AM	26.501	25.454	26.12	27.123	27.011	44.507	50.013	9.733	35.733	-0.72	-6.669	50.345	0.037	0.001	0	1986.31	33.1052	48.5	12.3	40.1	2.766	0.006	0.006	0.000	0.133	0.11
1851	10/3/2002	2:17:35 AM	26.518	25.472	26.113	27.15	27.029	44.84	50.28	9.78	36.055	-0.717	-6.663	50.142	0.037	0.001	0	1987.31	33.1219	48.8	12.3	40.4	2.789	0.006	0.006	0.000	0.132	0.11
1852	10/3/2002	2:18:35 AM	26.521	25.484	26.095	27.148	27.036	44.849	50.311	9.872	36.6	-0.711	-6.669	50.355	0.037	0.001	0	1988.31	33.1386	48.8	12.3	40.1	2.766	0.006	0.006	0.000	0.133	0.11
1853	10/3/2002	2:19:35 AM	26.548	25.512	26.093	27.2	27.059	44.432	49.978	9.682	35.727	-0.717	-6.666	50.211	0.037	0.001	0	1989.31	33.1552	48.5	12.3	40.1	2.763	0.006	0.006	0.000	0.133	0.11
1854	10/3/2002	2:20:35 AM	26.57	25.539	26.084	27.257	27.075	45.25	50.908	9.711	36.489	-0.688	-6.657	48.805	0.037	0.001	0	1990.31	33.1719	49.4	12.0	40.9	2.818	0.006	0.005	0.000	0.131	0.11
1855	10/3/2002	2:21:35 AM	26.593	25.577	26.088	27.29	27.099	45.145	50.83	9.637	36.409	-0.648	-6.652	49.275	0.037	0.001	0	1991.31	33.1886	49.4	12.1	40.8	2.811	0.006	0.005	0.000	0.131	0.11
1856	10/3/2002	2:22:35 AM	26.575	25.564	26.229	27.217	27.105	45.144	50.733	9.642	36.45	-0.619	-6.652	49.94	0.037	0.001	-0.001	1992.31	33.2052	49.3	12.2	40.8	2.813	0.006	0.005	0.000	0.131	0.11
1857	10/3/2002	2:23:35 AM	26.583	25.586	26.272	27.194	27.108	45.37	51.033	9.735	36.509	-0.61	-6.649	49.881	0.038	0.001	0	1993.31	33.2219	49.6	12.2	40.9	2.823	0.006	0.006	0.000	0.134	0.11
1858	10/3/2002	2:24:35 AM	26.605	25.609	26.299	27.247	27.12	45.103	50.716	9.61	36.428	-0.607	-6.646	49.332	0.038	0.001	0	1994.31	33.2386	49.2	12.1	40.8	2.811	0.006	0.006	0.000	0.134	0.11
1859	10/3/2002	2:25:35 AM	26.612	25.606	26.246	27.254	27.127	45.068	50.819	9.651	36.305	-0.578	-6.649	49.338	0.037	0.001	0	1995.31	33.2552	49.3	12.1	40.7	2.805	0.006	0.006	0.000	0.131	0.11
1860	10/3/2002	2:26:35 AM	26.644	25.628	26.259	27.266	27.154	44.952	50.594	9.604	36.253	-0.587	-6.646	49.779	0.037	0.001	0	1996.31	33.2719	49.1	12.2	40.6	2.799	0.006	0.005	0.000	0.131	0.11
1861	10/3/2002	2:27:35 AM	26.651	25.635	26.21	27.263	27.166	45.296	51.026	9.641	36.501	-0.552	-6.646	48.902	0.037	0.001	0	1997.31	33.2886	49.6	12.0	40.9	2.820	0.006	0.005	0.000	0.130	0.11
1862	10/3/2002	2:28:35 AM	26.684	25.672	26.218	27.335	27.164	45.147	50.931	9.626	36.368	-0.549	-6.643	49.745	0.037	0.001	0	1998.31	33.3052	49.5	12.2	40.8	2.810	0.006	0.005	0.000	0.131	0.11
1863	10/3/2002	2:29:35 AM	26.685	25.684	26.19	27.322	27.16	45.25	50.999	9.678	36.415	-0.552	-6.643	49.135	0.037	0.001	0	1999.31	33.3219	49.5	12.0	40.8	2.815	0.006	0.005	0.000	0.131	0.11
1864	10/3/2002	2:30:35 AM	26.723	25.722	26.197	27.394	27.183	44.898	50.712	9.554	36.192	-0.547	-6.637	49.401	0.037	0.001	0	2000.31	33.3386	49.2	12.1	40.5	2.795	0.006	0.005	0.000	0.132	0.11
1865	10/3/2002	2:31:35 AM	26.709	25.728	26.154	27.376	27.205	45.136	50.954	9.609	36.446	-0.529	-6.634	49.288	0.037	0.001	0	2001.31	33.3552	49.5	12.1	40.8	2.812	0.006	0.005	0.000	0.131	0.11
1866	10/3/2002	2:32:35 AM	26.712	25.751	26.137	27.414	27.222	45.087	50.865	9.679	36.317	-0.497	-6.637	49.529	0.037	0.001	0	2002.31	33.3719	49.4	12.1	40.7	2.806	0.006	0.005	0.000	0.131	0.11
1867	10/3/2002	2:33:35 AM	26.719	25.763	26.118	27.435	27.234	45.002	50.776	9.56	36.358	-0.497	-6.64	49.489	0.037	0.001	0	2003.31	33.3886	49.3	12.1	40.7	2.805	0.006	0.005	0.000	0.131	0.11
1868	10/3/2002	2:34:35 AM	26.716	25.79	26.111	27.478	27.246	44.761	50.666	9.616	35.989	-0.492	-6.628	49.162	0.037	0.001	0	2004.31	33.4052	49.2	12.0	40.4	2.784	0.006	0.005	0.000	0.132	0.11
1869	10/3/2002	2:35:35 AM	26.709	25.788	26.088	27.44	27.249	45.138	50.851	9.573	36.542	-0.497	-6.634	49.162	0.037	0.001	0	2005.31	33.4219	49.4	12.0	40.8	2.816	0.006	0.005	0.000	0.131	0.11
1870	10/3/2002	2:36:35 AM	26.71	25.81	26.07	27.437	27.261	45.035	50.896	9.613	36.317	-0.495	-6.634	49.516	0.037	0.001	0	2006.31	33.4386	49.4	12.1	40.7	2.804	0.006	0.005	0.000	0.132	0.11
1871	10/3/2002	2:37:35 AM	26.707	25.826	26.057	27.454	27.272	45.254	51.171	9.673	36.413	-0.428	-6.628	48.772	0.037	0.001	0	2007.31	33.4552	49.7	12.0	40.8	2.815	0.006	0.005	0.000	0.131	0.11
1872	10/3/2002	2:38:35 AM	26.715	25.849	26.239	27.426	27.285	44.969	50.712	9.582	36.313	-0.425	-6.628	49.384	0.037	0.001	0	2008.31	33.4719	49.2	12.1	40.6	2.802	0.006	0.005	0.000	0.131	0.11
1873	10/3/2002	2:39:35 AM	26.722	25.866	26.301	27.408	27.281	45.159	51.109	9.756	36.253	-0.428	-6.623	49.573	0.037	0.001	0	2009.31	33.4886	49.6	12.1	40.7	2.807	0.006	0.005	0.000	0.131	0.11
1874	10/3/2002	2:40:35 AM	26.718	25.867	26.298	27.4	27.283	44.896	50.784	9.56	36.264	-0.402	-6.623	49.126	0.037	0.001	0	2010.31	33.5052	49.3	12.0	40.6	2.798	0.006	0.005	0.000	0.131	0.11
1875	10/3/2002	2:41:35 AM	26.746	25.89	26.315	27.437	27.296	45.109	51.033	9.649	36.36	-0.414	-6.617	49.219	0.037	0.001	0	2011.31	33.5219	49.6	12.1	40.7	2.809	0.006	0.005	0.000	0.131	0.11
1876	10/3/2002	2:42:35 AM	26.763	25.902	26.302	27.469	27.297	45.163	51.167	9.652	36.403	-0.379	-6.617	48.852	0.037	0.001	0	2012.31	33.5386	49.7	12.0	40.8	2.812	0.006	0.005	0.000	0.130	0.11
1877	10/3/2002	2:43:35 AM	26.779	25.923	26.279	27.541	27.309	45.107	50.999	9.649	36.397	-0.382	-6.617	49.663	0.037	0.001	0	2013.31	33.5552	49.5	12.2	40.8	2.810	0.006	0.005	0.000	0.131	0.11
1878	10/3/2002	2:44:35 AM	26.792	25.941	26.261	27.563	27.342	45	50.948	9.628	36.229	-0.318	-6.611	48.992	0.037	0.001	0	2014.31	33.5719	49.5	12.0	40.6	2.800	0.006	0.005	0.000	0.131	0.11
1879	10/3/2002	2:45:35 AM	26.804	25.959	26.264	27.576	27.346	44.919	50.904	9.581	36.223	-0.289	-6.605	49.689	0.037	0.001	0	2015.31	33.5886	49.4	12.2	40.6	2.797	0.006	0.005	0.000	0.131	0.11
1880	10/3/2002	2:46:35 AM	26.821	25.975	26.231	27.622	27.366	45.12	51.105	9.643	36.342	-0.278	-6.579	49.319	0.037	0.001	0	2016.31	33.6052	49.6	12.1	40.7	2.808	0.006	0.005	0.000	0.131	0.11
1881	10/3/2002	2:47:35 AM	26.808	25.972	26.193	27.594	27.363	45.002	51.122	9.492	36.337	-0.255	-6.573	49.202	0.037	0.001	0	2017.31	33.6219	49.6	12.1	40.7	2.804	0.006	0.005	0.000	0.131	0.11
1882	10/3/2002	2:48:35 AM	26.825	26.005	26.2	27.612	27.37	45.008	51.018	9.677	36.182	-0.255	-6.576	49.726	0.037	0.001	0	2018.31	33.6386	49.5	12.2	40.6	2.799	0.006	0.005	0.000	0.131	0.11
1883	10/3/2002	2:49:35 AM	26.827	26.016	26.182	27.613	27.382	44.778	50.822	9.568	36.061	-0.252	-6.57	49.296	0.037	0.001	0	2019.31	33.6552	49.3	12.1	40.4	2.787	0.006	0.005	0.000	0.132	0.11
1884	10/3/2002	2:50:35 AM	26.824	26.033	26.179	27.62	27.404	45.101	51.097	9.623	36.434	-0.246	-6.559	48.938	0.037	0.001	0	2020.31	33.6719	49.6	12.0	40.8	2.811	0.006	0.005	0.000	0.131	0.11
1885	10/3/2002	2:51:35 AM	26.817	26.041	26.151	27.583	27.411	45.027	51.093	9.554	36.501	-0.182	-6.562	49.191	0.037	0.001	0	2021.31	33.6886	49.6	12.1	40.8	2.811	0.006	0.005	0.000	0.131	0.11
1886	10/3/2002	2:52:35 AM	26.818	26.052	26.133	27.59	27.418	44.881	50.917	9.543	36.264	-0.182	-6.565	49.391	0.037	0.001	0	2022.31	33.7052	49.4	12.1	40.6	2.797	0.006	0.005	0.000	0.132	0.11
1887	10/3/2002	2:53:35 AM	26.821	26.08	26.131	27.617	27.436	44.774	50.702	9.458	36.294	-0.182	-6.555	49.344	0.037	0.001	0	2023.31	33.7219	49.2	12.1	40.5	2.795	0.006	0.005	0.000	0.132	0.11
1888	10/3/2002	2:54:35 AM	26.818	26.087	26.117	27.624	27.432	44.989	50.995	9.62	36.36	-0.185	-6.559	49.005	0.037	0.001	0	2024.31	33.7386	49.5	12.0	40.7	2.804	0.006	0.005	0.000	0.131	0.11
1889	10/3/2002	2:55:35 AM	26.809	26.104	26.329	27.601	27.424	44.718	50.735	9.46	36.288	-0.177	-6.553	49.156	0.037	0.001	0	2025.31	33.7552	49.3	12.0	40.5	2.793	0.006	0.005	0.000	0.131	0.11
1890	10/3/2002	2:56:35 AM	26.816	26.115	26.376	27.602	27.436	44.844	51.004	9.602	36.045	-0.156	-6.547	48.738	0.037	0.001	0	2026.31	33.7719	49.5	11.9	40.4	2.789	0.006	0.005	0.000	0.131	0.11
1891	10/3/2002	2:57:35 AM	26.829	26.133	26.388	27.69	27.424	45.091	51.202	9.637	36.393	-0.159	-6.547	49.384	0.037	0.001	0	2027.31	33.7886	49.7	12.1	40.7	2.809	0.006	0.005	0.000	0.130	0.11
1892	10/3/2002	2:58:35 AM	26.855	26.149	26.384	27.651	27.439	44.991	51.124	9.554	36.296	-0.159	-6.544	48.552	0.037	0.001	0	2028.31	33.8052	49.7	11.9	40.6	2.802	0.006	0.005	0.000	0.131	0.11
1893	10/3/2002	2:59:35 AM	26.86	26.155	26.35	27.637	27.44	44.983	51.099	9.546	36.311	-0.148	-6.547	48.633	0.037	0.001	0	2029.31	33.8219	49.6	11.9	40.6	2.802	0.006	0.005	0.000	0.131	0.11
1894	10/3/2002	3:00:35 AM	26.872	26.161	26.327	27.628	27.452	44.853	50.95	9.463	36.311	-0.125	-6.544	48.818	0.037	0.001	0	2030.31	33.8386	49.5	12.0	40.6	2.798	0.006	0.005	0.000	0.131	0.11
1895	10/3/2002	3:01:35 AM	26.899	26.188	26.324	27.67	27.459	44.73	50.95	9.373	36.253	-0.101	-6.539	48.766	0.037	0.001	0	2031.31	33.8552	49.5	12.0	40.5	2.792	0.006	0.005	0.000	0.131	0.11
1896	10/3/2002	3:02:35 AM	26.916	26.205	26.316	27.687	27.461	44.614	51.109	9.444	36.227	-0.101	-6.539	49.015	0.037	0.001	0	2032.31	33.8719	49.6	12.0	40.6	2.794	0.006	0.005	0.000	0.131	0.11
1897	10/3/2002	3:03:35 AM	26.917	26.216	26.291	27.668	27.481	45.126	51.386	9.602	36.378	-0.104	-6.536	49.099	0.037	0.001	-0.001	2033.31	33.8886	49.9	12.0	40.8	2.810	0.006	0.005	0.000	0.131	0.11
1898	10/3/2002	3:04:35 AM	26.917	26.222	26.282	27.709	27.487	45.043	51.283	9.541	36.456	-0.093	-6.53	49.147	0.037	0.001	0	2034.31	33.9052	49.8	12.0	40.7	2.810	0.006	0.005	0.000	0.131	0.11
1899	10/3/2002	3:05:35 AM	26.919	26.243	26.264	27.735	27.499	44.782	51.053	9.418	36.155	-0.101	-6.53	49.275	0.037	0.001	0	2035.31	33.9219	49.6	12.1	40.5	2.790	0.006	0.005	0.000	0.132	0.11
1900	10/3/2002	3:06:35 AM	26.916	26.255	26.251	27.757	27.516	45.047	51.407	9.658	36.21	-0.078	-6.527	49.028	0.037	0.001	0	2036.31	33.9386	49.9	12.0	40.6	2.801	0.006	0.005	0.000	0.131	0.11
1901	10/3/2002	3:07:35 AM	26.923	26.272	26.248	27.789	27.527	44.894	51.235	9.608	36.086	-0.084	-6.527	49.29	0.037	0.001	0	2037.31	33.9552	49.8	12.1	40.5	2.792	0.006	0.005	0.000	0.132	0.11
1902	10/3/2002	3:08:35 AM	26.92	26.284	26.229	27.785	27.529	44.753	51.045	9.628	35.979	-0.081	-6.521	48.994	0.037	0.001	0	2038.31	33.9719	49.6	12.0	40.4	2.783	0.006	0.005	0.000	0.132	0.11
1903	10/3/2002	3:09:35 AM	26.925	26.3	26.235	27.791	27.52	44.538	50.834	9.58	35.801	-0.058	-6.521	49.338	0.037	0.001	0	2039.31	33.9886	49.4	12.1	40.2	2.770	0.006	0.005	0.000	0.133	0.11
1904	10/3/2002	3:10:35 AM	26.923	26.307	26.208	27.809	27.543	44.811	51.142	9.603	36.014	-0.055	-6.521	49.322	0.037	0.001	0	2040.31	34.0052	49.7	12.1	40.4	2.786	0.006	0.005	0.000	0.132	0.11
1905	10/3/2002	3:11:35 AM	26.924	26.323	26.209	27.8	27.565	44.168	51.459	9.702	36.348	-0.038	-6.515	48.942	0.037	0.001	0	2041.31	34.0219	50.1	12.0	40.8	2.811	0.006	0.005	0.000	0.131	0.11
1906	10/3/2002	3:12:35 AM	26.909	26.328	26.189	27.786	27.564	44.753	50.95	9.607	36.037	-0.049	-6.513	49.28	0.037	0.001	0	2042.31	34.0386	49.5	12.1	40.4	2.785	0.006	0.005	0.000	0.132	0.11
1907	10/3/2002	3:13:35 AM	26.911	26.345	26.246	27.792	27.58	44.745	51.026	9.641	35.955	-0.047	-6.507	49.12	0.037	0.001	0	2043.31	34.0552	49.6	12.0	40.4	2.782	0.006	0.

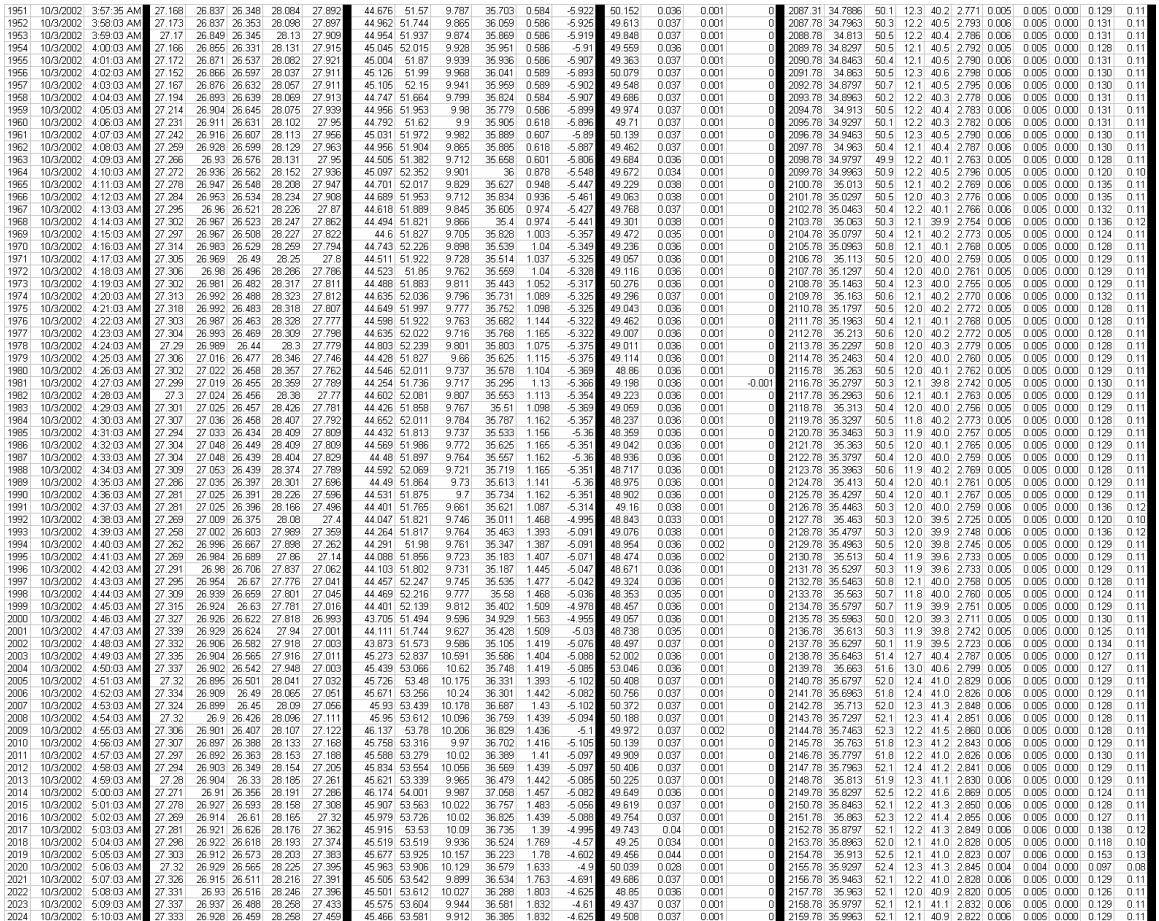
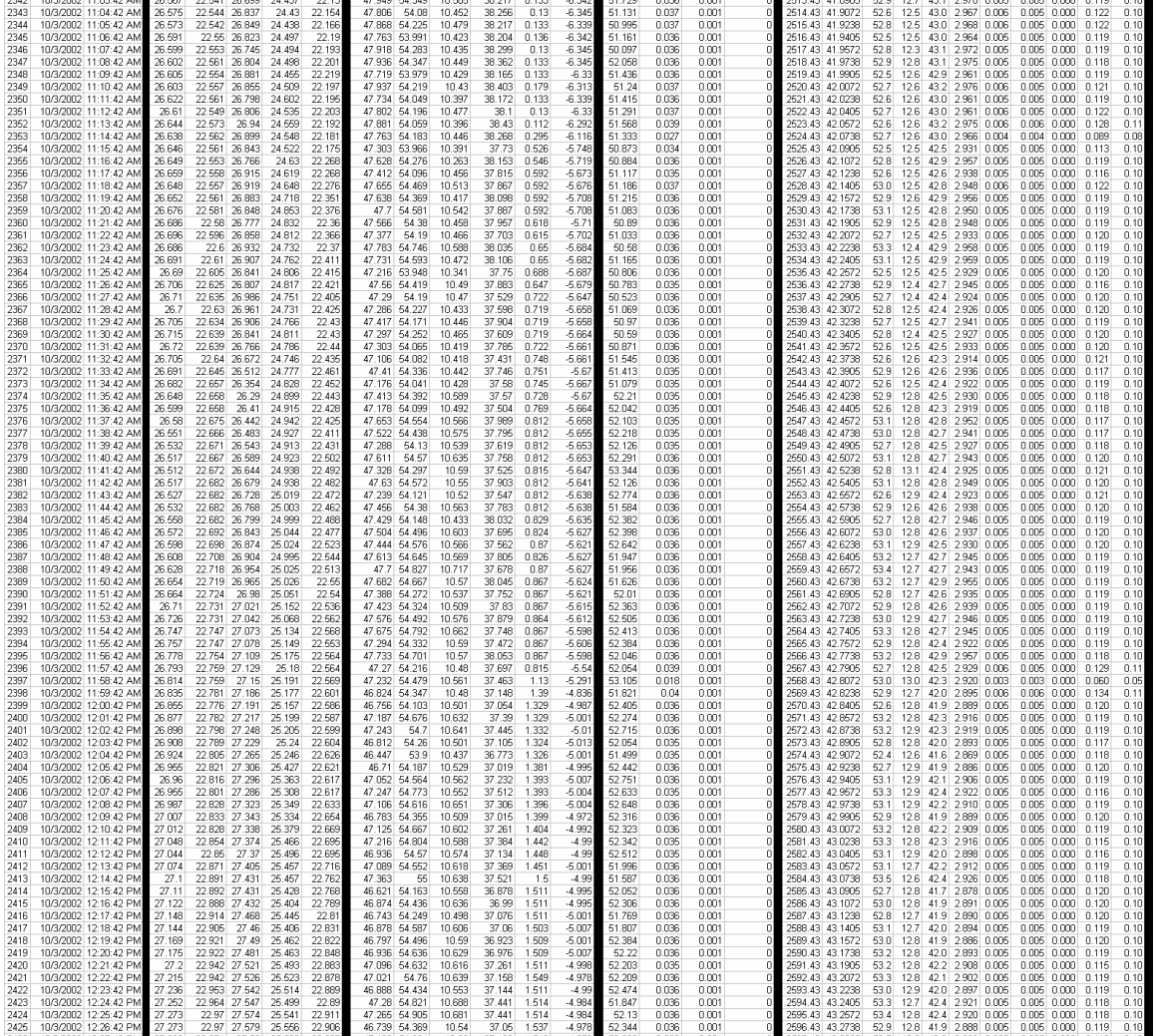


Figure D2-16: Dewatering of the AN-102R2, batch 3C, insoluble solids concentrations from 1 to 8.5 wt% - Raw & Calculated Data

2081	10/3/2002	6:07:03 AM	26.845	26.189	26.289	26.052	24.864	45.969	53.252	10.311	36.466	0.93	-4.573	51.012	0.039	0.001	0	2216.78	36.9463	51.8	12.5	41.2	2.842	0.006	0.006	0.000	0.136	0.12
2082	10/3/2002	6:08:03 AM	26.834	26.153	26.243	26.046	24.773	46.122	53.306	10.283	36.73	0.936	-4.578	51.645	0.036	0.001	0	2217.78	36.963	51.8	12.7	41.4	2.856	0.005	0.005	0.000	0.125	0.11
2083	10/3/2002	6:09:03 AM	26.823	26.103	26.187	26.001	24.676	45.973	53.217	10.272	36.458	0.962	-4.581	50.913	0.036	0.001	0	2218.78	36.9797	51.7	12.5	41.2	2.842	0.005	0.005	0.000	0.126	0.11
2084	10/3/2002	6:10:03 AM	26.792	26.051	26.321	25.869	24.631	45.778	52.952	10.162	36.507	0.977	-4.57	51.169	0.036	0.001	0	2219.78	36.9963	51.5	12.5	41.1	2.837	0.005	0.005	0.000	0.126	0.11
2085	10/3/2002	6:11:03 AM	26.802	26.037	26.371	25.855	24.582	46.016	53.281	10.227	36.649	0.98	-4.57	51.165	0.036	0.001	0	2220.78	37.013	51.8	12.5	41.3	2.850	0.005	0.005	0.000	0.125	0.11
2086	10/3/2002	6:12:03 AM	26.777	25.982	26.306	25.765	24.496	45.606	52.758	10.105	36.364	0.98	-4.581	51.245	0.036	0.001	0	2221.78	37.0297	51.3	12.6	41.0	2.826	0.005	0.005	0.000	0.126	0.11
2087	10/3/2002	6:13:03 AM	26.772	25.942	26.251	25.775	24.436	45.956	53.43	10.316	36.303	0.988	-4.584	48.992	0.036	0.001	0	2222.78	37.0463	52.0	12.0	41.1	2.836	0.005	0.005	0.000	0.126	0.11
2088	10/3/2002	6:14:03 AM	26.769	25.908	26.213	25.752	24.348	45.669	52.959	10.169	36.358	1.026	-4.575	50.555	0.036	0.001	0	2223.78	37.063	51.5	12.4	41.0	2.828	0.005	0.005	0.000	0.126	0.11
2089	10/3/2002	6:15:03 AM	26.749	25.853	26.353	25.532	24.263	46.054	53.443	10.257	36.624	1.037	-4.578	51.27	0.036	0.001	0	2224.78	37.0797	52.0	12.6	41.3	2.850	0.005	0.005	0.000	0.125	0.11
2090	10/3/2002	6:16:03 AM	26.734	25.814	26.353	25.507	24.183	46.043	53.387	10.222	36.698	1.043	-4.573	50.924	0.036	0.001	0	2225.78	37.0963	51.9	12.5	41.4	2.852	0.005	0.005	0.000	0.125	0.11
2091	10/3/2002	6:17:03 AM	26.761	25.795	26.349	25.543	24.143	45.961	53.374	10.239	36.579	1.075	-4.57	51.584	0.036	0.001	0	2226.78	37.113	51.9	12.6	41.3	2.845	0.005	0.005	0.000	0.125	0.11
2092	10/3/2002	6:18:03 AM	26.736	25.73	26.259	25.523	24.074	45.898	53.238	10.139	36.567	1.075	-4.573	50.863	0.036	0.001	0	2227.78	37.1297	51.8	12.5	41.2	2.843	0.005	0.005	0.000	0.126	0.11
2093	10/3/2002	6:19:03 AM	26.721	25.685	26.32	25.368	23.999	45.871	53.155	10.194	36.497	1.068	-4.57	51.61	0.036	0.001	0	2228.78	37.1463	51.7	12.6	41.2	2.839	0.005	0.005	0.000	0.126	0.11
2094	10/3/2002	6:20:03 AM	26.713	25.647	26.402	25.405	23.915	45.606	53.066	10.156	36.229	1.101	-4.564	51.903	0.036	0.001	0	2229.78	37.163	51.6	12.7	40.9	2.821	0.005	0.005	0.000	0.126	0.11
2095	10/3/2002	6:21:03 AM	26.716	25.6	26.374	25.353	23.853	45.64	53.027	10.077	36.374	1.098	-4.57	51.568	0.036	0.001	0	2230.78	37.1797	51.6	12.6	41.0	2.827	0.005	0.005	0.000	0.126	0.11
2096	10/3/2002	6:22:03 AM	26.707	25.556	26.321	25.314	23.804	45.94	53.41	10.229	36.489	1.17	-4.541	51.186	0.036	0.001	0	2231.78	37.1963	51.9	12.5	41.2	2.842	0.005	0.005	0.000	0.125	0.11
2097	10/3/2002	6:23:03 AM	26.72	25.519	26.283	25.297	23.731	45.987	53.548	10.267	36.415	1.173	-4.541	51.014	0.036	0.001	0	2232.78	37.213	52.1	12.5	41.2	2.841	0.005	0.005	0.000	0.126	0.11
2098	10/3/2002	6:24:03 AM	26.688	25.467	26.421	25.155	23.674	45.826	53.19	10.098	36.581	1.17	-4.567	51.364	0.036	0.001	0	2233.78	37.2297	51.7	12.6	41.2	2.841	0.005	0.005	0.000	0.125	0.11
2099	10/3/2002	6:25:03 AM	26.659	25.407	26.387	25.135	23.63	46.124	53.614	10.254	36.561	1.188	-4.575	51.442	0.036	0.001	0	2234.78	37.2463	52.1	12.6	41.3	2.850	0.005	0.005	0.000	0.125	0.11
2100	10/3/2002	6:26:03 AM	26.676	25.385	26.385	25.133	23.562	46.027	53.439	10.182	36.775	1.191	-4.57	51.018	0.036	0.001	0	2235.78	37.263	52.0	12.5	41.4	2.854	0.005	0.005	0.000	0.126	0.11
2101	10/3/2002	6:27:03 AM	26.659	25.328	26.303	25.146	23.5	45.956	53.482	10.073	36.677	1.188	-4.573	50.773	0.036	0.001	0	2236.78	37.2797	52.0	12.4	41.3	2.849	0.005	0.005	0.000	0.125	0.11
2102	10/3/2002	6:28:03 AM	26.642	25.276	26.425	25.059	23.426	45.526	52.944	10.108	36.247	1.208	-4.57	50.628	0.036	0.001	0	2237.78	37.2963	51.5	12.4	40.9	2.819	0.005	0.005	0.000	0.126	0.11
2103	10/3/2002	6:29:03 AM	26.624	25.227	26.432	24.99	23.374	45.917	53.339	10.197	36.563	1.211	-4.567	50.609	0.036	0.001	0	2238.78	37.313	51.9	12.4	41.2	2.843	0.005	0.005	0.000	0.125	0.11
2104	10/3/2002	6:30:03 AM	26.616	25.18	26.379	24.937	23.326	46.381	53.976	10.319	36.79	1.208	-4.575	51.247	0.036	0.001	0	2239.78	37.3297	52.5	12.6	41.6	2.867	0.005	0.005	0.000	0.124	0.11
2105	10/3/2002	6:31:03 AM	26.608	25.131	26.311	24.929	23.277	46.095	53.561	10.165	36.794	1.272	-4.567	50.981	0.036	0.001	0	2240.78	37.3463	52.1	12.5	41.4	2.857	0.005	0.005	0.000	0.125	0.11
2106	10/3/2002	6:32:03 AM	26.596	25.099	26.454	24.847	23.22	45.853	53.25	10.161	36.64	1.272	-4.564	49.611	0.036	0.001	0	2241.78	37.363	51.8	12.2	41.2	2.844	0.005	0.005	0.000	0.125	0.11
2107	10/3/2002	6:33:03 AM	26.6	25.074	26.463	24.842	23.22	45.72	53.261	10.193	36.342	1.272	-4.558	50.393	0.036	0.001	0	2242.78	37.3797	51.8	12.3	41.0	2.829	0.005	0.005	0.000	0.126	0.11
2108	10/3/2002	6:34:03 AM	26.59	25.023	26.418	24.801	23.149	45.71	53.219	10.169	36.348	1.315	-4.558	50.473	0.036	0.001	0	2243.78	37.3963	51.7	12.4	41.0	2.829	0.005	0.005	0.000	0.126	0.11
2109	10/3/2002	6:35:03 AM	26.59	24.983	26.348	24.801	23.079	45.938	53.503	10.136	36.589	1.324	-4.57	50.744	0.036	0.001	0	2244.78	37.413	52.0	12.4	41.3	2.845	0.005	0.005	0.000	0.125	0.11
2110	10/3/2002	6:36:03 AM	26.586	24.944	26.499	24.707	23.045	45.903	53.511	10.193	36.462	1.329	-4.564	51.339	0.036	0.001	0	2245.78	37.4297	52.0	12.6	41.2	2.839	0.005	0.005	0.000	0.125	0.11
2111	10/3/2002	6:37:03 AM	26.567	24.9	26.49	24.698	23	45.621	53.085	10.085	36.497	1.324	-4.564	50.876	0.036	0.001	0	2246.78	37.4463	51.6	12.5	41.1	2.831	0.005	0.005	0.000	0.125	0.11
2112	10/3/2002	6:38:03 AM	26.568	24.861	26.446	24.649	22.916	45.64	53.106	10.164	36.417	1.326	-4.564	50.114	0.036	0.001	0	2247.78	37.463	51.6	12.3	41.0	2.829	0.005	0.005	0.000	0.126	0.11
2113	10/3/2002	6:39:03 AM	26.563	24.811	26.386	24.654	22.876	45.84	53.546	10.212	36.327	1.341	-4.561	51.169	0.036	0.002	0	2248.78	37.4797	52.1	12.5	41.1	2.833	0.005	0.005	0.000	0.126	0.11
2114	10/3/2002	6:40:03 AM	26.546	24.773	26.518	24.581	22.843	45.468	53.105	10.125	36.02	1.393	-4.564	50.597	0.036	0.002	0	2249.78	37.4963	51.6	12.4	40.7	2.809	0.005	0.005	0.000	0.126	0.11
2115	10/3/2002	6:41:03 AM	26.527	24.719	26.509	24.537	22.799	45.642	53.236	10.12	36.297	1.396	-4.555	51.025	0.036	0.001	0	2250.78	37.513	51.8	12.5	41.0	2.825	0.005	0.005	0.000	0.126	0.11
2116	10/3/2002	6:42:03 AM	26.517	24.669	26.44	24.492	22.719	45.546	53.209	10.151	36.094	1.393	-4.561	50.89	0.036	0.001	0	2251.78	37.5297	51.7	12.5	40.8	2.814	0.005	0.005	0.000	0.126	0.11
2117	10/3/2002	6:43:03 AM	26.51	24.617	26.357	24.45	22.676	45.594	53.101	10.153	36.368	1.407	-4.555	50.24	0.036	0.001	0	2252.78	37.5463	51.6	12.3	41.0	2.826	0.005	0.005	0.000	0.126	0.11
2118	10/3/2002	6:44:03 AM	26.497	24.574	26.43	24.372	22.649	45.985	53.648	10.19	36.593	1.396	-4.561	51.662	0.036	0.001	0	2253.78	37.563	52.2	12.7	41.3	2.847	0.005	0.005	0.000	0.125	0.11
2119	10/3/2002	6:45:03 AM	26.486	24.533	26.314	24.291	22.613	45.582	53.31	10.212	36.092	1.399	-4.561	51.266	0.036	0.001	0	2254.78	37.5797	51.8	12.6	40.8	2.816	0.005	0.005	0.000	0.127	0.11
2120	10/3/2002	6:46:03 AM	26.48	24.487	26.243	24.31	22.561	45.917	53.716	10.351	36.233	1.43	-4.561	51.543	0.036	0.001	0	2255.78	37.5963	52.2	12.6	41.1	2.832	0.005	0.005	0.000	0.126	0.11
2121	10/3/2002	6:47:03 AM	26.448	24.439	26.14	24.262	22.523	45.557	53.163	10.173	36.286	1.442	-4.561	52.13	0.036	0.001	0	2256.78	37.613	51.7	12.8	40.9	2.821	0.005	0.005	0.000	0.127	0.11
2122	10/3/2002	6:48:03 AM	26.43	24.402	26.233	24.26	22.481	45.548	53.172	10.181	36.196	1.477	-4.556	52.694	0.035	0.001	0	2257.78	37.6297	51.7	12.9	40.9	2.818	0.005	0.005	0.000	0.123	0.10
2123	10/3/2002	6:49:03 AM	26.392	24.364	26.225	24.156	22.432	45.596	53.335	10.314	36.067	1.503	-4.552	52.264	0.036	0.001	0	2258.78	37.6463	51.9	12.8	40.8	2.815	0.005	0.005	0.000	0.127	0.11
2124	10/3/2002	6:50:03 AM	26.365	24.316	26.157	24.134	22.375	45.755	53.472	10.194	36.37	1.509	-4.555	50.886	0.036	0.001	0	2259.78	37.663	52.0	12.5	41.1	2.831	0.005	0.005	0.000	0.127	0.11
2125	10/3/2002	6:51:03 AM	26.347	24.278	26.079	24.106	22.301	45.818	53.494	10.274	36.358	1.509	-4.555	52.08	0.035	0.001	0	2260.78	37.6797	52.0	12.8	41.1	2.833	0.005	0.005	0.000	0.123	0.10
2126	10/3/2002	6:52:03 AM	26.33	24.236	26.042	24.124	22.274	45.58	53.269	10.243	36.19	1.514	-4.555	52.067	0.035	0.001	0	2261.78	37.6963	51.8	12.8	40.9	2.819	0.005	0.005	0.000	0.124	0.11
2127	10/3/2002	6:53:03 AM	26.292	24.183	26.144	24.031	22.251	45.807	53.437	10.323	36.321	1.509	-4.555	51.761	0.035	0.001	0	2262.78	37.713	52.0	12.7	41.1	2.831	0.005	0.005	0.000	0.123	0.10
2128	10/3/2002	6:54:03 AM	26.286	24.162	26.133	24.034	22.214	45.843	53.641	10.249	36.331	1.511	-4.558	52.782	0.035	0.001	0	2263.78	37.7297	52.2	12.9	41.1	2.833	0.005	0.005	0.000	0.123	0.10
2129	10/3/2002	6:55:03 AM	26.275	24.126	26.087	24.054	22.164	45.613	53.31	10.186	36.278	1.558	-4.549	51.551	0.035	0.001	0	2264.78	37.7463	51.8	12.6	40.9	2.823	0.005	0.005	0.000	0.124	0.11
2130	10/3/2002	6:56:03 AM	26.249	24.074	26.046	23.987	22.147	45.416	53.103	10.162	36.088	1.569	-4.555	51.136	0.035	0.002	0	2265.78	37.763	51.6	12.5	40.8	2.810	0.005	0.005	0.000	0.124	0.11
2131	10/3/2002	6:57:03 AM	26.234	24.044	26.181	23.952	22.127	45.623	53.346	10.346	36.086	1.575	-4.535	51.782	0.036	0.002	0	2266.78	37.7797	51.9	12.7	40.9	2.817	0.005	0.005	0.000	0.127	0.11
2132	10/3/2002	6:58:03 AM	26.203	23.993	26.13	23.886	22.07	45.958	53.894	10.361	36.323	1.572	-4.546	52.306	0.035	0.001	0	2267.78	37.7963	52.4	12.8	41.1	2.836	0.005	0.005	0.000	0.123	0.10
2133	10/3/2002	6:59:03 AM	26.181	23.941	26.058	23.854	22.043	45.975	53.716	10.315	36.452	1.584	-4.532	51.884	0.035	0.001	0	2268.78	37.813	52.2	12.7	41.2	2.842	0.005	0.005	0.000	0.123	0.10
2134	10/3/2002	7:00:03 AM	26.176	23.916	26.048	23.839	22.039	45.853	53.679	10.312	36.264	1.598	-4.538	51.742	0.035	0.001	0	2269.78	37.8297	52.2	12.7	41.1	2.832	0.005	0.005	0.000	0.123	0.10
2135	10/3/2002	7:01:03 AM	26.155	23.88	26.147	23.828	21.992	45.72	53.567	10.31	36.208	1.627	-4.538	51.404	0.035	0.001	0	2270.78	37.8463	52.1	12.6	41.0	2.824	0.005	0.005	0.000	0.123	0.10
2136	10/3/2002	7:02:03 AM	26.139	23.844	26.116	23.837	21.966	45.842	53.639	10.212	36.43	1.644	-4.532	51.194	0.035	0.001	0	2271.78	37.863	52.2	12.5	41.1	2.836	0.005	0.005	0.000	0.123	0.10
2137	10/3/2002	7:03:03 AM	26.124	23.788	26.026	23.812	21.911	45.72	53.575	10.279	36.139	1.641	-4.529	51.442	0.035	0.001	0	2272.78	37.8797	52.1	12.6	40.9	2.822	0.005	0.005	0.000	0.124	0.11
2138	10/3/2002	7:04:03 AM	26.119	23.763	26.121	23.782	21.886	45.501	53.379	10.238	35.967	1.641	-4.529	51.96	0.035	0.001	0	2273.78	37.8963	51.9	12.7	40.7	2.808	0.005	0.005	0.000	0.124	0.11
2139	10/3/2002	7:05:03 AM	26.088	23.718	26.139	23.686	21.836	45.677	53.598	10.298	36.086	1.641	-4.532	51.249	0.035	0.001	0	2274.78	37.913	52.1	12.6	40.9	2.819	0.005	0.005	0.000	0.124	0.11
2140	10/3/2002	7:06:03 AM	26.079	23.683	26.091	23.651	21.8	46.004	53.801	10.368	36.425	1.647	-4.535	51.362	0.035	0.001	0	2275.78	37.9297	52.3	12.6	41.2	2.842	0.005	0.005	0.000	0.123	0.10
2141	10/3/2002	7:07:03 AM	26.079	23.643	26.011	23.661	21.785	45.3	53.168	10.245	35.846	1.665	-4.535	51.784	0.035	0.001	0	2276.78	37.9463	51.7	12.7	40.6	2.797	0.005	0.005	0.000	0.125	0.11
2142	10/3/2002	7:08:03 AM	26.068	23.618	26.161	23.616	21.734	45.604	53.36	10.218	36.245	1.665	-4.532	51.343	0.035	0.001	0	2277.78	37.963	51.9	12.6	40.9	2.822	0.005	0.005	0.000	0.123	0.11
2143	10/3/2002	7:09:03 AM	26.049	23.573	26.121	23.596	21.729	45.376	53.122	10.166	36.088	1.665	-4.532	51.637	0.035	0.001	0	2278.78	37.9797	51.6	12.7	40.7	2.808	0.005	0.005	0.000	0.124	0.11
2144	10/3/2002	7:10:03 AM	26.054	23.538	26.081	23.591	21.704	45.509	53.457	10.313	36.938	1.668	-4.535	51.733	0.035	0.001	0	2279.78	37.9963	52.0	12.7	40.7	2.808	0.005	0.005	0.000	0.124	0.11
2145	10/3/2002	7:11:03 AM	26.029	23.488	26.031	23.591	21.669	45.77	53.59	10.301	36.288	1.665	-4.544	51.691	0.035	0.001	0	2280.78	38.013	52.1	12.7	41.0	2.829	0.005	0.005	0.000	0.124	0.11
2146	10/3/2002	7:12:03 AM	26.015	23.464	26.162	23.477	21.64	45.379	53.304	10.221	35.969	1.702	-4.532	51.7	0.035	0.001	0	2281.78	38.0297	51.8	12.7	40.7	2.804	0.005	0.005	0.000	0.124	0.11
2147	10/3/2002	7:13:03 AM	26	23.419	26.097	23.447	21.626	45.362	53.316	10.25	35.897	1.682	-4.541	51.251	0.035	0.001	0	2282.78	38.0463	51.8	12.6	40.6	2.801	0.005	0.005	0.000	0.125	0.11
2148	10/3/2002	7:14:03 AM	26.001	23.389	26.048	23.437	21.6	45.623	53.604	10.307	35.94	1.722	-4.535	51.297	0.035	0.001	0	2283.78	38.0963	52.2	12.6	40.8	2.812	0.005	0.005	0.000	0.124	0.11
2149	10/3/2002	7:15:03 AM	25.987	23.36	26.184	23.354	21.557	45.511	53.459	10.268	36.11	1.725	-4.526	51.765	0.035	0.001	0	2284.78	38.0797	52.0	12.7	40.8	2.814	0.005	0.005	0.000	0.124	0.11
2150	10/3/2002	7:16:03 AM	25.994	23.342	26.196	23.375	21.533	45.521	53.424	10.223	36.08	1.728	-4.52	51.469	0.035	0.001	0	2285.78	38.0963	52.0	12.6	40.8	2.813	0.005	0.005	0.000	0.124	0.11
2151	10/3/2002	7:17:03 AM	25.969	23.276	26.105	23.365	21.528	45.959	53.916	10.247	36.554	1.725	-4.523	51.111	0.035	0.001	0	2286.78	38.113	52.4	12.5	41.3	2.844	0.005	0.005	0.000	0.123	0.10
2152	10/3/2002	7:18:03 AM	25.969	23.257	26.136	23.366	21.514	45.395	53.368	10.267	35.895	1.734	-4.523	51.744	0.035	0.001	0	2287.78	38.1297	51.9	12.7	40.6	2.802	0.005	0.005	0.000	0.124	0.11
2153	10/3/2002	7:19:03 AM	25.97	23.238	26.227	23.387	21.535	45.557	53.527	10.255	36.041	1.774	-4.52	51.637	0.035	0.001	0	2288.78	38.1463	52.1	12.7	40.8	2.813	0.005	0.005	0.000	0.124	0.11
2154	10/3/2002	7:20:03 AM	25.956	23.194	26.163	23.378	21.566	45.637	53.594	10.276	36.104	1.772	-4.523	51.515	0.035	0.001	0	2289.78	38.163	52.1	12.6	40.9	2.818	0.005	0.005	0.000	0.124	0.11
2155	10/3/2002	7:21:03 AM	25.969	23.166	26.095	23.48	21.583	45.26	53.211	10.225	35.785	1.786	-4.532	50.983	0.035	0.001	0	2290.78	38.1797	51.7	12.5	40.5	2.794	0.005	0.005	0.000	0.125	0.11
2156	10/3/2002	7:22:03 AM	25.975	23.147	26.212	23.442	21.598	45.418	53.611	10.328	35.876	1.838	-4.538	51.892	0.035	0.001	0	2291.78	38.1963	52.0	12.7	40.6	2.802	0.005	0.005	0.000	0.124	0.11
2157	10/3/2002	7:23:03 AM	25.977	23.124	26.204	23.499	21.627	45.459	53.482	10.252	35.824	1.835	-4.532	51.958	0.035	0.001	0	2292.78	38.213	52.0	12.7	40.7	2.809	0.005	0.005	0.000	0.124	0.11
2158	10/3/2002	7:24:03 AM	25.994	23.111	26.176	23.547	21.629	45.801	53.751	10.292	36.366	1.838	-4.523	51.452	0.035	0.001	0	2293.78	38.2297	52.3	12.6	41.1	2.833	0.005	0.005	0.000	0.123	0.10
2159	10/3/2002	7:25:03 AM	25.998	23.095	26.1	23.625	21.663	45.265	53.23	10.198	35.801	1.841	-4.529	51.853	0.035	0.001	0	2294.78	38.2463	51.8	12.7	40.5	2.795	0.005	0.005	0.000	0.125	0.11
2160	10/3/2002	7:26:03 AM	25.985	23.072	26.232	23.548	21.681	45.551	53.548	10.297	36.006	1.864	-4.52	51.469	0.035	0.001	0	2295.78	38.263	52.1	12.6	40.8	2.812	0.005	0.005	0.000	0.124	0.11
2161	10/3/2002	7:27:03 AM	25.979	23.055	26.211	23.576	21.704	45.352	53.337	10.269	35.895	1.873	-4.52	51.249	0.035	0.001	0	2296.78	38.2797	51.9	12.6	40.6	2.801	0.005	0.005	0.000	0.124	0.11
2162	10/3/2002	7:28:03 AM	25.978	23.039	26.164	23.68	21.733	45.449	53.583	10.295	35.774	1.881	-4.529	51.169	0.035	0.001	0	2297.78	38.2963	52.1	12.5	40.6	2.800	0.005	0.005	0.000	0.124	0.11
2163	10/3/2002	7:29:03 AM	25.991	23.027	26.118	23.784	21.747	45.493	53.368	10.215	36.135	1.873	-4.529	51.524	0.035	0.001	0	2298.78	38.313	51.9	12.6	40.8	2.814	0.005	0.005	0.000	0.124	0.11
2164	10/3/2002	7:30:03 AM	25.996	23.017	26.213	23.739	21.767	45.743	53.768	10.369	36.168	1.89	-4.516	51.725	0.035	0.002	0	2299.78	38.3297	52.3	12.7	41.0	2.824	0.005	0.005	0.000	0.123	0.10
2165	10/3/2002	7:31:03 AM	25.986	23.007	26.128	23.779	21.807	45.952	53.962	10.395	36.08	1.884	-4.526	51.39	0.035	0.001	0	2300.78	38.3463	52.5	12.6	41.2	2.838	0.005	0.005	0.000	0.123	0.10
2166	10/3/2002	7:32:03 AM	25.98	22.987	26.067	23.803	21.821	45.646	53.739	10.38	36.028	1.887	-4.529	51.876	0.035	0.001	0	2301.78	38.363	52.3	12.7	40.8	2.816	0.005	0.005	0.000	0.124	0.11
2167	10/3/2002	7:33:03 AM	25.975	22.987	25.997	23.808	21.847	45.592	53.681	10.331	36.047	1.893	-4.526	51.226	0.035	0.001	0	2302.78	38.3797	52.2	12.6	40.8	2.814	0.005	0.005	0.000	0.124	0.11

2211	10/3/2002	8:17:03 AM	25.905	22.454	26.217	23.572	21.746	45.497	53.887	10.362	36.049	2.327	-4.153	51.637	0.034	0.001	0	2346.78	39.113	52.4	12.7	40.8	2.811	0.005	0.005	0.000	0.120	0.10
2212	10/3/2002	8:18:03 AM	25.893	22.431	26.135	23.57	21.688	45.321	53.712	10.294	35.922	2.338	-4.153	51.794	0.034	0.001	0	2347.78	39.1297	52.2	12.7	40.6	2.801	0.005	0.005	0.000	0.121	0.10
2213	10/3/2002	8:19:03 AM	25.907	22.425	26.178	23.519	21.692	45.167	53.579	10.297	35.686	2.341	-4.144	51.496	0.034	0.001	0	2348.78	39.1463	52.1	12.6	40.4	2.787	0.005	0.005	0.000	0.121	0.10
2214	10/3/2002	8:20:03 AM	25.9	22.424	26.237	23.512	21.7	45.157	53.554	10.272	35.703	2.338	-4.15	51.081	0.034	0.001	0	2349.78	39.163	52.1	12.5	40.4	2.788	0.005	0.005	0.000	0.121	0.10
2215	10/3/2002	8:21:03 AM	25.916	22.418	26.216	23.492	21.666	45.36	53.866	10.334	35.779	2.341	-4.141	50.68	0.034	0.001	0	2350.78	39.1797	52.4	12.4	40.6	2.797	0.005	0.005	0.000	0.121	0.10
2216	10/3/2002	8:22:03 AM	25.919	22.417	26.156	23.511	21.624	45.116	53.642	10.289	35.67	2.341	-4.138	49.795	0.034	0.001	0	2351.78	39.1963	52.1	12.2	40.4	2.785	0.005	0.005	0.000	0.121	0.10
2217	10/3/2002	8:23:03 AM	25.924	22.397	26.281	23.421	21.589	45.447	53.749	10.372	35.957	2.341	-4.136	50.804	0.034	0.001	0	2352.78	39.213	52.3	12.5	40.7	2.806	0.005	0.005	0.000	0.120	0.10
2218	10/3/2002	8:24:03 AM	25.914	22.372	26.246	23.365	21.563	45.461	53.865	10.372	35.832	2.338	-4.127	51.253	0.034	0.001	0	2353.78	39.2297	52.4	12.6	40.6	2.802	0.005	0.005	0.000	0.120	0.10
2219	10/3/2002	8:25:03 AM	25.924	22.372	26.226	23.381	21.548	45.503	53.927	10.434	35.789	2.347	-4.115	51.368	0.034	0.001	0	2354.73	39.2455	52.5	12.6	40.6	2.802	0.005	0.005	0.000	0.120	0.10
2220	10/3/2002	8:26:03 AM	25.946	22.374	26.203	23.343	21.541	45.449	53.904	10.407	35.819	2.358	-4.115	51.595	0.034	0.001	0	2355.73	39.2622	52.4	12.6	40.6	2.802	0.005	0.005	0.000	0.121	0.10
2221	10/3/2002	8:27:03 AM	25.94	22.383	26.357	23.341	21.529	45.045	53.521	10.263	35.512	2.384	-4.106	51.618	0.035	0.001	0	2356.73	39.2788	52.0	12.6	40.3	2.777	0.005	0.005	0.000	0.125	0.11
2222	10/3/2002	8:28:03 AM	25.933	22.361	26.32	23.364	21.527	45.403	53.956	10.427	35.699	2.365	-4.112	50.871	0.034	0.001	0	2357.73	39.2955	52.5	12.5	40.6	2.796	0.005	0.005	0.000	0.120	0.10
2223	10/3/2002	8:29:03 AM	25.934	22.337	26.261	23.391	21.513	45.265	53.732	10.339	35.762	2.344	-4.112	51.798	0.034	0.001	0	2358.73	39.3122	52.3	12.7	40.5	2.793	0.005	0.005	0.000	0.121	0.10
2224	10/3/2002	8:30:03 AM	25.935	22.318	26.322	23.361	21.519	44.931	53.461	10.279	35.406	2.384	-4.106	51.567	0.034	0.001	0	2359.73	39.3288	52.0	12.6	40.2	2.769	0.005	0.005	0.000	0.122	0.10
2225	10/3/2002	8:31:03 AM	25.94	22.303	26.337	23.437	21.539	45.422	53.902	10.317	35.873	2.407	-4.101	51.736	0.034	0.002	0	2360.78	39.3455	52.4	12.7	40.6	2.803	0.005	0.005	0.000	0.120	0.10
2226	10/3/2002	8:32:03 AM	25.949	22.292	26.286	23.521	21.548	45.099	53.561	10.307	35.582	2.399	-4.098	51.314	0.034	0.001	0	2361.73	39.3622	52.1	12.6	40.3	2.781	0.005	0.005	0.000	0.121	0.10
2227	10/3/2002	8:33:03 AM	25.969	22.281	26.21	23.586	21.553	45.422	54.028	10.31	35.885	2.376	-4.075	51.595	0.035	0.001	0	2362.73	39.3788	52.6	12.6	40.7	2.803	0.005	0.005	0.000	0.124	0.11
2228	10/3/2002	8:34:03 AM	25.943	22.265	26.315	23.495	21.592	44.824	53.254	10.273	35.381	2.459	-4.011	51.564	0.033	0.001	0	2363.73	39.3955	51.8	12.6	40.1	2.765	0.005	0.005	0.000	0.118	0.10
2229	10/3/2002	8:35:03 AM	25.942	22.285	26.329	23.565	21.622	44.942	53.681	10.396	35.226	2.535	-3.962	51.526	0.033	0.001	0	2364.73	39.4122	52.2	12.6	40.1	2.764	0.005	0.005	0.000	0.118	0.10
2230	10/3/2002	8:36:03 AM	25.962	22.29	26.289	23.695	21.642	45.101	53.772	10.306	35.584	2.564	-3.918	51.188	0.034	0.001	0	2365.73	39.4288	52.3	12.5	40.3	2.781	0.005	0.005	0.000	0.121	0.10
2231	10/3/2002	8:37:03 AM	25.957	22.274	26.203	23.785	21.652	45.174	53.892	10.337	35.686	2.564	-3.907	51.798	0.035	0.001	0	2366.73	39.4455	52.4	12.7	40.4	2.788	0.005	0.005	0.000	0.125	0.11
2232	10/3/2002	8:38:03 AM	25.982	22.29	26.304	23.811	21.726	45.35	53.966	10.402	35.801	2.569	-3.907	51.853	0.035	0.001	0	2367.73	39.4622	52.5	12.7	40.6	2.798	0.005	0.005	0.000	0.124	0.11
2233	10/3/2002	8:39:03 AM	25.983	22.295	26.195	23.826	21.743	45.314	53.939	10.417	35.74	2.566	-3.916	51.991	0.035	0.001	0	2368.73	39.4788	52.5	12.7	40.5	2.794	0.005	0.005	0.000	0.125	0.11
2234	10/3/2002	8:40:03 AM	25.994	22.312	26.166	23.872	21.78	45.345	54.098	10.519	35.561	2.569	-3.921	51.863	0.034	0.001	0	2369.73	39.4955	52.6	12.7	40.4	2.789	0.005	0.005	0.000	0.121	0.10
2235	10/3/2002	8:41:03 AM	25.979	22.302	26.061	23.938	21.8	45.65	54.407	10.457	35.979	2.564	-3.924	52.62	0.034	0.001	0	2370.73	39.5122	52.9	12.9	40.8	2.814	0.005	0.005	0.000	0.121	0.10
2236	10/3/2002	8:42:03 AM	25.975	22.307	26.181	23.863	21.836	45.178	53.859	10.383	35.629	2.564	-3.921	51.442	0.034	0.001	0	2371.73	39.5288	52.4	12.6	40.4	2.786	0.005	0.005	0.000	0.121	0.10
2237	10/3/2002	8:43:03 AM	25.965	22.318	26.177	23.949	21.861	45.043	53.672	10.431	35.412	2.564	-3.921	51.83	0.034	0.001	0	2372.73	39.5455	52.2	12.7	40.2	2.774	0.005	0.005	0.000	0.122	0.10
2238	10/3/2002	8:44:03 AM	25.966	22.318	26.137	23.999	21.902	45.215	53.948	10.479	35.494	2.566	-3.915	51.994	0.034	0.001	0	2373.73	39.5622	52.5	12.7	40.4	2.782	0.005	0.005	0.000	0.122	0.10
2239	10/3/2002	8:45:03 AM	25.961	22.324	26.073	24.06	21.933	45.352	54.022	10.506	35.633	2.566	-3.915	51.538	0.034	0.001	0	2374.73	39.5788	52.5	12.6	40.5	2.792	0.005	0.005	0.000	0.121	0.10
2240	10/3/2002	8:46:03 AM	25.978	22.351	26.1	24.067	21.97	45.144	53.894	10.525	35.31	2.566	-3.912	51.759	0.034	0.001	0	2376.73	39.5955	52.4	12.7	40.2	2.774	0.005	0.005	0.000	0.122	0.10
2241	10/3/2002	8:47:03 AM	25.944	22.342	26.176	24.013	22.021	45.242	53.84	10.342	35.748	2.566	-3.901	51.649	0.034	0.001	0	2376.73	39.6122	52.4	12.7	40.5	2.792	0.005	0.005	0.000	0.121	0.10
2242	10/3/2002	8:48:03 AM	25.94	22.342	26.161	24.074	22.037	45.363	53.972	10.489	35.652	2.483	-3.901	52.336	0.035	0.001	0	2377.73	39.6288	52.5	12.8	40.6	2.794	0.005	0.005	0.000	0.126	0.11
2243	10/3/2002	8:49:03 AM	25.961	22.374	26.117	24.14	22.053	45.091	54.003	10.462	35.433	2.858	-3.545	51.326	0.024	0.001	0	2378.73	39.6455	52.5	12.6	40.3	2.776	0.004	0.003	0.000	0.086	0.07
2244	10/3/2002	8:50:03 AM	25.942	22.365	26.034	24.161	22.074	44.496	53.699	10.38	34.866	3.02	-3.212	51.614	0.033	0.001	0	2379.73	39.6622	52.2	12.6	39.7	2.736	0.005	0.005	0.000	0.120	0.10
2245	10/3/2002	8:51:03 AM	25.964	22.392	26.206	24.108	22.092	44.513	53.737	10.387	34.87	3.02	-3.2	52.134	0.034	0.001	0	2380.73	39.6788	52.3	12.8	39.7	2.737	0.005	0.005	0.000	0.123	0.11
2246	10/3/2002	8:52:03 AM	25.945	22.393	26.172	24.134	22.098	44.65	53.701	10.367	35.005	3.02	-3.209	52.008	0.034	0.001	0	2381.73	39.6955	52.2	12.7	39.8	2.746	0.005	0.005	0.000	0.123	0.10
2247	10/3/2002	8:53:03 AM	25.941	22.394	26.108	24.141	22.094	44.631	53.937	10.387	34.935	3.029	-3.223	51.928	0.033	0.001	0	2382.73	39.7122	52.5	12.7	39.8	2.743	0.005	0.005	0.000	0.120	0.10
2248	10/3/2002	8:54:03 AM	25.948	22.406	26.05	24.137	22.096	44.865	54.245	10.458	35.009	3.02	-3.229	51.96	0.033	0.001	0	2383.73	39.7288	52.8	12.7	39.9	2.754	0.005	0.005	0.000	0.120	0.10
2249	10/3/2002	8:55:03 AM	25.938	22.401	26.16	24.052	22.081	44.807	54.012	10.521	35.123	3.043	-3.22	50.66	0.033	0.001	0	2384.73	39.7455	52.5	12.4	40.0	2.755	0.005	0.005	0.000	0.119	0.10
2250	10/3/2002	8:56:03 AM	25.927	22.396	26.154	23.981	22.065	44.637	53.798	10.411	34.994	3.084	-3.22	51.916	0.033	0.001	0	2385.73	39.7622	52.3	12.7	39.8	2.745	0.005	0.005	0.000	0.120	0.10
2251	10/3/2002	8:57:03 AM	25.942	22.406	26.129	23.956	22.026	44.85	54.008	10.462	35.226	3.087	-3.217	51.798	0.033	0.001	0	2386.73	39.7788	52.5	12.7	40.0	2.760	0.005	0.005	0.000	0.119	0.10
2252	10/3/2002	8:58:03 AM	25.942	22.405	26.064	23.96	22.014	44.536	53.679	10.254	35.201	3.081	-3.217	52.593	0.033	0.001	0	2387.73	39.7955	52.1	12.9	39.9	2.749	0.005	0.005	0.000	0.120	0.10
2253	10/3/2002	8:59:03 AM	25.942	22.41	26.179	23.86	22.029	44.734	54.008	10.503	34.952	3.081	-3.215	51.842	0.033	0.001	0	2388.73	39.8122	52.5	12.7	39.8	2.747	0.005	0.005	0.000	0.119	0.10
2254	10/3/2002	9:00:03 AM	25.931	22.41	26.188	23.87	21.998	44.678	53.799	10.386	35.13	3.104	-3.212	51.511	0.034	0.001	0	2389.73	39.8288	52.3	12.6	39.9	2.751	0.005	0.005	0.000	0.123	0.10
2255	10/3/2002	9:01:03 AM	25.935	22.398	26.141	23.843	21.972	44.877	53.966	10.418	35.298	3.087	-3.215	51.899	0.033	0.001	0	2390.73	39.8455	52.5	12.7	40.1	2.764	0.005	0.005	0.000	0.119	0.10
2256	10/3/2002	9:02:03 AM	25.928	22.381	26.06	23.836	21.95	44.583	53.896	10.455	34.802	3.127	-3.212	51.937	0.033	0.001	0	2391.73	39.8622	52.4	12.7	39.7	2.737	0.005	0.005	0.000	0.120	0.10
2257	10/3/2002	9:03:03 AM	25.932	22.395	26.194	23.81	21.969	45.084	54.341	10.534	35.32	3.13	-3.209	51.572	0.034	0.001	0	2392.73	39.8788	52.9	12.6	40.2	2.772	0.005	0.005	0.000	0.122	0.10
2258	10/3/2002	9:04:03 AM	25.925	22.378	26.177	23.763	21.912	44.523	53.621	10.357	35.023	3.136	-3.209	51.754	0.033	0.001	0	2393.73	39.8955	52.1	12.7	39.8	2.742	0.005	0.005	0.000	0.120	0.10
2259	10/3/2002	9:05:03 AM	25.933	22.371	26.145	23.741	21.896	44.623	53.894	10.436	34.935	3.136	-3.203	52.289	0.033	0.001	0	2394.73	39.9122	52.4	12.8	39.8	2.743	0.005	0.005	0.000	0.120	0.10
2260	10/3/2002	9:06:03 AM	25.933	22.371	26.075	23.751	21.866	44.908	54.088	10.422	35.343	3.133	-3.213	51.675	0.033	0.001	0	2395.73	39.9288	52.6	12.7	40.1	2.767	0.005	0.005	0.000	0.119	0.10
2261	10/3/2002	9:07:03 AM	25.933	22.366	26.23	23.646	21.865	44.562	53.815	10.363	34.99	3.156	-3.2	51.736	0.033	0.001	0	2396.73	39.9455	52.3	12.7	39.8	2.742	0.005	0.005	0.000	0.120	0.10
2262	10/3/2002	9:08:03 AM	25.918	22.346	26.195	23.605	21.834	44.554	53.865	10.474	34.864	3.171	-3.2	50.299	0.033	0.001	0	2397.73	39.9622	52.4	12.3	39.7	2.738	0.005	0.005	0.000	0.120	0.10
2263	10/3/2002	9:09:03 AM	25.921	22.349	26.163	23.629	21.767	44.372	53.708	10.457	34.624	3.202	-3.194	51.773	0.033	0.001	0	2398.73	39.9788	52.2	12.7	39.5	2.723	0.005	0.005	0.000	0.121	0.10
2264	10/3/2002	9:10:03 AM	25.915	22.332	26.121	23.607	21.765	44.554	53.918	10.438	34.829	3.22	-3.197	50.731	0.033	0.001	0	2399.73	39.9955	52.4	12.4	39.7	2.737	0.005	0.005	0.000	0.120	0.10
2265	10/3/2002	9:11:03 AM	25.922	22.33	26.239	23.635	21.718	44.455	53.633	10.364	34.943	3.208	-3.197	51.503	0.033	0.001	0	2400.73	40.0122	52.2	12.6	39.7	2.737	0.005	0.005	0.000	0.120	0.10
2266	10/3/2002	9:12:03 AM	25.936	22.328	26.217	23.643	21.716	44.589	53.985	10.445	34.825	3.237	-3.191	51.457	0.033	0.001	0	2401.73	40.0288	52.5	12.6	39.7	2.738	0.005	0.005	0.000	0.120	0.10
2267	10/3/2002	9:13:03 AM	25.945	22.322	26.171	23.682	21.686	44.697	54.034	10.462	35.033	3.254	-3.194	51.899	0.033	0.001	0	2402.73	40.0455	52.6	12.7	39.9	2.749	0.005	0.005	0.000	0.119	0.10
2268	10/3/2002	9:14:03 AM	25.948	22.311	26.185	23.646	21.676	44.66	54.036	10.403	34.97	3.254	-3.191	51.786	0.033	0.001	0	2403.73	40.0622	52.6	12.7	39.8	2.745	0.005	0.005	0.000	0.120	0.10
2269	10/3/2002	9:15:03 AM	25.942	22.305	26.209	23.65	21.713	44.471	53.714	10.41	34.931	3.254	-3.186	52.256	0.033	0.001	0	2404.73	40.0788	52.2	12.8	39.7	2.737	0.005	0.005	0.000	0.120	0.10
2270	10/3/2002	9:16:03 AM	25.957	22.304	26.243	23.685	21.747	44.478	53.827	10.4	34.927	3.251	-3.183	52.344	0.033	0.001	0	2405.73	40.0955	52.4	12.8	39.7	2.737	0.005	0.005	0.000	0.120	0.10
2271	10/3/2002	9:17:03 AM	25.972	22.304	26.193	23.74	21.768	44.558	54.007	10.466	34.823	3.277	-3.177	51.423	0.033	0.001	0	2406.73	40.1122	52.5	12.6	39.7	2.737	0.005	0.005	0.000	0.120	0.10
2272	10/3/2002	9:18:03 AM	25.967	22.299	26.278	23.755	21.793	44.409	53.885	10.445	34.646	3.303	-3.177	51.725	0.033	0.001	0	2407.73	40.1288	52.4	12.7	39.5	2.725	0.005	0.005	0.000	0.120	0.10
2273	10/3/2002	9:19:03 AM	25.972	22.3	26.309	23.841	21.823	44.31	53.6	10.427	34.657	3.318	-3.171	51.268	0.033	0.001	0	2408.73	40.1455	52.1	12.6	39.5	2.722	0.005	0.005	0.000	0.120	0.10
2274	10/3/2002	9:20:03 AM	25.983	22.301	26.265	23.891	21.849	44.521	53.865	10.382	34.976	3.318	-3.171	51.639	0.033	0.001	0	2409.73	40.1622	52.4	12.7	39.7	2.741	0.005	0.005	0.000	0.119	0.10
2275	10/3/2002	9:21:03 AM	25.984	22.306	26.205	23.987	21.895	44.703	54.061	10.447	35.001	3.312	-3.165	51.664	0.033	0.001	0	2410.73	40.1788	52.6	12.7	39.9	2.748	0.005	0.005	0.000	0.119	0.10
2276	10/3/2002	9:22:03 AM	25.99	22.307	26.261	23.928	21.906	44.54	53.968	10.495	34.794	3.318	-3.165	51.811	0.033	0.001	0	2411.73	40.1955	52.5	12.7	39.7	2.735	0.005	0.005	0.000	0.120	0.10
2277	10/3/2002	9:23:03 AM	26.006	22.339	26.352	24.02	21.956	44.654	54.227	10.417	35.037	3.321	-3.157	51.889	0.033	0.001	0	2412.73	40.2122	52.8	12.7	39.8	2.747	0.005	0.005	0.000	0.119	0.10
2278	10/3/2002	9:24:03 AM	26.002	22.33	26.288	24.086	21.989	44.819	54.345	10.462	35.031	3.318	-3.157	52.168	0.033	0.001	0	2413.73	40.2288	52.9	12.8	39.9	2.753	0.005	0.005	0.000	0.119	0.10
2279	10/3/2002	9:25:03 AM	26.014	22.336	26.23	24.143	22.041	44.38	53.918	10.344	34.771	3.318	-3.154	50.718	0.033	0.001	0	2414.73	40.2455	52.4	12.4	39.6	2.729	0.005	0.005	0.000	0.120	0.10
2280	10/3/2002	9:26:03 AM	26.03	22.348	26.187	24.19	22.058	44.409	53.761	10.37	34.904	3.321	-3.145	50.72	0.033	0.001	0	2415.73	40.2622	52.3	12.4	39.7	2.734	0.005	0.005	0.000	0.120	0.10
2281	10/3/2002	9:27:03 AM	26.022	22.36	26.323	24.166	22.079	44.542	53.952	10.341	34.98	3.329	-3.148	51.723	0.033	0.001	0	2416.73	40.2788	52.5	12.7	39.8	2.741	0.005	0.005	0.000	0.119	0.10
2282	10/3/2002	9:28:03 AM	26.014	22.356	26.305	24.143	22.096	44.606	53.883	10.406	35.107	3.318	-3.148	52.302	0.033	0.001	0	2417.73	40.2955	52.4	12.8	39.9	2.748	0.005	0.005	0.000	0.119	0.10
2283	10/3/2002	9:29:03 AM	26.015	22.358	26.236	24.189	22.128	44.343	53.691	10.38	34.788	3.344	-3.148	52.046	0.033	0.001	0	2418.73	40.3122	52.2	12.8	39.6	2.728	0.005	0.005	0.000	0.120	0.10
2284	10/3/2002	9:30:03 AM	26.057	22.396	26.214	24.262	22.176	44.598	54.169	10.473	34.79	3.356	-3.136	51.436	0.033	0.001	0	2419.73	40.3288	52.7	12.6	39.7	2.737	0.005	0.005	0.000	0.120	0.10
2285	10/3/2002	9:31:03 AM	26.066	22.41	26.363	24.241	22.215	44.256	53.728	10.367	34.606	3.376	-3.131	51.157	0.033	0.001	0	2420.73	40.3455	52.3	12.5	39.4	2.719	0.005	0.005	0.000	0.120	0.10
2286	10/3/2002	9:32:03 AM	26.07	22.424	26.367	24.31	22.249	44.247	53.728	10.348	34.47	3.376	-3.129	51.333	0.033	0.001	0	2421.78	40.3622	52.3	12.6	39.6	2.725	0.005	0.005	0.000	0.120	0.10
2287	10/3/2002	9:33:03 AM	26.074	22.432	26.341	24.414	22.273	45.053	54.473	10.534	35.388	3.376	-3.128	51.88	0.033	0.001	0	2422.73	40.3788	53.0	12.7	40.2	2.773	0.005	0.005	0.000	0.118	0.10
2288	10/3/2002	9:34:03 AM	26.083	22.441	26.275	24.453	22.262	44.494	53.861	10.422	34.88	3.379	-3.133	51.32	0.033	0.001	0	2423.73	40.3955	52.4	12.6	39.7	2.736	0.005	0.005	0.000	0.120	0.10
2289	10/3/2002	9:35:03 AM	26.082	22.455	26.244	24.447	22.266	44.72	54.15	10.448	35.048	3.379	-3.131	51.972	0.033	0.001	0	2424.73	40.4122	52.7	12.7	39.9	2.750	0.005	0.005	0.000	0.119	0.10
2290	10/3/2002	9:36:03 AM	26.075	22.464	26.382	24.335	22.264	44.786	54.208	10.474	35.146	3.376	-3.128	51.001	0.033	0.001	0	2425.73	40.4288	52.7	12.5	40.0	2.756	0.005	0.005	0.000	0.118	0.10
2291	10/3/2002	9:37:03 AM	26.084	22.462	26.371	24.329	22.238	44.664	54.125	10.445	35.027	3.379	-3.119	51.224	0.033	0.001	0	2426.73	40.4455	52.7	12.6	39.8	2.747	0.005	0.005	0.000	0.119	0.10
2292	10/3/2002	9:38:03 AM	26.092	22.471	26.314	24.337	22.221	44.146	53.722	10.358	34.366	3.376	-3.116	51.57	0.033	0.001	0	2427.73	40.4622	52.2	12.6	39.3	2.707	0.005	0.005	0.000	0.121	0.10
2293	10/3/2002	9:39:03 AM	26.095	22.469	26.252	24.31	22.219	44.125	53.588	10.435	34.446	3.376	-3.113	51.572	0.033	0.001	0	2428.73	40.4788	52.1	12.6	39.3	2.709	0.005	0.005	0.000	0.121	0.10
2294	10/3/2002	9:40:03 AM	26.102	22.465	26.379	24.211	22.196	44.281	53.863	10.434	34.493	3.376	-3.107	51.819	0.033	0.001	0	2429.73	40.4955	52.4	12.7	39.4	2.716	0.005	0.005	0.000	0.120	0.10
2295	10/3/2002	9:41:03 AM	26.088	22.456	26.365	24.172	22.186	44.469	54.053	10.457	34.636	3.376	-3.107	51.529	0.033	0.001	0	2430.73	40.5122	52.6	12.6	39.6	2.727	0.005	0.005	0.000	0.120	0.10
2296	10/3/2002	9:42:03 AM	26.087	22.451	26.319	24.157	22.196	44.54	54.041	10.409	34.888	3.387	-3.099	50.666	0.034	0.001	0	2431.73	40.5288	52.6	12.4	39.7	2.738	0.005	0.005	0.000	0.123	0.10
2297	10/3/2002	9:43:03 AM	26.091	22.439	26.238	24.205	22.134	44.488	53.902	10.41	34.823	3.376	-3.11	51.561	0.033	0.001	0	2432.73	40.5455	52.4	12.6	39.7	2.734	0.005	0.005	0.



2341	10/3/2002	11:02:42 AM	26.57	22.554	26.781	24.455	22.123	47.972	54.421	10.495	38.198	0.13	-6.345	51.427	0.036	0.001	0	2512.43	41.8738	52.9	12.6	43.1	2.971	0.005	0.005	0.000	0.119	0.10
2342	10/3/2002	11:03:42 AM	26.567	22.541	26.699	24.437	22.13	47.949	54.349	10.505	38.217	0.133	-6.342	51.729	0.036	0.001	0	2513.43	41.8905	52.9	12.7	43.1	2.970	0.005	0.005	0.000	0.119	0.10
2343	10/3/2002	11:04:42 AM	26.575	22.544	26.837	24.43	22.154	47.806	54.08	10.452	38.256	0.13	-6.345	51.131	0.037	0.001	0	2514.43	41.9072	52.6	12.5	43.0	2.967	0.006	0.005	0.000	0.122	0.10
2344	10/3/2002	11:05:42 AM	26.573	22.542	26.849	24.438	22.166	47.868	54.225	10.479	38.217	0.133	-6.339	50.995	0.037	0.001	0	2515.43	41.9238	52.8	12.5	43.0	2.968	0.006	0.005	0.000	0.122	0.10
2345	10/3/2002	11:06:42 AM	26.591	22.55	26.823	24.497	22.19	47.763	53.991	10.423	38.204	0.136	-6.342	51.161	0.036	0.001	0	2516.43	41.9405	52.5	12.5	43.0	2.964	0.005	0.005	0.000	0.119	0.10
2346	10/3/2002	11:07:42 AM	26.599	22.553	26.745	24.494	22.193	47.918	54.283	10.435	38.299	0.13	-6.345	50.097	0.036	0.001	0	2517.43	41.9572	52.8	12.3	43.1	2.972	0.005	0.005	0.000	0.119	0.10
2347	10/3/2002	11:08:42 AM	26.602	22.561	26.804	24.498	22.201	47.936	54.347	10.449	38.362	0.133	-6.345	52.058	0.036	0.001	0	2518.43	41.9738	52.9	12.8	43.1	2.975	0.005	0.005	0.000	0.118	0.10
2348	10/3/2002	11:09:42 AM	26.605	22.554	26.881	24.455	22.219	47.719	53.979	10.429	38.165	0.133	-6.33	51.436	0.036	0.001	0	2519.43	41.9905	52.5	12.6	42.9	2.961	0.005	0.005	0.000	0.119	0.10
2349	10/3/2002	11:10:42 AM	26.603	22.557	26.855	24.509	22.197	47.937	54.219	10.43	38.403	0.179	-6.313	51.24	0.037	0.001	0	2520.43	42.0072	52.7	12.6	43.2	2.976	0.006	0.005	0.000	0.121	0.10
2350	10/3/2002	11:11:42 AM	26.622	22.561	26.798	24.602	22.195	47.734	54.049	10.397	38.172	0.133	-6.339	51.415	0.036	0.001	0	2521.43	42.0238	52.6	12.6	43.0	2.961	0.005	0.005	0.000	0.119	0.10
2351	10/3/2002	11:12:42 AM	26.61	22.549	26.806	24.535	22.203	47.802	54.196	10.477	38.1	0.13	-6.33	51.291	0.037	0.001	0	2522.43	42.0405	52.7	12.6	43.0	2.961	0.006	0.005	0.000	0.122	0.10
2352	10/3/2002	11:13:42 AM	26.644	22.573	26.94	24.559	22.192	47.881	54.059	10.396	38.43	0.112	-6.292	51.568	0.039	0.001	0	2523.43	42.0572	52.6	12.6	43.2	2.975	0.006	0.006	0.000	0.128	0.11
2353	10/3/2002	11:14:42 AM	26.638	22.562	26.899	24.548	22.181	47.763	54.183	10.446	38.268	0.295	-6.116	51.333	0.027	0.001	0	2524.43	42.0738	52.7	12.6	43.0	2.966	0.004	0.004	0.000	0.089	0.08
2354	10/3/2002	11:15:42 AM	26.646	22.561	26.843	24.522	22.175	47.303	53.966	10.391	37.73	0.526	-5.748	50.873	0.034	0.001	0	2525.43	42.0905	52.5	12.5	42.5	2.931	0.005	0.005	0.000	0.113	0.10
2355	10/3/2002	11:16:42 AM	26.649	22.553	26.766	24.63	22.268	47.628	54.276	10.263	38.153	0.546	-5.719	50.884	0.036	0.001	0	2526.43	42.1072	52.8	12.5	42.9	2.957	0.005	0.005	0.000	0.119	0.10
2356	10/3/2002	11:17:42 AM	26.659	22.558	26.915	24.619	22.268	47.412	54.096	10.456	37.815	0.592	-5.673	51.117	0.035	0.001	0	2527.43	42.1238	52.6	12.5	42.6	2.938	0.005	0.005	0.000	0.116	0.10
2357	10/3/2002	11:18:42 AM	26.648	22.557	26.919	24.648	22.276	47.655	54.469	10.513	37.867	0.592	-5.676	51.186	0.037	0.001	0	2528.43	42.1405	53.0	12.5	42.8	2.948	0.006	0.005	0.000	0.122	0.10
2358	10/3/2002	11:19:42 AM	26.652	22.561	26.883	24.718	22.351	47.638	54.369	10.417	38.098	0.592	-5.708	51.215	0.036	0.001	0	2529.43	42.1572	52.9	12.6	42.9	2.956	0.005	0.005	0.000	0.119	0.10
2359	10/3/2002	11:20:42 AM	26.676	22.581	26.848	24.853	22.376	47.7	54.581	10.542	37.887	0.592	-5.708	51.083	0.036	0.001	0	2530.43	42.1738	53.1	12.5	42.8	2.950	0.005	0.005	0.000	0.119	0.10
2360	10/3/2002	11:21:42 AM	26.686	22.58	26.777	24.832	22.36	47.566	54.38	10.458	37.957	0.618	-5.71	50.89	0.036	0.001	0	2531.43	42.1905	52.9	12.5	42.8	2.948	0.005	0.005	0.000	0.119	0.10
2361	10/3/2002	11:22:42 AM	26.696	22.596	26.858	24.812	22.366	47.377	54.19	10.466	37.703	0.615	-5.702	51.033	0.036	0.001	0	2532.43	42.2072	52.7	12.5	42.5	2.933	0.005	0.005	0.000	0.120	0.10
2362	10/3/2002	11:23:42 AM	26.686	22.6	26.932	24.732	22.37	47.783	54.746	10.588	38.035	0.65	-5.684	50.58	0.036	0.001	0	2533.43	42.2238	53.3	12.4	42.9	2.958	0.005	0.005	0.000	0.119	0.10
2363	10/3/2002	11:24:42 AM	26.691	22.61	26.907	24.762	22.411	47.731	54.593	10.472	38.106	0.65	-5.682	51.165	0.036	0.001	0	2534.43	42.2405	53.1	12.5	42.9	2.959	0.005	0.005	0.000	0.119	0.10
2364	10/3/2002	11:25:42 AM	26.69	22.605	26.841	24.806	22.415	47.216	53.948	10.341	37.75	0.688	-5.687	50.806	0.036	0.001	0	2535.43	42.2572	52.5	12.5	42.5	2.929	0.005	0.005	0.000	0.120	0.10
2365	10/3/2002	11:26:42 AM	26.706	22.625	26.807	24.817	22.421	47.56	54.419	10.49	37.883	0.647	-5.679	50.783	0.035	0.001	0	2536.43	42.2738	52.9	12.4	42.7	2.945	0.005	0.005	0.000	0.116	0.10
2366	10/3/2002	11:27:42 AM	26.71	22.635	26.986	24.751	22.405	47.29	54.19	10.47	37.529	0.722	-5.647	50.523	0.036	0.001	0	2537.43	42.2905	52.7	12.4	42.4	2.924	0.005	0.005	0.000	0.120	0.10
2367	10/3/2002	11:28:42 AM	26.7	22.63	26.961	24.731	22.425	47.286	54.227	10.433	37.598	0.719	-5.658	51.069	0.036	0.001	0	2538.43	42.3072	52.8	12.5	42.4	2.926	0.005	0.005	0.000	0.120	0.10
2368	10/3/2002	11:29:42 AM	26.705	22.634	26.906	24.766	22.43	47.417	54.171	10.446	37.904	0.719	-5.658	50.97	0.036	0.001	0	2539.43	42.3238	52.7	12.5	42.7	2.941	0.005	0.005	0.000	0.119	0.10
2369	10/3/2002	11:30:42 AM	26.715	22.639	26.841	24.811	22.43	47.297	54.252	10.465	37.609	0.719	-5.664	50.59	0.036	0.001	0	2540.43	42.3405	52.8	12.4	42.5	2.927	0.005	0.005	0.000	0.120	0.10
2370	10/3/2002	11:31:42 AM	26.72	22.639	26.766	24.786	22.44	47.303	54.065	10.419	37.785	0.722	-5.661	50.871	0.036	0.001	0	2541.43	42.3572	52.6	12.5	42.5	2.933	0.005	0.005	0.000	0.120	0.10
2371	10/3/2002	11:32:42 AM	26.705	22.64	26.672	24.746	22.435	47.106	54.082	10.418	37.431	0.748	-5.661	51.545	0.036	0.001	0	2542.43	42.3738	52.6	12.6	42.3	2.914	0.005	0.005	0.000	0.121	0.10
2372	10/3/2002	11:33:42 AM	26.691	22.645	26.512	24.777	22.461	47.41	54.336	10.442	37.746	0.751	-5.67	51.413	0.035	0.001	0	2543.43	42.3905	52.9	12.6	42.6	2.936	0.005	0.005	0.000	0.117	0.10
2373	10/3/2002	11:34:42 AM	26.682	22.657	26.354	24.828	22.452	47.176	54.041	10.428	37.58	0.745	-5.667	51.079	0.035	0.001	0	2544.43	42.4072	52.6	12.5	42.4	2.922	0.005	0.005	0.000	0.119	0.10
2374	10/3/2002	11:35:42 AM	26.648	22.658	26.29	24.899	22.443	47.413	54.392	10.589	37.57	0.728	-5.67	52.21	0.035	0.001	0	2545.43	42.4238	52.9	12.8	42.5	2.930	0.005	0.005	0.000	0.118	0.10
2375	10/3/2002	11:36:42 AM	26.599	22.658	26.41	24.915	22.428	47.178	54.099	10.492	37.504	0.769	-5.664	52.042	0.035	0.001	0	2546.43	42.4405	52.6	12.8	42.3	2.919	0.005	0.005	0.000	0.118	0.10
2376	10/3/2002	11:37:42 AM	26.58	22.675	26.442	24.942	22.425	47.653	54.554	10.566	37.989	0.812	-5.658	52.103	0.035	0.001	0	2547.43	42.4572	53.1	12.8	42.8	2.952	0.005	0.005	0.000	0.117	0.10
2377	10/3/2002	11:38:42 AM	26.551	22.666	26.483	24.927	22.411	47.522	54.438	10.575	37.795	0.812	-5.655	52.218	0.035	0.001	0	2548.43	42.4738	53.0	12.8	42.7	2.941	0.005	0.005	0.000	0.117	0.10
2378	10/3/2002	11:39:42 AM	26.532	22.671	26.543	24.913	22.431	47.288	54.13	10.539	37.619	0.812	-5.653	52.126	0.035	0.001	0	2549.43	42.4905	52.7	12.8	42.5	2.927	0.005	0.005	0.000	0.118	0.10
2379	10/3/2002	11:40:42 AM	26.517	22.667	26.589	24.923	22.502	47.611	54.57	10.635	37.758	0.812	-5.653	52.291	0.036	0.001	0	2550.43	42.5072	53.1	12.8	42.7	2.943	0.005	0.005	0.000	0.120	0.10
2380	10/3/2002	11:41:42 AM	26.512	22.672	26.644	24.938	22.492	47.328	54.297	10.59	37.525	0.815	-5.647	53.344	0.036	0.001	0	2551.43	42.5238	52.8	13.1	42.4	2.925	0.005	0.005	0.000	0.121	0.10
2381	10/3/2002	11:42:42 AM	26.517	22.682	26.679	24.938	22.482	47.63	54.572	10.55	37.903	0.812	-5.641	52.126	0.036	0.001	0	2552.43	42.5405	53.1	12.8	42.8	2.949	0.005	0.005	0.000	0.120	0.10
2382	10/3/2002	11:43:42 AM	26.527	22.682	26.728	25.019	22.472	47.239	54.121	10.52	37.547	0.812	-5.638	52.774	0.036	0.001	0	2553.43	42.5572	52.6	12.9	42.4	2.923	0.005	0.005	0.000	0.121	0.10
2383	10/3/2002	11:44:42 AM	26.532	22.682	26.768	25.003	22.462	47.456	54.38	10.563	37.783	0.812	-5.638	51.584	0.036	0.001	0	2554.43	42.5738	52.9	12.6	42.6	2.938	0.005	0.005	0.000	0.120	0.10
2384	10/3/2002	11:45:42 AM	26.558	22.682	26.799	24.999	22.488	47.429	54.148	10.433	38.032	0.829	-5.635	52.382	0.036	0.001	0	2555.43	42.5905	52.7	12.8	42.7	2.946	0.005	0.005	0.000	0.119	0.10
2385	10/3/2002	11:46:42 AM	26.572	22.692	26.843	25.044	22.477	47.504	54.496	10.603	37.695	0.824	-5.627	52.398	0.036	0.001	0	2556.43	42.6072	53.0	12.8	42.6	2.937	0.005	0.005	0.000	0.120	0.10
2386	10/3/2002	11:47:42 AM	26.598	22.698	26.874	25.024	22.523	47.444	54.576	10.566	37.562	0.87	-5.621	52.642	0.036	0.001	0	2557.43	42.6238	53.1	12.9	42.5	2.930	0.005	0.005	0.000	0.120	0.10
2387	10/3/2002	11:48:42 AM	26.608	22.708	26.904	24.995	22.544	47.613	54.645	10.569	37.805	0.826	-5.627	51.947	0.036	0.001	0	2558.43	42.6405	53.2	12.7	42.7	2.945	0.005	0.005	0.000	0.119	0.10
2388	10/3/2002	11:49:42 AM	26.628	22.718	26.954	25.025	22.513	47.7	54.827	10.717	37.678	0.87	-5.627	51.956	0.036	0.001	0	2559.43	42.6572	53.4	12.7	42.7	2.943	0.005	0.005	0.000	0.119	0.10
2389	10/3/2002	11:50:42 AM	26.654	22.719	26.965	25.026	22.55	47.682	54.667	10.57	38.045	0.867	-5.624	51.626	0.036	0.001	0	2560.43	42.6738	53.2	12.7	42.9	2.955	0.005	0.005	0.000	0.119	0.10
2390	10/3/2002	11:51:42 AM	26.664	22.724	26.98	25.051	22.54	47.388	54.272	10.537	37.752	0.867	-5.621	52.01	0.036	0.001	0	2561.43	42.6905	52.8	12.7	42.6	2.935	0.005	0.005	0.000	0.119	0.10
2391	10/3/2002	11:52:42 AM	26.71	22.731	27.021	25.152	22.536	47.423	54.324	10.509	37.83	0.867	-5.615	52.363	0.036	0.001	0	2562.43	42.7072	52.9	12.8	42.6	2.939	0.005	0.005	0.000	0.119	0.10
2392	10/3/2002	11:53:42 AM	26.726	22.731	27.042	25.068	22.562	47.576	54.492	10.576	37.879	0.864	-5.612	52.505	0.036	0.001	0	2563.43	42.7238	53.0	12.9	42.7	2.946	0.005	0.005	0.000	0.119	0.10
2393	10/3/2002	11:54:42 AM	26.747	22.747	27.073	25.134	22.568	47.675	54.792	10.662	37.748	0.867	-5.598	52.413	0.036	0.001	0	2564.43	42.7405	53.3	12.8	42.7	2.945	0.005	0.005	0.000	0.119	0.10
2394	10/3/2002	11:55:42 AM	26.757	22.747	27.078	25.149	22.553	47.294	54.332	10.59	37.472	0.867	-5.606	52.384	0.036	0.001	0	2565.43	42.7572	52.9	12.8	42.4	2.922	0.005	0.005	0.000	0.119	0.10
2395	10/3/2002	11:56:42 AM	26.778	22.754	27.109	25.175	22.564	47.733	54.701	10.57	38.053	0.867	-5.598	52.046	0.036	0.001	0	2566.43	42.7738	53.2	12.8	42.9	2.957	0.005	0.005	0.000	0.118	0.10
2396	10/3/2002	11:57:42 AM	26.793	22.759	27.129	25.18	22.564	47.27	54.216	10.48	37.697	0.815	-5.54	52.054	0.039	0.001	0	2567.43	42.7905	52.7	12.8	42.5	2.929	0.006	0.005	0.000	0.129	0.11
2397	10/3/2002	11:58:42 AM	26.814	22.759	27.15	25.191	22.569	47.232	54.479	10.561	37.463	1.13	-5.291	53.105	0.018	0.001	0	2568.43	42.8072	53.0	13.0	42.3	2.920	0.003	0.003	0.000	0.060	0.05
2398	10/3/2002	11:59:42 AM	26.835	22.781	27.186	25.177	22.601	46.824	54.347	10.48	37.148	1.39	-4.836	51.821	0.04	0.001	0	2569.43	42.8238	52.9	12.7	42.0	2.895	0.006	0.006	0.000	0.134	0.11
2399	10/3/2002	12:00:42 PM	26.855	22.776	27.191	25.157	22.586	46.756	54.103	10.501	37.054	1.329	-4.987	52.405	0.036	0.001	0	2570.43	42.8405	52.6	12.8	41.9	2.889	0.005	0.005	0.000	0.120	0.10
2400	10/3/2002	12:01:42 PM	26.877	22.782	27.217	25.199	22.587	47.187	54.676	10.632	37.39	1.329	-5.001	52.274	0.036	0.001	0	2571.43	42.8572	53.2	12.8	42.3	2.916	0.005	0.005	0.000	0.119	0.10
2401	10/3/2002	12:02:42 PM	26.898	22.798	27.248	25.205	22.599	47.243	54.7	10.641	37.445	1.332	-5.01	52.715	0.036	0.001	0	2572.43	42.8738	53.2	12.9	42.3	2.919	0.005	0.005	0.000	0.119	0.10
2402	10/3/2002	12:03:42 PM	26.908	22.789	27.229	25.24	22.604	46.812	54.26	10.501	37.105	1.324	-5.013	52.054	0.035	0.001	0	2573.43	42.8905	52.8	12.8	42.0	2.893	0.005	0.005	0.000	0.117	0.10
2403	10/3/2002	12:04:42 PM	26.924	22.805	27.265	25.246	22.626	46.447	53.9	10.437	36.773	1.326	-5.001	51.499	0.035	0.001	0	2574.43	42.9072	52.4	12.6	41.6	2.869	0.005	0.005	0.000	0.118	0.10
2404	10/3/2002	12:05:42 PM	26.955	22.821	27.306	25.427	22.621	46.71	54.187	10.529	37.019	1.381	-4.995	52.442	0.036	0.001	0	2575.43	42.9238	52.7	12.9	41.9	2.886	0.005	0.005	0.000	0.120	0.10
2405	10/3/2002	12:06:42 PM	26.96	22.816	27.296	25.363	22.617	47.052	54.564	10.562	37.232	1.393	-5.007	52.751	0.036	0.001	0	2576.43	42.9405	53.1	12.9	42.1	2.906	0.005	0.005	0.000	0.119	0.10
2406	10/3/2002	12:07:42 PM	26.955	22.801	27.286	25.308	22.617	47.247	54.773	10.552	37.512	1.393	-5.004	52.633	0.035	0.001	0	2577.43	42.9572	53.3	12.9	42.4	2.922	0.005	0.005	0.000	0.116	0.10
2407	10/3/2002	12:08:42 PM	26.987	22.828	27.323	25.349	22.633	47.106	54.616	10.651	37.306	1.396	-5.004	52.648	0.036	0.001	0	2578.43	42.9738	53.1	12.9	42.2	2.910	0.005	0.005	0.000	0.119	0.10
2408	10/3/2002	12:09:42 PM	27.007	22.833	27.343	25.334	22.654	46.783	54.355	10.509	37.015	1.399	-4.972	52.316	0.036	0.001	0	2579.43	42.9905	52.9	12.8	41.9	2.889	0.005	0.005	0.000	0.120	0.10
2409	10/3/2002	12:10:42 PM	27.012	22.828	27.338	25.379	22.669	47.125	54.667	10.602	37.261	1.404	-4.992	52.323	0.036	0.001	0	2580.43	43.0072	53.2	12.8	42.2	2.909	0.005	0.005	0.000	0.119	0.10
2410	10/3/2002	12:11:42 PM	27.048	22.854	27.374	25.466	22.695	47.216	54.804	10.588	37.384	1.442	-4.99	52.342	0.035	0.001	0	2581.43	43.0238	53.3	12.8	42.3	2.916	0.005	0.005	0.000	0.115	0.10
2411	10/3/2002	12:12:42 PM	27.044	22.85	27.37	25.496	22.695	46.936	54.57	10.574	37.134	1.448	-4.99	52.512	0.035	0.001	0	2582.43	43.0405	53.1	12.9	42.0	2.898	0.005	0.005	0.000	0.116	0.10
2412	10/3/2002	12:13:42 PM	27.074	22.871	27.405	25.457	22.716	47.089	54.552	10.618	37.369	1.451	-5.001	51.996	0.036	0.001	0	2583.43	43.0572	53.1	12.7	42.2	2.912	0.005	0.005	0.000	0.119	0.10
2413	10/3/2002	12:14:42 PM	27.1	22.891	27.431	25.457	22.762	47.363	55	10.638	37.521	1.5	-4.99	51.587	0.036	0.001	0	2584.43	43.0738	53.5	12.6	42.4	2.926	0.005	0.005	0.000	0.118	0.10
2414	10/3/2002	12:15:42 PM	27.11	22.892	27.431	25.428	22.768	46.621	54.163	10.558	36.878	1.511	-4.995	52.052	0.036	0.001	0	2585.43	43.0905	52.7	12.8	41.7	2.878	0.005	0.005	0.000	0.120	0.10
2415	10/3/2002	12:16:42 PM	27.122	22.888	27.432	25.404	22.789	46.874	54.436	10.636	36.99	1.511	-4.995	52.306	0.036	0.001	0	2586.43	43.1072	53.0	12.8	41.9	2.891	0.005	0.005	0.000	0.120	0.10
2416	10/3/2002	12:17:42 PM	27.148	22.914	27.468	25.445	22.81	46.743	54.249	10.498	37.076	1.511	-5.001	51.769	0.036	0.001	0	2587.43	43.1238	52.8	12.7	41.9	2.890	0.005	0.005	0.000	0.120	0.10
2417	10/3/2002	12:18:42 PM	27.144	22.905	27.46	25.406	22.831	46.878	54.587	10.606	37.06	1.503	-5.007	51.807	0.036	0.001	0	2588.43	43.1405	53.1	12.7	42.0	2.894	0.005	0.005	0.000	0.119	0.10
2418	10/3/2002	12:19:42 PM	27.169	22.921	27.49	25.462	22.822	46.797	54.496	10.59	36.923	1.509	-5.001	52.384	0.036	0.001	0	2589.43	43.1572	53.0	12.8	41.9	2.886	0.005	0.005	0.000	0.120	0.10
2419	10/3/2002	12:20:42 PM	27.175	22.922	27.481	25.463	22.848	46.936	54.636	10.629	36.976	1.509	-5.007	52.22	0.036	0.001	0	2590.43	43.1738	53.2	12.8	42.0	2.893	0.005	0.005	0.000	0.119	0.10
2420	10/3/2002	12:21:42 PM	27.2	22.942	27.521	25.493	22.883	47.096	54.632	10.616	37.261	1.511	-4.998	52.203	0.035	0.001	0	2591.43	43.1905	53.2	12.8	42.2	2.908	0.005	0.005	0.000	0.115	0.10
2421	10/3/2002	12:22:42 PM	27.215	22.942	27.526	25.523	22.878	47.021	54.76	10.639	37.158	1.549	-4.978	52.209	0.036	0.001	0	2592.43	43.2072	53.3	12.8	42.1	2.902	0.005	0.005	0.000	0.119	0.10
2422	10/3/2002	12:23:42 PM	27.236	22.953	27.542	25.514	22.889	46.888	54.434	10.553	37.144	1.511	-4.99	52.474	0.036	0.001	0	2593.43	43.2238	53.0	12.9	42.0	2.897	0.005	0.005	0.000	0.119	0.10
2423	10/3/2002	12:24:42 PM	27.252	22.964	27.547	25.499	22.89	47.28	54.821	10.688	37.441	1.514	-4.984	51.847	0.036	0.001	0	2594.43	43.2405	53.3	12.7	42.4	2.921	0.005	0.005	0.000	0.118	0.10
2424	10/3/2002	12:25:42 PM	27.273	22.97	27.574	25.541	22.911	47.265	54.905	10.681	37.441	1.514	-4.984	52.13	0.036	0.001	0	2595.43	43.2572	53.4	12.8	42.4	2.920	0.005	0.005	0.000	0.118	0.10
2425	10/3/2002	12:26:42 PM	27.273	22.97	27.579	25.556	22.906	46.739	54.369	10.54	37.05	1.537	-4.978	52.344	0.036	0.001	0	2596.43	43.2738	52.9	12.8	41.9	2.888	0.005	0.005	0.000	0.119	0.10
2426	10/3/2002	12:27:42 PM	27.289	22.971	27.59	25.562	22.897	47.162	54.984	10.68	37.189	1.549	-4.978	52.082	0.036	0.001	0	2597.43	43.2905	53.5	12.8	42.2	2.908	0.005	0.005	0.000	0.118	0.10
2427	10/3/2002	12:28:42 PM	27.3	22.992	27.611	25.553	22.903	47.102	54.796	10.597	37.338	1.529	-4.969	51.541	0.036	0.001	0	2598.43	43.3072	53.3	12.6	42.2	2.911	0.005	0.005	0.000	0.118	0.10
2428	10/3/2002	12:29:42 PM	27.306	22.998	27.616	25.564	22.909	47.042	54.711	10.625	37.209	1.572	-4.966	52.048	0.036	0.001	0	2599.43	43.3238	53.2	12.8	42.1	2.904	0.005	0.005	0.000	0.118	0.10
2429	10/3/2002	12:30:42 PM	27.311	23.003	27.627	25.574	22.929	46.82	54.444	10.569	37.074	1.569	-4.958	53.221	0.036	0.001	0	2600.43	43.3405	53.0	13.0	41.9	2.892	0.005	0.005	0.000	0.119	0.10
2430	10/3/2002	12:31:42 PM	27.322	23.009	27.632	25.585	22.955	47.381	54.988	10.505	37.609	1.569	-4.949	52.147	0.036	0.001	0	2601.43	43.3572	53.5	12.8	42.5	2.930	0.005	0.005	0.000	0.117	0.10
2431	10/3/2002	12:32:42 PM	27.343	23.016	27.654	25.627	22.987	46.986	54.669	10.574	37.212	1.569	-4.943	52.424	0.036	0.001	0	2602.43	43.3738	53.2	12.8	42.1	2.903	0.005	0.005	0.000	0.118	0.10
2432	10/3/2002	12:33:42 PM	27.364	23.037	27.67	25.658	23.008	46.766	54.38	10.528	37.062	1.572	-4.937	52.056	0.036	0.001	0	2603.43	43.3905	52.9	12.8	41.9	2.890	0.005	0.005	0.000	0.119	0.10
2433	10/3/2002	12:34:42 PM	27.37	23.043	27.676	25.683	23.034	46.744	54.434	10.535	37.001	1.569	-4.94	52.119	0.036	0.001	0	2604.43	43.4072	53.0	12.8	41.9	2.887	0.005	0.005	0.000	0.119	0.10
2434	10/3/2002	12:35:42 PM	27.376	23.048	27.676	25.734	23.019	46.797	54.535	10.63	36.927	1.572	-4.94	52.635	0.035	0.001	0	2605.43	43.4238	53.1	12.9	41.9	2.886	0.005	0.005	0.000	0.116	0.10
2435	10/3/2002	12:36:42 PM	27.381	23.059	27.692	25.74	23.02	46.917	54.612	10.602	37.064	1.575	-4.882	52.937	0.035	0.001	0	2606.43	43.4405	53.1	13.0	42.0	2.895	0.005	0.005	0.000	0.115	0.10
2436	10/3/2002	12:37:42 PM	27.402	23.065	27.698	25.706	23.016	46.907	54.69	10.666	36.964	1.665	-4.801	52.356	0.035	0.001	0	2607.43	43.4572	53.2	12.8	41.9	2.891	0.005	0.005	0.000	0.115	0.10
2437	10/3/2002	12:38:42 PM	27.408	23.071	27.703	25.701	23.037	46.603	54.612	10.638	36.614	1.705	-4.778	52.558	0.037	0.001	0	2608.43	43.4738	53.1	12.9	41.6	2.869	0.006	0.005	0.000	0.123	0.10
2438	10/3/2002	12:39:42 PM	27.414	23.082	27.72	25.697	23.053	46.802	54.719	10.652	36.937	1.722	-4.772	51.947	0.037	0.001	0	2609.43	43.4905	53.2	12.7	41.9	2.887	0.006	0.005	0.000	0.122	0.10
2439	10/3/2002	12:40:42 PM	27.421	23.084	27.706	25.674	23.08	46.992	54.82	10.633	37.093	1.653	-4.851	52.702	0.036	0.001	0	2610.43	43.5072	53.3	12.9	42.0	2.899	0.005	0.005	0.000	0.118	0.10
2440	10/3/2002	12:41:42 PM	27.441	23.099	27.732	25.745	23.066	46.791	54.585	10.619	36.929	1.647	-4.868	51.822	0.035	0.001	0	2611.43	43.5238	53.1	12.7	41.9	2.886	0.005	0.005	0.000	0.116	0.10
2441	10/3/2002	12:42:42 PM	27.457	23.105	27.753	25.756	23.107	47.12	54.883	10.658	37.222	1.569	-4.798	52.088	0.035	0.001	0	2612.43	43.5405	53.4	12.8	42.2	2.908	0.005	0.005	0.000	0.115	0.10
2442	10/3/2002	12:43:42 PM	27.469	23.112	27.754	25.752	23.133	46.833	54.971	10.672	37.009	2	-4.214	51.912	0.03	0.001	0	2613.43	43.5572	53.5	12.7	41.9	2.890	0.004	0.004	0.000	0.099	0.08
2443	10/3/2002	12:44:42 PM	27.474	23.122	27.765	25.793	23.154	46.284	54.45	10.596	36.548	2.11	-4.095	52.251	0.035	0.001	0	2614.43	43.5738	53.0	12.8	41.4	2.855	0.005	0.005	0.000	0.117	0.10
2444	10/3/2002	12:45:42 PM	27.491	23.139	27.777	25.845	23.161	46.222	54.465	10.547	36.456	2.116	-4.08	52.358	0.036	0.001	0	2615.43	43.5905	53.0	12.8	41.3	2.850	0.005	0.005	0.000	0.120	0.10
2445	10/3/2002	12:46:42 PM	27.513	23.161	27.798	25.876	23.157	46.416	54.62	10.613	36.632	2.069	-4.167	52.734	0.036	0.001	0	2616.43	43.6072	53.1	12.9	41.5	2.863	0.005	0.005	0.000	0.120	0.10
2446	10/3/2002	12:47:42 PM	27.524	23.162	27.799	25.917	23.164	46.582	54.781	10.727	36.559	2	-4.353	52.302	0.037	0.001	0	2617.43	43.6238	53.3	12.8	41.6	2.866	0.006	0.005	0.000	0.123	0.10
2447	10/3/2002	12:48:10 PM	27.524	23.167	27.799	25.942	23.189	46.801	54.992	10.684	36.878	1.968	-4.413	51.973	0.037	0.001	0	2617.90	43.6316	53.5	12.7	41.8	2.885	0.006	0.005	0.000	0.122	0.10
2448	10/3/2002	12:49:10 PM	27.53	23.178	27.796	25.894	23.215	46.741	54.75	10.649	37.017	1.942	-4.465	52.658	0.036	0.001	0	2618.90	43.6483	53.3	12.9	41.9	2.887	0.005	0.005	0.000	0.119	0.10
2449	10/3/2002	12:50:10 PM	27.541	23.2	27.832	25.995	23.211	46.661	54.783	10.688	36.773	1.965	-4.463	51.88	0.036	0.001	0	2619.90	43.6649	53.3	12.7	41.7	2.876	0.005	0.005	0.000	0.119	0.10
2450	10/3/2002	12:51:10 PM	27.553	23.217	27.853	25.997	23.223	46.781	55.027	10.7	36.786	1.962	-4.463	52.396	0.036	0.001	0	2620.90	43.6816	53.6	12.8	41.8	2.881	0.005	0.005	0.000	0.119	0.10
2451	10/3/2002	12:52:10 PM	27.555	23.213	27.835	25.983	23.225	46.679	54.686	10.57	36.988	1.957	-4.463	51.889	0.036	0.001	0	2621.90	43.6983	53.2	12.7	41.8	2.884	0.005	0.005	0.000	0.119	0.10
2452	10/3/2002	12:53:10 PM	27.571	23.23	27.847	25.985	23.216	46.868	55.071	10.705	36.861	1.945	-4.486	51.079	0.036	0.001	0	2622.90	43.7149	53.6	12.5	41.9	2.886	0.005	0.005	0.000	0.118	0.10
2453	10/3/2002	12:54:10 PM	27.583	23.242	27.859	25.962	23.218	46.804	54.914	10.693	36.837	1.962	-4.48	52.4	0.036	0.001	0	2623.90	43.7316	53.4	12.8	41.8	2.883	0.005	0.005	0.000	0.119	0.10
2454	10/3/2002	12:55:10 PM	27.59	23.249	27.865	25.984	23.235	46.953	55.191	10.802	36.759	2	-4.477	52.409	0.036	0.001	0	2624.90	43.7483	53.7	12.8	41.9	2.886	0.005	0.005	0.000	0.118	0.10
2455	10/3/2002	12:56:10 PM	27.607	23.261	27.877	25.98	23.212	46.744	54.874	10.692	36.808	2.006	-4.468	52.746	0.036	0.001	0	2625.90	43.7649	53.4	12.9	41.8	2.880	0.005	0.005	0.000	0.119	0.10
2456	10/3/2002	12:57:10 PM	27.608	23.267	27.874	25.967	23.239	46.547	54.581	10.591	36.739	2	-4.465	52.151	0.036	0.001	0	2626.90	43.7816	53.1	12.8	41.6	2.871	0.005	0.005	0.000	0.119	0.10
2457	10/3/2002	12:58:10 PM	27.619	23.278	27.905	25.958	23.224	46.758	54.922	10.649	36.894	2.006	-4.457	52.619	0.036	0.001	0	2627.90	43.7983	53.5	12.9	41.8	2.884	0.005	0.005	0.000	0.118	0.10
2458	10/3/2002	12:59:10 PM	27.61	23.274	27.881	25.919	23.205	46.837	54.911	10.615	36.984	2.003	-4.454	52.411	0.036	0.001	0	2628.90	43.8149	53.4	12.8	41.9	2.890	0.005	0.005	0.000	0.118	0.10
2459	10/3/2002	1:00:10 PM	27.616	23.28	27.881	25.945	23.251	46.845	55.079	10.649	36.954	2	-4.445	51.843	0.036	0.001	0	2629.90	43.8316	53.6	12.7	41.9	2.889	0.005	0.005	0.000	0.118	0.10
2460	10/3/2002	1:01:10 PM	27.636	23.291	27.897	25.95	23.237	47.062	55.189	10.763	37.093	2.003	-4.445	52.642	0.036	0.001	0	2630.90	43.8483	53.7	12.9	42.1	2.901	0.005	0.005	0.000	0.118	0.10
2461	10/3/2002	1:02:10 PM	27.636	23.291	27.892	25.915	23.257	46.743	54.938	10.662	36.888	2	-4.451	52.029	0.036	0.001	0	2631.90	43.8649	53.5	12.8	41.8	2.883	0.005	0.005	0.000	0.118	0.10
2462	10/3/2002	1:03:10 PM	27.652	23.306	27.912	25.961	23.242	46.741	54.901	10.657	36.921	2.006	-4.448	52.575	0.036	0.001	0	2632.90	43.8816	53.4	12.9	41.8	2.884	0.005	0.005	0.000	0.118	0.10
2463	10/3/2002	1:04:10 PM	27.667	23.307	27.918	25.941	23.248	46.89	54.936	10.723	37.023	2.069	-4.439	52.233	0.036	0.001	0	2633.90	43.8983	53.5	12.8	42.0	2.893	0.005	0.005	0.000	0.118	0.10
2464	10/3/2002	1:05:10 PM	27.678	23.317	27.924	25.897	23.269	46.862	54.98	10.685	37.046	2.069	-4.436	52.463	0.036	0.001	0	2634.90	43.9149	53.5	12.9	42.0	2.893	0.005	0.005	0.000	0.118	0.10
2465	10/3/2002	1:06:10 PM	27.677	23.307	27.913	25.841	23.258	46.667	54.98	10.671	36.731	2.069	-4.431	52.05	0.036	0.001	0	2635.90	43.9316	53.5	12.8	41.7	2.875	0.005	0.005	0.000	0.119	0.10
2466	10/3/2002	1:07:10 PM	27.688	23.327	27.929	25.837	23.284	46.431	54.547	10.595	36.753	2.072	-4.428	52.327	0.036	0.001	0	2636.90	43.9483	53.1	12.8	41.6	2.868	0.005	0.005	0.000	0.119	0.10
2467	10/3/2002	1:08:10 PM	27.698	23.333	27.934	25.887	23.289	46.951	55.162	10.699	37.007	2.069	-4.428	52.424	0.036	0.001	0	2637.90	43.9649	53.7	12.8	42.0	2.894	0.005	0.005	0.000	0.118	0.10
2468	10/3/2002	1:09:10 PM	27.704	23.333	27.944	25.913	23.269	46.721	54.833	10.681	36.866	2.072	-4.422	52.281	0.036	0.001	0	2638.90	43.9816	53.4	12.8	41.8	2.882	0.005	0.005	0.000	0.118	0.10
2469	10/3/2002	1:10:10 PM	27.694	23.323	27.919	25.883	23.264	46.781	54.992	10.719	36.859	2.066	-4.422	52.44	0.036	0.001	0	2639.90	43.9983	53.5	12.9	41.8	2.883	0.005	0.005	0.000	0.118	0.10
2470	10/3/2002	1:11:10 PM	27.714	23.344	27.95	25.978	23.285	46.553	54.883	10.678	36.61	2.069	-4.413	52.377	0.036	0.001	0	2640.90	44.0149	53.4	12.8	41.6	2.867	0.005	0.005	0.000	0.119	0.10

Figure D2-19: Dewatering of the AN-102R2, batch 3C, insoluble solids concentrations from 1 to 8.5 wt% - Raw & Calculated Data

2471	10/3/2002	1:12:10 PM	27.714	23.343	27.954	26.058	23.279	46.634	54.833	10.662	36.751	2.11	-4.399	52.491	0.036	0.001	0	2641.90	44.0316	53.4	12.9	41.7	2.875	0.005	0.005	0.000	0.119	0.10
2472	10/3/2002	1:13:10 PM	27.735	23.359	27.97	26.099	23.306	46.567	54.885	10.622	36.681	2.075	-4.373	52.413	0.036	0.001	0	2642.90	44.0483	53.4	12.8	41.6	2.870	0.005	0.005	0.000	0.119	0.10
2473	10/3/2002	1:14:10 PM	27.735	23.354	27.965	26.234	23.311	49.438	55.013	10.714	39.582	-0.607	-4.106	51.966	0.028	0.001	0	2643.90	44.0649	53.5	12.7	44.5	3.069	0.004	0.004	0.000	0.086	0.07
2474	10/3/2002	1:15:10 PM	27.734	23.354	27.97	26.358	23.32	47.707	54.941	10.529	37.986	1.046	-3.183	52.107	0.009	0.001	0	2644.90	44.0816	53.5	12.8	42.8	2.954	0.001	0.001	0.000	0.029	0.02
2475	10/3/2002	1:16:10 PM	27.755	23.375	27.986	26.409	23.316	46.772	54.965	10.692	36.97	2.11	-1.104	51.943	0.002	0.001	0	2645.90	44.0983	53.5	12.7	41.9	2.887	0.000	0.000	0.000	0.007	0.01
2476	10/3/2002	1:17:10 PM	27.756	23.381	27.991	26.47	23.302	46.035	55.133	10.769	35.965	2.931	0.512	52.707	0.008	0.001	0	2646.90	44.1149	53.7	12.9	41.0	2.827	0.001	0.001	0.000	0.027	0.02
2477	10/3/2002	1:18:10 PM	27.756	23.381	27.982	26.466	23.322	47.675	54.943	10.686	37.811	1.098	-3.238	52.363	0.01	0.001	0	2647.90	44.1316	53.5	12.8	42.7	2.947	0.001	0.001	0.000	0.032	0.03
2478	10/3/2002	1:19:10 PM	27.762	23.397	27.998	26.486	23.328	46.744	54.891	10.722	36.796	2.003	-1.396	51.868	0.027	0.001	0	2648.90	44.1483	53.4	12.7	41.8	2.880	0.004	0.004	0.000	0.089	0.08
2479	10/3/2002	1:20:10 PM	27.757	23.397	27.988	26.461	23.343	47.798	54.744	10.737	37.949	0.965	-3.834	52.226	0.11	0.001	0	2649.90	44.1649	53.3	12.8	42.9	2.956	0.016	0.015	0.000	0.352	0.30
2480	10/3/2002	1:21:10 PM	27.783	23.423	28.034	26.562	23.354	48.877	54.998	10.728	39.072	0.063	-5.841	52.071	0.026	0.001	0	2650.90	44.1816	53.5	12.8	44.0	3.032	0.004	0.004	0.000	0.081	0.07
2481	10/3/2002	1:22:10 PM	27.778	23.408	28.009	26.407	23.354	48.266	54.889	10.712	38.35	0.523	-4.717	51.949	0.028	0.001	0	2651.90	44.1983	53.4	12.7	43.3	2.986	0.004	0.004	0.000	0.089	0.08
2482	10/3/2002	1:23:10 PM	27.784	23.419	28.034	26.353	23.35	48.26	54.911	10.713	38.419	0.586	-4.798	52.865	0.061	0.001	0	2652.90	44.2149	53.4	13.0	43.3	2.988	0.009	0.008	0.000	0.193	0.16
2483	10/3/2002	1:24:10 PM	27.784	23.419	28.02	26.279	23.376	49.024	54.969	10.702	39.165	-0.179	-6.675	52.346	0.039	0.001	0	2653.90	44.2316	53.5	12.8	44.1	3.040	0.006	0.005	0.000	0.121	0.10
2484	10/3/2002	1:25:10 PM	27.806	23.441	28.037	26.305	23.387	48.936	54.984	10.731	39.04	-0.153	-6.524	52.444	0.036	0.001	0	2654.90	44.2483	53.5	12.9	44.0	3.032	0.005	0.005	0.000	0.112	0.10
2485	10/3/2002	1:26:10 PM	27.802	23.447	28.047	26.301	23.376	49.018	55.061	10.728	39.224	-0.096	-6.408	52.008	0.037	0.001	0	2655.90	44.2649	53.6	12.7	44.1	3.042	0.006	0.005	0.000	0.115	0.10
2486	10/3/2002	1:27:10 PM	27.812	23.453	28.053	26.367	23.399	48.844	55.089	10.7	38.941	-0.064	-6.411	52.984	0.038	0.001	0	2656.90	44.2816	53.6	13.0	43.9	3.026	0.006	0.005	0.000	0.119	0.10
2487	10/3/2002	1:28:10 PM	27.828	23.458	28.058	26.472	23.389	48.804	54.87	10.702	38.931	-0.078	-6.405	52.107	0.038	0.001	0	2657.90	44.2983	53.4	12.8	43.9	3.025	0.006	0.005	0.000	0.119	0.10
2488	10/3/2002	1:29:10 PM	27.818	23.454	28.039	26.433	23.415	49.042	55.226	10.672	39.212	-0.049	-6.405	52.283	0.037	0.001	0	2658.90	44.3149	53.8	12.8	44.1	3.042	0.006	0.005	0.000	0.115	0.10
2489	10/3/2002	1:30:10 PM	27.839	23.474	28.09	26.493	23.421	49.063	55.207	10.789	39.13	-0.041	-6.417	52.503	0.038	0.001	0	2659.90	44.3316	53.7	12.9	44.1	3.040	0.006	0.005	0.000	0.118	0.10
2490	10/3/2002	1:31:10 PM	27.845	23.491	28.076	26.49	23.432	48.655	54.907	10.717	38.728	-0.029	-6.414	52.021	0.038	0.001	0	2660.90	44.3483	53.4	12.7	43.7	3.012	0.006	0.005	0.000	0.119	0.10
2491	10/3/2002	1:32:10 PM	27.851	23.497	28.092	26.471	23.433	48.916	55.137	10.724	38.929	0.02	-6.414	52.138	0.038	0.001	0	2661.90	44.3649	53.7	12.8	43.9	3.028	0.006	0.005	0.000	0.118	0.10
2492	10/3/2002	1:33:10 PM	27.857	23.503	28.093	26.406	23.439	48.779	55.013	10.718	38.905	0.037	-6.42	52.336	0.038	0.001	0	2662.90	44.3816	53.5	12.8	43.8	3.023	0.006	0.005	0.000	0.119	0.10
2493	10/3/2002	1:34:10 PM	27.863	23.513	28.108	26.317	23.464	49.204	55.425	10.8	39.255	0.032	-6.423	52.132	0.038	0.001	0	2663.90	44.3983	54.0	12.8	44.2	3.049	0.006	0.005	0.000	0.117	0.10
2494	10/3/2002	1:35:10 PM	27.883	23.534	28.139	26.303	23.46	48.62	54.723	10.574	38.86	0.043	-6.414	51.97	0.038	0.001	0	2664.90	44.4149	53.3	12.7	43.7	3.016	0.006	0.005	0.000	0.119	0.10
2495	10/3/2002	1:36:10 PM	27.884	23.53	28.109	26.283	23.436	48.738	55.009	10.686	38.847	0.066	-6.42	52.793	0.038	0.001	0	2665.90	44.4316	53.5	12.9	43.8	3.019	0.006	0.005	0.000	0.119	0.10
2496	10/3/2002	1:37:10 PM	27.91	23.546	28.125	26.269	23.472	49.057	55.249	10.749	39.169	0.066	-6.411	51.532	0.038	0.001	0	2666.90	44.4483	53.8	12.6	44.1	3.041	0.006	0.005	0.000	0.118	0.10
2497	10/3/2002	1:38:10 PM	27.925	23.561	28.146	26.305	23.498	48.419	54.69	10.641	38.548	0.066	-6.408	52.025	0.038	0.001	0	2667.90	44.4649	53.2	12.7	43.5	2.998	0.006	0.005	0.000	0.119	0.10
2498	10/3/2002	1:39:10 PM	27.926	23.562	28.137	26.356	23.543	48.955	55.332	10.703	39.046	0.069	-6.391	51.675	0.037	0.001	0	2668.90	44.4816	53.9	12.7	44.0	3.034	0.006	0.005	0.000	0.115	0.10
2499	10/3/2002	1:40:10 PM	27.932	23.573	28.148	26.327	23.555	48.96	55.389	10.796	36.943	0.066	-6.379	51.826	0.037	0.001	0	2669.90	44.4983	53.9	12.7	44.0	3.030	0.006	0.005	0.000	0.115	0.10
2500	10/3/2002	1:41:10 PM	27.933	23.59	28.154	26.333	23.551	49.262	55.727	10.805	39.253	0.069	-6.397	52.239	0.038	0.001	0	2670.90	44.5149	54.3	12.8	44.3	3.051	0.006	0.005	0.000	0.117	0.10
2501	10/3/2002	1:42:10 PM	27.935	23.598	28.165	26.419	23.562	48.643	55.042	10.679	38.651	0.066	-6.414	52.168	0.038	0.001	0	2671.90	44.5316	53.6	12.8	43.6	3.009	0.006	0.005	0.000	0.119	0.10
2502	10/3/2002	1:43:10 PM	27.936	23.597	28.181	26.43	23.573	48.891	55.203	10.743	38.97	0.069	-6.408	52.428	0.038	0.001	0	2672.90	44.5483	53.7	12.8	43.9	3.029	0.006	0.005	0.000	0.118	0.10
2503	10/3/2002	1:44:10 PM	27.947	23.613	28.198	26.487	23.565	48.871	55.207	10.813	38.896	0.072	-6.411	52.333	0.038	0.001	0	2673.90	44.5649	53.7	12.8	43.9	3.026	0.006	0.005	0.000	0.118	0.10
2504	10/3/2002	1:45:10 PM	27.923	23.594	28.153	26.487	23.565	49.239	55.557	10.867	39.226	0.063	-6.414	52.002	0.038	0.001	0	2674.90	44.5816	54.1	12.7	44.2	3.050	0.006	0.005	0.000	0.117	0.10
2505	10/3/2002	1:46:10 PM	27.949	23.621	28.19	26.534	23.587	49.076	55.354	10.807	39.097	0.066	-6.408	53.764	0.038	0.001	0	2675.90	44.5983	53.9	13.2	44.1	3.040	0.006	0.005	0.000	0.118	0.10
2506	10/3/2002	1:47:10 PM	27.95	23.621	28.186	26.52	23.593	48.871	55.183	10.687	39.005	0.095	-6.391	52.017	0.038	0.001	0	2676.90	44.6149	53.7	12.7	43.9	3.029	0.006	0.005	0.000	0.118	0.10
2507	10/3/2002	1:48:10 PM	27.96	23.626	28.201	26.555	23.593	48.724	54.976	10.693	38.941	0.118	-6.394	52.006	0.039	0.001	0	2677.90	44.6316	53.5	12.7	43.8	3.022	0.006	0.005	0.000	0.121	0.10
2508	10/3/2002	1:49:10 PM	27.971	23.638	28.207	26.501	23.599	49.123	55.426	10.751	39.226	0.086	-6.388	52.002	0.038	0.001	0	2678.90	44.6483	54.0	12.7	44.2	3.046	0.006	0.005	0.000	0.117	0.10
2509	10/3/2002	1:50:10 PM	27.977	23.643	28.207	26.532	23.6	48.719	55.034	10.715	38.629	0.075	-6.397	52.079	0.038	0.001	0	2679.90	44.6649	53.6	12.8	43.8	3.018	0.006	0.005	0.000	0.118	0.10
2510	10/3/2002	1:51:10 PM	27.967	23.654	28.213	26.662	23.62	49.082	55.366	10.743	39.228	0.092	-6.388	52.266	0.038	0.001	0	2680.90	44.6816	53.9	12.8	44.2	3.044	0.006	0.005	0.000	0.117	0.10
2511	10/3/2002	1:52:10 PM	27.982	23.654	28.218	26.657	23.61	48.943	55.067	10.733	39.134	0.13	-6.379	52.79	0.038	0.001	0	2681.90	44.6983	53.6	12.9	44.0	3.036	0.006	0.005	0.000	0.118	0.10
2512	10/3/2002	1:53:10 PM	28.009	23.666	28.235	26.639	23.647	48.862	55.276	10.765	38.857	0.112	-6.379	52.029	0.037	0.001	0	2682.90	44.7149	53.8	12.8	43.9	3.024	0.006	0.005	0.000	0.115	0.10
2513	10/3/2002	1:54:10 PM	28.005	23.677	28.24	26.615	23.628	49.084	55.462	10.777	39.064	0.133	-6.371	51.574	0.038	0.001	0	2683.90	44.7316	54.0	12.6	44.1	3.039	0.006	0.005	0.000	0.117	0.10
2514	10/3/2002	1:55:10 PM	28.031	23.688	28.266	26.571	23.624	48.931	55.158	10.736	39.113	0.136	-6.356	52.1	0.037	0.001	0	2684.90	44.7483	53.7	12.8	44.0	3.035	0.006	0.005	0.000	0.114	0.10
2515	10/3/2002	1:56:10 PM	28.032	23.683	28.247	26.456	23.619	48.953	55.265	10.745	39.019	0.089	-6.269	52.092	0.034	0.001	0	2685.90	44.7649	53.8	12.8	44.0	3.033	0.005	0.005	0.000	0.105	0.09
2516	10/3/2002	1:57:10 PM	28.032	23.694	28.248	26.437	23.64	48.539	55.375	10.715	36.559	0.543	-5.658	52.312	0.036	0.001	0	2686.90	44.7816	53.9	12.8	43.5	3.003	0.005	0.005	0.000	0.113	0.10
2517	10/3/2002	1:58:10 PM	28.063	23.7	28.264	26.453	23.651	48.332	55.069	10.69	38.407	0.592	-5.6	52.274	0.038	0.001	0	2687.90	44.7983	53.6	12.8	43.4	2.990	0.006	0.005	0.000	0.119	0.10
2518	10/3/2002	1:59:10 PM	28.065	23.707	28.26	26.435	23.663	48.299	55.143	10.721	38.383	0.586	-5.609	51.943	0.037	0.001	0	2688.90	44.8149	53.7	12.7	43.3	2.988	0.006	0.005	0.000	0.116	0.10
2519	10/3/2002	2:00:10 PM	28.071	23.723	28.276	26.476	23.684	48.608	55.366	10.853	38.573	0.621	-5.603	52.411	0.037	0.001	0	2689.90	44.8316	53.9	12.8	43.6	3.005	0.006	0.005	0.000	0.116	0.10
2520	10/3/2002	2:01:10 PM	28.077	23.729	28.288	26.497	23.695	48.315	55.102	10.701	38.469	0.647	-5.58	52.522	0.037	0.001	0	2690.90	44.8483	53.6	12.9	43.4	2.992	0.006	0.005	0.000	0.116	0.10
2521	10/3/2002	2:02:10 PM	28.088	23.735	28.289	26.543	23.686	48.543	55.396	10.793	38.511	0.647	-5.592	52.362	0.037	0.001	0	2691.90	44.8649	53.9	12.8	43.5	3.001	0.006	0.005	0.000	0.116	0.10
2522	10/3/2002	2:03:10 PM	28.095	23.752	28.316	26.53	23.713	48.26	55.141	10.716	38.321	0.647	-5.606	51.828	0.037	0.001	0	2692.90	44.8816	53.7	12.7	43.3	2.985	0.006	0.005	0.000	0.116	0.10
2523	10/3/2002	2:04:10 PM	28.101	23.763	28.316	26.556	23.719	48.2	55	10.692	38.313	0.653	-5.598	51.918	0.037	0.001	0	2693.90	44.8983	53.5	12.7	43.3	2.982	0.006	0.005	0.000	0.116	0.10
2524	10/3/2002	2:05:10 PM	28.102	23.759	28.292	26.497	23.72	48.423	55.342	10.784	38.432	0.656	-5.6	52.182	0.037	0.001	0	2694.90	44.9149	53.9	12.8	43.4	2.994	0.006	0.005	0.000	0.116	0.10
2525	10/3/2002	2:06:10 PM	28.127	23.78	28.328	26.527	23.736	48.266	55.201	10.805	38.174	0.717	-5.586	51.928	0.037	0.001	0	2695.90	44.9316	53.7	12.7	43.2	2.980	0.006	0.005	0.000	0.116	0.10
2526	10/3/2002	2:07:10 PM	28.132	23.795	28.333	26.577	23.716	48.736	55.679	10.828	38.753	0.719	-5.592	51.994	0.037	0.001	0	2696.90	44.9483	54.2	12.7	43.7	3.016	0.006	0.005	0.000	0.116	0.10
2527	10/3/2002	2:08:10 PM	28.132	23.785	28.328	26.547	23.711	48.09	54.821	10.681	38.294	0.717	-5.589	52.541	0.037	0.001	0	2697.90	44.9649	53.3	12.9	43.2	2.978	0.006	0.005	0.000	0.116	0.10
2528	10/3/2002	2:09:10 PM	28.132	23.795	28.338	26.497	23.726	48.601	55.362	10.802	38.724	0.751	-5.56	51.316	0.037	0.001	0	2698.90	44.9816	53.9	12.6	43.7	3.010	0.006	0.005	0.000	0.115	0.10
2529	10/3/2002	2:10:10 PM	28.142	23.8	28.338	26.542	23.711	48.674	55.638	10.787	38.7	0.751	-5.548	52.056	0.038	0.001	0	2699.90	44.9983	54.2	12.8	43.7	3.012	0.006	0.005	0.000	0.118	0.10
2530	10/3/2002	2:11:10 PM	28.153	23.805	28.343	26.518	23.691	48.326	55.276	10.787	38.307	0.774	-5.554	52.023	0.037	0.001	0	2700.90	45.0149	53.8	12.7	43.3	2.987	0.006	0.005	0.000	0.116	0.10
2531	10/3/2002	2:12:10 PM	28.153	23.811	28.359	26.569	23.717	48.253	55.265	10.743	38.29	0.766	-5.543	51.989	0.037	0.001	0	2701.90	45.0316	53.8	12.7	43.3	2.983	0.006	0.005	0.000	0.116	0.10
2532	10/3/2002	2:13:10 PM	28.149	23.807	28.34	26.514	23.713	48.326	55.468	10.822	38.227	0.809	-5.543	51.757	0.037	0.001	0	2702.90	45.0483	54.0	12.7	43.3	2.984	0.006	0.005	0.000	0.116	0.10
2533	10/3/2002	2:14:10 PM	28.18	23.838	28.396	26.576	23.724	48.49	55.543	10.833	38.409	0.815	-5.534	52.214	0.038	0.001	0	2703.90	45.0649	54.1	12.8	43.4	2.996	0.006	0.005	0.000	0.119	0.10
2534	10/3/2002	2:15:10 PM	28.171	23.834	28.391	26.541	23.75	48.141	55.135	10.754	38.141	0.815	-5.543	51.788	0.037	0.001	0	2704.90	45.0816	53.7	12.7	43.1	2.974	0.006	0.005	0.000	0.116	0.10
2535	10/3/2002	2:16:10 PM	28.187	23.84	28.393	26.568	23.742	48.19	55.464	10.714	38.174	0.841	-5.543	52.353	0.037	0.001	0	2705.90	45.0983	53.7	12.7	43.1	2.972	0.006	0.005	0.000	0.116	0.10
2536	10/3/2002	2:17:10 PM	28.192	23.835	28.383	26.482	23.741	48.231	55.294	10.762	38.295	0.855	-5.551	52.295	0.037	0.001	0	2706.90	45.1149	53.8	12.8	43.3	2.983	0.006	0.005	0.000	0.116	0.10
2537	10/3/2002	2:18:10 PM	28.198	23.841	28.393	26.568	23.742	48.552	55.689	10.918	38.331	0.861	-5.543	52.044	0.037	0.001	0	2707.90	45.1316	54.2	12.8	43.4	2.995	0.006	0.005	0.000	0.116	0.10
2538	10/3/2002	2:19:10 PM	28.218	23.846	28.409	26.574	23.712	48.465	55.532	10.78	38.565	0.864	-5.545	51.928	0.037	0.001	0	2708.90	45.1483	54.1	12.7	43.5	3.000	0.006	0.005	0.000	0.115	0.10
2539	10/3/2002	2:20:10 PM	28.218	23.851	28.409	26.524	23.732	48.228	55.16	10.763	38.399	0.864	-5.537	52.149	0.038	0.001	0	2709.90	45.1649	53.7	12.8	43.3	2.986	0.006	0.005	0.000	0.119	0.10
2540	10/3/2002	2:21:10 PM	28.233	23.866	28.424	26.574	23.727	48.357	55.387	10.773	38.403	0.867	-5.537	51.945	0.037	0.001	0	2710.90	45.1816	53.9	12.7	43.4	2.991	0.006	0.005	0.000	0.116	0.10
2541	10/3/2002	2:22:10 PM	28.234	23.867	28.419	26.569	23.713	48.429	55.574	10.798	38.354	0.864	-5.54	51.67	0.037	0.001	0	2711.90	45.1983	54.1	12.7	43.4	2.992	0.006	0.005	0.000	0.116	0.10
2542	10/3/2002	2:23:10 PM	28.234	23.867	28.419	26.549	23.718	48.438	55.377	10.672	38.704	0.913	-5.537	53.028	0.037	0.001	0	2712.90	45.2149	53.9	13.0	43.6	3.004	0.006	0.005	0.000	0.115	0.10
2543	10/3/2002	2:24:10 PM	28.244	23.873	28.429	26.569	23.703	48.393	55.767	10.762	38.368	0.928	-5.525	51.686	0.037	0.001	0	2713.90	45.2316	54.0	12.7	43.3	2.988	0.006	0.005	0.000	0.116	0.10
2544	10/3/2002	2:25:10 PM	28.265	23.883	28.436	26.605	23.744	48.102	55.085	10.734	38.215	0.933	-5.522	51.966	0.037	0.001	0	2714.90	45.2483	53.9	12.7	43.2	2.976	0.006	0.005	0.000	0.116	0.10
2545	10/3/2002	2:26:10 PM	28.264	23.888	28.445	26.58	23.743	48.471	55.735	10.768	38.428	0.928	-5.511	52.01	0.037	0.001	0	2715.90	45.2649	54.3	12.7	43.4	2.996	0.006	0.005	0.000	0.115	0.10
2546	10/3/2002	2:27:10 PM	28.264	23.888	28.44	26.575	23.713	48.241	55.408	10.785	38.233	0.962	-5.499	51.907	0.038	0.001	0	2716.90	45.2816	53.9	12.8	43.2	2.981	0.006	0.005	0.000	0.119	0.10
2547	10/3/2002	2:28:10 PM	28.259	23.892	28.439	26.579	23.708	48.357	55.408	10.842	38.419	0.977	-5.502	52.369	0.037	0.001	0	2717.90	45.2983	53.9	12.8	43.4	2.991	0.006	0.005	0.000	0.116	0.10
2548	10/3/2002	2:29:10 PM	28.268	23.886	28.439	26.629	23.687	48.025	55.276	10.708	38.053	0.974	-5.505	52.187	0.038	0.001	0	2718.90	45.3149	53.8	12.8	43.0	2.967	0.006	0.005	0.000	0.120	0.10
2549	10/3/2002	2:30:10 PM	28.273	23.891	28.454	26.684	23.722	48.316	55.315	10.744	38.464	0.98	-5.496	52.004	0.037	0.001	0	2719.90	45.3316	53.8	12.7	43.4	2.992	0.006	0.005	0.000	0.115	0.10
2550	10/3/2002	2:31:10 PM	28.272	23.891	28.453	26.603	23.706	48.2	55.263	10.738	38.217	0.98	-5.49	51.792	0.037	0.001	0	2720.90	45.3483	53.8	12.7	43.2	2.979	0.006	0.005	0.000	0.116	0.10
2551	10/3/2002	2:32:10 PM	28.282	23.896	28.468	26.653	23.686	48.187	55.305	10.73	38.284	0.98	-5.482	51.979	0.037	0.001	0	2721.90	45.3649	53.8	12.7	43.2	2.981	0.006	0.005	0.000	0.116	0.10
2552	10/3/2002	2:33:10 PM	28.287	23.901	28.468	26.608	23.686	48.382	55.538	10.756	38.483	0.98	-5.485	51.947	0.037	0.001	0	2722.90	45.3816	54.1	12.7	43.4	2.995	0.006	0.005	0.000	0.115	0.10
2553	10/3/2002	2:34:10 PM	28.292	23.895	28.452	26.537	23.651	48.332	55.41	10.754	38.415	0.928	-5.545	51.448	0.038	0.001	0	2723.90	45.3983	53.9	12.6	43.4	2.990	0.006	0.005	0.000	0.119	0.10
2554	10/3/2002	2:35:10 PM	28.302	23.9	28.472	26.537	23.676	48.083	55.267	10.722	38.202	0.98	-5.499	52.21	0.037	0.001	0	2724.90	45.4149	53.8	12.8	43.1	2.975	0.006	0.005	0.000	0.116	0.10
2555	10/3/2002	2:36:10 PM	28.302	23.905	28.477	26.447	23.676	48.241	55.391	10.771	38.272	0.98	-5.464	51.553	0.037	0.001	0	2725.90	45.4316	53.9	12.6	43.3	2.982	0.006	0.005	0.000	0.116	0.10
2556	10/3/2002	2:37:10 PM	28.307	23.9	28.477	26.487	23.661	48.17	55.495	10.818	37.979	1.008	-5.459	51.515	0.036	0.002	0	2726.90	45.4483	54.0	12.6	43.1	2.970	0.005	0.005	0.000	0.113	0.10
2557	10/3/2002	2:38:10 PM	28.292	23.9	28.472	26.397	23.686	48.597	55.824	10.823	38.602	1.035	-5.45	51.052	0.038	0.001	0	2727.90	45.4649	54.4	12.5	43.6	3.006	0.006	0

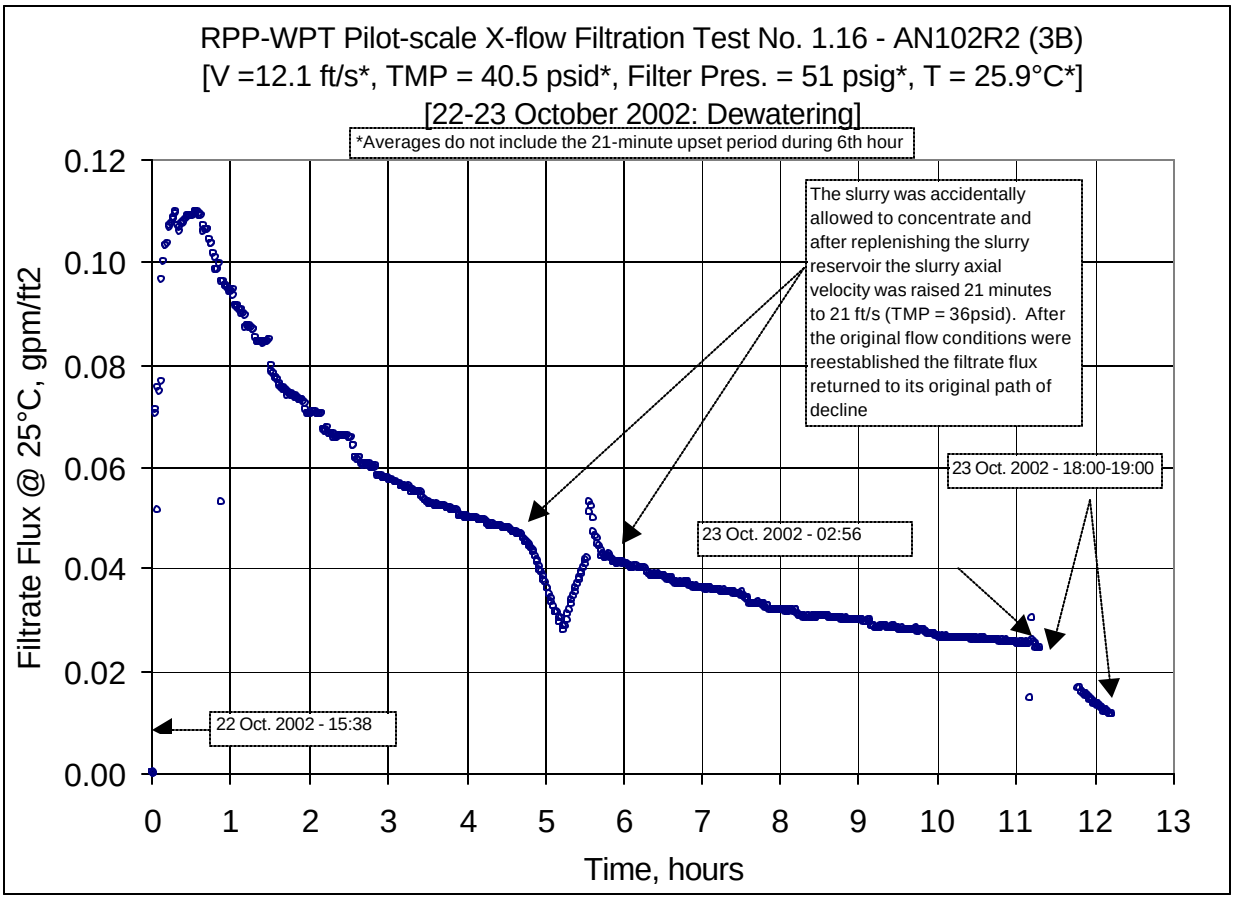


Figure D3: Dewatering of the AN-102R2, batch 3B, insoluble solids concentrations from 1 to 22 wt%

(Data from 6 Files)
(1.163b-rpp-pxu-102202-1539, -1739, -1939, -2139)
(1.163b-rpp-pxu-102302-0139, -1835)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1			<<<<<<<<< Temperature Measurements >>>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>>						<<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>>										
2	DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
3			deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
4			T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
5	Zeros																											
6	10/22/2002	1:31:17 PM	22.729	22.28	22.185	22.183	21.21	-0.131	0.062	-0.061	0.056	-0.304	0.35	-0.214	0.002	0.001	0		Filter Surface	6.707	FT2							
7	10/22/2002	1:31:51 PM	22.729	22.28	22.185	22.183	21.21	-0.133	0.062	-0.061	0.056	-0.304	0.35	-0.214	0.002	0.001	0		Conversion	851	m3/m2/day/barg / gpm/ft2/barg							
8	10/22/2002	1:31:52 PM	22.724	22.256	22.406	22.164	21.15	-0.133	0.062	-0.061	0.058	-0.307	0.353	-0.21	0.002	0.001	0											
9	10/22/2002	1:31:53 PM	22.724	22.251	22.416	22.164	21.15	-0.133	0.062	-0.061	0.058	-0.304	0.353	-0.214	0.002	0.001	0		Note: Gauge Pressure P1 is approximately 1.4 psig									
10	10/22/2002	1:31:54 PM	22.724	22.256	22.421	22.169	21.15	-0.131	0.062	-0.061	0.058	-0.307	0.356	-0.21	0.002	0.001	0											
11	10/22/2002	1:31:55 PM	22.729	22.25	22.426	22.168	21.144	-0.133	0.062	-0.061	0.058	-0.304	0.353	-0.214	0.002	0.001	0		Pressure P1is corrected for 40.88 inches of water tubing									
12	10/22/2002	1:31:56 PM	22.724	22.255	22.431	22.168	21.154	-0.131	0.062	-0.061	0.058	-0.307	0.35	-0.212	0.002	0.001	0		VVVV					< Filtrate Flux		<< PERMIABILITY		>>
13	10/22/2002	1:31:57 PM	22.734	22.266	22.441	22.169	21.16	-0.133	0.063	-0.061	0.058	-0.307	0.35	-0.212	0.002	0.001	0							at 25C		x 1000		
14																		Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
15	Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
16	10/22/2002	3:38:49 PM	27.717	24.441	27.636	26.257	25.394	5.117	50.458	8.56	-2.705	39.517	91.787	49.214	0.002	0.001	0	0		49.0	12.1	1.2	0.083	0.000	0.000	0.000	0.230	0.20
17	10/22/2002	3:39:27 PM	27.717	24.441	27.636	26.257	25.394	5.117	50.458	8.56	-2.705	39.517	91.787	49.214	0.002	0.001	0	0.63	0.01056	49.0	12.1	1.2	0.083	0.000	0.000	0.000	0.230	0.20
18	10/22/2002	3:39:49 PM	27.281	24.464	27.599	26.455	25.423	-7.463	50.598	8.495	-18.556	61.207	63.008	48.445	0.002	0.001	0.939	1.00	0.01667	49.1	11.9	-13.0	-0.897	0.000	0.000	0.000	-0.021	-0.02
19	10/22/2002	3:40:19 PM	27.299	24.476	27.576	26.497	25.425	5.034	50.052	8.462	-2.583	39.24	49.423	49.328	0.002	0.001	0.002	1.50	0.025	48.6	12.1	1.2	0.084	0.000	0.000	0.000	0.113	0.10
20	10/22/2002	3:40:49 PM	27.404	24.472	27.527	26.513	25.441	24.367	50.007	8.534	16.664	20.068	0.662	49.67	0.411	0.001	0	2.00	0.03333	48.5	12.2	20.5	1.414	0.000	0.000	0.000	0.007	0.01
21	10/22/2002	3:41:19 PM	27.727	24.5	27.53	26.581	25.454	40.468	50.017	8.564	32.698	3.439	0.709	49.875	0.514	0.001	0	2.50	0.04167	48.5	12.2	36.6	2.522	0.077	0.071	0.002	1.952	1.66
22	10/22/2002	3:41:50 PM	27.918	24.507	27.502	26.638	25.466	40.451	49.99	8.586	32.73	3.523	0.822	49.896	0.507	0.001	0	3.02	0.05028	48.5	12.2	36.6	2.523	0.076	0.070	0.002	1.926	1.64
23	10/22/2002	3:42:50 PM	27.963	24.532	27.457	26.668	25.501	28.134	50.106	8.617	20.276	16.039	14.57	49.772	0.369	0.001	0	4.02	0.06694	48.6	12.2	24.2	1.669	0.055	0.051	0.002	2.122	1.81
24	10/22/2002	3:43:50 PM	27.923	24.567	27.452	26.742	25.515	32.372	50.089	8.597	24.691	12.007	8.563	49.846	0.444	0.001	0	5.02	0.08361	48.6	12.2	28.5	1.964	0.081	0.076	0.003	2.669	2.26
25	10/22/2002	3:44:50 PM	27.933	24.582	27.442	26.753	25.556	37.759	50.147	8.635	29.94	6.373	3.251	49.808	0.537	0.001	0	6.02	0.10028	48.7	12.2	33.8	2.334	0.080	0.075	0.002	2.209	1.88
26	10/22/2002	3:45:50 PM	27.921	24.595	27.455	26.751	25.564	40.408	53.648	9.089	31.965	7.038	3.775	51.327	0.551	0.001	0	7.02	0.11694	52.2	12.6	36.2	2.495	0.082	0.077	0.002	2.120	1.80
27	10/22/2002	3:46:50 PM	27.987	24.626	27.63	26.811	25.604	43.457	65.979	8.37	35.852	16.49	10.979	48.703	0.698	0.001	0	8.02	0.13361	64.5	11.9	39.7	2.734	0.104	0.097	0.002	2.439	2.08
28	10/22/2002	3:47:50 PM	28.087	24.647	27.866	26.802	25.621	43.121	67.547	8.136	35.959	18.53	12.508	48.434	0.727	0.001	0	9.02	0.15028	66.1	11.9	39.5	2.726	0.108	0.100	0.003	2.531	2.15
29	10/22/2002	3:48:50 PM	28.326	24.662	28.13	26.812	25.635	43.148	69.78	8.281	35.691	20.626	14.051	48.908	0.755	0.001	0	10.02	0.16694	68.3	12.0	39.4	2.718	0.113	0.103	0.003	2.617	2.23
30	10/22/2002	3:49:50 PM	28.61	24.687	28.409	26.882	25.655	43.057	69.982	8.135	35.871	21.146	14.454	48.688	0.761	0.001	0	11.02	0.18361	68.5	11.9	39.5	2.721	0.113	0.103	0.003	2.615	2.23
31	10/22/2002	3:50:50 PM	28.849	24.716	28.483	26.901	25.69	42.52	69.831	8.162	35.338	21.49	14.714	48.516	0.767	0.001	0	12.02	0.20028	68.4	11.9	38.9	2.684	0.114	0.104	0.003	2.666	2.27
32	10/22/2002	3:51:50 PM	28.908	24.73	28.407	26.86	25.719	43.452	72.451	8.465	35.791	22.979	15.823	49.386	0.786	0.001	0	13.02	0.21694	71.0	12.1	39.6	2.732	0.117	0.107	0.003	2.690	2.29
33	10/22/2002	3:52:50 PM	28.997	24.75	28.347	26.925	25.739	43.113	72.151	8.318	36.76	23.204	15.971	49.105	0.789	0.001	0	14.02	0.23361	70.7	12.0	39.4	2.719	0.117	0.107	0.003	2.714	2.31
34	10/22/2002	3:53:50 PM	28.967	24.78	28.183	26.93	25.753	43.258	72.604	8.414	35.6	23.27	16.009	48.938	0.789	0.001	0	15.02	0.25028	71.1	12.0	39.4	2.718	0.118	0.108	0.003	2.730	2.32
35	10/22/2002	3:54:50 PM	28.901	24.789	27.962	26.964	25.762	43.747	73.104	8.419	36.202	23.233	15.988	48.866	0.789	0.001	0	16.02	0.26694	71.6	12.0	40.0	2.756	0.118	0.108	0.003	2.709	2.31
36	10/22/2002	3:55:50 PM	28.751	24.808	27.727	26.818	25.736	43.148	72.02	8.32	35.779	23.135	15.965	48.95	0.788	0.001	0	17.02	0.28361	70.5	12.0	39.5	2.721	0.117	0.109	0.003	2.759	2.35
37	10/22/2002	3:56:50 PM	28.611	24.838	27.503	26.343	25.726	43.009	72.128	8.336	35.455	23.033	15.87	48.675	0.787	0.001	0	18.02	0.30028	70.7	11.9	39.2	2.705	0.117	0.109	0.003	2.789	2.37
38	10/22/2002	3:57:50 PM	28.448	24.86	27.235	25.95	25.653	43.647	72.372	8.323	36.192	22.909	15.745	48.52	0.785	0.001	0	19.02	0.31694	70.9	11.9	39.9	2.752	0.117	0.110	0.003	2.754	2.34
39	10/22/2002	3:58:50 PM	28.389	24.86	28.547	25.69	25.614	43.026	72.446	8.213	35.688	23.562	16.281	48.556	0.792	0.001	0	20.02	0.33361	71.0	11.9	39.4	2.714	0.118	0.107	0.003	2.718	2.31
40	10/22/2002	3:59:50 PM	28.934	24.877	29.34	25.452	25.575	42.293	72.457	8.191	35.013	24.216	16.79	48.461	0.801	0.001	-0.001	21.02	0.35028	71.0	11.9	38.7	2.665	0.119	0.106	0.003	2.739	2.33
41	10/22/2002	4:00:50 PM	29.243	24.908	29.047	25.312	25.656	42.541	72.67	8.23	35.134	24.265	16.805	48.43	0.801	0.001	0	22.02	0.36694	71.2	11.9	38.8	2.678	0.119	0.107	0.003	2.748	2.34
42	10/22/2002	4:01:50 PM	29.299	24.894	28.799	25.178	25.522	42.933	73.086	8.155	35.765	24.262	16.819	48.369	0.802	0.001	0	23.02	0.38361	71.6	11.9	39.4	2.714	0.120	0.108	0.003	2.734	2.33
43	10/22/2002	4:02:50 PM	29.315	24.925	28.696	25.119	25.498	42.897	73.079	8.141	35.67	24.166	16.724	48.187	0.8	0.001	0	24.02	0.40028	71.6	11.8	39.3	2.708	0.119	0.108	0.003	2.740	2.33
44	10/22/2002	4:03:50 PM	29.302	24.927	28.533	25.121	25.475	42.75	72.99	8.184	35.447	24.132	16.698	47.954	0.8	0.001	0	25.02	0.41694	71.5	11.8	39.1	2.696	0.119	0.108	0.003	2.765	2.35
45	10/22/2002	4:04:50 PM	29.238	24.938	28.419	25.042	25.416	42.978	73.203	8.223	35.557	24.146	16.773	47.908	0.8	0.001	0	26.02	0.43361	71.7	11.7	39.3	2.707	0.119	0.108	0.003	2.762	2.35
46	10/22/2002	4:05:50 PM	29.184	24.934	28.296	24.947	25.396	43.386	73.714	8.227	35.908	24.097	16.698	47.795	0.8	0.001	0	27.02	0.45028	72.2	11.7	39.6	2.734	0.119	0.109	0.003	2.745	2.34
47	10/22/2002	4:06:50 PM	29.115	24.955	28.152	24.948	25.367	43.44	73.489	8.222	35.981	23.929	16.541	47.606	0.798	0.001	0	28.02	0.46694	72.0	11.7	39.7	2.738	0.119	0.109	0.003	2.744	2.34
48	10/22/2002	4:07:50 PM	29.017	24.945	28.058	24.944	25.343	43.214	73.117	8.224	35.785	23.866	16.498	47.654	0.797	0.001	0	29.02	0.48361	71.6	11.7	39.5	2.723	0.119	0.109	0.003	2.763	2.35
49	10/22/2002	4:08:50 PM	28.943	24.961	27.994	24.96	25.319	43.63	73.295	8.235	36.254	23.733	16.437	47.662	0.795	0.001	0	30.02	0.50028	71.8	11.7	39.9	2.754	0.119	0.109	0.003	2.730	2.32
50	10/22/2002	4:09:50 PM	28.86	24.968	27.906	24.971	25.33	43.921	73.551	8.252	36.47	23.707	16.417	47.547	0.794	0.001	0	31.02	0.51694	72.1	11.7	40.2	2.771	0.118	0.109	0.003	2.716	2.31
51	10/22/2002	4:10:50 PM	28.797	24.974	27.868	25.078	25.317	43.904	73.564	8.152	36.645	23.688	16.316	47.568	0.793	0.001	0	32.02	0.53361	72.1	11.7	40.3	2.777	0.119	0.109	0.003	2.711	2.31
52	10/22/2002	4:11:50 PM	28.752	24.984	27.898	25.028	25.262	44.109	74.101	7.897	37.029	23.869	16.547	46.364	0.795	0.001	0	33.02	0.55028	72.6	11.3	40.6	2.797	0.119	0.109	0.003	2.696	2.29
53	10/22/2002	4:12:50 PM	28.709	24.976	27.884	24.93	25.254	44.583	74.488	8.552	36.972	24.117	16.683	49.095	0.799	0.001	0	34.02	0.56694	73.0	12.0	40.8	2.811	0.119	0.110	0.003	2.696	2.29
54	10/22/2002	4:13:50 PM	28.699	24.982	27.945	24.96	25.249	45.217	75.262	8.599	37.447	24.039	16.666	48.868	0.799	0.001	0	35.02	0.58361	73.8	12.0	41.3	2.850	0.119	0.110	0.003	2.655	2.26
55	10/22/2002	4:14:50 PM	28.704	24.992	27.99	24.995	25.229	44.989	74.923	8.482	37.447	24.042	16.651	48.791	0.797	0.001	0	36.02	0.60028	73.5	12.0	41.2	2.842	0.119	0.109	0.003	2.652	2.26
56	10/22/2002	4:15:50 PM	28.704	24.977	27.955	24.885	25.199	44.262	74.054	8.427	36.702	23.941	16.605	48.74	0.795	0.001	0	37.02	0.61694	72.6	11.9	40.5	2.791	0.119	0.109	0.003	2.696	2.29
57	10/22/2002	4:16:50 PM	28.709	24.971	28.004	24.744	25.163	44.832	74.637	8.482	37.177	23.924	16.536	48.663	0.795	0.001	0	38.02	0.63361	73.2	11.9	41.0	2.827	0.119	0.109	0.003	2.658	2.26
58	10/22/2002	4:17:50 PM	28.717	24.964	28.022	24.687	25.152	44.896	73.642	8.776	36.923	22.805	15.742	49.275	0.781	0.001	0	39.02	0.65028	72.2	12.1	40.9	2.821	0.116	0.107	0.003	2.616	2.23
59	10/22/2002	4:18:50 PM	28.726	24.974	27.967	24.677	25.146	44.386	72.637	8.595	36.655	22.285	15.331	48.936	0.773	0.001	0	40.02	0.66694	71.2	12.0	40.5	2.794	0.115	0.106	0.003	2.618	2.23
60	10/22/2002	4:19:50 PM	28.7	24.968	27.926	24.626	25.12	44.944	73.069	8.624	37.228	22.233	15.253	48.799	0.774	0.001	0	41.02	0.68361	71.6	12.0	41.1	2.833	0.115	0.106	0.003	2.589	2.20
61	10/22/2002	4:20:50 PM	28.673	24.945	27.894	24.603	25.033	44.852	72.665	8.535	37.349	22.051	15.178	48.755	0.773	0.001	0	42.02	0.70028	72.2	11.9	41.1	2.834	0.115	0.106	0.003	2.587	2.20
62	10/22/2002	4:21:50 PM	28.654	24.926	27.845	24.589	25.029	45.169	73.032	8.5	37.578	21.967	15.089	48.837	0.771	0.001	0	43.02	0.71694	71.6	12.0	41.4	2.853	0.115	0.106	0.003	2.566	2.18
63	10/22/2002	4:22:50 PM	28.626	24.918	27.827	24.566	25.02	44.981	72.117	8.751	37.185	21.291	14.645	49.624	0.759	0.001	0	44.02	0.73361	70.6	12.2	41.1	2.833	0.113	0.105	0.003	2.546	2.17
64	10/22/2002	4:23:50 PM	28.608	24.92	27.858	24.548	25.027	45.173	72.291	8.902	37.085	21.019	14.402	49.867	0.754	0.001	0	45.02	0.75028	70.8	12.2	41.1	2.836	0.112	0.104	0.003	2.524	2.15
65	10/22/2002	4:24:50 PM	28.596	24.918	27.837	24.526	25.025	44.824	71.658	8.848	36.829	20.811	14.292	49.661	0.752	0.001	0	46.02	0.76694	70.2	12.2	40.8	2.815	0.112	0.104	0.003	2.537	2.16
66	10/22/2002	4:25:50 PM	28.571	24.912	27.756	24.515	25.04	44.778	70.481	8.744	36.755	19.683	13.408	49.036	0.736	0.001	-0.001	47.02	0.78361	69.0	12.0	40.8	2.811	0.110	0.102	0.002	2.493	2.12
67	10/22/2002	4:26:50 PM	28.535	24.912	27.77	24.519	25.004	44.968	70.375	8.695	37.146	19.441	13.174	49.269	0.731	0.001	0	48.02	0.80028	68.9	12.1	41.1	2.830	0.109	0.101	0.002	2.457	2.09
68	10/22/2002	4:27:50 PM	28.488	24.884	27.698	24.507	24.966	44.184	68.044	8.848	36.237	18.068	12.172	49.561	0.713	0.001	0	49.02	0.81694	66.6	12.1	40.2	2.772	0.106	0.099	0.002	2.452	2.09
69	10/22/2002	4:28:50 PM	28.45	24.882	27.631	24.499	24.964	44.502	68.514	8.851	36.413	17.952	12.163	49.315	0.711	0.001	0	50.02	0.83361	67.0	12.1	40.5	2.789	0.106	0.098	0.002	2.435	2.07
70	10/22/2002	4:29:50 PM	28.408	24.874	27.573	24.482	24.972	44.398	68.203	8.741	36.288	17.712	12.094	49.183	0.712	0.001	0	51.02	0.85028	67.1	12.1	40.5	2.791	0.106	0.098	0.002	2.436	2.07
71	10/22/2002	4:30:50 PM	28.364	24.86	27.56	24.468	24.993	44.983	68.187	8.775	37.038	17.276	11.416	49.133	0.719	0.001	0	52.02	0.86694	66.7	12.0	41.0	2.828	0.107	0.100	0.002	2.434	2.07
72	10/22/2002	4:31:50 PM	28.336	24.862	27.551	24.5	25.03	43.985	66.737	8.982	35.869	16.649	11.208	49.741	0.693	0.001	0	53.02	0.88361	65.3	12.2	39.9	2.753	0.103	0.096	0.002	2.410	2.05
73	10/22/2002	4:32:50 PM	28.302	24.863	27.518	24.451	24.995	29.472	66.275	8.887	21.428	30.546	29.137	49.256	0.382	0.001	0	54.02	0.90028	64.8	12.1	25.5	1.755	0.057	0.053	0.002	2.086	1.78
74	10/22/2002	4:33:50 PM	28.239	24.855	27.4	24.417	24.997	44.496	66.257	9.01	36.296	15.833	10.472	49.558	0.691	0.001	0	55.02	0.91694	64.8	12.1	40.4	2.785	0.103	0.096	0.002	2.385	2.03
75	10/22/2002	4:34:50 PM	28.196	24.852	27.411	24.424	25.004	44.286	66.151	8.949	36.165	15.926	10.721	49.416	0.684	0.001	0	56.02	0.93361	64.7	12.1	40.2	2.773	0.102	0.095	0.002	2.370	2.02
76	10/22/2002	4:35:50 PM	28.15	24.855	27.33	24.428	25.008	44.266	66.015	8.843	36.196	15.773	10.646	49.185	0.683	0.001	0	57.02	0.95028	64.5	12.1	40.2	2.774	0.102	0.095	0.002	2.372	2.02
77	10/22/2002	4:36:50 PM	28.121	24.871	27.341	24.469	25.028	44.799	66.507	8.898	36.726	15.695	10.516	49.3	0.681	0.001	0	58.02	0.96694	65.0	12.1	40.8	2.810	0.102	0.095	0.002	2.333	1.99
78	10/22/2002	4:37:50 PM	28.067	24.862	27.312	24.459	25.034	44.502	66.091	8.895	36.352	15.585	10.426	49.271	0.678	0.001	0	59.02	0.98361	64.6	12.1	40.4	2.797	0.101	0.095	0.002	2.344	1.99
79	10/22/2002	4:38:50 PM	28.027	24.857	27.267	24.469	25.029	44.997	66.317	8.892	37.101	15.403	10.241	49.141	0.675	0.001	0	60.02	1.00028	64.8	12.0	41.0	2.830	0.101	0.094	0.002	2.301	1.96
80	10/22/2002	4:39:50 PM	27.979	24.838	27.213	24.451	25.016	45.29	66.768	8.967	36.943	15.281	10.212	49.2	0.674	0.001	0	61.02	1.01694	65.3	12.1	41.1	2.835	0.100	0.094	0.002	2.297	1.96
81	10/22/2002	4:40:50 PM	27.965	24.855	27.205	24.448	25.027	45.698	67.086	9.002	37.418	15.174	10.215	49.103	0.674	0.001	0	62.02	1.03361	65.6	12.0	41.6	2.865	0.100	0.094	0.002	2.274	1.93
82	10/22/2002	4:41:50 PM	27.93	24.845	27.145	24.443	25.017	45.207	66.027	9.093	37.003	14.842	9.902	50.209	0.665	0.001	0	63.02	1.05028	64.6	12.3	41.1	2.834	0.099	0.093	0.002	2.272	1.93
83	10/22/2002	4:42:50 PM	27.886	24.835	27.095	24.372	24.997	45.058	64.999	8.904	36.9	13.793	9.136	49.256	0.652	0.001	0	64.02	1.06694	63.5	12.1	41.0	2.825	0.097	0.092	0.002	2.237	1.90
84	10/22/2002	4:43:50 PM	27.845	24.84	27.055	24.407	25.007	44.815	64.442	8.865	36.861	13.7	8.973	49.154	0.65	0.001	0	65.02	1.08361	63.0	12.0	40.8	2.816	0.097	0.091	0.002	2.241	1.91
85	10/22/2002	4:44:50 PM	27.812	24.847	27.002	24.424	25.004	45	64.542	8.948	36.864	13.544	8.97	49.089	0.648	0.001	0	66.02	1.10028	63.1	12.0	40.9	2.822	0.097	0.091	0.002	2.232	1.90
86	10/22/2002	4:45:50 PM	27.761	24.836	26.941	24.398	25.023	44.875	63.671	8.989	36.651	12.68	8.185	49.405	0.642	0.001	0	67.02	1.11694	62.2	12.1	40.8	2.810	0.096	0.091	0.002	2.224	1.89
87	10/22/2002	4:46:50 PM	27.72	24.839	26.915	24.397	25.037	44.782	63.422	8.866	36.759	12.611	8.127	49.11	0.643	0.001	0	68.02	1.13361	62.0	12.0	40.8	2.811	0.096	0.091	0.002	2.229	1.90
88	10/22/2002	4:47:50 PM	27.673	24.848	26.873	24.405	25.03	44.809	63.609	7.893	36.839	12.749	8.321	48.795	0.636	0.001	0	69.02	1.15028	62.1	11.9	40.8	2.815	0.095	0.090	0.002	2.204	1.88
89	10/22/2002	4:48:50 PM	27.629	24.838	26.818	24.47	25.015	44.975	63.702	8.767	37.085	12.746	8.309	48.665	0.635	0.001	0	70.02	1.16694	62.2	11.9	41.0	2.829	0.095	0.090	0.002	2.193	1.87
90	10/22/2002	4:49:50 PM	27.588	24.837	26.778	24.384	25.004	45.312	63.967	8.712	37.521	12.599	8.217	48.579	0.633	0.001	0	71.02	1.18361	62.5	11.9	41.4	2.856	0.094	0.090	0.002	2.168	1.85
91	10/22/2002	4:50:50 PM	27.539	24.828	26.723	24.385	24.995	44.378	61.941	9.062	36.135	11.524	7.319	49.41	0.615	0.001	0	72.02	1.20028	60.5	12.1	40.3	2.776	0.092	0.087	0.002	2.170	1.85
92	10/22/2002	4:51:50 PM	27.474	24.812	26.619	24.365	24.89	44.736	62.429	9.024	36.354	11.408	7.27	49.193	0.614	0.001	0	73.02	1.21694	61.0	12.1	40.5	2.796	0.092	0.087	0.002	2.158	1.84
93	10/22/2002	4:52:50 PM	27.392	24.79	26.506	24.312	24.847	44.707	61.801	8.916	36.782	11.298	7.143	49.152	0.612	0.001	0	74.02	1.23361	60.3	12.0	40.7	2.809	0.091	0.087	0.002	2.147	1.83
94	10/22/2002	4:53:50 PM	27

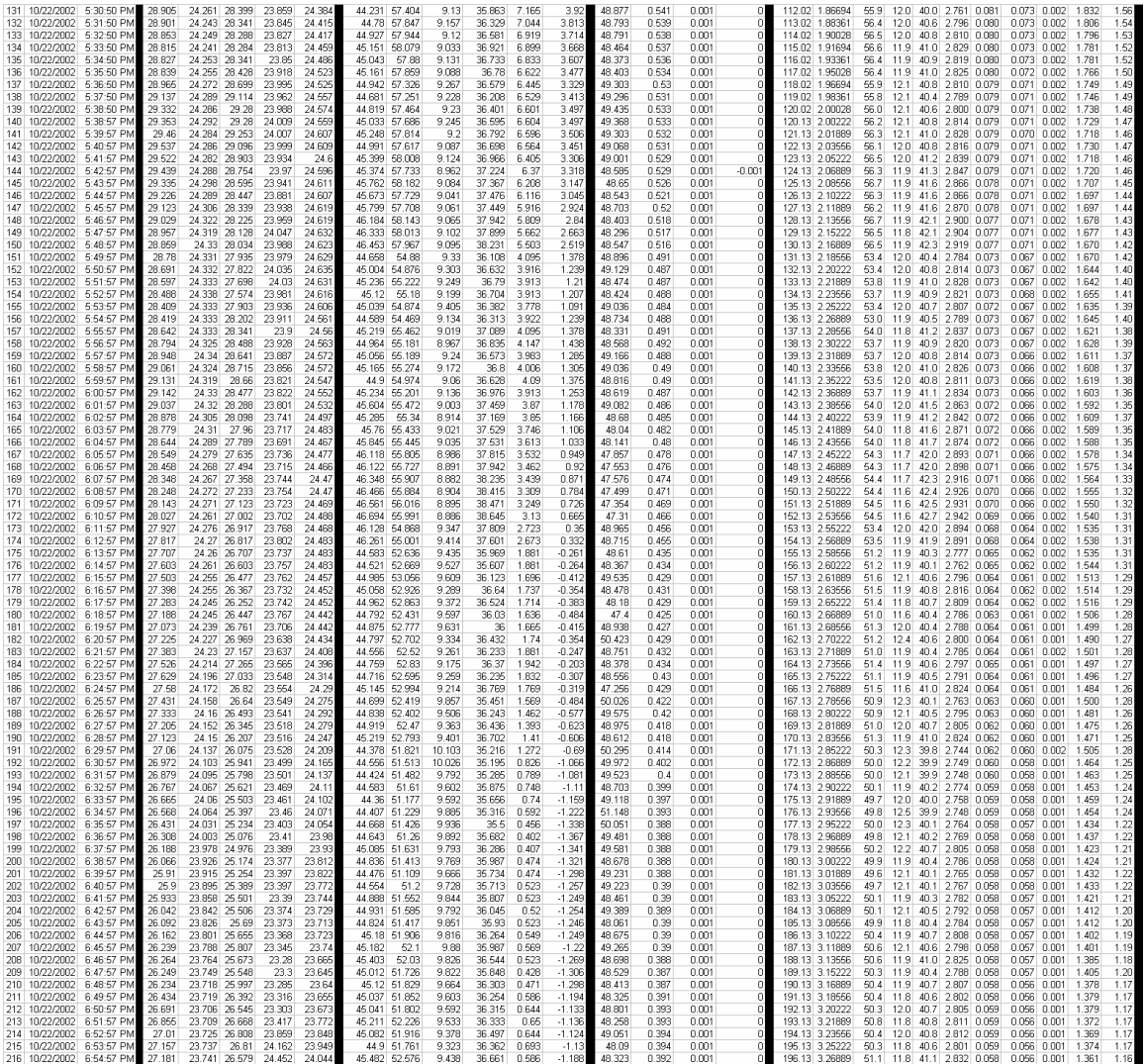
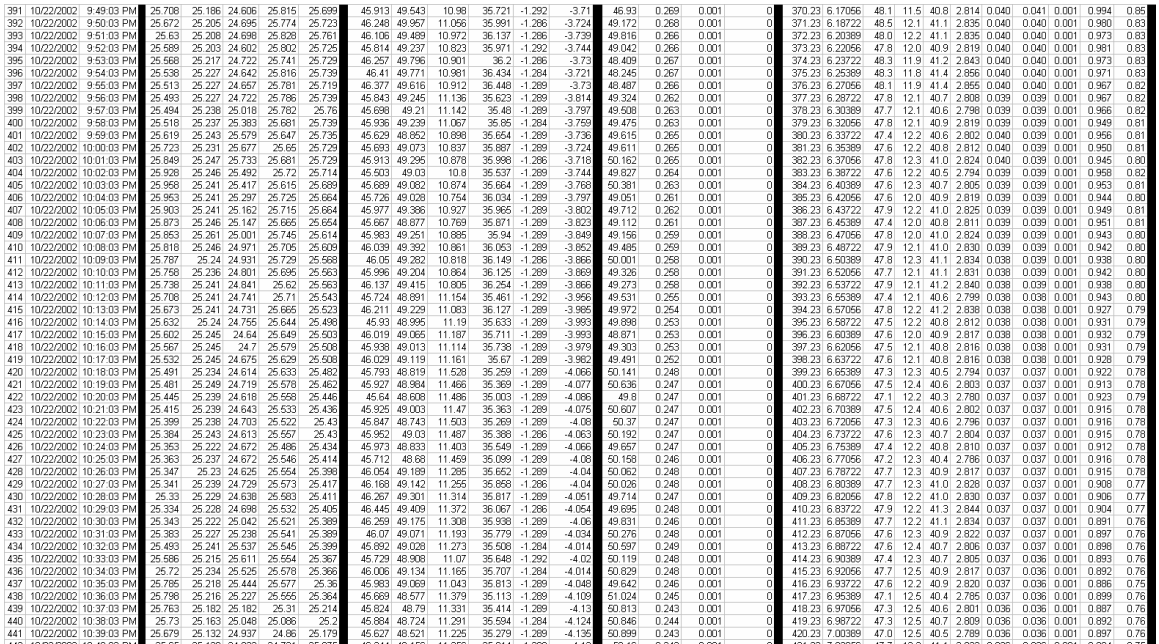


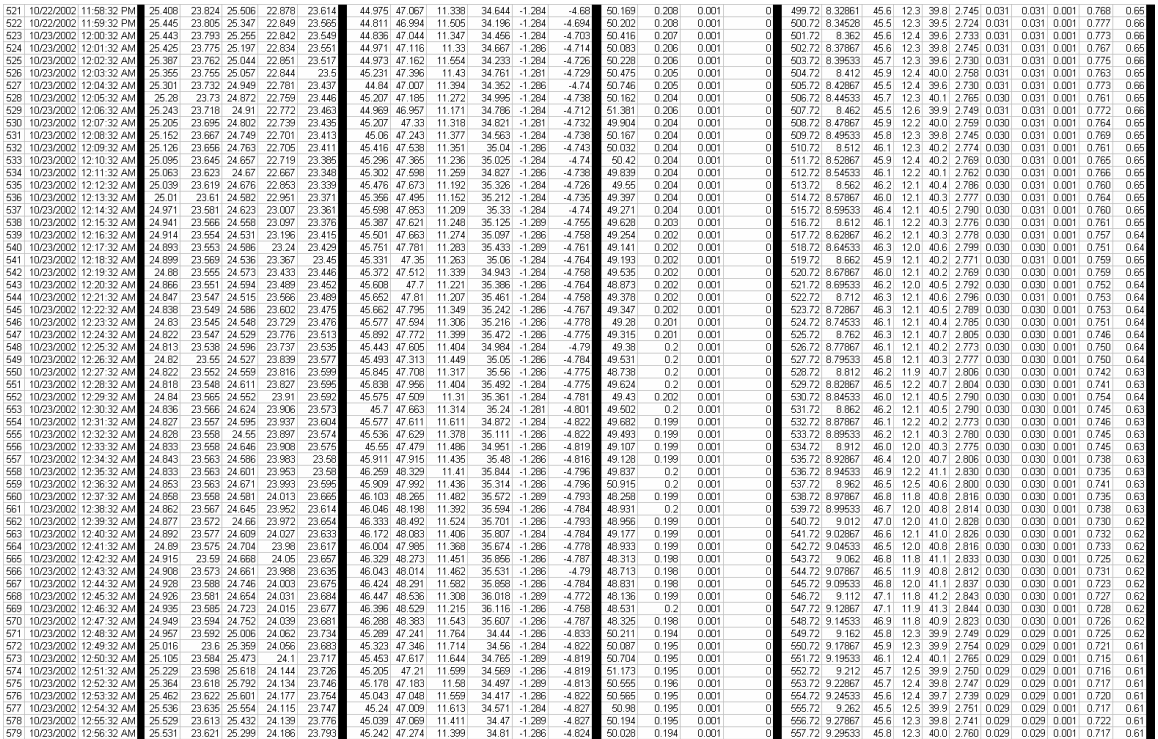
Figure D4-2: Dewatering of the AN-102R2, batch 3B, insoluble solids concentrations from 1 to 22 wt% - Raw & Calculated Data

261	10/22/2002	7:39:05 PM	26.334	24.41	25.612	25.501	25.269	44.826	49.913	9.884	35.91	-1.012	-2.401	49.502	0.342	0.001	0	240.27	4.00444	48.4	12.1	40.4	2.783	0.051	0.050	0.001	1.242	1.06
262	10/22/2002	7:40:05 PM	26.282	24.423	25.611	25.479	25.292	44.875	49.946	9.868	36	-1.07	-2.407	48.961	0.34	0.001	0	241.27	4.02111	48.5	12.0	40.4	2.788	0.051	0.050	0.001	1.232	1.05
263	10/22/2002	7:41:05 PM	26.239	24.446	25.468	25.546	25.309	44.807	49.901	9.862	35.772	-1.093	-2.433	50.173	0.34	0.001	0	242.27	4.03778	48.4	12.3	40.3	2.778	0.051	0.050	0.001	1.242	1.06
264	10/22/2002	7:42:05 PM	26.181	24.453	25.42	25.534	25.327	44.813	49.769	9.819	35.989	-1.102	-2.447	49.179	0.339	0.001	0	243.27	4.05444	48.3	12.1	40.4	2.786	0.051	0.050	0.001	1.236	1.05
265	10/22/2002	7:43:05 PM	26.14	24.461	25.408	25.557	25.325	44.643	49.75	9.655	36.032	-1.168	-2.459	49.395	0.339	0.001	0	244.27	4.07111	48.3	12.1	40.3	2.781	0.051	0.050	0.001	1.239	1.05
266	10/22/2002	7:44:05 PM	26.092	24.474	25.256	25.564	25.327	44.908	49.886	9.713	36.215	-1.165	-2.47	48.612	0.338	0.001	0	245.27	4.08778	48.4	11.9	40.6	2.797	0.050	0.050	0.001	1.233	1.05
267	10/22/2002	7:45:05 PM	26.044	24.491	25.278	25.582	25.345	44.948	50.12	9.778	36.084	-1.162	-2.479	48.787	0.338	0.001	0	246.27	4.10444	48.6	12.0	40.6	2.793	0.050	0.050	0.001	1.234	1.06
268	10/22/2002	7:46:05 PM	26.007	24.513	25.245	25.639	25.342	45.289	50.619	9.928	36.082	-1.223	-2.517	49.007	0.336	0.001	0	247.27	4.12111	49.1	12.0	40.7	2.805	0.050	0.050	0.001	1.223	1.04
269	10/22/2002	7:47:05 PM	25.944	24.516	25.118	25.606	25.36	45.167	50.428	9.851	36.096	-1.223	-2.514	48.868	0.336	0.001	0	248.27	4.13778	49.0	12.0	40.6	2.801	0.050	0.050	0.001	1.229	1.05
270	10/22/2002	7:48:05 PM	25.89	24.522	25.499	25.557	25.34	44.894	49.94	9.662	36.131	-1.2	-2.491	48.604	0.337	0.001	0	249.27	4.15444	48.5	11.9	40.5	2.793	0.050	0.050	0.001	1.223	1.04
271	10/22/2002	7:49:05 PM	25.912	24.533	25.36	25.614	25.372	45.06	50.172	9.75	36.108	-1.206	-2.505	48.355	0.336	0.001	0	250.27	4.17111	48.7	11.9	40.6	2.798	0.050	0.050	0.001	1.222	1.04
272	10/22/2002	7:50:05 PM	25.923	24.56	25.322	25.605	25.394	45.167	50.441	9.784	36.174	-1.223	-2.505	48.233	0.336	0.001	0	251.27	4.18778	49.0	11.8	40.7	2.804	0.050	0.050	0.001	1.221	1.04
273	10/22/2002	7:51:05 PM	25.895	24.562	25.319	25.577	25.41	45.414	50.424	9.844	36.456	-1.22	-2.523	47.706	0.334	0.001	0	252.27	4.20444	49.0	11.7	40.9	2.822	0.050	0.049	0.001	1.206	1.03
274	10/22/2002	7:52:05 PM	25.866	24.568	25.17	25.563	25.392	45.283	50.201	9.702	36.608	-1.266	-2.552	48.667	0.333	0.001	0	253.27	4.22111	48.7	11.9	40.9	2.823	0.050	0.049	0.001	1.207	1.03
275	10/22/2002	7:53:05 PM	25.855	24.581	25.193	25.572	25.405	45.24	50.118	9.771	36.407	-1.275	-2.554	48.889	0.333	0.001	0	254.27	4.23778	48.6	12.0	40.8	2.815	0.050	0.049	0.001	1.210	1.03
276	10/22/2002	7:54:05 PM	25.826	24.598	25.16	25.538	25.402	45.383	50.273	9.862	36.264	-1.289	-2.576	49.267	0.332	0.001	0	255.27	4.25444	48.8	12.1	40.8	2.815	0.049	0.049	0.001	1.207	1.03
277	10/22/2002	7:55:05 PM	25.782	24.599	25.041	25.599	25.392	44.865	49.553	10.222	35.95	-1.289	-2.69	50.263	0.327	0.001	0	256.27	4.27111	48.1	12.3	40.3	2.776	0.049	0.049	0.001	1.210	1.03
278	10/22/2002	7:56:05 PM	25.753	24.61	25.106	25.555	25.408	45.171	49.835	10.17	35.994	-1.289	-2.719	49.701	0.326	0.001	0	257.27	4.28778	48.4	12.2	40.6	2.798	0.049	0.048	0.001	1.194	1.02
279	10/22/2002	7:57:05 PM	25.728	24.616	25.037	25.631	25.429	45.171	49.715	10.117	36.077	-1.289	-2.751	49.646	0.324	0.001	0	258.27	4.30444	48.2	12.2	40.6	2.801	0.048	0.048	0.001	1.188	1.01
280	10/22/2002	7:58:05 PM	25.699	24.621	25.003	25.582	25.405	45.366	49.977	10.089	36.258	-1.289	-2.705	49.498	0.326	0.001	0	259.27	4.32111	48.5	12.1	40.8	2.813	0.049	0.049	0.001	1.191	1.01
281	10/22/2002	7:59:05 PM	25.68	24.642	25.069	25.642	25.376	45.254	49.994	10.098	36.088	-1.286	-2.699	49.147	0.326	0.001	0	260.27	4.33778	48.5	12.0	40.7	2.804	0.049	0.049	0.001	1.193	1.02
282	10/22/2002	8:00:05 PM	25.641	24.633	24.924	25.653	25.406	45.314	49.899	10.011	36.299	-1.292	-2.708	48.952	0.325	0.001	0	261.27	4.35444	48.4	12.0	40.8	2.813	0.048	0.049	0.001	1.190	1.01
283	10/22/2002	8:01:05 PM	25.631	24.648	24.979	25.573	25.401	45.215	49.918	10.006	36.213	-1.289	-2.708	48.942	0.325	0.001	0	262.27	4.37111	48.4	12.0	40.7	2.807	0.048	0.048	0.001	1.191	1.01
284	10/22/2002	8:02:05 PM	25.606	24.658	24.989	25.598	25.401	45.292	50.006	10.15	36.053	-1.286	-2.734	49.116	0.324	0.001	0	263.27	4.38778	48.5	12.0	40.7	2.804	0.048	0.048	0.001	1.188	1.01
285	10/22/2002	8:03:05 PM	25.592	24.674	24.906	25.624	25.407	45.36	50.172	10.003	36.296	-1.289	-2.717	47.755	0.324	0.001	0	264.27	4.40444	48.7	11.7	40.8	2.815	0.048	0.048	0.001	1.186	1.01
286	10/22/2002	8:04:05 PM	25.577	24.68	24.971	25.56	25.423	45.362	50.116	10.065	36.178	-1.289	-2.737	49.063	0.323	0.001	0	265.27	4.42111	48.6	12.0	40.8	2.811	0.048	0.048	0.001	1.182	1.01
287	10/22/2002	8:05:05 PM	25.567	24.69	24.936	25.61	25.418	45.269	49.932	10.087	36.053	-1.289	-2.746	49.401	0.323	0.001	0	266.27	4.43778	48.5	12.1	40.7	2.803	0.048	0.048	0.001	1.186	1.01
288	10/22/2002	8:06:05 PM	25.549	24.696	24.898	25.571	25.43	45.182	49.88	10.042	36.022	-1.289	-2.751	48.999	0.323	0.001	0	267.27	4.45444	48.4	12.0	40.6	2.799	0.048	0.048	0.001	1.189	1.01
289	10/22/2002	8:07:05 PM	25.541	24.713	24.989	25.558	25.426	45.466	50.344	10.175	36.034	-1.289	-2.763	49.116	0.322	0.001	0	268.27	4.47111	48.9	12.0	40.8	2.810	0.048	0.048	0.001	1.178	1.00
290	10/22/2002	8:08:05 PM	25.536	24.724	24.915	25.604	25.447	45.513	50.28	10.109	36.219	-1.284	-2.783	48.881	0.321	0.001	0	269.27	4.48778	48.8	12.0	40.9	2.818	0.048	0.048	0.001	1.174	1.00
291	10/22/2002	8:09:05 PM	25.537	24.73	24.961	25.555	25.448	45.54	50.211	10.057	36.456	-1.286	-2.768	48.921	0.321	0.001	0	270.27	4.50444	48.7	12.0	41.0	2.827	0.048	0.048	0.001	1.169	0.99
292	10/22/2002	8:10:05 PM	25.534	24.741	25.003	25.561	25.44	45.667	50.379	10.094	36.538	-1.286	-2.788	48.617	0.321	0.001	0	271.27	4.52111	48.9	11.9	41.1	2.834	0.048	0.048	0.001	1.164	0.99
293	10/22/2002	8:11:05 PM	25.535	24.747	24.903	25.562	25.445	45.592	50.205	10.131	36.489	-1.286	-2.783	48.873	0.32	0.001	0	272.27	4.53778	48.7	12.0	41.0	2.830	0.048	0.048	0.001	1.166	0.99
294	10/22/2002	8:12:05 PM	25.52	24.763	24.994	25.568	25.401	45.731	50.364	10.173	36.446	-1.289	-2.783	48.571	0.321	0.001	0	273.27	4.55444	48.9	11.9	41.1	2.833	0.048	0.048	0.001	1.165	0.98
295	10/22/2002	8:13:05 PM	25.541	24.764	24.99	25.634	25.427	45.892	50.528	10.244	36.516	-1.289	-2.801	48.948	0.32	0.001	0	274.27	4.57111	49.1	12.0	41.2	2.841	0.048	0.048	0.001	1.158	0.99
296	10/22/2002	8:14:05 PM	25.547	24.77	24.976	25.59	25.503	45.582	50.273	10.53	35.758	-1.289	-2.879	49.686	0.316	0.001	0	275.27	4.58778	48.8	12.2	40.7	2.804	0.047	0.047	0.001	1.159	0.99
297	10/22/2002	8:15:05 PM	25.534	24.771	25.068	25.576	25.49	45.271	49.833	10.344	35.83	-1.289	-2.89	49.475	0.316	0.001	0	276.27	4.60444	48.4	12.1	40.6	2.796	0.047	0.047	0.001	1.160	0.99
298	10/22/2002	8:16:05 PM	25.564	24.781	24.993	25.621	25.475	45.478	49.992	10.455	35.965	-1.289	-2.887	49.206	0.315	0.001	0	277.27	4.62111	48.5	12.1	40.7	2.808	0.047	0.047	0.001	1.154	0.98
299	10/22/2002	8:17:05 PM	25.58	24.797	25.083	25.577	25.45	45.766	50.176	10.399	36.311	-1.284	-2.864	49.267	0.317	0.001	0	278.27	4.63778	48.7	12.1	41.0	2.829	0.047	0.047	0.001	1.149	0.98
300	10/22/2002	8:18:05 PM	25.59	24.808	25.149	25.598	25.446	45.687	50.311	10.46	36.092	-1.286	-2.887	48.566	0.315	0.001	0	279.27	4.65444	48.8	11.9	40.9	2.819	0.047	0.047	0.001	1.144	0.97
301	10/22/2002	8:19:05 PM	25.61	24.808	25.039	25.563	25.456	45.768	50.325	10.523	36.055	-1.286	-2.905	48.849	0.315	0.001	0	280.27	4.67111	48.9	12.0	40.9	2.821	0.047	0.047	0.001	1.147	0.98
302	10/22/2002	8:20:05 PM	25.6	24.788	25.134	25.538	25.446	45.942	50.383	10.364	36.601	-1.289	-2.893	48.705	0.315	0.001	0	281.27	4.68778	48.9	11.9	41.3	2.846	0.047	0.047	0.001	1.134	0.96
303	10/22/2002	8:21:05 PM	25.64	24.808	25.159	25.643	25.416	46.188	50.633	10.602	36.45	-1.286	-2.916	49.128	0.314	0.001	0	282.27	4.70444	49.2	12.0	41.3	2.849	0.047	0.047	0.001	1.128	0.96
304	10/22/2002	8:22:05 PM	25.665	24.823	25.144	25.613	25.416	45.76	50.311	10.778	36.658	-1.284	-3.005	49.537	0.31	0.001	0	283.27	4.72111	48.8	12.1	40.7	2.807	0.046	0.046	0.001	1.131	0.96
305	10/22/2002	8:23:05 PM	25.666	24.814	25.25	25.564	25.442	45.107	49.194	10.626	35.424	-1.289	-3.044	49.414	0.308	0.001	0	284.27	4.73778	47.7	12.1	40.3	2.776	0.046	0.046	0.001	1.132	0.96
306	10/22/2002	8:24:05 PM	25.701	24.829	25.195	25.534	25.467	45.629	50.015	10.755	35.621	-1.289	-3.119	49.246	0.305	0.001	0	285.27	4.75444	48.5	12.1	40.6	2.801	0.045	0.045	0.001	1.113	0.95
307	10/22/2002	8:25:05 PM	25.732	24.855	25.261	25.604	25.453	45.627	49.746	10.68	35.928	-1.284	-3.128	48.849	0.305	0.001	0	286.27	4.77111	48.3	12.0	40.8	2.811	0.045	0.045	0.001	1.107	0.94
308	10/22/2002	8:26:05 PM	25.757	24.85	25.351	25.539	25.458	45.809	49.959	10.775	35.977	-1.286	-3.18	49.424	0.303	0.001	0	287.27	4.78778	48.5	12.1	40.9	2.819	0.045	0.045	0.001	1.094	0.93
309	10/22/2002	8:27:05 PM	25.793	24.876	25.262	25.59	25.459	45.801	49.978	10.772	35.844	-1.286	-3.212	49.013	0.301	0.001	0	288.27	4.80444	48.5	12.0	40.8	2.815	0.045	0.045	0.001	1.091	0.93
310	10/22/2002	8:28:05 PM	25.792	24.865	25.341	25.554	25.448	46.246	50.077	10.802	36.407	-1.286	-3.255	48.462	0.299	0.001	0	289.27	4.82111	48.6	11.9	41.3	2.849	0.045	0.044	0.001	1.068	0.91
311	10/22/2002	8:29:05 PM	25.808	24.876	25.377	25.595	25.449	45.962	49.936	10.848	35.975	-1.286	-3.339	48.673	0.296	0.001	0	290.27	4.83778	48.5	11.9	41.0	2.824	0.044	0.044	0.001	1.066	0.91
312	10/22/2002	8:30:05 PM	25.837	24.88	25.316	25.639	25.458	46.491	50.093	10.85	36.64	-1.284	-3.414	48.719	0.293	0.001	0	291.27	4.85444	48.6	11.9	41.6	2.866	0.044	0.043	0.001	1.042	0.89
313	10/22/2002	8:31:05 PM	25.838	24.876	25.437	25.59	25.444	46.389	50.197	10.746	36.62	-1.289	-3.493	48.728	0.289	0.001	0	292.27	4.87111	48.7	11.9	41.5	2.862	0.043	0.043	0.001	1.026	0.87
314	10/22/2002	8:32:05 PM	25.863	24.886	25.392	25.595	25.444	46.833	50.569	10.887	36.816	-1.289	-3.594	47.052	0.284	0.001	0	293.27	4.88778	49.1	11.5	41.8	2.884	0.042	0.042	0.001	1.001	0.85
315	10/22/2002	8:33:05 PM	25.884	24.896	25.403	25.591	25.449	46.973	50.439	10.98	36.827	-1.289	-3.684	48.159	0.28	0.001	0	294.27	4.90444	49.0	11.8	41.9	2.889	0.042	0.041	0.001	0.985	0.84
316	10/22/2002	8:34:05 PM	25.884	24.901	25.528	25.536	25.444	47.002	50.41	10.929	36.937	-1.289	-3.776	48.132	0.276	0.001	0	295.27	4.92111	48.9	11.8	42.0	2.894	0.041	0.041	0.001	0.966	0.82
317	10/22/2002	8:35:05 PM	25.879	24.891	25.418	25.511	25.489	47.325	50.685	11.001	37.199	-1.289	-3.872	47.807	0.271	0.001	0	296.27	4.93778	49.2	11.7	42.3	2.914	0.040	0.040	0.001	0.945	0.80
318	10/22/2002	8:36:05 PM	25.894	24.901	25.513	25.521	25.429	47.578	50.809	10.951	37.59	-1.289	-3.941	47.843	0.267	0.001	0	297.27	4.95444	49.3	11.7	42.6	2.936	0.040	0.039	0.001	0.921	0.78
319	10/22/2002	8:37:05 PM	25.924	24.911	25.598	25.561	25.429	47.325	50.308	11.003	37.271	-1.289	-4.06	47.56	0.262	0.001	0	298.27	4.97111	48.8	11.7	42.3	2.916	0.039	0.038	0.001	0.908	0.77
320	10/22/2002	8:38:05 PM	25.934	24.901	25.473	25.581	25.429	47.914	50.909	11.135	37.611	-1.289	-4.176	47.369	0.258	0.001	0	299.27	4.98778	49.4	11.6	42.8	2.948	0.038	0.038	0.001	0.888	0.76
321	10/22/2002	8:39:05 PM	25.949	24.906	25.623	25.566	25.419	47.7	50.435	11.194	37.437	-1.289	-4.271	47.384	0.254	0.001	0	300.27	5.00444	49.0	11.6	42.6	2.935	0.038	0.037	0.001	0.874	0.74
322	10/22/2002	8:40:05 PM	25.98	24.912	25.619	25.642	25.435	48.202	50.918	11.222	37.901	-1.289	-4.336	47.193	0.247	0.001	0	301.27	5.02111	48.4	11.6	43.1	2.968	0.037	0.036	0.001	0.841	0.72
323	10/22/2002	8:41:05 PM	25.999	24.916	25.583	25.621	25.459	48.663	51.455	11.312	38.243	-1.289	-4.379	47.119	0.247	0.001	0	302.27	5.03778	50.0	11.5	43.4	2.996	0.037	0.036	0.001	0.834	0.71
324	10/22/2002	8:42:05 PM	26.014	24.921	25.738	25.611	25.429	48.661	51.202	11.284	38.317	-1.289	-4.454	46.811	0.24	0.001	0	303.27	5.05444	49.7	11.5	43.5	2.998	0.036	0.035	0.001	0.806	0.69
325	10/22/2002	8:43:05 PM	26.043	24.931	25.642	25.66	25.444	48.966	51.496	11.386	38.469	-1.286	-4.544	46.792	0.234	0.001	0	304.27	5.07111	50.0	11.5	43.7	3.014	0.035	0.034	0.001	0.784	0.67
326	10/22/2002	8:44:05 PM	26.057	24.935	26.006	25.619	25.438	48.572	51.039	11.229	38.149	-1.292	-4.607	47.17	0.232	0.001	0	305.27	5.08778	49.6	11.6	43.4	2.990	0.035	0.034	0.001	0.776	0.66
327	10/22/2002	8:45:05 PM	26.116	24.934	26.51	25.514	25.432	48.411	50.613	11.166	38.206	-1.289	-4.674	47.021	0.228	0.001	0	306.27	5.10444	49.1	11.5	43.3	2.986	0.034	0.033	0.001	0.752	0.64
328	10/22/2002	8:46:05 PM	26.266	24.944	27.214	25.649	25.477	46.938	49.134	11.51	36.427	-1.286	-4.749	49.806	0.224	0.001	0	307.27	5.12111	47.7	12.2	41.7	2.874	0.033	0.031	0.001	0.753	0.64
329	10/22/2002	8:47:05 PM	26.526	24.949	27.309	25.624	25.487	47.458	49.762	11.387	36.931	-1.284	-4.685	49.464	0.226	0.001	0	308.27	5.13778	48.3	12.1	42.2	2.909	0.034	0.032	0.001	0.749	0.64
330	10/22/2002	8:48:05 PM	26.736	24.944	27.224	25.654	25.467	46.273	48.147	11.639	35.764	-1.289	-4.824	50.969	0.225	0.001	0	309.27	5.15444	46.7	12.5	41.0	2.828	0.034	0.032	0.001	0.769	0.65
331	10/22/2002	8:49:05 PM	26.872	24.96	27.17	25.649	25.498	45.982	47.788	11.741	35.397	-1.289	-4.932	51.208	0.218	0.001	0	310.27	5.17111	46.4	12.6	40.6	2.802	0.032	0.030	0.001	0.746	0.63
332	10/22/2002	8:50:05 PM	26.932	24.96	27.175	25.669	25.498	45.621	47.481	11.531	34.859	-1.289	-4.882	50.825	0.212	0.001	0	311.27	5.18778	46.0	12.5	40.2	2.774	0.032	0.030	0.001	0.739	0.63
333	10/22/2002	8:51:05 PM	26.983	24.971	26.916	25.635	25.524	45.584	47.406	11.38	35.105	-1.289	-4.894	49.697	0.216	0.001	0	312.27	5.20444	45.9	12.2	40.3	2.782	0.032	0.031	0.001	0.757	0.64
334	10/22/2002	8:52:05 PM	27.003	24.971	26.792	25.645	25.514	37.763	39.412	17.54	21.483	-1.289	-4.978	64.011	0.202	0.001	0	313.27	5.22111	37.9	15.7	29.6	2.042	0.030	0.029	0.001	0.967	0.82
335	10/22/2002	8:53:05 PM	26.943	24.986	27.341	25.745	25.474	51.072	52.584	26.049	24.873	-1.284	-5.396	83.895	0.2	0.001	0	314.27	5.23778	51.1	20.6	38.0	2.618	0.030	0.028	0.001	0.736	0.63
336	10/22/2002	8:54:05 PM	27.003	24.987	27.975	25.611	25.459	50.291	52.077	26.049	24.648	-1.286	-5.239	89.694	0.209	0.001	0	315.27	5.25444	50.6	22.0	37.5	2.583	0.031	0.029	0.001	0.765	0.65
337	10/22/2002	8:55:05 PM	27.203	24.992	28.538	25.621	25.439	49.523	51.577	25.98	24.139	-1.289	-4.972	91.583	0.222	0.001	0	316.27	5.27111	50.1	22.4	36.8	2.539	0.033	0.030	0.001	0.814	0.69
338	10/22/2002	8:56:05 PM	27.483	24.997	28.991	25.657	25.435	49.902	52.29	25.313	25.92	-1.292	-4.735	88.588	0.233	0.001	-0.001	317.27	5.28778	50.8	21.7	37.9	2.614	0.035	0.031	0.001	0.820	0.70
339	10/22/2002	8:57:05 PM	27.789	24.998	29.47	25.563	25.431	49.407	51.784	25.357	25.396	-1.289	-4.516	85.463	0.244	0.001	0	318.27	5.30444	50.3	20.9	37.4	2.579	0.036	0.032	0.001	0.859	0.73
340	10/22/2002	8:58:05 PM	28.119	25.029	29.919	25.679	25.437	48.746	51.541	25.449	24.222	-1.289	-4.336	89.067	0.253	0.001	0	319.27	5.32111	50.1	21.8	36.5	2.515	0.038	0.033	0.001	0.906	0.77
341	10/22/2002	8:59:05 PM	28.433	25.03	30.038	25.744	25.433	49.038	52.119	25.376	25.025	-1.289	-4.164	86.246	0.261	0.001	0	320.27	5.33778	50.6	21.1	37.0	2.553	0.039	0.034	0.001	0.914	0.78
342	10/22/2002	9:00:05 PM	28.722	25.045	30.242	25.854	25.443	48.5	51.97	25.418	23.67	-1.286	-4.014	87.24	0.268	0.001	0	321.27	5.35444	50.5	21.4	36.1	2.488	0.040	0.035	0.001	0.958	0.82
343	10/22/2002	9:01:05 PM	28.997	25.046	30.387	25.93	25.438	48.61	52.348	25.299	24.353	-1.286	-3.878	92.42	0.275	0.001	0	322.27	5.37111	50.9	22.6	36.5	2.515	0.041	0.035	0.001	0.968	0.82
344	10/22/2002	9:02:05 PM	29.221	25.041	30.491	25.99	25.443	47.711	51.26	25.257	22.961	-1.289	-3.73	85.895	0.282	0.001	0	323.27	5.38778	49.8	21.0	35.3	2.436	0.042	0.036	0.001	1.022	0.87
345	10/22/2002	9:03:05 PM	29.437	25.057	30.617	25.997	25.46	48.032	51.837	25.295	23.373	-1.289	-3.582	87.426	0.289	0.001	0	324.27	5.40444	50.4	21.4	35.7	2.462	0.043	0.037	0.001	1.033	0.88
346	10/22/2002	9:04:05 PM	29.633	25.065	30.713	26.069	25.473	47.768	51.585	24.85	24.233	-1.289	-3.426	84.19	0.297	0.001	0	325.27	5.42111	50.1	20.6	36.0	2.482	0.044	0.038	0.001	1.051	0.89
347	10/22/2002	9:05:05 PM	29.813	25.091	30.833	26.085	25.483	47.62	51.641	25.227	23.18	-1.286	-3.313	88.794	0.302	0.001	0	326.27	5.43778	50.2	21.8	35.4	2.441	0.045	0.038	0.001	1.083	0.92
348	10/22/2002	9:06:05 PM	29.959	25.087	30.909	26.122	25.505	46.907	51.237	25.269	22.71	-1.286	-3.189	87.993	0.308	0.001	0	327.27	5.45444	49.8	21.6	34.8	2.400



391	10/22/2002	9:49:03 PM	25.708	25.186	24.606	25.815	25.699	45.913	49.543	10.98	35.721	-1.292	-3.71	46.93	0.269	0.001	0	370.23	6.17056	48.1	11.5	40.8	2.814	0.040	0.041	0.001	0.994	0.85
392	10/22/2002	9:50:03 PM	25.672	25.205	24.695	25.774	25.723	46.248	49.957	11.056	35.991	-1.286	-3.724	49.172	0.268	0.001	0	371.23	6.18722	48.5	12.1	41.1	2.835	0.040	0.040	0.001	0.980	0.83
393	10/22/2002	9:51:03 PM	25.63	25.208	24.698	25.828	25.761	46.106	49.489	10.972	36.137	-1.286	-3.739	49.816	0.266	0.001	0	372.23	6.20389	48.0	12.2	41.1	2.835	0.040	0.040	0.001	0.973	0.83
394	10/22/2002	9:52:03 PM	25.589	25.203	24.602	25.802	25.725	45.814	49.237	10.823	35.971	-1.292	-3.744	49.042	0.266	0.001	0	373.23	6.22056	47.8	12.0	40.9	2.819	0.040	0.040	0.001	0.981	0.83
395	10/22/2002	9:53:03 PM	25.568	25.217	24.722	25.741	25.729	46.257	49.796	10.901	36.2	-1.286	-3.73	48.409	0.267	0.001	0	374.23	6.23722	48.3	11.9	41.2	2.843	0.040	0.040	0.001	0.973	0.83
396	10/22/2002	9:54:03 PM	25.538	25.227	24.642	25.816	25.739	46.41	49.771	10.981	36.434	-1.284	-3.721	48.245	0.267	0.001	0	375.23	6.25389	48.3	11.8	41.4	2.856	0.040	0.040	0.001	0.971	0.83
397	10/22/2002	9:55:03 PM	25.513	25.227	24.657	25.781	25.719	46.377	49.616	10.912	36.448	-1.289	-3.73	48.487	0.266	0.001	0	376.23	6.27056	48.1	11.9	41.4	2.855	0.040	0.040	0.001	0.967	0.82
398	10/22/2002	9:56:03 PM	25.493	25.227	24.722	25.786	25.739	45.843	49.245	11.136	35.623	-1.289	-3.814	49.324	0.262	0.001	0	377.23	6.28722	47.8	12.1	40.7	2.808	0.039	0.039	0.001	0.967	0.82
399	10/22/2002	9:57:03 PM	25.494	25.238	25.018	25.782	25.76	45.698	49.21	11.142	35.48	-1.289	-3.797	49.508	0.263	0.001	0	378.23	6.30389	47.7	12.1	40.6	2.798	0.039	0.039	0.001	0.966	0.82
400	10/22/2002	9:58:03 PM	25.518	25.237	25.383	25.681	25.739	45.936	49.239	11.067	35.85	-1.284	-3.759	49.475	0.263	0.001	0	379.23	6.32056	47.8	12.1	40.9	2.819	0.039	0.039	0.001	0.949	0.81
401	10/22/2002	9:59:03 PM	25.619	25.243	25.579	25.647	25.735	45.629	48.852	10.898	35.654	-1.289	-3.736	49.615	0.265	0.001	0	380.23	6.33722	47.4	12.2	40.6	2.802	0.040	0.039	0.001	0.956	0.81
402	10/22/2002	10:00:03 PM	25.723	25.231	25.677	25.65	25.729	45.693	49.073	10.837	35.887	-1.289	-3.724	49.611	0.265	0.001	0	381.23	6.35389	47.6	12.2	40.8	2.812	0.040	0.039	0.001	0.950	0.81
403	10/22/2002	10:01:03 PM	25.849	25.247	25.733	25.681	25.729	45.913	49.295	10.878	35.998	-1.286	-3.718	50.162	0.265	0.001	0	382.23	6.37056	47.8	12.3	41.0	2.824	0.040	0.039	0.001	0.945	0.80
404	10/22/2002	10:02:03 PM	25.928	25.246	25.492	25.72	25.714	45.503	49.03	10.8	35.537	-1.289	-3.744	49.827	0.264	0.001	0	383.23	6.38722	47.6	12.2	40.5	2.794	0.039	0.039	0.001	0.958	0.82
405	10/22/2002	10:03:03 PM	25.958	25.241	25.417	25.615	25.689	45.689	49.082	10.874	35.664	-1.289	-3.768	50.381	0.263	0.001	0	384.23	6.40389	47.6	12.3	40.7	2.805	0.039	0.039	0.001	0.953	0.81
406	10/22/2002	10:04:03 PM	25.953	25.241	25.297	25.725	25.664	45.726	49.028	10.754	36.034	-1.289	-3.797	49.051	0.261	0.001	0	385.23	6.42056	47.6	12.0	40.9	2.819	0.039	0.039	0.001	0.944	0.80
407	10/22/2002	10:05:03 PM	25.903	25.241	25.162	25.715	25.664	45.977	49.386	10.927	35.965	-1.289	-3.802	49.712	0.262	0.001	0	386.23	6.43722	47.9	12.2	41.0	2.825	0.039	0.039	0.001	0.949	0.81
408	10/22/2002	10:06:03 PM	25.873	25.246	25.147	25.665	25.654	45.667	48.877	10.769	35.871	-1.289	-3.823	49.112	0.261	0.001	0	387.23	6.45389	47.4	12.0	40.8	2.811	0.039	0.039	0.001	0.951	0.81
409	10/22/2002	10:07:03 PM	25.853	25.261	25.001	25.745	25.614	45.983	49.251	10.885	35.94	-1.289	-3.849	49.156	0.259	0.001	0	388.23	6.47056	47.8	12.0	41.0	2.824	0.039	0.039	0.001	0.943	0.80
410	10/22/2002	10:08:03 PM	25.818	25.246	24.971	25.705	25.609	46.039	49.392	10.861	36.053	-1.289	-3.852	49.485	0.259	0.001	0	389.23	6.48722	47.9	12.1	41.0	2.830	0.039	0.039	0.001	0.942	0.80
411	10/22/2002	10:09:03 PM	25.787	25.24	24.931	25.729	25.568	46.05	49.282	10.818	36.149	-1.286	-3.866	50.001	0.258	0.001	0	390.23	6.50389	47.8	12.3	41.1	2.834	0.038	0.039	0.001	0.938	0.80
412	10/22/2002	10:10:03 PM	25.758	25.236	24.801	25.695	25.563	45.996	49.204	10.864	36.125	-1.289	-3.869	49.326	0.258	0.001	0	391.23	6.52056	47.7	12.1	41.1	2.831	0.038	0.039	0.001	0.942	0.80
413	10/22/2002	10:11:03 PM	25.738	25.241	24.841	25.62	25.563	46.137	49.415	10.805	36.254	-1.289	-3.866	49.273	0.258	0.001	0	392.23	6.53722	47.9	12.1	41.2	2.840	0.038	0.039	0.001	0.938	0.80
414	10/22/2002	10:12:03 PM	25.708	25.241	24.741	25.71	25.543	45.724	48.891	11.154	35.461	-1.292	-3.956	49.531	0.255	0.001	0	393.23	6.55389	47.4	12.1	40.6	2.799	0.038	0.038	0.001	0.943	0.80
415	10/22/2002	10:13:03 PM	25.673	25.241	24.731	25.665	25.523	46.211	49.229	11.083	36.127	-1.289	-3.985	49.972	0.254	0.001	0	394.23	6.57056	47.8	12.2	41.2	2.838	0.038	0.038	0.001	0.927	0.79
416	10/22/2002	10:14:03 PM	25.632	25.24	24.755	25.644	25.498	45.93	48.995	11.19	35.633	-1.289	-3.993	49.898	0.253	0.001	0	395.23	6.58722	47.5	12.2	40.8	2.812	0.038	0.038	0.001	0.931	0.79
417	10/22/2002	10:15:03 PM	25.602	25.245	24.64	25.649	25.503	46.019	49.065	11.187	35.711	-1.289	-3.993	48.871	0.253	0.001	0	396.23	6.60389	47.6	12.0	40.9	2.817	0.038	0.038	0.001	0.932	0.79
418	10/22/2002	10:16:03 PM	25.567	25.245	24.7	25.579	25.508	45.938	49.013	11.114	35.738	-1.289	-3.979	49.303	0.253	0.001	0	397.23	6.62056	47.5	12.1	40.8	2.816	0.038	0.038	0.001	0.931	0.79
419	10/22/2002	10:17:03 PM	25.532	25.245	24.675	25.629	25.508	46.029	49.119	11.161	35.67	-1.289	-3.982	49.491	0.252	0.001	0	398.23	6.63722	47.6	12.1	40.8	2.816	0.038	0.038	0.001	0.928	0.79
420	10/22/2002	10:18:03 PM	25.491	25.234	24.614	25.633	25.482	45.793	48.819	11.528	35.259	-1.289	-4.066	50.141	0.248	0.001	0	399.23	6.65389	47.3	12.3	40.5	2.794	0.037	0.037	0.001	0.922	0.78
421	10/22/2002	10:19:03 PM	25.481	25.249	24.719	25.578	25.462	45.927	48.984	11.466	35.369	-1.289	-4.077	50.636	0.247	0.001	0	400.23	6.67056	47.5	12.4	40.6	2.803	0.037	0.037	0.001	0.913	0.78
422	10/22/2002	10:20:03 PM	25.445	25.239	24.618	25.558	25.446	45.64	48.608	11.486	35.003	-1.289	-4.086	49.8	0.247	0.001	0	401.23	6.68722	47.1	12.2	40.3	2.780	0.037	0.037	0.001	0.923	0.79
423	10/22/2002	10:21:03 PM	25.415	25.239	24.643	25.533	25.436	45.925	49.003	11.47	35.363	-1.289	-4.075	50.607	0.247	0.001	0	402.23	6.70389	47.5	12.4	40.6	2.802	0.037	0.037	0.001	0.915	0.78
424	10/22/2002	10:22:03 PM	25.399	25.238	24.703	25.522	25.43	45.847	48.743	11.503	35.269	-1.289	-4.08	50.37	0.247	0.001	0	403.23	6.72056	47.3	12.3	40.6	2.796	0.037	0.037	0.001	0.916	0.78
425	10/22/2002	10:23:03 PM	25.384	25.243	24.613	25.557	25.43	45.952	49.03	11.487	35.388	-1.286	-4.063	50.192	0.247	0.001	0	404.23	6.73722	47.6	12.3	40.7	2.804	0.037	0.037	0.001	0.915	0.78
426	10/22/2002	10:24:03 PM	25.353	25.222	24.672	25.486	25.434	45.973	48.833	11.403	35.549	-1.289	-4.066	49.657	0.247	0.001	0	405.23	6.75389	47.4	12.2	40.8	2.810	0.037	0.037	0.001	0.912	0.78
427	10/22/2002	10:25:03 PM	25.363	25.237	24.672	25.546	25.414	45.712	48.68	11.459	35.099	-1.289	-4.08	50.158	0.246	0.001	0	406.23	6.77056	47.2	12.3	40.4	2.786	0.037	0.037	0.001	0.916	0.78
428	10/22/2002	10:26:03 PM	25.347	25.23	24.625	25.554	25.398	46.054	49.189	11.285	35.652	-1.289	-4.04	50.062	0.248	0.001	0	407.23	6.78722	47.7	12.3	40.9	2.817	0.037	0.037	0.001	0.915	0.78
429	10/22/2002	10:27:03 PM	25.341	25.239	24.729	25.573	25.417	46.168	49.142	11.255	35.858	-1.286	-4.04	50.026	0.248	0.001	0	408.23	6.80389	47.7	12.3	41.0	2.828	0.037	0.037	0.001	0.908	0.77
430	10/22/2002	10:28:03 PM	25.33	25.229	24.638	25.583	25.411	46.267	49.301	11.314	35.817	-1.289	-4.051	49.714	0.247	0.001	0	409.23	6.82056	47.8	12.2	41.0	2.830	0.037	0.037	0.001	0.906	0.77
431	10/22/2002	10:29:03 PM	25.334	25.228	24.698	25.532	25.405	46.445	49.409	11.372	36.067	-1.286	-4.054	49.695	0.248	0.001	0	410.23	6.83722	47.9	12.2	41.3	2.844	0.037	0.037	0.001	0.904	0.77
432	10/22/2002	10:30:03 PM	25.343	25.222	25.042	25.521	25.389	46.259	49.175	11.308	35.938	-1.289	-4.06	49.831	0.246	0.001	0	411.23	6.85389	47.7	12.2	41.1	2.834	0.037	0.037	0.001	0.891	0.76
433	10/22/2002	10:31:03 PM	25.383	25.227	25.238	25.541	25.389	46.07	49.071	11.193	35.779	-1.289	-4.034	50.276	0.248	0.001	0	412.23	6.87056	47.6	12.3	40.9	2.822	0.037	0.037	0.001	0.897	0.76
434	10/22/2002	10:32:03 PM	25.493	25.241	25.537	25.545	25.399	45.892	49.028	11.273	35.508	-1.284	-4.014	50.597	0.249	0.001	0	413.23	6.88722	47.6	12.4	40.7	2.806	0.037	0.037	0.001	0.898	0.76
435	10/22/2002	10:33:03 PM	25.586	25.215	25.611	25.554	25.367	45.729	48.908	11.07	35.648	-1.292	-4.02	50.119	0.248	0.001	0	414.23	6.90389	47.4	12.3	40.7	2.805	0.037	0.036	0.001	0.893	0.76
436	10/22/2002	10:34:03 PM	25.72	25.234	25.525	25.578	25.366	46.006	49.134	11.165	35.707	-1.284	-4.014	50.829	0.248	0.001	0	415.23	6.92056	47.7	12.5	40.9	2.817	0.037	0.036	0.001	0.892	0.76
437	10/22/2002	10:35:03 PM	25.785	25.218	25.444	25.577	25.36	45.983	49.069	11.043	35.813	-1.289	-4.048	49.642	0.246	0.001	0	416.23	6.93722	47.6	12.2	40.9	2.820	0.037	0.036	0.001	0.886	0.75
438	10/22/2002	10:36:03 PM	25.798	25.216	25.227	25.555	25.364	45.669	48.577	11.379	35.113	-1.289	-4.109	51.024	0.245	0.001	0	417.23	6.95389	47.1	12.5	40.4	2.785	0.037	0.036	0.001	0.899	0.76
439	10/22/2002	10:37:03 PM	25.763	25.182	25.182	25.31	25.214	45.824	48.79	11.331	35.414	-1.289	-4.13	50.813	0.243	0.001	0	418.23	6.97056	47.3	12.5	40.6	2.801	0.036	0.036	0.001	0.887	0.76
440	10/22/2002	10:38:03 PM	25.73	25.163	25.048	25.086	25.2	45.884	48.724	11.291	35.594	-1.284	-4.124	50.846	0.244	0.001	0	419.23	6.98722	47.3	12.5	40.7	2.809	0.036	0.036	0.001	0.892	0.76
441	10/22/2002	10:39:03 PM	25.679	25.132	24.937	24.86	25.179	45.627	48.521	11.225	35.279	-1.289	-4.135	50.899	0.243	0.001	0	420.23	7.00389	47.0	12.5	40.5	2.789	0.036	0.036	0.001	0.897	0.76
442	10/22/2002	10:40:03 PM	25.65	25.128	24.923	24.721	25.075	46.244	49.156	11.256	35.914	-1.289	-4.13	50.16	0.243	0.001	0	421.23	7.02056	47.7	12.3	41.1	2.832	0.036	0.036	0.001	0.884	0.75
443	10/22/2002	10:41:03 PM	25.649	25.142	24.792	24.66	25.029	46.238	49.049	11.249	35.838	-1.289	-4.159	50.062	0.241	0.001	0	422.23	7.03722	47.6	12.3	41.0	2.829	0.036	0.036	0.001	0.881	0.75
444	10/22/2002	10:42:03 PM	25.631	25.13	24.794	24.602	24.896	46.12	48.922	11.142	35.905	-1.286	-4.141	50.133	0.242	0.001	0	423.23	7.05389	47.4	12.3	41.0	2.828	0.036	0.036	0.001	0.885	0.75
445	10/22/2002	10:43:03 PM	25.617	25.121	24.785	24.568	24.632	46.191	49.104	11.106	36.047	-1.289	-4.159	49.605	0.24	0.001	0	424.23	7.07056	47.6	12.2	41.1	2.835	0.036	0.036	0.001	0.875	0.75
446	10/22/2002	10:44:03 PM	25.594	25.103	24.692	24.5	24.594	46.329	49.117	11.166	36.149	-1.286	-4.159	50.59	0.241	0.001	0	425.23	7.08722	47.6	12.4	41.2	2.843	0.036	0.036	0.001	0.879	0.75
447	10/22/2002	10:45:03 PM	25.554	25.082	24.752	24.474	24.503	46.391	49.235	11.121	36.229	-1.286	-4.156	49.525	0.241	0.001	0	426.23	7.10389	47.8	12.1	41.3	2.848	0.036	0.036	0.001	0.876	0.75
448	10/22/2002	10:46:03 PM	25.517	25.06	24.665	24.422	24.526	46.485	49.303	11.17	36.186	-1.286	-4.164	49.688	0.24	0.001	0	427.23	7.12056	47.8	12.2	41.3	2.850	0.036	0.036	0.001	0.874	0.74
449	10/22/2002	10:47:03 PM	25.479	25.023	24.647	24.379	24.503	46.715	49.553	11.112	36.595	-1.286	-4.17	48.715	0.239	0.001	0	428.23	7.13722	48.1	11.9	41.7	2.872	0.036	0.036	0.001	0.864	0.74
450	10/22/2002	10:48:03 PM	25.446	24.999	24.684	24.266	24.415	46.186	49.115	11.355	35.721	-1.289	-4.17	50.383	0.239	0.001	0	429.23	7.15389	47.6	12.3	41.0	2.824	0.036	0.036	0.001	0.878	0.75
451	10/22/2002	10:49:03 PM	25.418	24.976	24.59	24.268	24.376	45.971	48.747	11.277	35.582	-1.284	-4.193	49.3	0.238	0.001	0	430.23	7.17056	47.3	12.1	40.8	2.811	0.035	0.036	0.001	0.880	0.75
452	10/22/2002	10:50:03 PM	25.381	24.959	24.639	24.236	24.375	46.427	49.198	11.259	36.108	-1.289	-4.214	49.871	0.237	0.001	0	431.23	7.18722	47.7	12.2	41.3	2.845	0.035	0.036	0.001	0.865	0.74
453	10/22/2002	10:51:03 PM	25.36	24.939	24.643	24.22	24.349	46.375	49.2	11.357	36.034	-1.289	-4.211	49.787	0.237	0.001	0	432.23	7.20389	47.7	12.2	41.2	2.841	0.035	0.036	0.001	0.866	0.74
454	10/22/2002	10:52:03 PM	25.335	24.919	24.573	24.2	24.334	46.464	49.442	11.297	36.049	-1.289	-4.211	49.823	0.237	0.001	0	433.23	7.22056	48.0	12.2	41.3	2.844	0.035	0.036	0.001	0.867	0.74
455	10/22/2002	10:53:03 PM	25.311	24.894	24.644	24.166	24.249	46.47	49.253	11.284	36.155	-1.286	-4.208	49.701	0.238	0.001	0	434.23	7.23722	47.8	12.2	41.3	2.848	0.035	0.036	0.001	0.868	0.74
456	10/22/2002	10:54:03 PM	25.287	24.87	24.604	24.111	24.17	46.555	49.444	11.367	36.026	-1.284	-4.225	50.169	0.236	0.001	0	435.23	7.25389	48.0	12.3	41.3	2.847	0.035	0.036	0.001	0.862	0.73
457	10/22/2002	10:55:03 PM	25.284	24.867	24.617	24.094	24.187	46.563	49.363	11.361	36.127	-1.284	-4.216	49.923	0.236	0.001	0	436.23	7.27056	47.9	12.2	41.3	2.851	0.035	0.036	0.001	0.860	0.73
458	10/22/2002	10:56:03 PM	25.261	24.834	24.673	24.04	24.199	46.872	49.595	11.352	36.514	-1.286	-4.219	49.942	0.237	0.001	0	437.23	7.28722	48.1	12.2	41.7	2.875	0.035	0.036	0.001	0.855	0.73
459	10/22/2002	10:57:03 PM	25.242	24.806	24.585	24.032	24.13	46.661	49.438	11.355	36.196	-1.286	-4.231	49.741	0.236	0.001	0	438.23	7.30389	48.0	12.2	41.4	2.856	0.035	0.036	0.001	0.859	0.73
460	10/22/2002	10:58:03 PM	25.24	24.798	24.652	24.039	24.128	46.443	49.148	11.238	36.147	-1.284	-4.216	49.856	0.236	0.001	0	439.23	7.32056	47.7	12.2	41.3	2.847	0.035	0.036	0.001	0.860	0.73
461	10/22/2002	10:59:03 PM	25.223	24.776	24.68	24.032	24.111	46.702	49.436	11.253	36.405	-1.286	-4.222	49.475	0.236	0.001	0	440.23	7.33722	48.0	12.1	41.6	2.865	0.035	0.036	0.001	0.854	0.73
462	10/22/2002	11:00:03 PM	25.205	24.743	24.587	23.989	24.108	46.727	49.57	11.291	36.409	-1.289	-4.225	49.223	0.236	0.001	0	441.23	7.35389	48.1	12.1	41.6	2.866	0.035	0.036	0.001	0.856	0.73
463	10/22/2002	11:01:03 PM	25.202	24.73	24.685	23.971	24.06	46.592	49.311	11.299	36.278	-1.286	-4.24	49.647	0.235	0.001	0	442.23	7.37056	47.8	12.2	41.4	2.857	0.035	0.035	0.001	0.853	0.73
464	10/22/2002	11:02:03 PM	25.206	24.714	24.649	23.955	24.059	46.559	49.382	11.306	36.159	-1.284	-4.242	49.256	0.235	0.001	0	443.23	7.38722	47.9	12.1	41.4	2.852	0.035	0.035	0.001	0.856	0.73
465	10/22/2002	11:03:03 PM	25.196	24.699	24.638	23.91	24.038	46.965	49.742	11.304	36.618	-1.286	-4.234	49.602	0.234	0.001	0	444.23	7.40389	48.3	12.2	41.8	2.881	0.035	0.035	0.001	0.843	0.72
466	10/22/2002	11:04:03 PM	25.2	24.673	24.748	23.924	23.938	46.984	49.764	11.382	36.493	-1.281	-4.237	49.332	0.235	0.001	0	445.23	7.42056	48.3	12.1	41.7	2.878	0.035	0.035	0.001	0.845	0.72
467	10/22/2002	11:05:03 PM	25.187	24.63	24.639	23.891	23.919	46.775	49.591	11.372	36.294	-1.286	-4.242	48.692	0.234	0.001	0	446.23	7.43722	48.1	11.9	41.5	2.864	0.035	0.035	0.001	0.849	0.72
468	10/22/2002	11:06:03 PM	25.173	24.596	24.7	23.867	23.905	46.909	49.525	11.381	36.442	-1.286	-4.237	49.267	0.234	0.001	0	447.23	7.45389	48.1	12.1	41.7	2.873	0.035	0.035	0.001	0.844	0.72
469	10/22/2002	11:07:03 PM	25.185	24.593	24.743	23.859	23.908	46.907	49.595	11.319	36.595	-1.286	-4.254	49.426	0.234	0.001	0	448.23	7.47056	48.1	12.1	41.8	2.879	0.035	0.035	0.001	0.842	0.72
470	10/22/2002	11:08:03 PM	25.181	24.573	24.683	23.865	23.893	46.791	49.564	11.298	36.473	-1.284	-4.251	49.808	0.234	0.001	0	449.23	7.48722	48.1	12.2	41.6	2.870	0.035	0.035	0.001	0.846	0.72
471	10/22/2002	11:09:03 PM	25.186	24.554	24.769	23.835	23.883	47.106	49.884	11.356	36.747	-1.286	-4.237	48.764	0.235	0.001	0	450.23	7.50389	48.4	12.0	41.9	2.891	0.035	0.035	0.001	0.841	0.72
472	10/22/2002	11:10:03 PM	25.191	24.529	24.919	23.775	23.889	46.791	49.591	11.353	36.323	-1.286	-4.26	49.099	0.233	0.001	0	451.23	7.52056	48.1	12.0	41.6	2.865	0.035	0.035	0.001	0.838	0.71
473	10/22/2002	11:11:03 PM	25.231	24.524	25.234	23.79	23.878	46.799	49.611	11.113	36.565	-1.284	-4.231	49.378	0.234	0.001	0	452.23	7.53722	48.1	12.1	41.7	2.874	0.035	0.035	0.001	0.831	0.71
474	10/22/2002	11:12:03 PM	25.302	24.499	25.51	23.74	23.909	46.586	49.274	11.223	36.329	-1.286	-4.231	49.605	0.234	0.001	0	453.23	7.55389	47.8	12.2	41.5	2.858	0.035	0.034	0.001	0.830	0.71
475	10/22/2002	11:13:03 PM	25.403	24.475	25.586	23.721	23.895	46.458	49.202	11.155	36.282	-1.284	-4.228	50.139	0.234	0.001	0	454.23	7.57056	47.7	12.3	41.4	2.852	0.035	0.034	0.001	0.830	0.71
476	10/22/2002	11:14:03 PM	25.51	24.472	25.748	23.693	23.887	46.439	49.227	11.102	36.204	-1.286	-4.237	49.709	0.234	0.001	0	455.23	7.58722	47.8	12.2	41.3	2.849	0.035	0.034	0.001	0.827	0.70
477	10/22/2002	11:15:03 PM	25.613	24.455	25.736	23.676	23.91	45.538	48.252	10.929	35.605	-1.286	-4.266	48.994	0.232	0.001	0	456.23	7.60389	46.8	12.0	40.6	2.797	0.035	0.034	0.001	0.835	0.71
478	10/22/2002	11:16:03 PM	25.677	24.443	25.524	23.674	23.938	45.167	47.766	10.888	35.16	-1.286	-4.344	48.08	0.225	0.001	0	457.23	7.62056	46.3	11.8	40.2	2.769	0.034	0.033	0.001	0.823	0.70
479	10/22/2002	11:17:03 PM	25.7	24.432	25.473	23.678	24.022	45.167	47.791	10.808	35.293	-1.281	-4.445	48.938	0.225	0.001	0	458.23	7.63722	46.3	12.0	40.2	2.774	0.034	0.033	0.001	0.823	0.70
480	10/22/2002	11:18:03 PM	25.688	24.425	25.296	23.666	23.975	45.196	47.787	10.882	35.175	-1.284	-4.474	49.288	0.225	0.001	0	459.23	7.65389	46.3	12.1	40.2	2.771	0.034	0.033	0.001	0.828	0.70
481	10/22/2002	11:19:03 PM	25.64	24.392	25.178	23.683	23.962	45.304	47.675	10.896	35.428	-1.286	-4.48	49.133	0.224	0.001	0	460.23	7.67056	46.2	12.0	40.4	2.783	0.033	0.033	0.001	0.823	0.70
482	10/22/2002	11:20:03 PM	25.601	24.378	25.134	23.624	23.908	45.153	47.574	10.854	35.273	-1.284	-4.486	49.084	0.223	0.001	0	461.23	7.68722	46.1	12.0	40.2	2.773	0.033	0.033	0.001	0.824	0.70
483	10/22/2002	11:21:03 PM	25.552	24.353	24.954	23.574	23.838	45.289	47.718	10.823	35.373	-1.286	-4.497	50.234	0.223	0.001	0	462.23	7.70389	46.2	12.3	40.3	2.781	0.033	0.033	0.001	0.825	0.70
484	10/22/2002	11:22:03 PM	25.522	24.339	24.929	23.554	23.819	45.488	47.94	10.806	35.613	-1.286	-4.483	49.026	0.223	0.001	0	463.23	7.72056	46.5	12.0	40.6	2.796	0.033	0.033	0.001	0.822	0.70
485	10/22/2002	11:23:03 PM	25.472	24.319	24.854	23.509	23.823	45.302	47.752	10.752	35.514	-1.289	-4.497	48.619	0.222	0.001	0	464.23	7.73722	46.3	11.9	40.4	2.786	0.033	0.033	0.001	0.822	0.70
486	10/22/2002	11:24:03 PM	25.436	24.293	24.733	23.503	23.742	45.495	47.952	10.802	35.734	-1.286	-4.497	48.483	0.221	0.001	0	465.23	7.75389	46.5	11.9	40.6	2.800	0.033	0.033	0.001	0.817	0.70
487	10/22/2002	11:25:03 PM	25.41	24.292	24.772	23.483	23.737	45.59	48.029	10.747	35.873	-1.284	-4.5	46.884	0.221	0.001	0	466.23	7.77056	46.6	11.5	40.7	2.808	0.033	0.033	0.001	0.814	0.69
488	10/22/2002	11:26:03 PM	25.366	24.273	24.678	23.454	23.748	44.944	47.241	11.218	34.608	-1.286	-4.544	50.899	0.219	0.001	0	467.23	7.78722	45.8	12.5	39.8	2.742	0.033	0.033	0.001	0.828	0.70
489	10/22/2002	11:27:03 PM	25.316	24.248	24.633	23.418	23.743	45.339	47.644	11.292	35.003	-1.289	-4.587	49.85	0.216	0.001	0	468.23	7.80389	46.2	12.2	40.2	2.770	0.032	0.033	0.001	0.810	0.69
490	10/22/2002	11:28:03 PM	25.262	24.229	24.665	23.395	23.769	45.055	47.398	11.09	34.939	-1.289	-4.596	49.521	0.216	0.001	0	469.23	7.82056	45.9	12.1	40.0	2.758	0.032	0.033	0.001	0.813	0.69
491	10/22/2002	11:29:03 PM	25.235	24.232	24.582	23.427	23.752	45.339	47.749	11	35.189	-1.286	-4.573	48.596	0.216	0.001	0	470.23	7.83722	46.3	11.9	40.3	2.776	0.032	0.033	0.001	0.809	0.69
492	10/22/2002	11:30:03 PM	25.202	24.224	24.609	23.415	23.744	45.532	47.741	11.124	35.357	-1.284	-4.564	49.97	0.216	0.001	0	471.23	7.85389	46.3	12.2	40.4	2.789	0.032	0.033	0.001	0.805	0.69
493	10/22/2002	11:31:03 PM	25.16	24.207	24.633	23.408	23.747	44.989	47.11	11.578	34.366	-1.286	-4.654	51.39	0.212	0.001	0	472.23	7.87056	45.6	12.6	39.7	2.736	0.032	0.032	0.001	0.805	0.68
494	10/22/2002	11:32:03 PM	25.114	24.186	24.541	23.391	23.771	45.145	47.307	11.541	34.563	-1.284	-4.654	49.94	0.212	0.001	0	473.23	7.88722	45.8	12.2	39.9	2.748	0.032	0.032	0.001	0.803	0.68
495	10/22/2002	11:33:03 PM	25.084	24.171	24.621	23.351	23.796	45.105	47.199	11.477	34.659	-1.286	-4.659	50.532	0.213	0.001	0	474.23	7.90389	45.7	12.4	39.9	2.750	0.032	0.032	0.001	0.805	0.68
496	10/22/2002	11:34:03 PM	25.048	24.16	24.571	23.295	23.79	44.968	47.214	11.479	34.46	-1.284	-4.671	50.364	0.211	0.001	0	475.23	7.92056	45.7	12.3	39.7	2.738	0.031	0.032	0.001	0.802	0.68
497	10/22/2002	11:35:03 PM	25.016	24.133	24.519	23.248	23.774	45.18	47.425	11.553	34.548	-1.286	-4.625	50.572	0.211	0.001	0	476.23	7.93722	46.0	12.4	39.9	2.748	0.031	0.032	0.001	0.800	0.68
498	10/22/2002	11:36:03 PM	25.006	24.138	24.594	23.248	23.799	45.244	47.648	11.532	34.546	-1.284	-4.659	49.571	0.212	0.001	0	477.23	7.95389	46.2	12.1	39.9	2.751	0.032	0.032	0.001	0.801	0.68
499	10/22/2002	11:37:03 PM	24.975	24.107	24.477	23.197	23.762	45.341	47.449	11.485	34.845	-1.286	-4.671	50.045	0.212	0.001	0	478.23	7.97056	46.0	12.3	40.1	2.764	0.032	0.032	0.001	0.800	0.68
500	10/22/2002	11:38:03 PM	24.962	24.099	24.514	23.234	23.724	45.25	47.439	11.455	34.739	-1.286	-4.659	49.743	0.212	0.001	0	479.23	7.98722	46.0	12.2	40.0	2.757	0.032	0.032	0.001	0.801	0.68
501	10/22/2002	11:38:32 PM	24.961	24.088	24.473	23.238	23.713	45.024	47.226	11.419	34.47	-1.286	-4.662	49.493	0.211	0.001	0	479.72	7.99528	45.8	12.1	39.7	2.740	0.031	0.032	0.001	0.803	0.68
502	10/22/2002	11:39:32 PM	24.949	24.081	24.521	23.226	23.706	45.35	47.574	11.408	34.814	-1.286	-4.645	50.087	0.212	0.001	0	480.72	8.01194	46.1	12.3	40.1	2.764	0.032	0.032	0.001	0.799	0.68
503	10/22/2002	11:40:32 PM	24.941	24.063	24.529	23.193	23.718	45.428	47.872	11.378	34.909	-1.286	-4.639	49.311	0.212	0.001	0	481.72	8.02861	46.4	12.1	40.2	2.769	0.032	0.032	0.001	0.797	0.68
504	10/22/2002	11:41:32 PM	24.924	24.056	24.476	23.176	23.731	45.542	47.795	11.416	35.064	-1.281	-4.625	49.359	0.212	0.001	0	482.72	8.04528	46.3	12.1	40.3	2.779	0.032	0.032	0.001	0.796	0.68
505	10/22/2002	11:42:32 PM	24.909	24.051	24.556	23.176	23.741	45.345	47.499	11.476	34.786	-1.286	-4.639	47.908	0.211	0.001	0	483.72	8.06194	46.0	11.7	40.1	2.762	0.031	0.032	0.001	0.795	0.68
506	10/22/2002	11:43:32 PM	24.912	24.049	24.524	23.138	23.779	45.617	47.927	11.496	35.128	-1.281	-4.648	49.489	0.21	0.001	0	484.72	8.07861	46.5	12.1	40.4	2.784	0.031	0.032	0.001	0.786	0.67
507	10/22/2002	11:44:32 PM	24.879	24.011	24.492	23.046	23.742	45.289	47.505	11.455	34.788	-1.292	-4.648	49.567	0.211	0.001	0	485.72	8.09528	46.0	12.1	40.0	2.761	0.031	0.032	0.001	0.797	0.68
508	10/22/2002	11:45:32 PM	24.888	24.005	24.586	23.074	23.77	45.42	47.59	11.471	34.927	-1.286	-4.657	48.715	0.21	0.001	0	486.72	8.11194	46.1	11.9	40.2	2.770	0.031	0.032	0.001	0.788	0.67
509	10/22/2002	11:46:32 PM	24.872	23.994	24.494	23.058	23.719	45.401	47.524	11.457	34.898	-1.286	-4.654	49.73	0.211	0.001	0	487.72	8.12861	46.1	12.2	40.1	2.768	0.031	0.032	0.001	0.795	0.68
510	10/22/2002	11:47:32 PM	24.866	23.978	24.564	23.032	23.713	45.561	47.785	11.36	35.209	-1.284	-4.642	48.501	0.211	0.001	0	488.72	8.14528	46.3	11.9	40.4	2.784	0.031	0.032	0.001	0.789	0.67
511	10/22/2002	11:48:32 PM	24.867	23.969	24.584	23.023	23.719	45.412	47.675	11.373	34.976	-1.284	-4.633	49.409	0.211	0.001	0	489.72	8.16194	46.2	12.1	40.2	2.771	0.031	0.032	0.001	0.792	0.67
512	10/22/2002	11:49:32 PM	24.868	23.959	24.52	23.009	23.72	45.726	47.909	11.319	35.433	-1.286	-4.642	50.718	0.21	0.001	0	490.72	8.17861	46.4	12.4	40.6	2.798	0.031	0.032	0.001	0.782	0.67
513	10/22/2002	11:50:32 PM	24.862	23.933	24.604	22.988	23.729	45.729	47.996	11.467	35.304	-1.286	-4.63	48.168	0.211	0.001	0	491.72	8.19528	46.5	11.8	40.5	2.793	0.031	0.032	0.001	0.785	0.67
514	10/22/2002	11:51:32 PM	24.86	23.927	24.537	22.991	23.722	45.666	47.888	11.431	35.24	-1.286	-4.642	48.915	0.211	0.001	0	492.72	8.21194	46.4	12.0	40.5	2.789	0.031	0.032	0.001	0.788	0.67
515	10/22/2002	11:52:32 PM	24.868	23.91	24.836	22.944	23.7	45.101	47.09	11.743	34.343	-1.284	-4.691	50.228	0.208	0.001	0	493.72	8.22861	45.6	12.3	39.7	2.739	0.031	0.031	0.001	0.784	0.67
516	10/22/2002	11:53:32 PM	24.894	23.89	25.162	22.92	23.646	44.94	47.158	11.691	34.147	-1.286	-4.694	48.971	0.207	0.001	0	494.72	8.24528	45.7	12.0	39.5	2.726	0.031	0.031	0.001	0.777	0.66
517	10/22/2002	11:54:32 PM	24.981	23.872	25.304	22.911	23.642	44.964	47.232	11.653	34.217	-1.284	-4.677	51.696	0.208	0.001	0	495.72	8.26194	45.8	12.7	39.6	2.730	0.031	0.031	0.001	0.777	0.66
518	10/22/2002	11:55:32 PM	25.107	23.853	25.5	22.892	23.643	44.591	46.785	11.485	34.008	-1.284	-4.659	50.391	0.209	0.001	0	496.72	8.27861	45.3	12.3	39.3	2.710	0.031	0.031	0.001	0.782	0.67
519	10/22/2002	11:56:32 PM	25.224	23.844	25.622	22.903	23.585	44.888	47.11	11.535	34.317	-1.284	-4.659	49.626	0.209	0.001	0	497.72	8.29528	45.6	12.2	39.6	2.730	0.031	0.031	0.001	0.773	0.66
520	10/22/2002	11:57:32 PM	25.331	23.826	25.538	22.865	23.587	44.679	46.736	11.449	34.208	-1.289	-4.674	51.601	0.208	0.001	0	498.72	8.31194	45.3	12.6	39.4	2.719	0.031	0.031	0.001	0.774	0.66

Figure D4-4: Dewatering of the AN-102R2, batch 3B, insoluble solids concentrations from 1 to 22 wt% - Raw & Calculated Data



521	10/22/2002	11:58:32 PM	25.408	23.824	25.506	22.878	23.614	44.975	47.067	11.338	34.644	-1.284	-4.68	50.169	0.208	0.001	0	499.72	8.32861	45.6	12.3	39.8	2.745	0.031	0.031	0.001	0.768	0.65
522	10/22/2002	11:59:32 PM	25.445	23.805	25.347	22.849	23.565	44.811	46.994	11.505	34.196	-1.284	-4.694	50.202	0.208	0.001	0	500.72	8.34528	45.5	12.3	39.5	2.724	0.031	0.031	0.001	0.777	0.66
523	10/23/2002	12:00:32 AM	25.443	23.793	25.255	22.842	23.549	44.836	47.044	11.347	34.456	-1.284	-4.703	50.416	0.207	0.001	0	501.72	8.362	45.6	12.4	39.6	2.733	0.031	0.031	0.001	0.773	0.66
524	10/23/2002	12:01:32 AM	25.425	23.775	25.197	22.834	23.551	44.971	47.116	11.33	34.667	-1.286	-4.714	50.083	0.206	0.001	0	502.72	8.37867	45.6	12.3	39.8	2.745	0.031	0.031	0.001	0.767	0.65
525	10/23/2002	12:02:32 AM	25.387	23.762	25.044	22.851	23.517	44.973	47.162	11.554	34.233	-1.284	-4.726	50.228	0.206	0.001	0	503.72	8.39533	45.7	12.3	39.6	2.730	0.031	0.031	0.001	0.775	0.66
526	10/23/2002	12:03:32 AM	25.355	23.755	25.057	22.844	23.5	45.231	47.396	11.43	34.761	-1.281	-4.729	50.475	0.205	0.001	0	504.72	8.412	45.9	12.4	40.0	2.758	0.031	0.031	0.001	0.763	0.65
527	10/23/2002	12:04:32 AM	25.301	23.732	24.949	22.781	23.437	44.84	47.007	11.394	34.352	-1.286	-4.74	50.746	0.205	0.001	0	505.72	8.42867	45.5	12.4	39.6	2.730	0.031	0.031	0.001	0.773	0.66
528	10/23/2002	12:05:32 AM	25.28	23.73	24.872	22.759	23.446	45.207	47.185	11.272	34.995	-1.284	-4.738	50.162	0.204	0.001	0	506.72	8.44533	45.7	12.3	40.1	2.765	0.030	0.031	0.001	0.761	0.65
529	10/23/2002	12:06:32 AM	25.243	23.718	24.91	22.772	23.463	44.969	46.957	11.171	34.786	-1.284	-4.712	51.381	0.206	0.001	0	507.72	8.462	45.5	12.6	39.9	2.749	0.031	0.031	0.001	0.772	0.66
530	10/23/2002	12:07:32 AM	25.205	23.695	24.802	22.739	23.435	45.207	47.33	11.318	34.821	-1.281	-4.732	49.904	0.204	0.001	0	508.72	8.47867	45.9	12.2	40.0	2.759	0.030	0.031	0.001	0.764	0.65
531	10/23/2002	12:08:32 AM	25.152	23.667	24.749	22.701	23.413	45.06	47.243	11.377	34.563	-1.284	-4.738	50.167	0.204	0.001	0	509.72	8.49533	45.8	12.3	39.8	2.745	0.030	0.031	0.001	0.769	0.65
532	10/23/2002	12:09:32 AM	25.126	23.656	24.763	22.705	23.411	45.416	47.538	11.351	35.04	-1.286	-4.743	50.032	0.204	0.001	0	510.72	8.512	46.1	12.3	40.2	2.774	0.030	0.031	0.001	0.761	0.65
533	10/23/2002	12:10:32 AM	25.095	23.645	24.657	22.719	23.385	45.296	47.365	11.236	35.025	-1.284	-4.74	50.42	0.204	0.001	0	511.72	8.52867	45.9	12.4	40.2	2.769	0.030	0.031	0.001	0.765	0.65
534	10/23/2002	12:11:32 AM	25.063	23.623	24.67	22.667	23.348	45.302	47.598	11.259	34.827	-1.286	-4.738	49.839	0.204	0.001	0	512.72	8.54533	46.1	12.2	40.1	2.762	0.030	0.031	0.001	0.766	0.65
535	10/23/2002	12:12:32 AM	25.039	23.619	24.676	22.853	23.339	45.476	47.673	11.192	35.326	-1.284	-4.726	49.55	0.204	0.001	0	513.72	8.562	46.2	12.1	40.4	2.786	0.030	0.031	0.001	0.760	0.65
536	10/23/2002	12:13:32 AM	25.01	23.61	24.582	22.951	23.371	45.356	47.495	11.152	35.212	-1.284	-4.735	49.397	0.204	0.001	0	514.72	8.57867	46.0	12.1	40.3	2.777	0.030	0.031	0.001	0.764	0.65
537	10/23/2002	12:14:32 AM	24.971	23.581	24.623	23.007	23.361	45.598	47.853	11.209	35.33	-1.284	-4.74	49.271	0.204	0.001	0	515.72	8.59533	46.4	12.1	40.5	2.790	0.030	0.031	0.001	0.760	0.65
538	10/23/2002	12:15:32 AM	24.941	23.566	24.558	23.097	23.376	45.387	47.621	11.248	35.125	-1.289	-4.755	49.628	0.203	0.001	0	516.72	8.612	46.1	12.2	40.3	2.776	0.030	0.031	0.001	0.761	0.65
539	10/23/2002	12:16:32 AM	24.914	23.554	24.531	23.196	23.415	45.501	47.663	11.274	35.097	-1.286	-4.758	49.254	0.202	0.001	0	517.72	8.62867	46.2	12.1	40.3	2.778	0.030	0.031	0.001	0.757	0.64
540	10/23/2002	12:17:32 AM	24.893	23.553	24.586	23.24	23.429	45.751	47.781	11.283	35.433	-1.289	-4.761	49.141	0.202	0.001	0	518.72	8.64533	46.3	12.0	40.6	2.799	0.030	0.030	0.001	0.751	0.64
541	10/23/2002	12:18:32 AM	24.899	23.569	24.536	23.367	23.45	45.331	47.35	11.263	35.06	-1.284	-4.764	49.193	0.202	0.001	0	519.72	8.662	45.9	12.1	40.2	2.771	0.030	0.031	0.001	0.759	0.65
542	10/23/2002	12:19:32 AM	24.88	23.555	24.573	23.433	23.446	45.372	47.512	11.339	34.943	-1.284	-4.758	49.535	0.202	0.001	0	520.72	8.67867	46.0	12.1	40.2	2.769	0.030	0.030	0.001	0.759	0.65
543	10/23/2002	12:20:32 AM	24.866	23.551	24.594	23.489	23.452	45.608	47.7	11.221	35.386	-1.286	-4.764	48.873	0.202	0.001	0	521.72	8.69533	46.2	12.0	40.5	2.792	0.030	0.030	0.001	0.752	0.64
544	10/23/2002	12:21:32 AM	24.847	23.547	24.515	23.566	23.489	45.652	47.81	11.207	35.461	-1.284	-4.758	49.378	0.202	0.001	0	522.72	8.712	46.3	12.1	40.6	2.796	0.030	0.031	0.001	0.753	0.64
545	10/23/2002	12:22:32 AM	24.838	23.549	24.586	23.602	23.475	45.662	47.795	11.349	35.242	-1.286	-4.767	49.347	0.202	0.001	0	523.72	8.72867	46.3	12.1	40.5	2.789	0.030	0.030	0.001	0.753	0.64
546	10/23/2002	12:23:32 AM	24.83	23.545	24.548	23.729	23.476	45.577	47.594	11.306	35.216	-1.286	-4.778	49.28	0.201	0.001	0	524.72	8.74533	46.1	12.1	40.4	2.785	0.030	0.030	0.001	0.751	0.64
547	10/23/2002	12:24:32 AM	24.822	23.547	24.529	23.776	23.513	45.892	47.772	11.399	35.472	-1.286	-4.775	49.315	0.201	0.001	0	525.72	8.762	46.3	12.1	40.7	2.805	0.030	0.030	0.001	0.746	0.64
548	10/23/2002	12:25:32 AM	24.813	23.538	24.596	23.737	23.535	45.443	47.605	11.404	34.984	-1.284	-4.79	49.38	0.2	0.001	0	526.72	8.77867	46.1	12.1	40.2	2.773	0.030	0.030	0.001	0.750	0.64
549	10/23/2002	12:26:32 AM	24.82	23.55	24.527	23.839	23.577	45.493	47.313	11.449	35.05	-1.286	-4.784	49.531	0.2	0.001	0	527.72	8.79533	45.8	12.1	40.3	2.777	0.030	0.030	0.001	0.750	0.64
550	10/23/2002	12:27:32 AM	24.822	23.552	24.559	23.816	23.599	45.845	47.708	11.317	35.56	-1.286	-4.775	48.738	0.2	0.001	0	528.72	8.812	46.2	11.9	40.7	2.806	0.030	0.030	0.001	0.742	0.63
551	10/23/2002	12:28:32 AM	24.818	23.548	24.611	23.827	23.595	45.838	47.956	11.404	35.492	-1.284	-4.775	49.624	0.2	0.001	0	529.72	8.82867	46.5	12.2	40.7	2.804	0.030	0.030	0.001	0.741	0.63
552	10/23/2002	12:29:32 AM	24.84	23.565	24.552	23.91	23.592	45.575	47.509	11.31	35.361	-1.284	-4.781	49.43	0.202	0.001	0	530.72	8.84533	46.0	12.1	40.5	2.790	0.030	0.030	0.001	0.754	0.64
553	10/23/2002	12:30:32 AM	24.836	23.566	24.624	23.906	23.573	45.7	47.663	11.314	35.24	-1.281	-4.801	49.502	0.2	0.001	0	531.72	8.862	46.2	12.1	40.5	2.790	0.030	0.030	0.001	0.745	0.63
554	10/23/2002	12:31:32 AM	24.827	23.557	24.595	23.937	23.604	45.577	47.611	11.611	34.872	-1.284	-4.822	49.682	0.199	0.001	0	532.72	8.87867	46.1	12.2	40.2	2.773	0.030	0.030	0.001	0.746	0.63
555	10/23/2002	12:32:32 AM	24.828	23.558	24.55	23.897	23.574	45.536	47.629	11.378	35.111	-1.286	-4.822	49.493	0.199	0.001	0	533.72	8.89533	46.2	12.1	40.3	2.780	0.030	0.030	0.001	0.745	0.63
556	10/23/2002	12:33:32 AM	24.833	23.558	24.646	23.908	23.575	45.55	47.479	11.486	34.951	-1.286	-4.819	49.107	0.199	0.001	0	534.72	8.912	46.0	12.0	40.3	2.775	0.030	0.030	0.001	0.745	0.63
557	10/23/2002	12:34:32 AM	24.843	23.563	24.586	23.983	23.58	45.911	47.915	11.435	35.48	-1.286	-4.816	49.128	0.199	0.001	0	535.72	8.92867	46.4	12.0	40.7	2.806	0.030	0.030	0.001	0.738	0.63
558	10/23/2002	12:35:32 AM	24.833	23.563	24.601	23.953	23.58	46.259	48.329	11.41	35.844	-1.286	-4.796	49.837	0.2	0.001	0	536.72	8.94533	46.9	12.2	41.1	2.830	0.030	0.030	0.001	0.735	0.63
559	10/23/2002	12:36:32 AM	24.853	23.563	24.671	23.993	23.595	45.909	47.992	11.436	35.314	-1.286	-4.796	50.915	0.2	0.001	0	537.72	8.962	46.5	12.5	40.6	2.800	0.030	0.030	0.001	0.741	0.63
560	10/23/2002	12:37:32 AM	24.858	23.558	24.581	24.013	23.665	46.103	48.265	11.482	35.572	-1.289	-4.793	48.258	0.199	0.001	0	538.72	8.97867	46.8	11.8	40.8	2.816	0.030	0.030	0.001	0.735	0.63
561	10/23/2002	12:38:32 AM	24.862	23.567	24.645	23.952	23.614	46.046	48.198	11.392	35.594	-1.286	-4.784	48.931	0.2	0.001	0	539.72	8.99533	46.7	12.0	40.8	2.814	0.030	0.030	0.001	0.738	0.63
562	10/23/2002	12:39:32 AM	24.877	23.572	24.66	23.972	23.654	46.333	48.492	11.524	35.701	-1.286	-4.793	48.956	0.199	0.001	0	540.72	9.012	47.0	12.0	41.0	2.828	0.030	0.030	0.001	0.730	0.62
563	10/23/2002	12:40:32 AM	24.892	23.577	24.609	24.027	23.633	46.172	48.083	11.406	35.807	-1.284	-4.784	49.177	0.199	0.001	0	541.72	9.02867	46.6	12.1	41.0	2.826	0.030	0.030	0.001	0.732	0.62
564	10/23/2002	12:41:32 AM	24.89	23.575	24.704	23.98	23.617	46.004	47.985	11.368	35.674	-1.286	-4.778	48.933	0.199	0.001	0	542.72	9.04533	46.5	12.0	40.8	2.816	0.030	0.030	0.001	0.733	0.62
565	10/23/2002	12:42:32 AM	24.915	23.59	24.668	24.05	23.657	46.329	48.273	11.451	35.856	-1.286	-4.787	48.313	0.198	0.001	0	543.72	9.062	46.8	11.8	41.1	2.833	0.030	0.030	0.001	0.725	0.62
566	10/23/2002	12:43:32 AM	24.908	23.573	24.661	23.988	23.635	46.043	48.014	11.462	35.531	-1.286	-4.79	48.713	0.198	0.001	0	544.72	9.07867	46.5	11.9	40.8	2.812	0.030	0.030	0.001	0.731	0.62
567	10/23/2002	12:44:32 AM	24.928	23.588	24.746	24.003	23.675	46.424	48.291	11.582	35.858	-1.286	-4.784	48.831	0.198	0.001	0	545.72	9.09533	46.8	12.0	41.1	2.837	0.030	0.030	0.001	0.723	0.62
568	10/23/2002	12:45:32 AM	24.926	23.581	24.654	24.031	23.684	46.447	48.536	11.308	36.018	-1.289	-4.772	48.136	0.199	0.001	0	546.72	9.112	47.1	11.8	41.2	2.843	0.030	0.030	0.001	0.727	0.62
569	10/23/2002	12:46:32 AM	24.935	23.585	24.723	24.015	23.677	46.396	48.529	11.215	36.116	-1.286	-4.758	48.531	0.2	0.001	0	547.72	9.12867	47.1	11.9	41.3	2.844	0.030	0.030	0.001	0.728	0.62
570	10/23/2002	12:47:32 AM	24.949	23.594	24.752	24.039	23.681	46.288	48.383	11.543	35.607	-1.286	-4.787	48.325	0.198	0.001	0	548.72	9.14533	46.9	11.8	40.9	2.823	0.030	0.030	0.001	0.726	0.62
571	10/23/2002	12:48:32 AM	24.957	23.592	25.006	24.062	23.734	45.289	47.241	11.764	34.44	-1.286	-4.833	50.211	0.194	0.001	0	549.72	9.162	45.8	12.3	39.9	2.749	0.029	0.029	0.001	0.725	0.62
572	10/23/2002	12:49:32 AM	25.016	23.6	25.359	24.056	23.683	45.323	47.346	11.714	34.56	-1.284	-4.822	50.087	0.195	0.001	0	550.72	9.17867	45.9	12.3	39.9	2.754	0.029	0.029	0.001	0.721	0.61
573	10/23/2002	12:50:32 AM	25.105	23.584	25.473	24.1	23.717	45.453	47.617	11.644	34.765	-1.289	-4.819	50.704	0.195	0.001	0	551.72	9.19533	46.1	12.4	40.1	2.765	0.029	0.029	0.001	0.715	0.61
574	10/23/2002	12:51:32 AM	25.229	23.598	25.618	24.144	23.726	45.205	47.21	11.599	34.569	-1.286	-4.819	51.173	0.195	0.001	0	552.72	9.212	45.7	12.5	39.9	2.750	0.029	0.029	0.001	0.716	0.61
575	10/23/2002	12:52:32 AM	25.364	23.618	25.792	24.134	23.746	45.178	47.183	11.58	34.497	-1.289	-4.813	50.555	0.196	0.001	0	553.72	9.22867	45.7	12.4	39.8	2.747	0.029	0.029	0.001	0.717	0.61
576	10/23/2002	12:53:32 AM	25.462	23.622	25.601	24.177	23.754	45.043	47.048	11.559	34.417	-1.286	-4.822	50.565	0.195	0.001	0	554.72	9.24533	45.6	12.4	39.7	2.739	0.029	0.029	0.001	0.720	0.61
577	10/23/2002	12:54:32 AM	25.536	23.635	25.554	24.115	23.747	45.24	47.009	11.613	34.571	-1.284	-4.827	50.98	0.195	0.001	0	555.72	9.262	45.5	12.5	39.9	2.751	0.029	0.029	0.001	0.717	0.61
578	10/23/2002	12:55:32 AM	25.529	23.613	25.432	24.139	23.776	45.039	47.069	11.411	34.47	-1.289	-4.827	50.194	0.195	0.001	0	556.72	9.27867	45.6	12.3	39.8	2.741	0.029	0.029	0.001	0.722	0.61
579	10/23/2002	12:56:32 AM	25.531	23.621	25.299	24.186	23.793	45.242	47.274	11.399	34.81	-1.286	-4.824	50.028	0.194	0.001	0	557.72	9.29533	45.8	12.3	40.0	2.760	0.029	0.029	0.001	0.717	0.61
580	10/23/2002	12:57:32 AM	25.501	23.635	25.289	24.176	23.803	45.501	47.621	11.404	34.99	-1.286	-4.824	49.89	0.194	0.001	0	558.72	9.312	46.1	12.2	40.2	2.775	0.029	0.029	0.001	0.713	0.61
581	10/23/2002	12:58:32 AM	25.474	23.633	25.182	24.244	23.816	45.633	47.611	11.381	35.175	-1.289	-4.83	49.951	0.194	0.001	0	559.72	9.32867	46.1	12.2	40.4	2.786	0.029	0.029	0.001	0.712	0.61
582	10/23/2002	12:59:32 AM	25.458	23.652	25.121	24.278	23.81	45.551	47.479	11.375	35.156	-1.286	-4.83	50.693	0.193	0.001	0	560.72	9.34533	46.0	12.4	40.4	2.782	0.029	0.029	0.001	0.711	0.60
583	10/23/2002	1:00:32 AM	25.431	23.65	25.119	24.231	23.813	45.522	47.598	11.36	35.181	-1.286	-4.839	49.672	0.192	0.001	0	561.72	9.362	46.1	12.2	40.4	2.782	0.029	0.029	0.001	0.707	0.60
584	10/23/2002	1:01:32 AM	25.409	23.653	25.002	24.274	23.821	45.629	47.814	11.426	35.171	-1.286	-4.845	50.309	0.192	0.001	0	562.72	9.37867	46.3	12.3	40.4	2.785	0.029	0.029	0.001	0.709	0.60
585	10/23/2002	1:02:32 AM	25.381	23.656	24.999	24.236	23.813	45.267	47.27	11.44	34.704	-1.284	-4.845	50.223	0.192	0.001	0	563.72	9.39533	45.8	12.3	40.0	2.757	0.029	0.029	0.001	0.716	0.61
586	10/23/2002	1:03:32 AM	25.343	23.648	24.966	24.243	23.835	45.726	47.752	11.435	35.171	-1.289	-4.856	49.762	0.192	0.001	0	564.72	9.412	46.3	12.2	40.4	2.789	0.029	0.029	0.001	0.708	0.60
587	10/23/2002	1:04:32 AM	25.327	23.656	24.869	24.267	23.884	45.656	47.654	11.259	35.388	-1.286	-4.845	49.498	0.191	0.001	0	565.72	9.42867	46.2	12.1	40.5	2.794	0.028	0.029	0.001	0.705	0.60
588	10/23/2002	1:05:32 AM	25.304	23.664	24.907	24.244	23.857	45.724	47.679	11.33	35.396	-1.284	-4.856	48.78	0.192	0.001	0	566.72	9.44533	46.2	12.0	40.6	2.796	0.029	0.029	0.001	0.708	0.60
589	10/23/2002	1:06:32 AM	25.277	23.657	24.855	24.282	23.849	45.437	47.373	11.371	34.945	-1.289	-4.868	49.523	0.191	0.001	0	567.72	9.462	45.9	12.1	40.2	2.771	0.028	0.029	0.001	0.711	0.61
590	10/23/2002	1:07:32 AM	25.245	23.675	24.813	24.28	23.862	45.958	47.901	11.348	35.65	-1.284	-4.865	49.28	0.191	0.001	0	568.72	9.47867	46.4	12.1	40.8	2.813	0.028	0.029	0.001	0.702	0.60
591	10/23/2002	1:08:32 AM	25.217	23.672	24.855	24.222	23.879	45.685	47.679	11.548	35.101	-1.286	-4.888	49.644	0.19	0.001	0	569.72	9.49533	46.2	12.2	40.4	2.785	0.028	0.028	0.001	0.704	0.60
592	10/23/2002	1:09:32 AM	25.189	23.674	24.772	24.254	23.886	45.737	47.832	11.58	35.056	-1.286	-4.891	50.326	0.188	0.001	0	570.72	9.512	46.4	12.3	40.4	2.785	0.028	0.028	0.001	0.698	0.59
593	10/23/2002	1:10:32 AM	25.191	23.686	24.804	24.301	23.879	45.482	47.392	11.56	34.876	-1.286	-4.891	49.846	0.188	0.001	0	571.72	9.52867	45.9	12.2	40.2	2.770	0.028	0.028	0.001	0.701	0.60
594	10/23/2002	1:11:32 AM	25.162	23.682	24.821	24.238	23.89	45.312	47.234	11.631	34.55	-1.286	-4.882	50.68	0.189	0.001	0	572.72	9.54533	45.8	12.4	39.9	2.753	0.028	0.028	0.001	0.709	0.60
595	10/23/2002	1:12:32 AM	25.154	23.684	24.733	24.265	23.887	45.507	47.512	11.626	34.806	-1.286	-4.885	51.243	0.188	0.001	0	573.72	9.562	46.0	12.6	40.2	2.769	0.028	0.028	0.001	0.703	0.60
596	10/23/2002	1:13:32 AM	25.136	23.686	24.779	24.221	23.893	44.863	46.676	11.408	34.513	-1.286	-4.9	48.495	0.187	0.001	0	574.72	9.57867	45.2	11.9	39.7	2.736	0.028	0.028	0.001	0.707	0.60
597	10/23/2002	1:14:32 AM	25.128	23.693	24.766	24.303	23.901	45.186	47.174	11.591	34.573	-1.289	-4.908	49.43	0.186	0.001	0	575.72	9.59533	45.7	12.1	39.9	2.750	0.028	0.028	0.001	0.700	0.60
598	10/23/2002	1:15:32 AM	25.119	23.704	24.707	24.335	23.922	45.418	47.303	11.501	34.925	-1.286	-4.903	49.779	0.186	0.001	0	576.72	9.612	45.8	12.2	40.2	2.770	0.028	0.028	0.001	0.696	0.59
599	10/23/2002	1:16:32 AM	25.101	23.701	24.764	24.306	23.919	45.058	47.021	11.583	34.45	-1.286	-4.9	49.928	0.186	0.001	0	577.72	9.62867	45.5	12.2	39.8	2.741	0.028	0.028	0.001	0.702	0.60
600	10/23/2002	1:17:32 AM	25.093	23.708	24.701	24.354	23.956	45.316	47.309	11.533	34.759	-1.286	-4.894	49.76	0.186	0.001	0	578.72	9.64533	45.8	12.2	40.0	2.760	0.028	0.028	0.001	0.698	0.59
601	10/23/2002	1:18:32 AM	25.065	23.71	24.693	24.326	23.953	45.422	47.389	11.496	34.913	-1.289	-4.894	49.11	0.186	0.001	0	579.72	9.662	45.9	12.0	40.2	2.769	0.028	0.028	0.001	0.696	0.59
602	10/23/2002	1:19:32 AM	25.078	23.723	24.766	24.243	23.956	45.751	47.702	11.559	35.068	-1.286	-4.894	48.973	0.186	0.001	0	580.72	9.67867	46.2	12.0	40.4	2.786	0.028	0.028	0.001	0.691	0.59
603	10/23/2002	1:20:32 AM	25.059	23.719	24.662	24.25	23.962	45.412	47.278	11.533	34.777	-1.289	-4.891	48.701	0.186	0.001	0	581.72	9.69533	45.8	11.9	40.1	2.764	0.028	0.028	0.001	0.698	0.59
604	10/23/2002	1:21:32 AM	25.056	23.726	24.709	24.237	23.959	45.675	47.385	11.471	35.214	-1.286	-4.836	50.859	0.188	0.001	0	582.72	9.712	45.9	12.5	40.4	2.789	0.028	0.028	0.001	0.699	0.59
605	10/23/2002	1:22:32 AM	25.053	23.728	24.731	24.303	23.971	45.696	47.648	11.497	35.228	-1.289	-4.9	49.244	0.188	0.001	0	583.72	9.72867	46.2	12.1	40.5	2.790	0.028	0.028	0.001	0.698	0.59
606	10/23/2002	1:23:32 AM	25.038	23.719	24.636	24.309	23.976	45.573	47.361	11.505	35.101	-1.286	-4.923	49.061	0.187	0.001	0	584.72	9.74533	45.9	12.0	40.3	2.781	0.028	0.028	0.001	0.698	0.59
607	10/23/2002	1:24:32 AM	25.046	23.726	24.729	24.266	23.984	45.258	47.063	11.385	34.882	-1.289	-4.937	49.244	0.185	0.001	0	585.72	9.762	45.6	12.1	40.1	2.763	0.028	0.028	0.001	0.694	0.59
608	10/23/2002	1:25:32 AM	25.046	23.736	24.689	24.322	23.989	45.553	47.452	11.49	35.052	-1.286	-4.946	48.438	0.186	0.001	0	586.72	9.77867	46.0	11.9	40.3	2.779	0.028	0.028	0.001	0.694	0.59
609	10/23/2002	1:26:32 AM	25.043	23.738	24.671	24.228	23.996	45.762	47.603	11.509	35.255	-1.289	-4.946	49.045	0.186	0.001	0	587.72	9.79533	46.1	12.0	40.5	2.793	0.028	0.028	0.001	0.691	0.59
610	10/23/2002	1:27:32 AM	25.044	23.744	24.752	24.27	24.012	45.598	47.412	11.499	35.078	-1.286	-4.949	48.606	0.186	0.001	0	588.72	9.812	45.9	11.9	40.3	2.781	0.028	0.028	0.001	0.692	0.59
611	10/23/2002	1:28:32 AM	25.035	23.736	24.644	24.286	24.024	45.515	47.458	11.57	34.786	-1.292	-4.952	48.709	0.186	0.001	0	589.72	9.82867	46.0	11.9	40.2	2.768	0.028	0.028	0.001	0.698	0.59
612	10/23/2002	1:29:32 AM	25.038	23.753	24.726	24.369	24.031	45.673	47.441	11.791	34.798	-1.286	-4.966	49.215	0.183	0.001	0	590.72	9.84533	46.0	12.1	40.2	2.774	0.027	0.027	0.001	0.683	0.58
613	10/23/2002	1:30:32 AM	25.039	23.749	24.747	24.375	24.032	45.588	47.54	11.816	34.702	-1.289	-4.978	49.464	0.183	0.001	0	591.72	9.862	46.1	12.1	40.1	2.768	0.027	0.027	0.001	0.684	0.58
614	10/23/2002	1:31:32 AM	25.05	23.76	24.688	24.421	24.018	45.586	47.51	11.738	34.929	-1.289	-4.932	50.171	0.182	0.001	0	592.72	9.87867	46.0	12.3	40.3	2.776	0.027	0.027	0.001	0.680	0.58
615	10/23/2002	1:32:32 AM	25.052	23.762	24.78	24.333	24.025	45.629	47.493	11.94	34.63	-1.286	-4.946	50.024	0.183	0.001	0	593.72	9.89533	46.0	12.3	40.1	2.767	0.027	0.027	0.001	0.684	0.58
616	10/23/2002	1:33:32 AM	25.058	23.768	24.766	24.374	24.051	45.486	47.443	11.929	34.524	-1.286	-4.955	49.651	0.182	0.001	0	594.72	9.912	46.0	12.2	40.0	2.758	0.027	0.027	0.001	0.683	0.58
617	10/23/2002	1:34:32 AM	25.068	23.779	24.762	24.384	24.047	45.695	47.532	11.942	34.704	-1.284	-4.952	50.269	0.182	0.001	0	595.72	9.92867	46.1	12.3	40.2	2.772	0.027	0.027	0.001	0.680	0.58
618	10/23/2002	1:35:32 AM	25.079	23.774	24.903	24.315	24.052	45.801	47.638	11.887	35.007	-1.286	-4.949	49.646	0.182	0.001	0	596.72	9.94533	46.2	12.2	40.4	2.786	0.027	0.027	0.001	0.673	0.57
619	10/23/2002	1:36:32 AM	25.096	23.781	25.059	24.371	24.039	45.459	47.238	11.742	34.712	-1.289	-4.94	50.15	0.182	0.001	0	597.72	9.962	45.8	12.3	40.1	2.764	0.027	0.027	0.001	0.676	0.58
620	10/23/2002	1:37:32 AM	25.136	23.787	25.28	24.342	24.05	45.074	47.075	11.635	34.452	-1.289	-4.929	50.024	0.183	0.001	0	598.72	9.97867	45.6	12.3	39.8	2.742	0.027	0.027	0.001	0.681	0.58
621	10/23/2002	1:38:24 AM	25.208	23.788	25.422	24.359	24.041	45.082	46.982	11.725	34.253	-1.286	-4.932	50.209	0.182	0.001	0	599.59	9.99311	45.5	12.3	39.7	2.735	0.027	0.027	0.001	0.676	0.58
622	10/23/2002	1:39:24 AM	25.294	23.794	25.463	24.364	24.057	44.693	46.531	11.629	34.043	-1.284	-4.923	51.234	0.182	0.001	0	600.59	10.0098	45.1	12.6	39.4	2.714	0.027	0.027	0.001	0.680	0.58
623	10/23/2002	1:40:24 AM	25.375	23.8	25.614	24.356	24.058	44.714	46.63	11.591	34.102	-1.289	-4.932	51.326	0.182	0.001	0	601.59	10.0264	45.2	12.6	39.4	2.717	0.027	0.027	0.001	0.677	0.58
624	10/23/2002	1:41:24 AM	25.457	23.802	25.531	24.447	24.05	44.782	46.742	11.638	34.1	-1.286	-4.94	50.888	0.182	0.001	0	602.59	10.0431	45.3	12.5	39.4	2.719	0.027	0.027	0.001	0.678	0.58
625	10/23/2002	1:42:24 AM	25.507	23.792	25.436	24.372	24.07	44.84	46.802	11.615	34.114	-1.286	-4.934	50.551	0.181	0.001	0	603.59	10.0598	45.3	12.4	39.5	2.722	0.027	0.027	0.001	0.675	0.57
626	10/23/2002	1:43:24 AM	25.533	23.808	25.397	24.399	24.061	44.989	46.897	11.536	34.43	-1.289	-4.949	50.609	0.18	0.001	0	604.59	10.0764	45.4	12.4	39.7	2.738	0.027	0.027	0.001	0.668	0.57
627	10/23/2002	1:44:24 AM	25.54	23.81	25.243	24.43	24.093	45.012	46.914	11.593	34.29	-1.289	-4.952	50.395	0.181	0.001	0	605.59	10.0931	45.4	12.4	39.7	2.734	0.027	0.027	0.001	0.676	0.58
628	10/23/2002	1:45:24 AM	25.515	23.81	25.233	24.43	24.033	44.91	46.773	11.65	34.2	-1.286	-4.949	50.72	0.18	0.001	0	606.59	10.1098	45.3	12.4	39.6	2.727	0.027	0.027	0.001	0.674	0.57
629	10/23/2002	1:46:24 AM	25.487	23.812	25.17	24.447	24.05	45.122	47.007	11.587	34.507	-1.289	-4.966	50.11	0.179	0.001	0	607.59	10.1264	45.5	12.3	39.8	2.745	0.027	0.027	0.001	0.667	0.57
630	10/23/2002	1:47:24 AM	25.463	23.818	25.071	24.458	24.056	44.857	46.85	11.664	34.071	-1.286	-4.958	50.184	0.179	0.001	0	608.59	10.1431	45.4	12.3	39.5	2.721	0.027	0.027	0.001	0.675	0.57
631	10/23/2002	1:48:24 AM	25.439	23.819	25.082	24.42	24.067	44.985	46.81	11.659	34.284	-1.286	-4.966	50.406	0.179	0.001	0	609.59	10.1598	45.3	12.4	39.6	2.733	0.027	0.027	0.001	0.672	0.57
632	10/23/2002	1:49:24 AM	25.421	23.826	25.004	24.451	24.058	44.77	46.781	11.733	33.912	-1.286	-4.972	49.588	0.178	0.001	0	610.59	10.1764	45.3	12.2	39.3	2.712	0.027	0.027	0.001	0.674	0.57
633	10/23/2002	1:50:24 AM	25.382	23.822	24.95	24.397	24.07	45.12	47.063	11.711	34.339	-1.289	-4.969	50.116	0.178	0.001	0	611.59	10.1931	45.6	12.3	39.7	2.739	0.027	0.027	0.001	0.669	0.57
634	10/23/2002	1:51:24 AM	25.373	23.828	24.982	24.354	24.071	44.844	46.763	11.681	34.069	-1.286	-4.969	50.681	0.178	0.001	0	612.59	10.2098	45.3	12.4	39.5	2.720	0.027	0.027	0.001	0.673	0.57
635	10/23/2002	1:52:24 AM	25.35	23.835	24.883	24.43	24.103	45.263	47.021	11.674	34.616	-1.286	-4.966	50.544	0.177	0.001	0	613.59	10.2264	45.5	12.4	39.9	2.754	0.026	0.026	0.001	0.663	0.56
636	10/23/2002	1:53:24 AM	25.326	23.836	24.875	24.382	24.104	45.37	47.269	11.69	34.599	-1.289	-4.961	50.779	0.177	0.001	0	614.59	10.2431	45.8	12.4	40.0	2.757	0.026	0.026	0.001	0.662	0.56
637	10/23/2002	1:54:24 AM	25.313	23.838	24.891	24.403	24.106	44.832	46.668	11.589	34.188	-1.286	-4.958	50.181	0.177	0.001	0	615.59	10.2598	45.2	12.3	39.5	2.724	0.026	0.026	0.001	0.670	0.57
638	10/23/2002	1:55:24 AM	25.289	23.844	24.792	24.405	24.117	44.867	46.688	11.634	34.143	-1.284	-4.955	49.883	0.177	0.001	0	616.59	10.2764	45.2	12.2	39.5	2.724	0.026	0.027	0.001	0.672	0.57
639	10/23/2002	1:56:24 AM	25.265	23.845	24.838	24.35	24.078	44.921	46.684	11.69	34.196	-1.286	-4.955	50.267	0.176	0.001	0	617.59	10.2931	45.2	12.3	39.6	2.727	0.026	0.026	0.001	0.666	0.57
640	10/23/2002	1:57:24 AM	25.241	23.847	24.795	24.402	24.084	45.004	46.754	11.656	34.329	-1.289	-4.958	50.255	0.176	0.001	0	618.59	10.3098	45.3	12.3	39.7	2.735	0.026	0.026	0.001	0.665	0.57
641	10/23/2002	1:58:24 AM	25.227	23.852	24.745	24.383	24.09	45.045	46.905	11.528	34.542	-1.289	-4.955	50.24	0.177	0.001	0	619.59	10.3264	45.4	12.3	39.8	2.744	0.026	0.027	0.001	0.668	0.57
642	10/23/2002	1:59:24 AM	25.218	23.863	24.826	24.368	24.076	45.08	47.059	11.761	34.11	-1.284	-4.952	50.469	0.176	0.001	0	620.59	10.3431	45.6	12.4	39.6	2.730	0.026	0.026	0.001	0.666	0.57
643	10/23/2002	2:00:24 AM	25.183	23.849	24.727	24.369	24.042	45.116	46.982	11.688	34.384	-1.286	-4.955	49.722	0.176	0.001	0	621.59	10.3598	45.5	12.2	39.8	2.741	0.026	0.026	0.001	0.665	0.57
644	10/23/2002	2:01:24 AM	25.168	23.854	24.742	24.339	24.042	45.232	46.994	11.674	34.53	-1.286	-4.955	50.162	0.176	0.001	0	622.59	10.3764	45.5	12.3	39.9	2.750	0.026	0.026	0.001	0.663	0.56
645	10/23/2002	2:02:24 AM	25.164	23.86	24.777	24.35	24.047	45.037	47.098	11.643	34.292	-1.286	-4.952	49.107	0.176	0.001	0	623.59	10.3931	45.6	12.0	39.7	2.735	0.026	0.026	0.001	0.666	0.57
646	10/23/2002	2:03:24 AM	25.144	23.86	24.692	24.36	24.102	45.327	47.212	11.75	34.511	-1.286	-4.952	50.167	0.176	0.001	0	624.59	10.4098	45.7	12.3	39.9	2.752	0.026	0.026	0.001	0.663	0.56
647	10/23/2002	2:04:24 AM	25.135	23.855	24.748	24.35	24.083	45.29	47.218	11.623	34.622	-1.289	-4.952	50.049	0.176	0.001	0	625.59	10.4264	45.7	12.3	40.0	2.755	0.026	0.026	0.001	0.661	0.56
648	10/23/2002	2:05:24 AM	25.125	23.861	24.739	24.366	24.074	45.19	47.203	11.701	34.415	-1.286	-4.949	50.257	0.175	0.001	0	626.59	10.4431	45.7	12.3	39.8	2.744	0.026	0.026	0.001	0.660	0.56
649	10/23/2002	2:06:24 AM	25.115	23.856	24.689	24.346	24.034	45.18	47.003	11.738	34.313	-1.286	-4.946	50.429	0.175	0.001	0	627.59	10.4598	45.5	12.4	39.7	2.740	0.026	0.026	0.001	0.662	0.56
650	10/23/2002	2:07:24 AM	25.1	23.856	24.759	24.301	24.044	45.124	46.941	11.743	34.343	-1.289	-4.952	49.957	0.175	0.001	0	628.59	10.4764	45.5	12.2	39.7	2.739	0.026	0.026	0.001	0.661	0.56

Figure D4-5: Dewatering of the AN-102R2, batch 3B, insoluble solids concentrations from 1 to 22 wt% - Raw & Calculated Data

651	10/23/2002	2:08:24 AM	25.096	23.862	24.705	24.332	24.055	45.323	47.282	11.662	34.606	-1.286	-4.955	49.527	0.175	0.001	0	629.59	10.4931	45.8	12.1	40.0	2.755	0.026	0.026	0.001	0.658	0.56									
652	10/23/2002	2:09:24 AM	25.092	23.868	24.72	24.318	24.045	45.441	47.487	11.769	34.583	-1.286	-4.949	50.079	0.175	0.001	0	630.59	10.5098	46.0	12.3	40.0	2.759	0.026	0.026	0.001	0.657	0.56									
653	10/23/2002	2:10:24 AM	25.097	23.868	24.765	24.318	24.04	45.397	47.381	11.744	34.636	-1.286	-4.949	49.705	0.175	0.001	0	631.59	10.5264	45.9	12.2	40.0	2.759	0.026	0.026	0.001	0.656	0.56									
654	10/23/2002	2:11:24 AM	25.088	23.863	24.666	24.353	24.051	45.374	47.435	11.699	34.556	-1.289	-4.958	50.119	0.175	0.001	0	632.59	10.5431	46.0	12.3	40.0	2.755	0.026	0.026	0.001	0.659	0.56									
655	10/23/2002	2:12:24 AM	25.083	23.863	24.736	24.248	24.051	45.345	47.199	11.788	34.436	-1.289	-5.001	49.653	0.177	0.001	0	633.59	10.5598	45.7	12.2	39.9	2.760	0.026	0.026	0.001	0.666	0.57									
656	10/23/2002	2:13:24 AM	26.073	23.863	24.721	24.233	24.046	45.432	47.065	11.741	34.679	-1.289	-5.079	49.37	0.175	0.001	0	634.59	10.5764	45.6	12.1	40.1	2.762	0.026	0.026	0.001	0.657	0.56									
657	10/23/2002	2:14:24 AM	25.098	23.878	24.706	24.303	24.011	45.55	47.561	11.77	34.685	-1.286	-5.091	49.332	0.175	0.001	0	635.59	10.5931	46.1	12.1	40.1	2.766	0.026	0.026	0.001	0.656	0.56									
658	10/23/2002	2:15:24 AM	25.088	23.868	24.776	24.253	24.011	45.464	47.162	11.707	34.737	-1.284	-5.094	50.19	0.175	0.001	0	636.59	10.6098	45.7	12.3	40.1	2.765	0.026	0.026	0.001	0.655	0.56									
659	10/23/2002	2:16:24 AM	25.088	23.863	24.711	24.288	24.011	45.621	47.454	11.821	34.732	-1.286	-5.097	49.233	0.174	0.001	0	637.59	10.6264	46.0	12.1	40.2	2.770	0.026	0.026	0.001	0.651	0.55									
660	10/23/2002	2:17:24 AM	25.093	23.873	24.741	24.288	24.036	45.71	47.601	11.798	34.888	-1.289	-5.091	49.544	0.175	0.001	0	638.59	10.6431	46.1	12.1	40.3	2.778	0.026	0.026	0.001	0.652	0.56									
661	10/23/2002	2:18:24 AM	25.093	23.873	24.801	24.268	24.016	45.526	47.379	11.819	34.599	-1.286	-5.091	49.227	0.174	0.001	0	639.59	10.6598	45.9	12.1	40.1	2.762	0.026	0.026	0.001	0.651	0.55									
662	10/23/2002	2:19:24 AM	25.098	23.863	24.716	24.273	23.996	45.592	47.476	11.839	34.579	-1.286	-5.085	49.607	0.174	0.001	0	640.59	10.6764	46.0	12.2	40.1	2.764	0.026	0.026	0.001	0.652	0.56									
663	10/23/2002	2:20:24 AM	25.098	23.868	24.791	24.208	23.976	45.722	47.532	11.749	35.005	-1.284	-5.076	49.059	0.174	0.001	0	641.59	10.6931	46.1	12.0	40.4	2.783	0.026	0.026	0.001	0.647	0.55									
664	10/23/2002	2:21:24 AM	25.113	23.883	24.806	24.218	23.986	45.476	47.309	11.669	34.958	-1.286	-5.082	50.232	0.174	0.001	0	642.59	10.7098	45.8	12.3	40.2	2.773	0.026	0.026	0.001	0.649	0.55									
665	10/23/2002	2:22:24 AM	25.113	23.883	24.751	24.253	23.976	45.632	47.596	11.766	35.097	-1.286	-5.076	49.294	0.174	0.001	0	643.59	10.7264	46.1	12.1	40.5	2.790	0.026	0.026	0.001	0.646	0.55									
666	10/23/2002	2:23:24 AM	25.113	23.878	24.831	24.238	23.986	45.457	47.319	11.831	34.53	-1.286	-5.073	49.768	0.174	0.001	0	644.59	10.7431	45.8	12.2	40.0	2.757	0.026	0.026	0.001	0.652	0.55									
667	10/23/2002	2:24:24 AM	25.118	23.873	24.776	24.268	23.996	45.662	47.493	11.862	34.739	-1.289	-5.073	49.288	0.174	0.001	0	645.59	10.7598	46.0	12.1	40.2	2.772	0.026	0.026	0.001	0.649	0.55									
668	10/23/2002	2:25:24 AM	25.128	23.879	24.802	24.264	23.981	45.656	47.497	11.729	35.001	-1.286	-5.068	49.233	0.174	0.001	0	646.59	10.7764	46.0	12.1	40.3	2.781	0.026	0.026	0.001	0.647	0.55									
669	10/23/2002	2:26:24 AM	25.138	23.879	24.872	24.279	23.971	45.509	47.296	11.815	34.634	-1.286	-5.071	48.55	0.173	0.001	0	647.59	10.7931	45.8	11.9	40.1	2.763	0.026	0.026	0.001	0.646	0.55									
670	10/23/2002	2:27:24 AM	25.143	23.879	24.782	24.314	23.961	45.774	47.541	11.815	34.96	-1.286	-5.065	49.25	0.173	0.001	0	648.59	10.8098	46.1	12.1	40.4	2.783	0.026	0.026	0.001	0.643	0.55									
671	10/23/2002	2:28:24 AM	25.149	23.89	24.873	24.285	23.967	45.82	47.805	11.879	34.89	-1.284	-5.059	49.596	0.174	0.001	0	649.59	10.8264	46.3	12.2	40.4	2.782	0.026	0.026	0.001	0.645	0.55									
672	10/23/2002	2:29:24 AM	25.159	23.88	24.878	24.315	23.987	45.851	47.596	11.885	35.037	-1.289	-5.068	49.718	0.173	0.001	0	650.59	10.8431	46.1	12.2	40.4	2.786	0.026	0.026	0.001	0.640	0.54									
673	10/23/2002	2:30:24 AM	25.164	23.88	24.823	24.3	23.987	45.695	47.586	11.786	34.866	-1.289	-5.062	49.238	0.173	0.001	0	651.59	10.8598	46.1	12.1	40.3	2.777	0.026	0.026	0.001	0.644	0.55									
674	10/23/2002	2:31:24 AM	25.159	23.87	24.908	24.204	23.982	45.909	47.783	11.874	34.943	-1.289	-5.062	49.519	0.173	0.001	0	652.59	10.8764	46.3	12.1	40.4	2.787	0.026	0.026	0.001	0.640	0.54									
675	10/23/2002	2:32:24 AM	25.169	23.87	24.863	24.29	23.992	45.782	47.735	11.92	34.778	-1.289	-5.062	49.473	0.173	0.001	0	653.59	10.8931	46.3	12.1	40.3	2.777	0.026	0.026	0.001	0.643	0.55									
676	10/23/2002	2:33:24 AM	25.168	23.869	24.862	24.234	23.976	45.793	47.716	11.837	34.951	-1.292	-5.059	48.827	0.173	0.001	0	654.59	10.9098	46.2	12.0	40.4	2.784	0.026	0.026	0.001	0.641	0.55									
677	10/23/2002	2:34:24 AM	25.184	23.875	24.948	24.26	23.982	45.826	47.64	11.902	34.861	-1.289	-5.059	49.149	0.173	0.001	0	655.59	10.9264	46.2	12.0	40.3	2.782	0.026	0.026	0.001	0.640	0.54									
678	10/23/2002	2:35:24 AM	25.199	23.88	24.873	24.27	24.007	45.849	47.638	11.877	35.009	-1.286	-5.059	49.074	0.173	0.001	0	656.59	10.9431	46.2	12.0	40.4	2.787	0.026	0.026	0.001	0.640	0.54									
679	10/23/2002	2:36:24 AM	25.183	23.868	25.036	24.223	23.991	45.714	47.658	11.815	34.861	-1.286	-5.059	50.066	0.173	0.001	0	657.59	10.9598	46.2	12.3	40.3	2.778	0.026	0.026	0.001	0.640	0.54									
680	10/23/2002	2:37:24 AM	25.213	23.873	25.172	24.278	23.996	45.586	47.52	11.802	34.734	-1.289	-5.045	49.739	0.174	0.001	0	658.59	10.9764	46.0	12.2	40.2	2.769	0.026	0.026	0.001	0.643	0.55									
681	10/23/2002	2:38:24 AM	25.264	23.889	25.122	24.274	24.017	45.395	47.156	11.696	34.726	-1.289	-5.05	48.562	0.172	0.001	0	659.59	10.9931	45.7	11.9	40.1	2.762	0.026	0.026	0.001	0.638	0.54									
682	10/23/2002	2:39:24 AM	25.304	23.889	25.167	24.249	23.997	45.428	47.346	11.729	34.702	-1.289	-5.059	49.447	0.171	0.001	0	660.59	11.0098	45.9	12.1	40.1	2.762	0.025	0.025	0.001	0.633	0.54									
683	10/23/2002	2:40:24 AM	25.314	23.879	25.057	24.259	23.992	45.687	47.58	11.683	34.99	-1.289	-5.056	49.777	0.171	0.001	0	661.59	11.0264	46.1	12.2	40.3	2.781	0.025	0.025	0.001	0.631	0.54									
684	10/23/2002	2:41:24 AM	25.329	23.879	25.067	24.244	23.961	45.59	47.321	11.616	35.021	-1.284	-5.042	48.799	0.173	0.001	0	662.59	11.0431	45.8	12.0	40.3	2.779	0.026	0.026	0.001	0.639	0.54									
685	10/23/2002	2:42:24 AM	25.319	23.87	25.073	24.25	23.962	45.681	47.468	11.642	34.97	-1.289	-5.045	48.568	0.172	0.001	0	663.59	11.0598	46.0	11.9	40.3	2.780	0.026	0.026	0.001	0.635	0.54									
686	10/23/2002	2:43:24 AM	25.335	23.886	24.974	24.25	23.988	45.994	47.961	11.749	35.177	-1.286	-5.045	47.681	0.171	0.001	0	664.59	11.0764	46.5	11.7	40.6	2.798	0.025	0.025	0.001	0.629	0.53									
687	10/23/2002	2:44:24 AM	25.319	23.885	25.028	24.214	23.967	45.685	47.493	11.691	35.019	-1.289	-5.042	48.923	0.171	0.001	0	665.59	11.0931	46.0	12.0	40.4	2.782	0.025	0.025	0.001	0.631	0.54									
688	10/23/2002	2:45:24 AM	25.319	23.88	25.008	24.234	23.967	45.799	47.822	11.721	34.929	-1.289	-5.045	49.017	0.171	0.001	0	666.59	11.1098	46.3	12.0	40.4	2.783	0.025	0.025	0.001	0.631	0.54									
689	10/23/2002	2:46:24 AM	25.314	23.884	24.947	24.204	23.941	45.724	47.574	11.661	35.027	-1.289	-5.047	48.757	0.171	0.001	0	667.59	11.1264	46.1	11.9	40.4	2.784	0.025	0.026	0.001	0.632	0.54									
690	10/23/2002	2:47:24 AM	25.304	23.879	25.027	24.209	23.941	45.958	47.809	11.664	35.285	-1.286	-5.042	48.933	0.171	0.001	0	668.59	11.1431	46.3	12.0	40.6	2.801	0.025	0.025	0.001	0.627	0.53									
691	10/23/2002	2:48:24 AM	25.293	23.878	24.941	24.213	23.946	45.789	47.629	11.692	35.038	-1.289	-5.045	49.021	0.171	0.001	0	669.59	11.1598	46.2	12.0	40.4	2.786	0.025	0.026	0.001	0.632	0.54									
692	10/23/2002	2:49:24 AM	25.303	23.888	24.976	24.213	23.956	46.643	48.279	11.788	36.633	-1.289	-5.05	48.789	0.099	0.001	0	670.59	11.1764	46.8	12.0	41.1	2.833	0.015	0.015	0.000	0.359	0.31									
693	10/23/2002	2:50:24 AM	25.297	23.883	25.026	24.192	23.93	46.149	48.078	11.738	35.263	-1.289	-5.018	48.713	0.174	0.001	0	671.59	11.1931	46.6	11.9	40.7	2.807	0.026	0.026	0.001	0.637	0.54									
694	10/23/2002	2:51:24 AM	25.266	23.867	24.895	24.227	23.944	45.53	48.118	11.74	34.659	-1.289	-4.486	48.629	0.203	0.001	0	672.59	11.2098	46.6	11.9	40.1	2.764	0.030	0.030	0.001	0.757	0.64									
695	10/23/2002	2:52:24 AM	25.287	23.883	25.016	24.227	23.945	46.557	48.405	11.756	35.731	-1.286	-5.21	49.5	0.172	0.001	0	673.59	11.2264	46.9	12.1	41.1	2.837	0.026	0.026	0.001	0.623	0.53									
696	10/23/2002	2:53:24 AM	25.297	23.888	25.006	24.292	23.95	45.816	47.553	12.148	34.69	-1.289	-5.256	49.875	0.169	0.001	0	674.59	11.2431	46.1	12.2	40.3	2.775	0.025	0.025	0.001	0.626	0.53									
697	10/23/2002	2:54:24 AM	25.292	23.883	24.981	24.297	23.95	45.646	47.4	12.401	34.174	-1.286	-5.325	50.599	0.165	0.001	0	675.59	11.2598	45.9	12.4	39.9	2.752	0.025	0.025	0.001	0.617	0.52									
698	10/23/2002	2:55:24 AM	25.303	23.888	25.092	24.273	23.971	45.677	47.321	12.457	34.169	-1.286	-5.317	50.563	0.165	0.001	0	676.59	11.2764	45.8	12.4	39.9	2.753	0.025	0.025	0.001	0.615	0.52									
699	10/23/2002	2:56:24 AM	25.318	23.893	25.036	24.338	23.966	45.66	47.45	12.482	34.092	-1.289	-5.322	50.632	0.164	0.001	0	677.59	11.2931	46.0	12.4	39.9	2.749	0.024	0.024	0.001	0.613	0.52									
700	10/23/2002	6:36:09 PM	26.035	24.401	25.589	25.567	24.844	47.781	49.415	14.758	33.92	-1.284	-5.945	48.417	0.115	0.001	0	707.59	11.7932	47.9	11.9	40.9	2.816	0.017	0.017	0.000	0.413	0.35									
701	10/23/2002	6:36:09 PM	26.011	24.413	25.48	25.563	24.896	48.239	49.845	14.921	34.071	-1.289	-6.003	48.531	0.113	0.001	0	708.59	11.8098	48.4	11.9	41.2	2.837	0.017	0.017	0.000	0.404	0.34									
702	10/23/2002	6:37:09 PM	25.976	24.428	25.345	25.614	24.916	47.568	48.653	15.323	33.259	-1.289	-6.064	49.321	0.108	0.001	0	709.59	11.8265	47.2	12.1	40.4	2.786	0.016	0.016	0.000	0.395	0.34									
703	10/23/2002	6:38:09 PM	25.921	24.433	25.27	25.603	24.936	47.588	48.894	15.456	33.054	-1.286	-6.093	49.271	0.107	0.001	0	710.59	11.8432	47.4	12.1	40.3	2.780	0.016	0.016	0.000	0.393	0.33									
704	10/23/2002	6:39:09 PM	25.887	24.469	25.196	25.554	24.962	47.444	48.794	15.417	33.005	-1.286	-6.119	49.326	0.106	0.001	0	711.59	11.8598	47.3	12.1	40.2	2.773	0.016	0.016	0.000	0.391	0.33									
705	10/23/2002	6:40:09 PM	25.838	24.474	25.191	25.62	24.997	47.879	49.285	15.553	33.234	-1.289	-6.139	49.095	0.104	0.001	0	712.59	11.8765	47.8	12.0	40.6	2.796	0.016	0.015	0.000	0.380	0.32									
706	10/23/2002	6:41:09 PM	25.799	24.49	25.082	25.696	25.029	47.791	49.307	15.458	33.179	-1.289	-6.145	48.745	0.102	0.001	0	713.59	11.8932	47.8	11.9	40.5	2.791	0.015	0.015	0.000	0.375	0.32									
707	10/23/2002	6:42:09 PM	25.763	24.5	25.202	25.591	25.043	47.916	49.413	15.558	33.332	-1.289	-6.168	48.657	0.102	0.001	0	714.59	11.9098	47.9	11.9	40.6	2.801	0.015	0.015	0.000	0.372	0.32									
708	10/23/2002	6:43:09 PM	25.734	24.511	25.077	25.656	25.079	48.083	49.465	15.559	33.502	-1.289	-6.18	48.646	0.1	0.001	0	715.59	11.9265	48.0	11.9	40.8	2.813	0.015	0.015	0.000	0.365	0.31									
709	10/23/2002	6:44:09 PM	25.713	24.53	25.182	25.696	25.119	48.061	49.446	15.698	33.252	-1.286	-6.191	48.522	0.098	0.001	0	716.59	11.9432	48.0	11.9	40.7	2.803	0.015	0.015	0.000	0.358	0.30									
710	10/23/2002	6:45:09 PM	25.683	24.525	25.152	25.681	25.143	48.1	49.355	15.732	33.273	-1.289	-6.209	48.369	0.096	0.001	0	717.59	11.9598	47.9	11.9	40.7	2.805	0.014	0.014	0.000	0.350	0.30									
711	10/23/2002	6:46:09 PM	25.678	24.555	25.177	25.735	25.158	48.141	49.388	15.687	33.4	-1.286	-6.217	48.216	0.095	0.001	0	718.59	11.9765	47.9	11.8	40.8	2.811	0.014	0.014	0.000	0.346	0.29									
712	10/23/2002	6:47:09 PM	25.673	24.565	25.346	25.715	25.233	47.965	49.262	15.99	32.784	-1.286	-6.243	48.51	0.093	0.001	0	719.59	11.9932	47.8	11.9	40.4	2.784	0.014	0.014	0.000	0.340	0.29									
713	10/23/2002	6:48:09 PM	25.666	24.579	25.275	25.764	25.227	48.115	49.33	16.005	32.976	-1.286	-6.252	48.476	0.092	0.001	0	720.59	12.0098	47.9	11.9	40.5	2.795	0.014	0.014	0.000	0.336	0.29									
714	10/23/2002	6:49:09 PM	25.675	24.592	25.464	25.668	25.221	48.284	49.661	16.077	33.05	-1.286	-6.214	48.331	0.092	0.001	0	721.59	12.0265	48.2	11.8	40.7	2.804	0.014	0.014	0.000	0.333	0.28									
715	10/23/2002	6:50:09 PM	25.684	24.601	25.468	25.737	25.26	48.21	49.57	16.145	32.974	-1.289	-6.258	48.373	0.089	0.001	0	722.59	12.0432	48.1	11.9	40.6	2.799	0.013	0.013	0.000	0.323	0.27									
716	10/23/2002	6:51:09 PM	25.714	24.626	25.513	25.742	25.285	48.032	49.189	16.195	32.806	-1.289	-6.278	48.464	0.089	0.001	0	723.59	12.0598	47.7	11.9	40.4	2.787	0.013	0.013	0.000	0.324	0.28									
717	10/23/2002	6:52:09 PM	25.738	24.64	25.677	25.751	25.294	48.268	49.525	16.362	32.806	-1.284	-6.284	47.937	0.088	0.001	0	724.59	12.0765	48.1	11.7	40.5	2.795	0.013	0.013	0.000	0.318	0.27									
718	10/23/2002	6:53:09 PM	25.761	24.644	25.565	25.724	25.317	48.468	49.864	16.317	33.05	-1.289	-6.296	47.887	0.087	0.001	0	725.59	12.0932	48.4	11.7	40.8	2.810	0.013	0.013	0.000	0.313	0.27									
719	10/23/2002	6:54:09 PM	25.816	24.683	25.76	25.899	25.347	48.483	49.81	16.536	32.808	-1.286	-6.29	48.426	0.084	0.001	0	726.59	12.1098	48.3	11.9	40.6	2.802	0.013	0.012	0.000	0.302	0.26									
720	10/23/2002	6:55:09 PM	25.83	24.672	25.714	25.747	25.37	48.289	49.568	16.873	32.343	-1.289	-6.319	48.285	0.084	0.001	0	727.59	12.1265	48.1	11.8	40.3	2.780	0.013	0.012	0.000	0.304	0.26									
721	10/23/2002	6:56:09 PM	25.864	24.691	25.828	25.731	25.394	48.2	49.522	17.168	31.952	-1.286	-6.327	48.776	0.082	0.001	0	728.59	12.1432	48.0	12.0	40.1	2.763	0.012	0.012	0.000	0.298	0.25									
722	10/23/2002	6:57:09 PM	25.892	24.699	25.961	25.704	25.417	48.303	49.469	17.138	32.165	-1.292	-6.319	48.829	0.082	0.001	0	729.59	12.1598	48.0	12.0	40.2	2.774	0.012	0.012	0.000	0.296	0.25									
723	10/23/2002	6:58:09 PM	25.935	24.717	25.919	25.747	25.426	48.465	49.638	17.278	32.096	-1.284	-6.316	48.709	0.081	0.001	0	730.59	12.1765	48.2	11.9	40.3	2.777	0.012	0.012	0.000	0.292	0.25									
724	10/23/2002	6:59:09 PM	25.948	24.71	26.057	25.691	25.434	48.444	49.785	17.328	31.85	-1.289	-6.316	48.346	0.08	0.001	0	731.59	12.1932	48.3	11.8	40.1	2.768	0.012	0.012	0.000	0.288	0.25									
725	10/23/2002	7:00:09 PM	26.022	24.75	26.056	25.785	25.458	48.574	49.702	17.155	32.301	-1.286	-6.313	48.185	0.08	0.001	0	732.59	12.2098	48.2	11.8	40.4	2.788	0.012	0.012	0.000	0.286	0.24									
726																																					
727	Results for the first 11.3 hours																																				
728		Averages	26.4	24.4	25.9	24.6	24.6	45.4	52.1	10.9	35.3	2.0	-1.2 #	50.4	0.3	0.0	0.0			50.7	12.1	40.5	2.792	0.051	0.049	0.001	1.213	1.033									
729		Maximum	30.7	25.3	31.3	27.0	25.8	51.1	75.3	26.0	38.6	30.5	29.1 #	92.4	0.8	0.0	0.0			73.8	12.7	43.7	3.014	0.120	0.110	0.003	2.789	2.373									
730		Median	25.7	24.3	25.3	24.4	24.5	45.4	49.8	10.9	35.8	-1.3	-3.7 #	49.3	0.3	0.0	0.0			48.1	12.1	40.5	2.796	0.040	0.040	0.001	0.986	0.839									
731		Minimum	24.8	23.5	24.1	22.7	23.3	28.1	39.4	7.9	20.3	-1.3	-5.4 #	46.3	0.1	0.0	0.0			45.1	11.3	24.2	1.669	0.015	0.015	0.000	0.359	0.306									
732		2 x Std Dev	2.893	1.075	2.957	1.835	1.438	3.039	13.485	5.455	4.900	13.260	11.435 #	13.059	0.345	0.000	0.000			######	0.405	2.511	0.173	0.052	0.047	0.001	1.172	0.997									
733		Number of Points Used*	678	678	678	678	678	678	678	678	678	678	678.0	678	678	678	678			656	656	656	656	656	656	656	656	656									
734		* Backpulse points in box are not included																																			
735																																					
736	Results for the entire run of 12.2 hours																																				
737		Averages	26.4	24.4	25.9	24.6	24.6	45.5	52.0	11.1	35.3	1.9	-1.3 #	50.4	0.3	0.0	0.0			50.6	12.1	40.5	2.792	0.049	0.048	0.001	1.180	1.004									
738		Maximum	30.7	25.3	31.3	27.0	25.8	51.1	75.3	26.0	38.6	30.5	29.1 #	92.4	0.8	0.0	0.0			73.8	12.7	43.7	3.014	0.120	0.110	0.003	2.789	2.373									
739		Median	25.8	24.4	25.3	24.4	24.6	45.4	49.7	11.0	35.7	-1.3	-3.8

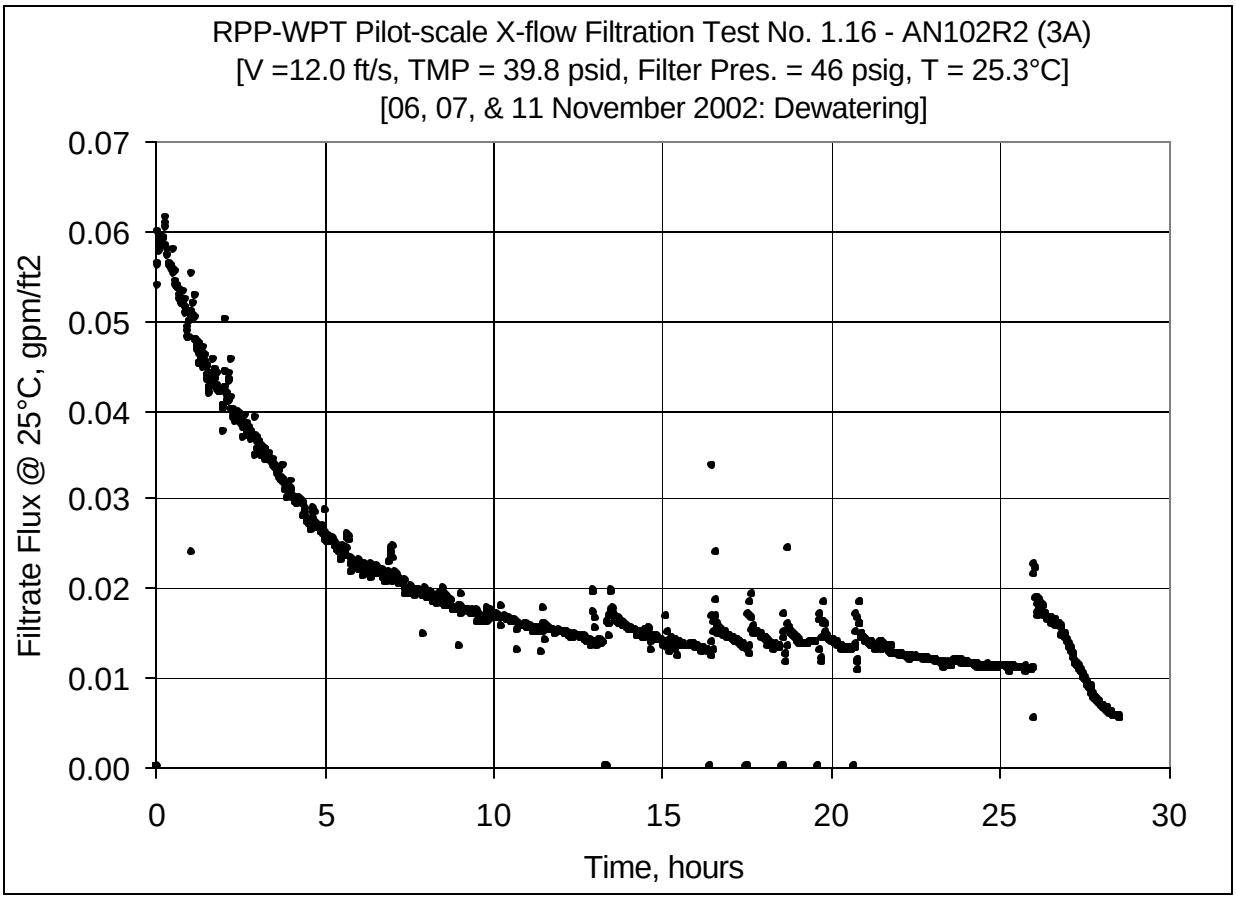


Figure D5: Dewatering of the AN-102R2, batch 3A, insoluble solids concentrations from 1.6 to 25 wt%

(Data from 18 Files)
(1.16-3a-rpp-pxu-110602-1515, -1715, -1915, -2015, -2115, -2305)
(1.16-3a-rpp-pxu-110702-0101, -0301, -0432, -0712, -0740, -0843, -947, -1050, -1400, -1600)
(1.16-3a-rpp-pxu-111102-0855, -1055)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1			<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>>						<<<<<<<< Flow Measurements >>>>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
2	DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
3			deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
4			T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
5																												
6	Zeros - 11/6/2002																											
7	11/6/2002	1:59:43 PM	22.088	21.4	21.328	22.099	21.673	-0.127	-0.016	-0.048	0.055	-0.308	0.337	-0.218	0.001	0.001	0.003											
8	11/6/2002	2:00:27 PM	22.088	21.4	21.328	22.099	21.673	-0.127	-0.016	-0.048	0.055	-0.308	0.337	-0.218	0.001	0.001	0.003											
9	11/6/2002	2:00:28 PM	22.088	21.405	21.323	22.094	21.668	-0.127	-0.016	-0.048	0.055	-0.366	0.34	-0.22	0.001	0.001	0.003											
10	11/6/2002	2:00:29 PM	22.088	21.405	21.323	22.094	21.663	-0.125	-0.016	-0.049	0.055	-0.343	0.34	-0.22	0.001	0.001	0.004											
11	11/6/2002	2:00:30 PM	22.088	21.405	21.318	22.089	21.668	-0.127	-0.016	-0.048	0.057	-0.32	0.34	-0.218	0.001	0.001	0.003											
12	11/6/2002	2:00:31 PM	22.099	21.411	21.324	22.095	21.674	-0.127	-0.018	-0.048	0.055	-0.314	0.34	-0.22	0.001	0.001	0.004											
13	11/6/2002	2:00:32 PM	22.088	21.4	21.318	22.089	21.663	-0.127	-0.016	-0.048	0.055	-0.308	0.34	-0.22	0.001	0.001	0.001											
14	11/6/2002	2:00:33 PM	22.088	21.405	21.318	22.089	21.668	-0.127	-0.018	-0.048	0.055	-0.311	0.34	-0.218	0.001	0.001	0.003											
15																												
16	Zeros- 11/11/2002																											
17	11/11/2002	8:48:51 AM	22.487	21.865	21.521	21.33	20.743	-0.125	0.018	-0.045	0.061	-0.377	0.32	-0.211	0.001	0.001	0.002		Filter Surface	6.707	FT2							
18	11/11/2002	8:49:09 AM	22.487	21.865	21.521	21.33	20.743	-0.125	0.018	-0.045	0.061	-0.377	0.32	-0.211	0.001	0.001	0.002		Conversion		851	m3/m2/day/barg / gpm/ft2/barg							
19	11/11/2002	8:49:10 AM	22.481	21.839	21.51	21.28	20.707	-0.125	0.018	-0.045	0.063	-0.375	0.322	-0.205	0.001	0.001	0.003											
20	11/11/2002	8:49:11 AM	22.471	21.834	21.51	21.284	20.702	-0.125	0.018	-0.045	0.063	-0.372	0.32	-0.211	0.001	0.001	0.002		Note: Gauge Pressure P1 is approximately 1.4 psig									
21	11/11/2002	8:49:12 AM	22.481	21.829	21.516	21.289	20.702	-0.125	0.016	-0.045	0.063	-0.375	0.32	-0.205	0.001	0.001	0.003											
22	11/11/2002	8:49:13 AM	22.48	21.833	21.509	21.284	20.696	-0.125	0.018	-0.045	0.061	-0.377	0.32	-0.209	0.001	0.001	0.001		Pressure P1is corrected for 40.88 inches of water tubing									
23	11/11/2002	8:49:14 AM	22.475	21.833	21.509	21.284	20.696	-0.125	0.02	-0.045	0.061	-0.375	0.322	-0.205	0.001	0.001	0		VVVV				< Filtrate Flux << PERMIABILITY >>					
24	11/11/2002	8:49:15 AM	22.481	21.844	21.515	21.279	20.702	-0.127	0.018	-0.045	0.063	-0.377	0.32	-0.211	0.001	0.001	0.001								at 25C			
25																								x 1000				
26	Data - Per Minute																	Time Min.	Time Hour	Press. psig	Vel. ft/s	TMP psi	TMP bar	gpm /ft2	gpm ft2	gpm ft2/psi	gpm ft2/psi	meter day/bar
27	11/6/2002	3:14:44 PM	24.913	21.555	25.868	23.073	21.989	5.261	51.826	8.393	-2.361	40.909	91.591	48.926	0.001	0.001	0	0	0	50.4	12.0	1.5	0.100	0.000	0.000	0.000	0.000	0.09
28	11/6/2002	3:15:17 PM	24.891	21.573	25.976	23.136	22.032	-7.498	52.709	8.354	-18.596	73.626	76.952	47.707	0.001	0.001	1.414	0.55	0.00917	51.2	11.7	-13.0	-0.900	0.000	0.000	0.000	-0.011	-0.01
29	11/6/2002	3:15:44 PM	24.477	21.575	26.088	23.158	22.059	5.811	51.788	8.673	-2.197	40.276	10.749	49.312	0.001	0.001	0.001	1.00	0.01667	50.3	12.1	1.8	0.125	0.000	0.000	0.000	0.080	0.07
30	11/6/2002	3:16:17 PM	25.457	21.593	26.12	23.262	22.093	41.303	50.876	8.88	33.27	3.9	0.574	50.165	0.517	0.001	0	1.55	0.02583	49.4	12.3	37.3	2.571	0.000	0.000	0.000	0.004	0.00
31	11/6/2002	3:16:44 PM	25.459	21.595	26.183	23.314	22.12	43.039	51.296	8.859	35.051	2.273	0.629	50.179	0.385	0.001	0	2.00	0.03333	49.8	12.4	39.0	2.692	0.000	0.000	0.000	0.004	0.00
32	11/6/2002	3:17:07 PM	25.932	21.592	26.266	23.307	22.143	43.339	51.761	8.616	35.512	2.345	0.684	50.184	0.391	0.001	0	2.38	0.03972	50.3	12.3	39.4	2.718	0.058	0.056	0.001	1.427	1.21
33	11/6/2002	3:17:08 PM	25.937	21.592	26.275	23.302	22.143	43.343	51.604	8.46	35.767	2.397	0.684	49.727	0.392	0.001	0	2.40	0.04	50.1	12.2	39.6	2.727	0.058	0.056	0.001	1.426	1.21
34	11/6/2002	3:18:08 PM	26.331	21.607	26.475	23.382	22.182	43.331	52.008	8.481	35.645	2.629	1.229	48.718	0.377	0.001	0	5.40	0.09667	50.5	11.9	39.5	2.723	0.056	0.054	0.001	1.366	1.16
35	11/6/2002	3:19:08 PM	26.362	21.638	26.755	23.383	22.239	44.868	51.612	8.579	37.1	0.721	-1.241	48.932	0.422	0.001	0	4.40	0.07333	50.1	12.0	41.0	2.826	0.063	0.060	0.001	1.462	1.24
36	11/6/2002	3:20:08 PM	26.563	21.649	26.98	23.388	22.274	44.431	50.735	8.757	36.531	0.218	-1.594	48.712	0.41	0.001	0	5.40	0.09	49.3	11.9	40.5	2.791	0.061	0.058	0.001	1.429	1.22
37	11/6/2002	3:21:08 PM	26.762	21.653	27.095	23.483	22.319	43.322	49.647	8.703	35.436	0.258	-1.479	50.119	0.415	0.001	0	6.40	0.10667	48.2	12.3	39.4	2.715	0.062	0.058	0.001	1.482	1.26
38	11/6/2002	3:22:08 PM	26.916	21.663	27.099	23.633	22.369	43.608	49.744	8.573	35.917	0.279	-1.487	49.517	0.413	0.001	0	7.40	0.12333	48.3	12.1	39.8	2.741	0.062	0.058	0.001	1.460	1.24
39	11/6/2002	3:23:08 PM	27.08	21.697	27.073	23.778	22.398	43.636	49.918	8.667	35.862	0.293	-1.447	49.247	0.415	0.001	0	8.40	0.14	48.4	12.1	39.7	2.737	0.062	0.058	0.001	1.471	1.25
40	11/6/2002	3:24:08 PM	27.155	21.702	27.113	23.697	22.443	43.434	49.802	8.49	35.894	0.406	-1.39	49.316	0.416	0.001	0	9.40	0.15667	48.3	12.1	39.7	2.735	0.062	0.058	0.001	1.474	1.25
41	11/6/2002	3:25:08 PM	27.225	21.727	27.093	23.747	22.508	43.689	50.208	8.419	36.046	0.403	-1.36	48.976	0.419	0.001	0	10.40	0.17333	48.7	12.0	39.9	2.749	0.062	0.059	0.001	1.478	1.26
42	11/6/2002	3:26:08 PM	27.274	21.752	27.053	23.867	22.533	43.735	50.173	8.394	36.318	0.521	-1.302	48.655	0.419	0.001	0	11.40	0.19	48.7	11.9	40.0	2.760	0.062	0.059	0.001	1.474	1.25
43	11/6/2002	3:27:08 PM	27.33	21.778	27.143	23.818	22.579	43.751	50.282	8.303	36.167	0.588	-1.261	49.001	0.423	0.001	0	12.40	0.20667	48.8	12.0	40.0	2.755	0.063	0.059	0.001	1.486	1.27
44	11/6/2002	3:28:08 PM	27.374	21.792	27.088	23.837	22.624	43.662	50.053	8.558	35.927	0.521	-1.276	49.113	0.421	0.001	0	13.40	0.22333	48.6	12.0	39.8	2.744	0.063	0.059	0.001	1.488	1.27
45	11/6/2002	3:29:08 PM	27.383	21.806	27.017	23.937	22.658	43.706	50.28	8.533	36.077	0.519	-1.296	49.383	0.419	0.001	0	14.40	0.24	48.8	12.1	39.9	2.750	0.062	0.059	0.001	1.480	1.26
46	11/6/2002	3:30:08 PM	27.353	21.841	26.947	23.977	22.688	43.538	50.044	8.518	35.927	0.513	-1.308	48.953	0.418	0.001	0	15.40	0.25667	48.6	12.0	39.7	2.739	0.062	0.059	0.001	1.485	1.26
47	11/6/2002	3:31:08 PM	27.298	21.857	26.668	24.022	22.733	44.205	50.839	8.134	36.901	0.646	-1.189	48.804	0.424	0.001	0	16.40	0.27333	49.4	12.0	40.6	2.796	0.063	0.060	0.001	1.488	1.27
48	11/6/2002	3:32:08 PM	27.163	21.882	26.273	24.192	22.789	44.619	51.317	7.962	37.495	0.698	-1.172	47.237	0.423	0.001	0	17.40	0.29	49.8	11.6	41.1	2.831	0.063	0.061	0.001	1.482	1.26
49	11/6/2002	3:33:08 PM	27.059	21.912	25.973	24.288	22.839	45.379	51.948	7.439	38.76	0.643	-1.227	45.662	0.424	0.001	0	18.40	0.30667	50.5	11.2	42.1	2.901	0.063	0.062	0.001	1.462	1.24
50	11/6/2002	3:34:08 PM	26.919	21.922	25.903	24.283	22.899	43.728	49.463	9.023	35.53	-0.002	-1.701	50.184	0.402	0.001	0	19.40	0.32333	48.0	12.3	39.6	2.732	0.060	0.058	0.001	1.475	1.25
51	11/6/2002	3:35:08 PM	26.784	21.938	25.874	24.293	22.94	44.621	50.386	8.526	36.899	-0.158	-1.864	48.496	0.399	0.001	0	20.40	0.34	48.9	11.9	40.8	2.810	0.059	0.058	0.001	1.424	1.21
52	11/6/2002	3:36:08 PM	26.675	21.968	25.869	24.379	22.971	43.801	49.411	9.045	35.665	-0.181	-1.904	50.992	0.394	0.001	0	21.40	0.35667	47.9	12.5	39.7	2.739	0.059	0.057	0.001	1.443	1.23
53	11/6/2002	3:37:08 PM	26.575	21.994	25.844	24.409	22.996	44.634	50.264	8.471	37.063	-0.253	-1.959	48.678	0.394	0.001	0	22.40	0.37333	48.8	11.9	40.8	2.816	0.059	0.057	0.001	1.404	1.20
54	11/6/2002	3:38:08 PM	26.496	22.024	25.835	24.48	23.062	43.735	49.163	9.187	35.43	-0.493	-2.075	51.684	0.387	0.001	0	23.40	0.39	47.7	12.7	39.6	2.729	0.058	0.056	0.001	1.424	1.21
55	11/6/2002	3:39:08 PM	26.422	22.041	25.916	24.466	23.104	43.944	49.494	8.734	35.974	-0.554	-2.188	48.815	0.386	0.001	0	24.40	0.40667	48.0	12.0	40.0	2.755	0.058	0.056	0.001	1.404	1.19
56	11/6/2002	3:40:08 PM	26.364	22.062	25.913	24.498	23.155	44.047	49.517	8.557	36.257	-0.496	-2.142	48.794	0.387	0.001	0	25.40	0.42333	48.0	12.0	40.2	2.768	0.058	0.056	0.001	1.401	1.19
57	11/6/2002	3:41:08 PM	26.324	22.073	25.888	24.568	23.195	44.025	49.436	8.465	36.486	-0.461	-2.098	48.576	0.387	0.001	0	26.40	0.44	48.0	11.9	40.3	2.775	0.058	0.056	0.001	1.398	1.19
58	11/6/2002	3:42:08 PM	26.315	22.104	25.844	24.529	23.236	44.072	49.471	8.525	36.347	-0.496	-2.11	48.811	0.386	0.001	0	27.40	0.45667	48.0	12.0	40.2	2.772	0.058	0.056	0.001	1.398	1.19
59	11/6/2002	3:43:08 PM	26.299	22.138	25.833	24.664	23.276	43.813	49.273	8.861	35.759	-0.609	-2.194	50.377	0.382	0.001	0	28.40	0.47333	47.8	12.3	39.8	2.743	0.057	0.056	0.001	1.398	1.19
60	11/6/2002	3:44:08 PM	26.269	22.144	25.759	24.669	23.311	44.196	49.564	8.469	36.642	-0.554	-2.171	48.905	0.383	0.001	0	29.40	0.49	48.1	12.0	40.4	2.787	0.057	0.056	0.001	1.383	1.18
61	11/6/2002	3:45:08 PM	26.25	22.174	25.854	24.699	23.377	44.18	49.701	8.485	36.322	-0.551	-2.124	49.125	0.383	0.001	0	30.40	0.50667	48.2	12.0	40.3	2.775	0.057	0.056	0.001	1.385	1.18
62	11/6/2002	3:46:08 PM	26.24	22.209	25.874	24.734	23.402	43.799	49.076	8.717	35.923	-0.62	-2.191	49.31	0.38	0.001	0	31.40	0.52333	47.6	12.1	39.9	2.748	0.057	0.055	0.001	1.387	1.18
63	11/6/2002	3:47:08 PM	26.245	22.23	25.594	24.775	23.448	44.646	49.709	8.465	36.981	-0.721	-2.263	47.858	0.378	0.001	0	32.40	0.54	48.2	11.7	40.8	2.814	0.056	0.055	0.001	1.358	1.16
64	11/6/2002	3:48:08 PM	26.199	22.244	25.368	24.829	23.487	44.721	50.202	7.825	37.456	-0.161	-1.865	45.417	0.393	0.001	0	33.40	0.55667	48.7	11.1	41.1	2.833	0.059	0.059	0.001	1.411	1.20
65	11/6/2002	3:49:08 PM	26.165	22.28	25.469	24.775	23.523	43.969	49.157	8.892	35.983	-0.75	-2.263	49.981	0.377	0.001	0	34.40	0.57333	47.7	12.2	40.0	2.756	0.056	0.055	0.001	1.398	1.18
66	11/6/2002	3:50:08 PM	26.13	22.315	25.539	24.744	23.573	44.395	49.449	8.61	36.568	-0.909	-2.417	49.568	0.371	0.001	0	35.40	0.59	48.0	12.1	40.5	2.791	0.055	0.054	0.001	1.346	1.15
67	11/6/2002	3:51:08 PM	26.04	22.325	25.514	24.704	23.583	44.468	49.517	8.867	36.445	-1.008	-2.492	49.763	0.367	0.001	0	36.40	0.60667	48.0	12.2	40.5	2.789	0.055	0.054	0.001	1.333	1.13
68	11/6/2002	3:52:08 PM	26.039	22.349	25.503	24.703	23.612	44.263	49.223	8.93	36.083	-1.065	-2.527	49.425	0.366	0.001	0	37.40	0.62333	47.8	12.1	40.2	2.770	0.055	0.054	0.001	1.339	1.14
69	11/6/2002	3:53:08 PM	26.014	22.369	25.608	24.638	23.652	44.605	49.459	8.639	36.805	-1.094	-2.576	49.047	0.368	0.001	0	38.40	0.64	48.0	12.0	40.7	2.806	0.055	0.054	0.001	1.325	1.13
70	11/6/2002	3:54:08 PM	25.982	22.382	25.621	24.676	23.67	44.466	49.258	8.876	36.402	-1.167	-2.619	49.738	0.366	0.001	0	39.40	0.65667	47.8	12.2	40.4	2.788	0.055	0.054	0.001	1.326	1.13
71	11/6/2002	3:55:08 PM	25.991	22.402	25.61	24.726	23.705	44.617	49.364	8.828	36.613	-1.167	-2.614	49.605	0.366	0.001	0	40.40	0.67333	47.9	12.2	40.6	2.800	0.055	0.054	0.001	1.321	1.12
72	11/6/2002	3:56:08 PM	26.001	22.442	25.645	24.76	23.744	44.505	49.188	8.843	36.375	-1.164	-2.616	49.962	0.365	0.001	0	41.40	0.69	47.7	12.2	40.4	2.788	0.054	0.053	0.001	1.321	1.12
73	11/6/2002	3:57:08 PM	25.99	22.441	25.599	24.774	23.774	44.194	49.124	8.811	36.383	-1.291	-2.683	50.644	0.361	0.001	0	42.40	0.70667	48.0	12.1	39.9	2.749	0.054	0.053	0.001	1.323	1.13
74	11/6/2002	3:58:08 PM	26.018	22.484	25.728	24.833	23.822	44.016	48.495	8.744	36.148	-1.285	-2.793	49.459	0.359	0.001	0	43.40	0.72333	47.0	12.1	40.1	2.764	0.054	0.052	0.001	1.308	1.11
75	11/6/2002	3:59:08 PM	26.021	22.482	25.66	24.771	23.83	43.919	48.321	8.737	35.902	-1.288	-2.787	49.238	0.358	0.001	0	44.40	0.74	46.8	12.1	39.9	2.752	0.053	0.052	0.001	1.313	1.12
76	11/6/2002	4:00:08 PM	26.01	22.511	25.749	24.694	23.824	44.054	48.611	8.728	36.052	-1.288	-2.764	48.81	0.359	0.001	0	45.40	0.75667	47.1	12.0	40.1	2.762	0.054	0.052	0.001	1.309	1.11
77	11/6/2002	4:01:08 PM	26.063	22.525	25.748	24.678	23.868	43.691	48.093	8.665	35.749	-1.291	-2.764	49.184	0.356	0.001	0	46.40	0.77333	46.6	12.1	39.7	2.739	0.053	0.052	0.001	1.308	1.11
78	11/6/2002	4:02:08 PM	26.08	22.522	25.69	24.665	23.875	43.993	48.53	8.741	35.952	-1.294	-2.776	49.398	0.355	0.001	0	47.40	0.79	47.1	12.1	40.0	2.766	0.053	0.052	0.001	1.299	1.11
79	11/6/2002	4:03:08 PM	26.13	22.561	25.714	24.744	23.924	44.246	49.016	8.79	36.187	-1.288	-2.808	49.517	0.356	0.001	0	48.40	0.80667	47.5	12.1	40.2	2.773	0.053	0.052	0.001	1.294	1.10
80	11/6/2002	4:04:08 PM	26.122	22.569	25.261	24.737	23.907	44.232	48.646	8.615	36.273	-1.288	-2.868	48.819	0.354	0.001	0	49.40	0.82333	47.2	12.0	40.3	2.775	0.053	0.052	0.001	1.302	1.11
81	11/6/2002	4:05:08 PM	26.036	22.592	24.764	24.765	23.945	44.65	48.273	8.631	36.586	-1.288	-2.864	48.019	0.355	0.001	0	50.40	0.84	47.8	11.8	40.6	2.801	0.053	0.053	0.001	1.312	1.12
82	11/6/2002	4:06:08 PM	25.934	22.611	24.537	24.819	23.939	45.05	49.324	8.3	37.497	-1.288	-2.999	48.024	0.347	0.001	0	51.40	0.85667	47.9	11.8	41.3	2.846	0.052	0.052	0.001	1.270	1.08
83	11/6/2002	4:07:08 PM	25.848	22.619	24.581	24.692	23.947	44.731	48.472	9.021	36.486	-1.291	-3.282	49.836	0.337	0.001	0	52.40	0.87333	47.0	12.2	40.6	2.800	0.050	0.051	0.001	1.252	1.07
84	11/6/2002	4:08:08 PM	25.781	22.658	24.584	24.645	23.976	45.042	49.099	8.523	37.419	-1.288	-3.158	47.898	0.341	0.001	0	53.40	0.89	47.6	11.7	41.2	2.843	0.051	0.051	0.001	1.248	1.06
85	11/6/2002	4:09:08 PM	25.659	22.661	24.712	24.533	24.054	45.071	49.24	8.596	37.098	-1.291	-3.143	48.062	0.342	0.001	0	54.40	0.90667	47.8	11.8	41.1	2.833	0.051	0.051	0.001	1.251	1.06
86	11/6/2002	4:10:08 PM	25.561	22.674	24.76	24.486	24.006	44.969	48.96	8.513	37.192	-1.291	-3.123	48.259	0.34	0.001	0	55.40	0.92333	47.5	11.8	41.1	2.832	0.051	0.051	0.001	1.242	1.06
87	11/6/2002	4:11:08 PM	25.482	22.679	24.966	24.481	24.012	44.037	47.843	9.325	35.354	-1.288	-3.326	51.002	0.33	0.001	0	56.40	0.94	46.4	12.5	39.7	2.737	0.049	0.049	0.001	1.241	1.06
88	11/6/2002	4:12:08 PM	25.47	22.707	25.049	24.589	24.025	44.457	48.35	8.961	36.199	-1.285	-3.332	49.268	0.324	0.001	0	57.40	0.95667	46.9	12.1	40.3	2.780	0.048	0.048	0.001	1.196	1.02
89	11/6/2002	4:13:08 PM	25.462	22.725	25.091	24.606	24.052	44.114	47.709	9.174	35.657	-1.288	-3.392	50.155	0.328	0.001	0	58.40	0.97333	46.2	12.3	39.9	2.750	0.049	0.049	0.001	1.223	1.04
90	11/6/2002	4:14:08 PM	25.465	22.738	25.245	24.589	24.071	43.124	48.958	9.671	34.205	-1.291	-3.45	52.16	0.325	0.001	0	59.40	0.99	45.4	12.8	39.7	2.666	0.048	0.048	0.001	1.245	1.06
91	11/6/2002	4:15:08 PM	25.508	22.771	25.273	24.623	24.083	44.766	48.956	8.44	36.94	-1.291	-3.045	47.854	0.338	0.001	0	60.40	1.00667	47.5	11.7	40.8	2.816	0.050	0.050	0.001	1.224	1.04
92	11/6/2002	4:16:08 PM	25.582	22.805	25.366	24.626	24.082	44.896	48.878	8.485	37.131	-1.285	-3.187	47.712	0.338	0.001	0	61.40	1.02333	47.4	11.7	41.0	2.828	0.050	0.050	0.001	1.216	1.03
93	11/6/2002	4:17:08 PM	25.795	22.813	25.46	24.55	24.161	23.754	48.664	8.506	15.91	19.269	18.938	48.011	0.164	0.001	0	62.40	1.04	47.2	11.8	19.8	1.367	0.024	0.024	0.001	1.217	1.04
94	11/6/2002	4:18:08 PM	25.783	22.815	25.397	24.567	24.108	43.335	48.7	8.363	35.741	-0.496	-2.052	47.672	0.375	0.001	0	63.40	1.05667	47.2	11.7	39.5	2.726	0.056	0.055	0.001	1.398	1.19
95	11/6/2002	4:19:08 PM	25.74	22.828	25.52	24.56	24.111	45.058	49.357	8.918	36.881	-1.294	-3.077	49.488	0.347	0.001	0	64.40	1.07333	47.9	12.1	41.0	2.825	0.052	0.051	0.001	1.244	1.06
96	11/6/2002	4:20:08 PM	25.803	22.856	25.593	24.628	24.133	45.182	49.285	8.69	37.405	-1.288	-3.097	48.687	0.344	0.001	0	65.40	1.09	47.8	11.9	41.3	2.847	0.051	0.050	0.001	1.221	1.04
97	11/6/2002	4:21:08 PM	25.86	22.858	25.535	24.575	24.176	44.787	49.049	9.138	36.398	-1.288	-3.184	50.184	0.341	0.001	0	66.40	1.10667	47.6	12.3	40.6	2.799	0.051	0.050	0.001	1.234	1.05
98	11/6/2002	4:22:08 PM	25.887	22.866	25.507	24.482	24.233	44.628	49.728	8.932	38.111	-1.288	-3.132	48.057	0.344	0.001	0	67.40	1.12333	48.3	11.8	41.9	2.887	0.051	0.051	0.001

131	11/6/2002	4:55:08 PM	25.296	23.181	24.845	24.5	24.247	44.778	47.686	9.137	36.381	-1.288	-4.064	49.941	0.293	0.001	0	100.40	1.67333	46.2	12.2	40.6	2.798	0.044	0.044	0.001	1.081	0.92
132	11/6/2002	4:56:08 PM	25.286	23.171	24.95	24.46	24.247	44.54	47.334	9.381	35.945	-1.291	-4.125	50.767	0.294	0.001	0	101.40	1.69	45.9	12.4	40.2	2.775	0.044	0.044	0.001	1.091	0.93
133	11/6/2002	4:57:08 PM	25.311	23.177	24.991	24.441	24.226	44.503	47.15	9.056	36.275	-1.291	-4.177	49.989	0.288	0.001	0	102.40	1.70667	45.7	12.3	40.4	2.785	0.043	0.043	0.001	1.063	0.90
134	11/6/2002	4:58:08 PM	25.351	23.187	24.961	24.446	24.202	44.46	47.243	9.207	35.913	-1.288	-4.093	49.761	0.291	0.001	0	103.40	1.72333	45.8	12.2	40.2	2.771	0.043	0.043	0.001	1.081	0.92
135	11/6/2002	4:59:08 PM	25.392	23.202	25.016	24.401	24.192	46.781	50.026	7.475	40.163	-1.291	-3.766	44.846	0.306	0.001	0	104.40	1.74	48.6	11.0	43.5	2.997	0.046	0.046	0.001	1.049	0.89
136	11/6/2002	5:00:08 PM	25.427	23.213	24.952	24.462	24.208	44.917	47.806	8.797	36.916	-1.288	-3.89	48.811	0.299	0.001	0	105.40	1.75667	46.3	12.0	40.9	2.821	0.045	0.045	0.001	1.091	0.93
137	11/6/2002	5:01:08 PM	25.397	23.213	25.012	24.447	24.218	44.663	47.33	9.075	36.402	-1.288	-4.058	49.345	0.292	0.001	0	106.40	1.77333	45.9	11.8	40.5	2.795	0.044	0.044	0.001	1.074	0.91
138	11/6/2002	5:02:08 PM	25.419	23.234	25.069	24.518	24.285	44.994	47.746	8.936	36.883	-1.288	-4.056	48.915	0.292	0.001	0	107.40	1.79	46.3	12.0	40.9	2.823	0.044	0.043	0.001	1.061	0.90
139	11/6/2002	5:03:08 PM	25.424	23.219	25.003	24.498	24.245	45.719	48.842	8.503	37.988	-1.291	-3.969	47.64	0.296	0.001	0	108.40	1.80667	47.4	11.7	41.9	2.886	0.044	0.044	0.001	1.054	0.90
140	11/6/2002	5:04:08 PM	25.449	23.24	25.104	24.479	24.245	43.865	46.927	9.574	34.934	-1.288	-3.934	51.072	0.297	0.001	0	109.40	1.82333	45.5	12.5	39.4	2.716	0.044	0.044	0.001	1.121	0.95
141	11/6/2002	5:05:08 PM	25.449	23.24	25.064	24.544	24.271	44.285	47.103	9.455	35.491	-1.291	-4.18	50.344	0.287	0.001	0	110.40	1.84	45.6	12.3	39.9	2.750	0.043	0.043	0.001	1.071	0.91
142	11/6/2002	5:06:08 PM	25.457	23.252	25.116	24.481	24.273	44.689	47.322	9.187	36.294	-1.291	-4.154	49.796	0.285	0.001	0	111.40	1.85667	45.8	12.2	40.5	2.792	0.042	0.042	0.001	1.046	0.89
143	11/6/2002	5:07:08 PM	25.482	23.278	25.192	24.557	24.299	44.795	47.576	9.131	36.359	-1.285	-4.215	49.935	0.285	0.001	0	112.40	1.87333	46.1	12.2	40.6	2.798	0.042	0.042	0.001	1.042	0.89
144	11/6/2002	5:08:08 PM	25.494	23.284	25.124	24.523	24.3	44.696	47.252	9.272	36.167	-1.291	-4.273	50.038	0.283	0.001	0	113.40	1.89	45.8	12.3	40.4	2.788	0.042	0.042	0.001	1.040	0.88
145	11/6/2002	5:09:08 PM	25.525	23.296	25.23	24.55	24.322	45.097	47.796	9.206	36.723	-1.288	-4.197	50.232	0.285	0.001	0	114.40	1.90667	46.3	12.3	40.9	2.821	0.042	0.042	0.001	1.032	0.88
146	11/6/2002	5:10:08 PM	25.536	23.301	25.18	24.635	24.322	44.934	47.653	9.158	36.386	-1.288	-4.2	49.694	0.286	0.001	0	115.40	1.92333	46.2	12.2	40.7	2.803	0.043	0.042	0.001	1.043	0.89
147	11/6/2002	5:11:08 PM	25.542	23.302	25.207	24.627	24.318	44.561	47.103	9.079	36.167	-1.288	-4.209	48.081	0.285	0.001	0	116.40	1.94	45.6	11.8	40.4	2.783	0.042	0.042	0.001	1.047	0.89
148	11/6/2002	5:12:08 PM	25.553	23.319	25.268	24.643	24.334	44.582	47.181	9.083	36.181	-1.294	-4.232	49.213	0.285	0.001	0	117.40	1.95667	45.7	12.1	40.4	2.784	0.042	0.042	0.001	1.044	0.89
149	11/6/2002	5:13:08 PM	25.575	23.33	25.19	24.604	24.316	44.894	47.545	8.673	36.94	-1.288	-4.203	48.267	0.284	0.001	0	118.40	1.97333	46.1	11.8	40.9	2.821	0.042	0.042	0.001	1.029	0.88
150	11/6/2002	5:14:08 PM	25.58	23.33	25.275	24.509	24.331	43.596	46.097	9.821	34.568	-1.291	-4.441	52.475	0.273	0.001	0	119.40	1.99	44.6	12.9	39.1	2.695	0.041	0.040	0.001	1.033	0.88
151	11/6/2002	5:15:08 PM	25.6	23.34	25.245	24.579	24.301	44.428	47.026	9.476	35.557	-1.291	-4.504	49.977	0.271	0.001	0	120.40	2.00667	45.6	12.2	40.0	2.757	0.040	0.040	0.001	1.003	0.85
152	11/6/2002	5:15:11 PM	25.606	23.356	25.27	24.585	24.312	44.199	46.734	9.457	35.456	-1.291	-4.501	51.032	0.274	0.001	0	120.45	2.0075	45.3	12.5	39.8	2.746	0.041	0.041	0.001	1.018	0.87
153	11/6/2002	5:16:11 PM	25.615	23.356	25.285	24.529	24.316	43.231	46.637	9.486	34.437	-1.285	-3.226	50.799	0.255	0.001	0	121.45	2.02417	45.2	12.4	38.8	2.677	0.039	0.039	0.001	0.971	0.83
154	11/6/2002	5:17:11 PM	25.606	23.361	25.341	24.56	24.312	39.279	47.063	9.393	30.414	1.944	0.441	50.279	0.34	0.001	0	122.45	2.04083	45.6	12.3	34.8	2.403	0.051	0.050	0.001	1.441	1.23
155	11/6/2002	5:18:11 PM	25.596	23.362	25.246	24.531	24.307	42.749	46.312	9.649	33.53	-1.291	-3.63	52.59	0.3	0.001	0	123.45	2.0575	44.8	12.9	38.1	2.630	0.045	0.044	0.001	1.165	0.99
156	11/6/2002	5:19:11 PM	25.601	23.372	25.321	24.516	24.327	44.917	47.911	8.859	36.807	-1.288	-4.212	49.276	0.288	0.001	0	124.45	2.07417	46.4	12.1	40.9	2.817	0.043	0.043	0.001	1.041	0.89
157	11/6/2002	5:20:11 PM	25.64	23.381	25.29	24.519	24.296	44.685	47.303	8.688	36.656	-1.291	-4.368	48.253	0.285	0.001	0	125.45	2.09083	45.8	11.8	40.7	2.804	0.042	0.042	0.001	1.036	0.88
158	11/6/2002	5:21:11 PM	25.621	23.381	25.275	24.53	24.322	45.366	48.333	8.692	37.299	-1.288	-4.371	47.854	0.284	0.001	0	126.45	2.1075	46.9	11.7	41.3	2.849	0.042	0.042	0.001	1.017	0.87
159	11/6/2002	5:22:11 PM	25.61	23.376	25.32	24.509	24.316	44.134	46.881	9.444	35	-1.291	-4.444	48.443	0.282	0.001	0	127.45	2.12417	45.4	11.9	39.6	2.728	0.042	0.042	0.001	1.053	0.90
160	11/6/2002	5:23:11 PM	25.629	23.39	25.239	24.539	24.305	44.706	47.353	8.929	36.437	-1.291	-4.461	48.905	0.277	0.001	0	128.45	2.14083	45.9	12.0	40.6	2.797	0.041	0.041	0.001	1.011	0.86
161	11/6/2002	5:24:11 PM	25.65	23.411	25.325	24.514	24.316	44.368	47.173	9.333	35.741	-1.288	-4.478	50.339	0.277	0.001	0	129.45	2.1575	45.7	12.3	40.1	2.762	0.041	0.041	0.001	1.022	0.87
162	11/6/2002	5:25:11 PM	25.665	23.416	25.24	24.529	24.356	46.477	49.314	7.639	39.626	-1.288	-4.183	44.995	0.292	0.001	0	130.45	2.17417	47.8	11.0	43.1	2.968	0.044	0.043	0.001	1.004	0.86
163	11/6/2002	5:26:11 PM	25.676	23.422	25.185	24.505	24.342	46.527	49.651	7.813	39.315	-1.288	-4.128	44.366	0.293	0.001	0	131.45	2.19083	48.2	10.9	42.9	2.959	0.044	0.043	0.001	1.012	0.86
164	11/6/2002	5:27:11 PM	25.671	23.422	25.225	24.485	24.352	47.398	50.746	7.142	40.91	-1.288	-4.015	42.426	0.298	0.001	0	132.45	2.2075	49.3	10.4	44.2	3.044	0.044	0.044	0.001	1.000	0.85
165	11/6/2002	5:28:11 PM	25.645	23.426	25.115	24.439	24.301	47.831	51.205	6.506	42.081	-1.282	-3.821	39.876	0.307	0.001	0	133.45	2.22417	49.7	9.8	45.0	3.100	0.046	0.046	0.001	1.015	0.86
166	11/6/2002	5:29:11 PM	25.598	23.409	25.168	24.362	24.264	44.872	47.707	9.111	36.484	-1.291	-4.319	48.079	0.279	0.001	0	134.45	2.24083	46.2	11.8	40.7	2.805	0.042	0.041	0.001	1.018	0.87
167	11/6/2002	5:30:11 PM	25.604	23.435	25.194	24.433	24.31	45.081	47.651	8.829	36.967	-1.288	-4.635	49.14	0.27	0.001	0	135.45	2.2575	46.2	12.0	41.0	2.828	0.040	0.040	0.001	0.976	0.83
168	11/6/2002	5:31:11 PM	25.584	23.435	25.179	24.373	24.27	44.781	47.46	9.192	36.267	-1.291	-4.611	49.018	0.27	0.001	0	136.45	2.27417	46.0	12.0	40.5	2.794	0.040	0.040	0.001	0.988	0.84
169	11/6/2002	5:32:11 PM	25.589	23.44	25.269	24.298	24.245	43.996	46.507	9.396	35.299	-1.291	-4.626	50.562	0.269	0.001	0	137.45	2.29083	45.0	12.4	39.6	2.734	0.040	0.040	0.001	1.004	0.85
170	11/6/2002	5:33:11 PM	25.588	23.434	25.198	24.292	24.214	44.886	47.448	9.254	36.459	-1.288	-4.626	50.048	0.265	0.001	0	138.45	2.3075	46.0	12.3	40.7	2.804	0.040	0.039	0.001	0.966	0.82
171	11/6/2002	5:34:11 PM	25.582	23.428	25.227	24.225	24.203	44.569	47.011	8.977	36.361	-1.294	-4.652	47.774	0.269	0.001	0	139.45	2.32417	45.5	11.7	40.5	2.790	0.040	0.040	0.001	0.986	0.84
172	11/6/2002	5:35:11 PM	25.601	23.437	25.261	24.265	24.207	44.675	47.371	9.157	36.238	-1.291	-4.661	49.257	0.27	0.001	0	140.45	2.34083	45.9	12.1	40.5	2.789	0.040	0.040	0.001	0.988	0.84
173	11/6/2002	5:36:11 PM	25.6	23.442	25.23	24.209	24.216	44.402	47.011	9.263	35.849	-1.288	-4.69	50.167	0.266	0.001	0	141.45	2.3575	45.5	12.3	40.1	2.767	0.040	0.039	0.001	0.982	0.84
174	11/6/2002	5:37:11 PM	25.6	23.437	25.305	24.254	24.231	43.902	46.467	9.399	35.202	-1.294	-4.736	49.916	0.263	0.001	0	142.45	2.37417	45.0	12.2	39.6	2.727	0.039	0.039	0.001	0.983	0.84
175	11/6/2002	5:38:11 PM	25.621	23.452	25.23	24.269	24.241	44.882	47.551	8.76	36.885	-1.291	-4.669	48.383	0.267	0.001	0	143.45	2.39083	46.1	11.9	40.9	2.819	0.040	0.040	0.001	0.967	0.82
176	11/6/2002	5:39:11 PM	25.6	23.436	25.25	24.213	24.236	44.814	47.655	8.892	36.607	-1.291	-4.617	47.67	0.269	0.001	0	144.45	2.4075	46.2	11.7	40.7	2.807	0.040	0.040	0.001	0.978	0.83
177	11/6/2002	5:40:11 PM	25.588	23.429	25.263	24.212	24.219	44.65	47.378	8.62	36.736	-1.294	-4.632	48.162	0.266	0.001	0	145.45	2.42417	45.9	11.8	40.7	2.806	0.040	0.039	0.001	0.967	0.82
178	11/6/2002	5:41:11 PM	25.597	23.443	25.202	24.245	24.193	44.662	47.419	8.742	36.511	-1.291	-4.611	47.03	0.268	0.001	0	146.45	2.44083	45.9	11.5	40.6	2.798	0.040	0.040	0.001	0.979	0.83
179	11/6/2002	5:42:11 PM	25.597	23.448	25.297	24.18	24.253	44.698	47.531	8.84	36.48	-1.288	-4.64	48.756	0.268	0.001	0	147.45	2.4575	46.1	11.9	40.6	2.798	0.040	0.040	0.001	0.976	0.83
180	11/6/2002	5:43:11 PM	25.611	23.457	25.246	24.22	24.227	44.658	47.374	8.999	36.277	-1.288	-4.69	48.739	0.265	0.001	0	148.45	2.47417	45.9	11.9	40.5	2.790	0.040	0.039	0.001	0.970	0.83
181	11/6/2002	5:44:11 PM	25.615	23.457	25.26	24.159	24.221	44.865	47.582	8.77	36.699	-1.291	-4.632	49.484	0.268	0.001	0	149.45	2.49083	46.1	12.1	40.8	2.811	0.040	0.040	0.001	0.973	0.83
182	11/6/2002	5:45:11 PM	25.615	23.461	25.304	24.223	24.21	44.153	46.867	9.392	35.382	-1.288	-4.713	50.195	0.262	0.001	0	150.45	2.5075	45.4	12.3	39.8	2.742	0.039	0.039	0.001	0.974	0.83
183	11/6/2002	5:46:11 PM	25.615	23.456	25.214	24.218	24.18	45.031	47.953	8.467	37.231	-1.291	-4.745	47.697	0.262	0.001	0	151.45	2.52417	46.5	11.7	41.1	2.836	0.039	0.039	0.001	0.944	0.80
184	11/6/2002	5:47:11 PM	25.625	23.472	25.305	24.209	24.221	45.18	48.002	8.548	37.323	-1.291	-4.69	48.108	0.263	0.001	0	152.45	2.54083	46.5	11.8	41.3	2.844	0.039	0.039	0.001	0.942	0.80
185	11/6/2002	5:48:11 PM	25.605	23.467	25.24	24.239	24.181	44.223	46.877	8.958	35.894	-1.291	-4.776	48.422	0.26	0.001	0	153.45	2.5575	45.4	11.9	40.1	2.762	0.039	0.039	0.001	0.961	0.82
186	11/6/2002	5:49:11 PM	25.615	23.482	25.26	24.174	24.196	43.998	46.616	9.47	35.106	-1.285	-4.748	50.031	0.258	0.001	0	154.45	2.57417	45.1	12.3	39.5	2.726	0.038	0.038	0.001	0.965	0.82
187	11/6/2002	5:50:11 PM	25.594	23.455	25.304	24.117	24.185	44.604	47.531	9.215	35.905	-1.291	-4.887	49.952	0.251	0.001	0	155.45	2.59083	46.1	12.2	40.3	2.775	0.037	0.037	0.001	0.922	0.79
188	11/6/2002	5:51:11 PM	25.608	23.469	25.223	24.192	24.164	44.257	47.239	9.091	35.837	-1.288	-4.713	48.358	0.262	0.001	0	156.45	2.6075	45.8	11.9	40.0	2.761	0.039	0.039	0.001	0.969	0.82
189	11/6/2002	5:52:11 PM	25.608	23.474	25.298	24.172	24.214	45.228	48.025	8.79	37.104	-1.288	-4.753	47.755	0.261	0.001	0	157.45	2.62417	46.6	11.7	41.2	2.838	0.039	0.039	0.001	0.937	0.80
190	11/6/2002	5:53:11 PM	25.612	23.478	25.247	24.14	24.172	44.538	47.376	8.737	36.238	-1.291	-4.736	48.053	0.261	0.001	0	158.45	2.64083	45.9	11.8	40.4	2.785	0.039	0.039	0.001	0.957	0.81
191	11/6/2002	5:54:11 PM	25.6	23.471	25.219	24.048	24.165	44.915	47.839	8.346	37.217	-1.294	-4.62	46.803	0.266	0.001	0	159.45	2.6575	46.4	11.5	41.1	2.831	0.040	0.039	0.001	0.960	0.82
192	11/6/2002	5:55:11 PM	25.609	23.48	25.294	24.062	24.164	44.544	47.32	8.723	36.463	-1.291	-4.713	48.339	0.259	0.001	0	160.45	2.67417	45.8	11.8	40.5	2.793	0.039	0.038	0.001	0.946	0.80
193	11/6/2002	5:56:11 PM	25.612	23.478	25.201	24.13	24.147	44.814	47.731	8.59	36.836	-1.288	-4.719	47.506	0.26	0.001	0	161.45	2.69083	46.3	11.6	40.8	2.815	0.039	0.039	0.001	0.944	0.80
194	11/6/2002	5:57:11 PM	25.594	23.475	25.269	24.057	24.159	43.902	46.892	9.347	35.2	-1.291	-4.745	50.239	0.258	0.001	0	162.45	2.7075	45.4	12.3	39.6	2.727	0.038	0.038	0.001	0.965	0.82
195	11/6/2002	5:58:11 PM	25.607	23.489	25.24	24.121	24.113	44.4	47.26	9.117	35.707	-1.288	-4.887	48.909	0.253	0.001	0	163.45	2.72417	46.2	12.0	40.0	2.754	0.038	0.038	0.001	0.936	0.80
196	11/6/2002	5:59:11 PM	25.606	23.487	25.241	24.039	24.096	44.534	47.283	8.991	36.25	-1.291	-4.829	48.974	0.252	0.001	0	164.45	2.74083	45.8	12.0	40.4	2.785	0.038	0.037	0.001	0.924	0.79
197	11/6/2002	6:00:11 PM	25.59	23.471	25.29	24.023	24.08	44.426	47.353	9.025	35.943	-1.291	-4.788	44.54	0.257	0.001	0	165.45	2.7575	45.9	10.9	40.2	2.771	0.038	0.038	0.001	0.946	0.80
198	11/6/2002	6:01:11 PM	25.599	23.481	25.219	24.077	24.105	44.52	47.372	8.961	36.113	-1.288	-4.785	48.643	0.258	0.001	0	166.45	2.77417	45.9	11.9	40.3	2.780	0.038	0.038	0.001	0.948	0.81
199	11/6/2002	6:02:11 PM	25.613	23.504	25.308	24.001	24.083	44.731	47.394	8.891	36.566	-1.288	-4.84	48.59	0.254	0.001	0	167.45	2.79083	45.9	11.9	40.6	2.803	0.038	0.038	0.001	0.924	0.79
200	11/6/2002	6:03:11 PM	25.592	23.479	25.252	23.925	24.098	44.762	47.543	8.998	36.359	-1.291	-4.834	49.675	0.254	0.001	0	168.45	2.8075	46.1	12.2	40.6	2.797	0.038	0.038	0.001	0.927	0.79
201	11/6/2002	6:04:11 PM	25.607	23.493	25.256	24.009	24.102	44.522	47.252	8.891	36.339	-1.285	-4.866	48.62	0.252	0.001	0	169.45	2.82417	45.8	11.9	40.4	2.788	0.038	0.037	0.001	0.923	0.79
202	11/6/2002	6:05:11 PM	25.61	23.491	25.35	24.063	24.116	44.401	47.274	9.205	35.776	-1.291	-4.881	49.15	0.249	0.001	0	170.45	2.84083	45.8	12.0	40.1	2.764	0.037	0.037	0.001	0.917	0.78
203	11/6/2002	6:06:11 PM	25.609	23.488	25.244	24.017	24.095	44.55	47.413	9.061	36.14	-1.288	-4.863	48.98	0.253	0.001	0	171.45	2.8575	46.0	12.0	40.4	2.785	0.038	0.037	0.001	0.927	0.79
204	11/6/2002	6:07:11 PM	25.588	23.464	25.288	23.91	24.023	44.764	47.593	8.944	36.476	-1.291	-4.869	47.949	0.252	0.001	0	172.45	2.87417	46.1	11.8	40.6	2.801	0.038	0.037	0.001	0.917	0.78
205	11/6/2002	6:08:11 PM	25.603	23.479	25.298	23.971	24.053	44.598	47.434	9.008	36.16	-1.291	-4.86	48.49	0.25	0.001	0	173.45	2.89083	46.0	11.9	40.4	2.784	0.037	0.037	0.001	0.915	0.78
206	11/6/2002	6:09:11 PM	25.592	23.463	25.247	23.94	24.037	44.733	47.558	9.057	36.253	-1.291	-4.863	48.855	0.25	0.001	0	174.45	2.9075	46.1	12.0	40.5	2.792	0.037	0.037	0.001	0.914	0.78
207	11/6/2002	6:10:11 PM	25.59	23.446	25.325	23.847	24.01	44.743	47.556	8.96	36.339	-1.291	-4.866	46.319	0.252	0.001	0	175.45	2.92417	46.1	11.4	40.5	2.795	0.038	0.037	0.001	0.918	0.78
208	11/6/2002	6:11:11 PM	25.582	23.428	25.237	23.865	23.962	44.72	47.374	8.957	36.476	-1.291	-4.881	49.031	0.25	0.001	0	176.45	2.94083	45.9	12.0	40.6	2.799	0.037	0.037	0.001	0.912	0.78
209	11/6/2002	6:12:11 PM	25.579	23.43	25.289	23.827	23.934	43.494	47.491	9	35.073	-1.288	-3.222	48.46	0.237	0.001	0	177.45	2.9575	46.0	11.9	39.3	2.708	0.035	0.035	0.001	0.892	0.76
210	11/6/2002	6:13:11 PM	25.577	23.423	25.302	23.865	23.927	44.116	47.357	8.927	35.771	-1.291	-4.235	48.584	0.266	0.001	0	178.45	2.97417	45.9	11.9	39.9	2.754	0.040	0.039	0.001	0.984	0.84
211	11/6/2002	6:14:11 PM	25.575	23.431	25.245	23.867	23.93	44.687	47.498	8.932	36.273	-1.288	-4.794	48.33	0.25	0.001	0	179.45	2.99083	46.0	11.8	40.5	2.791	0.037	0.037	0.001	0.914	0.78
212	11/6/2002	6:15:11 PM	25.569	23.43	25.343	23.796	23.886	44.785	47.45	8.937	36.39	-1.288	-4.93	47.798	0.248	0.001	0	180.45	3.0075	46.0	11.7	40.6	2.798	0.037	0.037	0.001	0.902	0.77
213	11/6/2002	6:16:11 PM	25.577	23.423	25.282	23.774	23.892	44.167	46.637	9.252	35.552	-1.291	-5.04	49.473	0.241	0.001	0	181.45	3.02417	45.2	12.1	39.9	2.748	0.036	0.036	0.001	0.894	0.76
214	11/6/2002	6:17:11 PM	25.576	23.427	25.25	23.858	23.865	44.368	47.043	9.164	35.798	-1.288	-4.913	50.455	0.248	0.001	0	182.45	3.04083	45.6	12.4	40.1	2.764	0.037	0.037	0.001	0.916	0.78
215	11/6/2002	6:18:11 PM	25.57	23.421	25.255	23.903	23.865	45.193	47.994	8.775	36.998	-1.288	-4.878	48.089	0.247	0.001	0	183.45	3.0575	46.5	11.8	41.1	2.833	0.037	0.037	0.001	0.890	0.76
216	11/6/2002	6:19:11 PM	25.544	23.42	25.154	23.947	23.909	44.356	46.939	9.145	35.817	-1.291	-5.014	48.278	0.241	0.001	0	184.45	3.07417	45.5	11.8	40.1	2.764	0.036	0.036	0.001	0.892	0.76
217	11/6/2002	6:20:11 PM	25.519	23.405	25.138	23.906	23.883	44.836	47.409	8.882	36.533	-1.291	-5.005	48.511	0.245	0.001	0	185.45	3.09083	45.9	11.9	40.7	2.805	0.037	0.036	0.001	0.894	0.76
218	11/6/2002	6:21:11 PM	25.504	23.41	24.998	23.997	23.898	43.467	45.921	9.813	34.287	-1.288	-5.014	50.667	0.242	0.001	0	186.45	3.1075	44.4	12.4	38.9	2.680	0.036	0.036	0.001

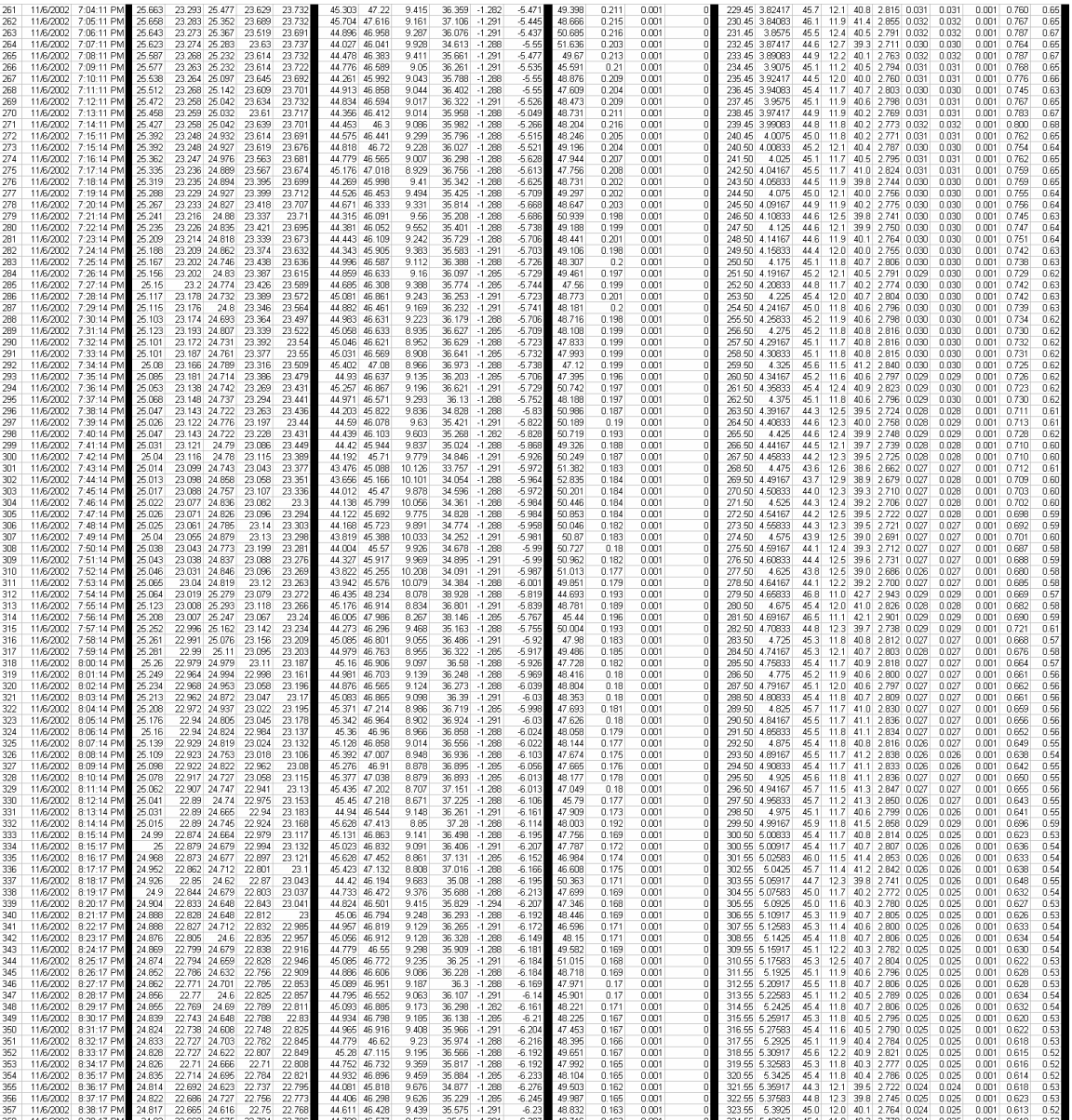


Figure D6-3: Dewatering of the AN-102R2, batch 3A, insoluble solids concentrations from 1.6 to 25 wt% - Raw & Calculated Data

391	11/6/2002	9:12:17 PM	24.98	22.467	24.844	22.572	22.635	44.72	46.215	9.639	35.475	-1.288	-6.291	49.559	0.152	0.001	0	357.55	5.95917	44.7	12.1	40.1	2.765	0.023	0.023	0.001	0.568	0.48
392	11/6/2002	9:13:17 PM	24.969	22.466	24.843	22.591	22.603	44.607	46.078	9.588	35.462	-1.285	-6.363	49.645	0.15	0.001	0	358.55	5.97583	44.6	12.2	40.0	2.760	0.022	0.022	0.001	0.561	0.48
393	11/6/2002	9:14:17 PM	24.943	22.45	24.762	22.53	22.623	44.779	46.24	9.507	35.579	-1.285	-6.352	48.678	0.153	0.001	0	359.55	5.9925	44.8	11.9	40.2	2.770	0.023	0.023	0.001	0.572	0.49
394	11/6/2002	9:15:17 PM	24.952	22.444	24.842	22.504	22.622	44.867	46.259	9.644	35.673	-1.288	-6.326	50.837	0.148	0.001	0	360.55	6.00917	44.8	12.5	40.3	2.776	0.022	0.022	0.001	0.550	0.47
395	11/6/2002	9:16:17 PM	24.947	22.444	24.771	22.569	22.637	44.64	46.101	9.733	35.358	-1.285	-6.352	48.938	0.153	0.001	0	361.55	6.02583	44.6	12.0	40.0	2.758	0.023	0.023	0.001	0.574	0.49
396	11/6/2002	9:17:17 PM	24.915	22.427	24.784	22.426	22.595	44.673	46.141	9.8	35.321	-1.288	-6.3	50.65	0.154	0.001	0	362.55	6.0425	44.7	12.4	40.0	2.758	0.023	0.023	0.001	0.578	0.49
397	11/6/2002	9:18:17 PM	24.905	22.432	24.819	22.467	22.579	44.696	45.954	9.469	35.737	-1.285	-6.346	49.622	0.15	0.001	0	363.55	6.05917	44.5	12.2	40.2	2.773	0.022	0.022	0.001	0.559	0.48
398	11/6/2002	9:19:17 PM	24.893	22.41	24.733	22.455	22.598	44.959	46.136	9.565	35.882	-1.288	-6.366	50.394	0.152	0.001	0	364.55	6.07583	44.7	12.3	40.4	2.787	0.023	0.023	0.001	0.565	0.48
399	11/6/2002	9:20:17 PM	24.892	22.409	24.807	22.454	22.587	45.021	46.463	9.508	35.997	-1.288	-6.383	49.863	0.15	0.001	0	365.55	6.0925	45.0	12.2	40.5	2.793	0.022	0.022	0.001	0.555	0.47
400	11/6/2002	9:21:17 PM	24.902	22.414	24.751	22.499	22.587	45.031	46.358	9.542	35.937	-1.291	-6.337	49.664	0.152	0.001	0	366.55	6.10917	44.9	12.2	40.5	2.791	0.023	0.023	0.001	0.564	0.48
401	11/6/2002	9:22:17 PM	24.886	22.408	24.77	22.518	22.586	44.959	46.397	9.568	35.819	-1.288	-6.349	49.322	0.151	0.001	0	367.55	6.12583	44.9	12.1	40.4	2.785	0.023	0.023	0.001	0.561	0.48
402	11/6/2002	9:23:17 PM	24.885	22.392	24.815	22.512	22.58	44.983	46.321	9.587	35.864	-1.285	-6.412	49.457	0.152	0.001	0	368.55	6.1425	44.8	12.1	40.4	2.787	0.023	0.023	0.001	0.564	0.48
403	11/6/2002	9:24:17 PM	24.869	22.376	24.699	22.451	22.569	44.694	45.861	9.458	35.747	-1.291	-6.378	51.139	0.142	0.001	0	369.55	6.15917	44.4	12.5	40.2	2.773	0.021	0.021	0.001	0.531	0.45
404	11/6/2002	9:25:17 PM	24.873	22.38	24.783	22.395	22.518	45.021	46.331	9.498	35.976	-1.288	-6.328	49.213	0.148	0.001	0	370.55	6.17583	44.9	12.1	40.5	2.792	0.022	0.022	0.001	0.548	0.47
405	11/6/2002	9:26:17 PM	24.863	22.369	24.747	22.419	22.542	44.953	46.215	9.583	35.647	-1.285	-6.386	49.899	0.15	0.001	0	371.55	6.1925	44.7	12.2	40.3	2.775	0.022	0.022	0.001	0.560	0.48
406	11/6/2002	9:27:17 PM	24.846	22.368	24.736	22.398	22.486	44.816	45.942	9.54	35.739	-1.291	-6.386	49.391	0.152	0.001	0	372.55	6.20917	44.5	12.1	40.3	2.777	0.023	0.023	0.001	0.567	0.48
407	11/6/2002	9:28:17 PM	24.841	22.362	24.81	22.357	22.52	44.971	46.333	9.588	35.798	-1.288	-6.441	51.178	0.148	0.001	0	373.55	6.22583	44.9	12.5	40.4	2.784	0.022	0.022	0.001	0.549	0.47
408	11/6/2002	9:29:17 PM	24.834	22.351	24.724	22.32	22.438	44.868	46.256	9.695	35.653	-1.285	-6.323	50.736	0.15	0.001	0	374.55	6.2425	44.8	12.4	40.3	2.776	0.022	0.023	0.001	0.560	0.48
409	11/6/2002	9:30:17 PM	24.813	22.33	24.767	22.279	22.437	44.582	45.94	9.814	35.235	-1.291	-6.366	50.033	0.146	0.001	0	375.55	6.25917	44.5	12.3	39.9	2.752	0.022	0.022	0.001	0.549	0.47
410	11/6/2002	9:31:17 PM	24.826	22.323	24.761	22.368	22.42	44.662	46.016	9.919	35.174	-1.288	-6.378	49.91	0.148	0.001	0	376.55	6.27583	44.5	12.2	39.9	2.752	0.022	0.022	0.001	0.557	0.47
411	11/6/2002	9:32:17 PM	24.819	22.316	24.734	22.431	22.443	44.729	46.112	9.842	35.321	-1.288	-6.467	50.13	0.147	0.001	0	377.55	6.2925	44.6	12.3	40.0	2.760	0.022	0.022	0.001	0.552	0.47
412	11/6/2002	9:33:17 PM	24.834	22.31	24.818	22.39	22.453	44.851	45.965	9.877	35.46	-1.288	-6.43	50.05	0.146	0.001	0	378.55	6.30917	44.5	12.3	40.2	2.769	0.022	0.022	0.001	0.545	0.46
413	11/6/2002	9:34:17 PM	24.864	22.32	24.779	22.461	22.478	44.769	46.036	9.872	35.373	-1.285	-6.43	50.893	0.146	0.001	0	379.55	6.32583	44.6	12.5	40.1	2.763	0.022	0.022	0.001	0.547	0.47
414	11/6/2002	9:35:17 PM	24.869	22.33	24.833	22.445	22.468	44.107	45.537	10.184	34.283	-1.285	-6.369	52.347	0.144	0.001	0	380.55	6.3425	44.1	12.8	39.2	2.702	0.021	0.022	0.001	0.550	0.47
415	11/6/2002	9:36:17 PM	24.859	22.31	24.848	22.466	22.468	44.733	45.959	9.683	35.518	-1.285	-6.462	48.976	0.142	0.001	0	381.55	6.35917	44.5	12.0	40.1	2.767	0.021	0.021	0.001	0.530	0.45
416	11/6/2002	9:37:17 PM	24.858	22.299	24.767	22.45	22.452	45.336	46.662	9.565	36.173	-1.285	-6.357	49.056	0.151	0.001	0	382.55	6.37583	45.2	12.0	40.8	2.810	0.023	0.023	0.001	0.566	0.47
417	11/6/2002	9:38:17 PM	24.867	22.289	24.837	22.369	22.487	45.108	46.72	9.774	35.688	-1.291	-6.352	49.891	0.15	0.001	0	383.55	6.3925	45.2	12.2	40.4	2.785	0.022	0.022	0.001	0.566	0.47
418	11/6/2002	9:39:17 PM	24.872	22.288	24.771	22.464	22.476	44.706	45.971	9.657	35.561	-1.285	-6.421	48.993	0.147	0.001	0	384.55	6.40917	44.5	12.0	40.1	2.767	0.022	0.022	0.001	0.550	0.47
419	11/6/2002	9:40:17 PM	24.876	22.282	24.79	22.413	22.49	45.321	46.714	9.518	36.23	-1.288	-6.433	48.423	0.15	0.001	0	385.55	6.42583	45.2	11.9	40.8	2.811	0.022	0.022	0.001	0.552	0.47
420	11/6/2002	9:41:17 PM	24.885	22.287	24.87	22.437	22.49	44.969	46.399	9.717	35.64	-1.285	-6.424	50.65	0.145	0.001	0	386.55	6.4425	44.9	12.4	40.3	2.779	0.022	0.022	0.001	0.538	0.46
421	11/6/2002	9:42:17 PM	24.874	22.265	24.733	22.421	22.494	45.284	46.681	9.463	36.175	-1.291	-6.395	47.795	0.149	0.001	0	387.55	6.45917	45.2	11.7	40.7	2.808	0.022	0.022	0.001	0.560	0.47
422	11/6/2002	9:43:17 PM	24.889	22.275	24.833	22.39	22.473	45.305	46.697	9.723	36.023	-1.288	-6.302	49.104	0.149	0.001	0	388.55	6.47583	45.2	12.0	40.7	2.804	0.022	0.022	0.001	0.545	0.46
423	11/6/2002	9:44:17 PM	24.894	22.28	24.793	22.435	22.473	44.981	46.35	9.678	35.698	-1.288	-6.392	49.077	0.146	0.001	0	389.55	6.4925	44.9	12.0	40.3	2.781	0.022	0.022	0.001	0.543	0.46
424	11/6/2002	9:45:17 PM	24.883	22.279	24.787	22.349	22.427	44.892	46.244	9.571	35.827	-1.288	-6.441	49.876	0.149	0.001	0	390.55	6.50917	44.8	12.2	40.4	2.783	0.022	0.022	0.001	0.554	0.47
425	11/6/2002	9:46:17 PM	24.887	22.274	24.867	22.374	22.396	44.971	46.289	9.662	35.728	-1.288	-6.43	48.121	0.144	0.001	0	391.55	6.52583	44.8	11.8	40.3	2.782	0.021	0.022	0.001	0.534	0.45
426	11/6/2002	9:47:17 PM	24.87	22.262	24.75	22.321	22.344	45.3	46.59	9.63	36.077	-1.288	-6.366	46.086	0.148	0.001	0	392.55	6.5425	45.1	11.3	40.7	2.805	0.022	0.022	0.001	0.546	0.46
427	11/6/2002	9:48:17 PM	24.849	22.25	24.819	22.265	22.353	45.528	46.904	9.455	36.517	-1.285	-6.401	50.935	0.15	0.001	0	393.55	6.55917	45.4	12.5	41.0	2.828	0.022	0.022	0.001	0.548	0.47
428	11/6/2002	9:49:17 PM	24.853	22.25	24.803	22.345	22.307	45.216	46.647	9.516	36.054	-1.285	-6.415	48.311	0.144	0.001	0	394.55	6.57583	45.2	11.8	40.6	2.802	0.021	0.022	0.001	0.531	0.45
429	11/6/2002	9:50:17 PM	24.857	22.253	24.782	22.278	22.321	44.938	46.083	9.457	35.98	-1.282	-6.441	48.773	0.144	0.001	0	395.55	6.5925	44.6	12.0	40.5	2.790	0.021	0.022	0.001	0.534	0.45
430	11/6/2002	9:51:17 PM	24.862	22.263	24.876	22.237	22.33	45.203	46.583	9.581	36.033	-1.288	-6.447	49.446	0.144	0.001	0	396.55	6.60917	45.1	12.1	40.6	2.800	0.021	0.022	0.001	0.530	0.45
431	11/6/2002	9:52:17 PM	24.871	22.247	24.785	22.267	22.366	45.234	46.496	9.624	36.034	-1.285	-6.395	48.548	0.147	0.001	0	397.55	6.62583	45.0	11.9	40.6	2.802	0.022	0.022	0.001	0.543	0.46
432	11/6/2002	9:53:17 PM	24.885	22.251	24.86	22.326	22.389	45.371	46.66	9.373	36.431	-1.285	-6.349	48.081	0.146	0.001	0	398.55	6.6425	45.2	11.8	40.9	2.820	0.022	0.022	0.001	0.534	0.45
433	11/6/2002	9:54:17 PM	24.88	22.241	24.864	22.371	22.424	45.286	46.589	9.643	35.995	-1.288	-6.462	47.995	0.144	0.001	0	399.55	6.65917	45.1	11.8	40.6	2.802	0.021	0.022	0.001	0.530	0.45
434	11/6/2002	9:55:17 PM	24.896	22.251	24.799	22.421	22.464	45.193	46.403	9.598	35.96	-1.288	-6.45	48.425	0.144	0.001	0	400.55	6.67583	44.9	11.9	40.6	2.798	0.021	0.022	0.001	0.532	0.45
435	11/6/2002	9:56:17 PM	24.914	22.235	24.894	22.381	22.468	45.501	46.8	9.521	36.41	-1.288	-6.404	47.881	0.144	0.001	0	401.55	6.6925	45.3	11.7	41.0	2.824	0.021	0.022	0.001	0.526	0.45
436	11/6/2002	9:57:17 PM	24.903	22.219	24.803	22.43	22.483	45.234	46.447	9.551	36.076	-1.291	-6.43	48.292	0.143	0.001	0	402.55	6.70917	45.0	11.8	40.7	2.803	0.021	0.021	0.001	0.527	0.45
437	11/6/2002	9:58:17 PM	24.908	22.219	24.838	22.425	22.503	45.392	46.759	9.452	36.332	-1.294	-6.415	48.852	0.147	0.001	0	403.55	6.72583	45.3	12.0	40.9	2.817	0.022	0.022	0.001	0.539	0.46
438	11/6/2002	9:59:17 PM	24.929	22.224	24.923	22.425	22.493	45.216	46.603	9.672	36.054	-1.285	-6.399	50.606	0.141	0.001	0	404.55	6.7425	45.0	12.4	40.6	2.802	0.021	0.021	0.001	0.518	0.44
439	11/6/2002	10:00:17 PM	24.929	22.22	24.823	22.355	22.463	45.445	46.697	9.675	36.24	-1.282	-6.444	48.905	0.145	0.001	0	405.55	6.75917	45.2	12.0	40.8	2.816	0.022	0.022	0.001	0.532	0.45
440	11/6/2002	10:01:17 PM	24.924	22.209	24.913	22.239	22.448	45.079	46.517	9.782	35.708	-1.288	-6.459	49.452	0.145	0.001	0	406.55	6.77583	45.0	12.1	40.4	2.785	0.022	0.022	0.001	0.537	0.46
441	11/6/2002	10:02:17 PM	24.908	22.199	24.872	22.223	22.376	45.309	46.649	9.777	35.945	-1.291	-6.427	48.188	0.139	0.001	0	407.55	6.7925	45.2	11.8	40.6	2.801	0.021	0.021	0.001	0.512	0.44
442	11/6/2002	10:03:17 PM	24.882	22.187	24.846	22.036	22.305	45.166	46.318	9.873	35.731	-1.288	-6.36	49.696	0.141	0.001	0	408.55	6.80917	44.8	12.2	40.4	2.789	0.021	0.021	0.001	0.522	0.44
443	11/6/2002	10:04:17 PM	24.897	22.182	24.956	22.051	22.325	45.226	46.517	9.798	35.804	-1.288	-6.398	49.746	0.143	0.001	0	409.55	6.82583	45.0	12.2	40.5	2.793	0.021	0.021	0.001	0.527	0.45
444	11/6/2002	10:05:17 PM	24.902	22.177	24.846	22.142	22.305	45.292	46.68	9.694	36.007	-1.288	-6.462	50.084	0.139	0.001	0	410.55	6.8425	45.2	12.3	40.6	2.803	0.021	0.021	0.001	0.512	0.44
445	11/6/2002	10:06:17 PM	24.89	22.161	24.915	22.115	22.304	45.487	46.736	9.466	36.457	-1.285	-6.412	47.105	0.145	0.001	0	411.55	6.85917	45.3	11.5	41.0	2.825	0.022	0.022	0.001	0.529	0.45
446	11/6/2002	10:07:17 PM	24.91	22.165	24.924	22.165	22.308	45.739	47.018	9.648	36.58	-1.288	-6.407	47.487	0.142	0.001	0	412.55	6.87583	45.5	11.6	41.2	2.838	0.021	0.021	0.001	0.515	0.44
447	11/6/2002	10:08:17 PM	24.903	22.144	24.848	22.229	22.332	45.584	47.093	9.747	36.164	-1.288	-6.421	48.622	0.14	0.001	0	413.55	6.8925	45.6	11.9	40.9	2.818	0.021	0.021	0.001	0.513	0.44
448	11/6/2002	10:09:17 PM	24.913	22.143	25.308	22.148	22.331	46.348	47.82	9.083	37.64	-1.288	-6.418	46.38	0.148	0.001	0	414.55	6.90917	46.3	11.4	42.0	2.895	0.022	0.022	0.001	0.521	0.44
449	11/6/2002	10:10:17 PM	24.972	22.138	25.457	22.198	22.376	48.057	49.513	7.614	40.945	-1.288	-6.282	42.361	0.156	0.001	0	415.55	6.92583	48.0	10.4	44.5	3.068	0.023	0.023	0.001	0.516	0.44
450	11/6/2002	10:11:17 PM	25.057	22.127	25.617	22.137	22.39	48.683	50.326	7.157	41.982	-1.288	-6.126	41.377	0.161	0.001	0	416.55	6.9425	48.9	10.1	45.3	3.126	0.024	0.024	0.001	0.520	0.44
451	11/6/2002	10:12:17 PM	25.181	22.136	25.646	22.211	22.375	48.368	49.941	7.073	41.753	-1.285	-6.187	40.786	0.164	0.001	0	417.55	6.95917	48.5	10.0	45.1	3.107	0.024	0.024	0.001	0.533	0.45
452	11/6/2002	10:13:17 PM	25.261	22.121	25.41	22.251	22.404	49.339	50.979	6.689	43.084	-1.285	-6.117	39.377	0.163	0.001	0	418.55	6.97583	49.5	9.6	46.2	3.186	0.024	0.024	0.001	0.520	0.44
453	11/6/2002	10:14:17 PM	25.31	22.125	25.365	22.25	22.398	49.318	50.971	6.605	43.178	-1.285	-6.276	38.345	0.166	0.001	0	419.55	6.9925	49.5	9.4	46.2	3.189	0.025	0.024	0.001	0.530	0.45
454	11/6/2002	10:15:17 PM	25.325	22.119	25.189	22.285	22.398	49.364	50.969	6.596	43.176	-1.285	-6.317	38.554	0.167	0.001	0	420.55	7.00917	49.5	9.4	46.3	3.190	0.025	0.025	0.001	0.535	0.46
455	11/6/2002	10:16:17 PM	25.319	22.124	25.133	22.254	22.387	49.209	50.818	6.582	42.997	-1.285	-6.302	38.889	0.159	0.001	0	421.55	7.02583	49.2	9.5	46.0	3.168	0.024	0.023	0.001	0.511	0.43
456	11/6/2002	10:17:17 PM	25.294	22.134	25.133	22.319	22.362	45.652	47.117	9.003	37.069	-1.285	-6.441	47.279	0.14	0.001	0	422.55	7.0425	45.6	11.6	41.4	2.852	0.021	0.021	0.001	0.503	0.43
457	11/6/2002	10:18:17 PM	25.233	22.112	25.007	22.298	22.376	45.064	46.283	9.19	36.337	-1.288	-6.424	47.34	0.144	0.001	0	423.55	7.05917	44.8	11.6	40.7	2.806	0.021	0.021	0.001	0.527	0.45
458	11/6/2002	10:19:17 PM	25.202	22.117	25.056	22.292	22.355	45.483	46.757	8.994	36.891	-1.285	-6.334	47.837	0.142	0.001	0	424.55	7.07583	45.3	11.7	41.2	2.840	0.021	0.021	0.001	0.513	0.44
459	11/6/2002	10:20:17 PM	25.166	22.116	24.965	22.327	22.38	46.218	47.535	8.865	37.753	-1.288	-6.346	47.737	0.146	0.001	0	425.55	7.0925	46.1	11.7	42.0	2.895	0.022	0.022	0.001	0.519	0.44
460	11/6/2002	10:21:17 PM	25.131	22.106	24.94	22.291	22.374	46.549	47.907	8.748	38.244	-1.288	-6.453	46.862	0.144	0.001	0	426.55	7.10917	46.4	11.5	42.4	2.923	0.021	0.022	0.001	0.507	0.43
461	11/6/2002	10:22:17 PM	25.085	22.1	24.959	22.23	22.363	46.307	47.618	8.782	37.923	-1.291	-6.531	46.518	0.143	0.001	0	427.55	7.12583	46.1	11.4	42.1	2.904	0.021	0.021	0.001	0.507	0.43
462	11/6/2002	10:23:17 PM	25.06	22.11	24.869	22.25	22.368	46.357	47.624	8.748	38.081	-1.285	-6.427	45.757	0.142	0.001	0	428.55	7.1425	46.2	11.2	42.2	2.911	0.021	0.021	0.001	0.503	0.43
463	11/6/2002	10:24:17 PM	25.029	22.099	24.898	22.213	22.347	46.492	47.915	8.692	38.304	-1.285	-6.488	46.568	0.146	0.001	0	429.55	7.15917	46.4	11.4	42.4	2.926	0.022	0.022	0.001	0.511	0.43
464	11/6/2002	10:25:17 PM	24.998	22.103	24.847	22.223	22.361	46.27	47.452	8.684	38.111	-1.285	-6.511	46.786	0.14	0.001	0	430.55	7.17583	46.0	11.5	42.2	2.909	0.021	0.021	0.000	0.497	0.42
465	11/6/2002	10:26:17 PM	24.973	22.083	24.792	22.178	22.336	46.404	47.756	8.749	37.978	-1.291	-6.528	46.516	0.141	0.001	0	431.55	7.1925	46.3	11.4	42.2	2.909	0.021	0.021	0.001	0.501	0.43
466	11/6/2002	10:27:17 PM	24.962	22.087	24.857	22.137	22.31	46.52	47.878	8.678	38.279	-1.288	-6.549	46.109	0.14	0.001	0	432.55	7.20917	46.4	11.3	42.4	2.923	0.021	0.021	0.000	0.494	0.42
467	11/6/2002	10:28:17 PM	24.932	22.072	24.761	22.162	22.295	44.851	45.923	9.599	35.769	-1.288	-6.575	48.674	0.137	0.001	0	433.55	7.22583	44.5	11.9	40.3	2.779	0.020	0.021	0.001	0.510	0.43
468	11/6/2002	10:29:17 PM	24.906	22.076	24.82	22.106	22.249	45.856	47.121	9.169	37.051	-1.285	-6.531	47.365	0.14	0.001	0	434.55	7.2425	45.6	11.6	41.5	2.858	0.021	0.021	0.001	0.506	0.43
469	11/6/2002	10:30:17 PM	24.865	22.045	24.774	22.079	22.233	46.265	47.502	9.075	37.436	-1.288	-6.554	47.206	0.139	0.001	0	435.55	7.25917	46.0	11.6	41.8	2.885	0.021	0.021	0.000	0.498	0.42
470	11/6/2002	10:31:17 PM	24.863	22.058	24.743	22.098	22.196	45.967	47.529	9.173	37.137	-1.285	-6.288	48.832	0.138	0.001	0	436.55	7.27583	46.1	12.0	41.6	2.865	0.021	0.021	0.000	0.499	0.42
471	11/6/2002	10:32:17 PM	24.847	22.052	24.832	22.092	22.17	45.864	47.196	8.961	37.344	-1.282	-6.366	47.269	0.138	0.001	0	437.55	7.2925	45.7	11.6	41.6	2.868	0.021	0.021	0.000	0.497	0.42
472	11/6/2002	10:33:17 PM	24.837	22.037	24.731	22.147	22.18	46.036	47.276	9.087	37.366	-1.285	-6.517	47.59	0.137	0.001	0	438.55	7.30917	45.8	11.7	41.7	2.875	0.021	0.021	0.000	0.494	0.42
473	11/6/2002	10:34:17 PM	24.826	22.031	24.766	22.086	22.159	46.015	47.227	9.154	37.272	-1.285	-6.58	47.208	0.138	0.001	0	439.55	7.32583	45.8	11.6	41.6	2.871	0.021	0.021	0.000	0.497	0.42
474	11/6/2002	10:35:17 PM	24.795	21.999	24.754	22.074	22.147	46.027	47.266	9.096	37.436	-1.288	-6.601	47.716	0.137	0.001	0	440.55	7.3425	45.8	11.7	41.7	2.877	0.020	0.021	0.000	0.493	0.42
475	11/6/2002	10:36:17 PM	24.804	22.024	24.723	22.094	22.141	45.086	46.246	9.548	36.048	-1.285	-6.598	43.498	0.139	0.001	0	441.55	7.35917	44.8	10.7	40.6	2.797	0.021	0.021	0.001	0.515	0.44
476	11/6/2002	10:37:17 PM	24.783	22.008	24.818	22.053	22.136	45.193	46.321	9.774	35.884	-1.285	-6.693	49.972	0.134	0.001	0	442.55	7.37583	44.8	12.2	40.5	2.795	0.020	0.020	0.000	0.495	0.42
477	11/6/2002	10:38:17 PM	24.773	22.002	24.772	22.077	22.12	44.756	45.95	9.908	35.28	-1.285	-6.705	50.413	0.133	0.001	0	443.55	7.3925	44.5	12.4	40.0	2.759	0.020	0.020	0.000	0.499	0.42
478	11/6/2002	10:39:17 PM	24.777	22.007	24.817	22.032	22.114	44.586	45.783	10.072	34.85	-1.282	-6.688	50.784	0.129	0.001	0	444.55	7.40917	44.3	12.4	39.7

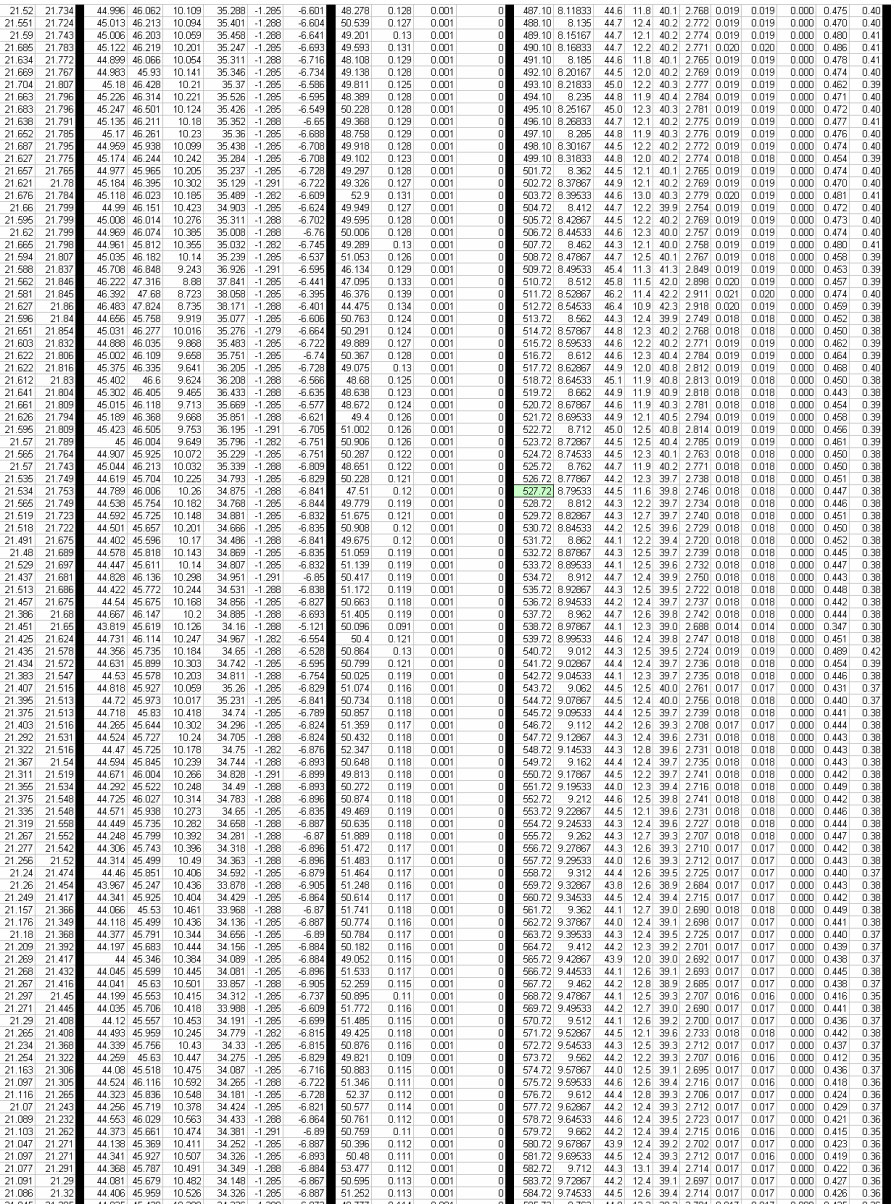


Figure D6-5: Dewatering of the AN-102R2, batch 3A, insoluble solids concentrations from 1.6 to 25 wt% - Raw & Calculated Data

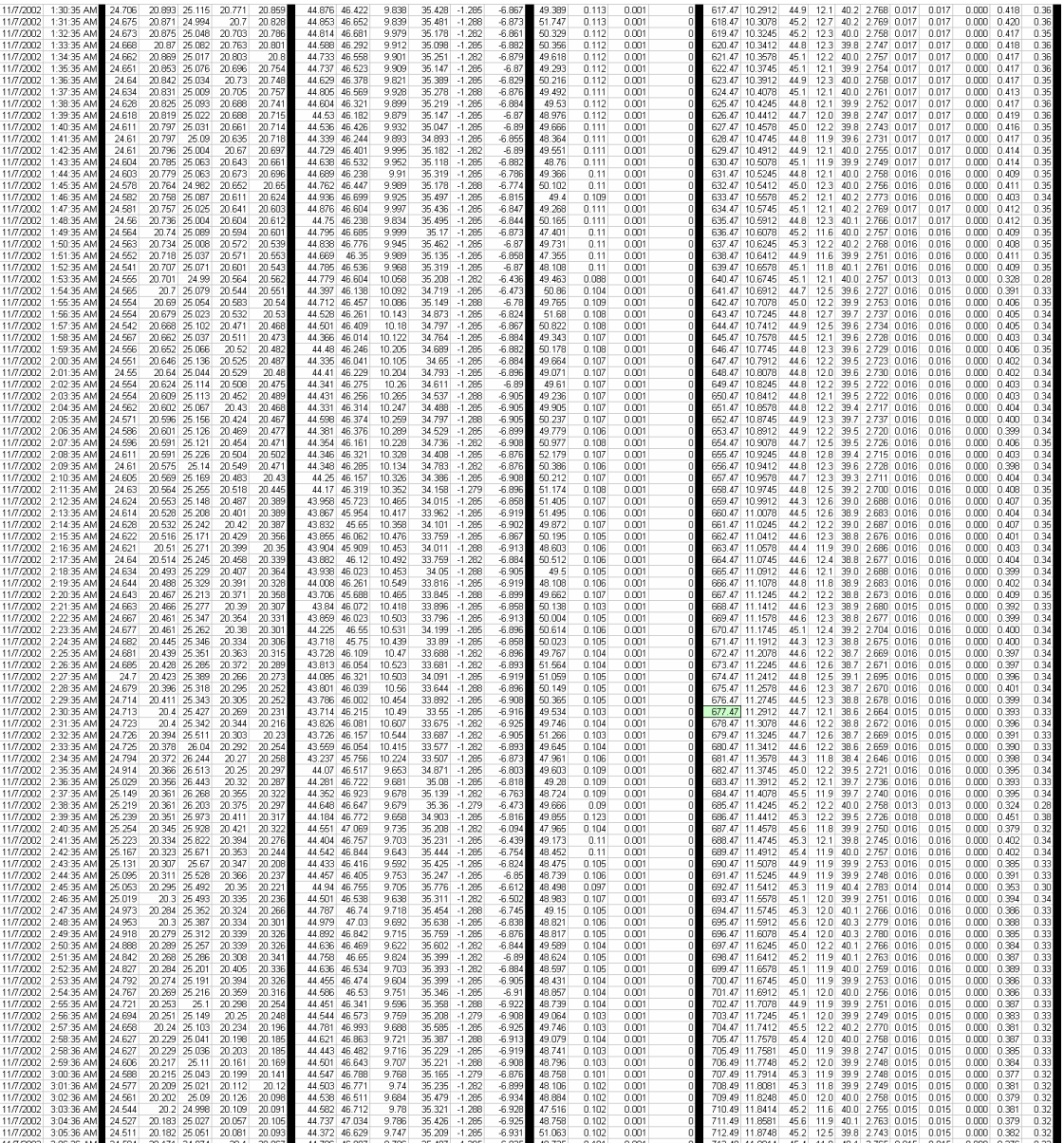


Figure D6-6: Dewatering of the AN-102R2, batch 3A, insoluble solids concentrations from 1.6 to 25 wt% - Raw & Calculated Data

781	11/7/2002	3:39:36 AM	24.421	19.966	25.051	19.955	19.862	43.677	46.399	10.008	34.16	-1.285	-6.922	48.303	0.099	0.001	0	746.49	12.4414	44.9	11.8	38.9	2.683	0.015	0.015	0.000	0.379	0.32
782	11/7/2002	3:40:36 AM	24.41	19.945	25.105	19.889	19.846	44.078	46.96	10.07	34.416	-1.285	-6.934	48.632	0.099	0.001	0	747.49	12.4581	45.5	11.9	39.2	2.706	0.015	0.015	0.000	0.375	0.32
783	11/7/2002	3:41:36 AM	24.42	19.949	25.11	19.949	19.845	43.813	46.821	10.067	34.24	-1.282	-6.91	50.556	0.099	0.001	0	748.49	12.4748	45.3	12.4	39.0	2.691	0.015	0.015	0.000	0.377	0.32
784	11/7/2002	3:42:36 AM	24.414	19.944	25.079	19.938	19.819	43.933	46.782	10.013	34.39	-1.282	-6.934	48.699	0.099	0.001	0	749.49	12.4914	45.3	11.9	39.2	2.700	0.015	0.015	0.000	0.376	0.32
785	11/7/2002	3:43:36 AM	24.419	19.933	25.164	19.912	19.773	43.801	46.732	10.034	34.283	-1.285	-6.937	48.601	0.099	0.001	0	750.49	12.5081	45.3	11.9	39.0	2.692	0.015	0.015	0.000	0.376	0.32
786	11/7/2002	3:44:36 AM	24.418	19.927	25.103	19.927	19.763	43.968	46.743	10.121	34.404	-1.282	-6.958	50.925	0.099	0.001	0	751.49	12.5248	45.3	12.5	39.2	2.701	0.015	0.015	0.000	0.376	0.32
787	11/7/2002	3:45:36 AM	24.422	19.921	25.112	19.921	19.777	44.002	47.036	10.069	34.359	-1.285	-6.931	48.695	0.099	0.001	0	752.49	12.5414	45.6	11.9	39.2	2.701	0.015	0.015	0.000	0.376	0.32
788	11/7/2002	3:46:36 AM	24.412	19.911	25.187	19.845	19.736	43.846	46.697	10.076	34.322	-1.285	-6.931	50.576	0.098	0.001	0	753.49	12.5581	45.2	12.4	39.1	2.695	0.015	0.015	0.000	0.372	0.32
789	11/7/2002	3:47:36 AM	24.401	19.905	25.106	19.824	19.74	44.149	47.189	10.115	34.476	-1.285	-6.925	49.5	0.098	0.001	0	754.49	12.5748	45.7	12.1	39.3	2.710	0.015	0.015	0.000	0.371	0.32
790	11/7/2002	3:48:36 AM	24.395	19.888	25.149	19.757	19.714	43.747	46.529	10.157	34.162	-1.282	-6.908	48.276	0.098	0.001	0	755.49	12.5914	45.1	11.8	39.0	2.686	0.015	0.015	0.000	0.374	0.32
791	11/7/2002	3:49:36 AM	24.389	19.888	25.204	19.721	19.713	44.012	47.063	10.194	34.22	-1.285	-6.928	48.687	0.098	0.001	0	756.49	12.6081	45.6	11.9	39.1	2.697	0.015	0.015	0.000	0.371	0.32
792	11/7/2002	3:50:36 AM	24.383	19.877	25.108	19.72	19.702	43.621	46.567	9.999	34.285	-1.285	-6.87	47.749	0.099	0.001	0	757.49	12.6248	45.1	11.7	39.0	2.686	0.015	0.015	0.000	0.378	0.32
793	11/7/2002	3:51:36 AM	24.387	19.871	25.187	19.698	19.691	43.952	46.97	10.075	34.314	-1.285	-6.89	48.811	0.098	0.001	0	758.49	12.6414	45.5	12.0	39.1	2.698	0.015	0.015	0.000	0.371	0.32
794	11/7/2002	3:52:36 AM	24.391	19.87	25.191	19.804	19.715	43.631	46.496	10.124	34.167	-1.285	-6.919	48.823	0.098	0.001	0	759.49	12.6581	45.0	12.0	38.9	2.682	0.015	0.015	0.000	0.374	0.32
795	11/7/2002	3:53:36 AM	24.39	19.849	25.125	19.798	19.684	44.149	47.092	10.086	34.594	-1.285	-6.931	48.301	0.099	0.001	0	760.49	12.6748	45.6	11.8	39.4	2.715	0.015	0.015	0.000	0.374	0.32
796	11/7/2002	3:54:36 AM	24.41	19.848	25.235	19.787	19.673	43.824	46.894	9.982	34.404	-1.285	-6.905	50.241	0.097	0.001	0	761.49	12.6914	45.4	12.3	39.1	2.697	0.014	0.014	0.000	0.367	0.31
797	11/7/2002	3:55:36 AM	24.425	19.853	25.205	19.823	19.678	43.718	46.771	10.301	33.943	-1.282	-6.937	48.859	0.097	0.001	0	762.49	12.7081	45.3	12.0	38.8	2.677	0.014	0.014	0.000	0.370	0.32
798	11/7/2002	3:56:36 AM	24.429	19.848	25.199	19.842	19.713	43.654	46.807	10.308	33.79	-1.285	-6.879	48.897	0.096	0.001	0	763.49	12.7248	45.3	12.0	38.7	2.670	0.014	0.014	0.000	0.368	0.31
799	11/7/2002	3:57:36 AM	24.444	19.848	25.294	19.802	19.733	43.681	46.836	10.213	34.074	-1.285	-6.939	49.991	0.096	0.001	0	764.49	12.7414	45.4	12.3	38.9	2.680	0.014	0.014	0.000	0.365	0.31
800	11/7/2002	3:58:36 AM	24.454	19.838	25.219	19.867	19.754	43.696	46.829	10.332	33.702	-1.282	-6.913	48.305	0.097	0.001	0	765.49	12.7581	45.4	11.8	38.6	2.665	0.014	0.014	0.000	0.372	0.32
801	11/7/2002	3:59:36 AM	24.449	19.822	25.249	19.776	19.748	43.621	46.637	10.282	33.896	-1.282	-6.922	49.303	0.095	0.001	0	766.49	12.7748	45.2	12.1	38.8	2.672	0.014	0.014	0.000	0.363	0.31
802	11/7/2002	4:00:36 AM	24.448	19.816	25.333	19.785	19.737	43.739	46.79	10.32	33.995	-1.288	-6.948	49.224	0.097	0.001	0	767.49	12.7914	45.3	12.1	38.9	2.680	0.014	0.014	0.000	0.369	0.31
803	11/7/2002	4:01:36 AM	24.468	19.801	25.963	19.9	19.737	43.167	46.288	10.013	33.685	-1.285	-6.919	49.766	0.099	0.001	0	768.49	12.8081	44.8	12.2	38.4	2.649	0.015	0.014	0.000	0.374	0.32
804	11/7/2002	4:02:36 AM	24.548	19.816	26.503	19.775	19.732	42.995	46.259	10.024	33.44	-1.285	-6.867	49.213	0.099	0.001	0	769.49	12.8248	44.8	12.1	38.2	2.635	0.015	0.014	0.000	0.370	0.32
805	11/7/2002	4:03:36 AM	24.677	19.81	26.447	19.754	19.706	43.401	46.42	9.826	34.07	-1.282	-6.91	49.872	0.098	0.001	0	770.49	12.8414	44.9	12.2	38.7	2.671	0.015	0.014	0.000	0.362	0.31
806	11/7/2002	4:04:36 AM	24.802	19.794	26.216	19.753	19.689	43.366	46.656	9.809	34.068	-1.285	-6.876	49.37	0.099	0.001	0	771.49	12.8581	45.2	12.1	38.7	2.669	0.015	0.014	0.000	0.368	0.31
807	11/7/2002	4:05:36 AM	24.896	19.798	26.16	19.757	19.709	43.44	46.637	9.774	34.097	-1.282	-6.884	48.406	0.097	0.001	0	772.49	12.8748	45.2	11.9	38.8	2.673	0.014	0.014	0.000	0.361	0.31
808	11/7/2002	4:06:36 AM	24.929	19.796	25.968	19.76	19.697	42.156	45.452	10.564	31.995	-1.279	-6.945	53.567	0.094	0.001	0	773.49	12.8914	44.0	13.1	37.1	2.556	0.014	0.014	0.000	0.368	0.31
809	11/7/2002	4:07:36 AM	24.958	19.785	26.787	19.744	19.691	49.449	52.97	5.77	44.191	-1.282	-6.656	34.624	0.119	0.001	0	774.49	12.9081	51.5	8.5	46.8	3.228	0.018	0.017	0.000	0.371	0.32
810	11/7/2002	4:08:36 AM	24.987	19.779	25.601	19.768	19.664	51.835	54.207	4.987	47.518	-1.288	-5.266	31.251	0.135	0.001	0	775.49	12.9248	52.7	7.7	49.7	3.425	0.020	0.020	0.000	0.398	0.34
811	11/7/2002	4:09:36 AM	24.947	19.783	25.325	19.766	19.679	51.684	55.436	4.771	47.416	-1.285	-3.607	28.927	0.133	0.001	0	776.49	12.9414	54.0	7.1	49.6	3.416	0.020	0.020	0.000	0.397	0.34
812	11/7/2002	4:10:36 AM	24.966	19.783	26.28	19.772	19.648	52.539	55.297	4.462	48.728	-1.282	-5.382	27.39	0.133	0.001	0	777.49	12.9581	53.8	6.7	50.6	3.491	0.020	0.020	0.000	0.389	0.33
813	11/7/2002	4:11:36 AM	24.91	19.761	25.144	19.731	19.642	43.791	46.283	9.934	34.476	-1.288	-6.184	50.547	0.112	0.001	0	778.49	12.9748	44.8	12.4	39.1	2.698	0.017	0.017	0.000	0.425	0.36
814	11/7/2002	4:12:36 AM	24.819	19.755	25.132	19.735	19.621	44.766	47.258	9.611	35.645	-1.285	-6.693	48.269	0.105	0.001	0	779.49	12.9914	45.8	11.8	40.2	2.772	0.016	0.016	0.000	0.388	0.33
815	11/7/2002	4:13:36 AM	24.728	19.75	25.172	19.749	19.615	44.399	46.474	9.862	35.151	-1.285	-6.835	50.035	0.094	0.001	0	780.49	13.0081	45.0	12.3	39.8	2.742	0.014	0.014	0.000	0.351	0.30
816	11/7/2002	4:14:36 AM	24.632	19.734	25.066	19.703	19.599	44.114	46.283	9.753	34.891	-1.282	-6.884	49.282	0.093	0.001	0	781.49	13.0248	44.8	12.1	39.5	2.724	0.014	0.014	0.000	0.350	0.30
817	11/7/2002	4:15:36 AM	24.591	19.738	25.1	19.626	19.542	44.867	47.063	9.502	35.88	-1.285	-6.925	48.464	0.093	0.001	0	782.49	13.0414	45.6	11.9	40.4	2.784	0.014	0.014	0.000	0.342	0.29
818	11/7/2002	4:16:36 AM	24.554	19.736	25.108	19.655	19.566	43.49	45.736	10.54	33.466	-1.276	-6.954	50.931	0.092	0.001	0	783.49	13.0581	44.3	12.5	38.5	2.653	0.014	0.014	0.000	0.355	0.30
819	11/7/2002	4:17:36 AM	24.492	19.714	25.017	19.643	19.565	43.942	46.321	10.038	34.287	-1.285	-6.957	49.809	0.093	0.001	0	784.49	13.0748	44.8	12.2	39.1	2.697	0.014	0.014	0.000	0.354	0.30
820	11/7/2002	4:18:36 AM	24.462	19.714	25.081	19.648	19.564	44.48	46.786	9.576	36.491	-1.285	-6.963	47.753	0.096	0.001	0	785.49	13.0914	45.3	11.7	40.0	2.757	0.014	0.014	0.000	0.367	0.30
821	11/7/2002	4:19:36 AM	24.451	19.713	25.04	19.652	19.523	44.25	46.55	9.751	35.098	-1.282	-6.965	49.152	0.094	0.001	0	786.49	13.1081	45.1	12.0	39.7	2.735	0.014	0.014	0.000	0.363	0.30
822	11/7/2002	4:20:36 AM	24.415	19.707	25.004	19.63	19.461	44.395	46.701	9.823	35.067	-1.282	-6.98	48.54	0.094	0.001	0	787.49	13.1248	45.2	11.9	39.7	2.739	0.014	0.014	0.000	0.363	0.30
823	11/7/2002	4:21:36 AM	24.388	19.705	25.068	19.604	19.454	44.52	46.807	9.768	35.28	-1.285	-6.983	50.618	0.094	0.001	0	788.49	13.1414	45.3	12.4	39.9	2.751	0.014	0.014	0.000	0.361	0.30
824	11/7/2002	4:22:36 AM	24.362	19.704	24.991	19.643	19.453	44.435	46.869	9.852	35.057	-1.282	-6.98	48.429	0.093	0.001	0	789.49	13.1581	45.4	11.9	39.7	2.740	0.014	0.014	0.000	0.349	0.30
825	11/7/2002	4:23:36 AM	24.326	19.683	24.985	19.606	19.472	44.569	47.065	9.706	35.299	-1.285	-6.96	48.972	0.096	0.001	0	790.49	13.1748	45.6	12.0	39.9	2.753	0.014	0.014	0.000	0.359	0.31
826	11/7/2002	4:24:36 AM	24.316	19.688	25.025	19.627	19.462	44.153	46.467	9.708	34.998	-1.285	-6.986	49.091	0.093	0.001	0	791.49	13.1914	45.0	12.0	39.6	2.729	0.014	0.014	0.000	0.350	0.30
827	11/7/2002	4:25:36 AM	24.32	19.692	24.96	19.626	19.457	44.343	46.801	9.836	34.996	-1.282	-6.974	48.141	0.094	0.001	0	792.49	13.2081	45.3	11.8	39.7	2.735	0.014	0.014	0.000	0.354	0.30
828	11/7/2002	4:26:36 AM	24.285	19.662	24.965	19.566	19.457	44.395	46.805	9.818	35.049	-1.288	-6.986	48.735	0.094	0.001	0	793.49	13.2248	45.3	11.9	39.7	2.739	0.014	0.014	0.000	0.353	0.30
829	11/7/2002	4:32:01 AM	24.06	19.648	24.911	19.521	19.321	-5.72	46.792	9.791	-3.143	35.29	84.24	49.148	0.001	0.001	0	798.90	13.3151	45.3	12.0	1.3	0.089	0.000	0.000	0.000	0.116	0.10
830	11/7/2002	4:33:01 AM	22.802	19.625	24.903	19.417	19.283	-7.531	47.222	9.651	-18.631	61.217	61.968	48.02	0.001	0.001	0.541	799.90	13.3317	45.7	11.8	-13.1	-0.902	0.000	0.000	0.000	-0.011	-0.01
831	11/7/2002	4:34:01 AM	23.217	19.628	24.956	19.41	19.231	6.538	46.705	9.705	-2.25	34.565	1.675	48.697	0.001	0.001	0	800.90	13.3484	45.2	11.9	2.1	0.148	0.000	0.000	0.000	0.070	0.06
832	11/7/2002	4:35:01 AM	24.099	19.616	24.859	19.469	19.198	39.253	46.945	9.721	30.312	1.663	2.019	48.07	0.108	0.001	0	801.90	13.3651	45.5	11.8	34.8	2.398	0.016	0.016	0.000	0.465	0.40
833	11/7/2002	4:36:01 AM	24.439	19.615	24.918	19.437	19.187	38.126	45.965	10.507	28.449	1.764	2.118	51.032	0.098	0.001	0	802.90	13.3817	44.5	12.5	33.3	2.295	0.015	0.015	0.000	0.440	0.37
834	11/7/2002	4:37:01 AM	24.698	19.613	24.951	19.446	19.186	38.666	46.438	10.047	29.423	1.669	2.051	49.641	0.108	0.001	0	803.90	13.3984	45.0	12.2	34.0	2.347	0.016	0.016	0.000	0.474	0.40
835	11/7/2002	4:38:01 AM	24.883	19.598	24.871	19.385	19.18	40.153	48	10.209	30.768	1.759	2.123	49.274	0.113	0.001	0	804.90	13.4151	46.5	12.1	35.5	2.445	0.017	0.017	0.000	0.477	0.41
836	11/7/2002	4:38:46 AM	24.976	19.596	24.989	19.373	19.118	42.448	50.326	10.09	33.186	1.952	2.115	51.757	0.108	0.001	0	805.65	13.4276	48.9	12.7	37.8	2.607	0.016	0.016	0.000	0.426	0.36
837	11/7/2002	4:39:46 AM	25.035	19.589	24.958	19.422	19.106	44.631	52.663	10.277	35.108	1.903	2.205	49.673	0.118	0.001	0	806.65	13.4442	51.2	12.2	39.9	2.749	0.018	0.018	0.000	0.442	0.38
838	11/7/2002	4:40:46 AM	24.547	19.573	25.031	19.345	19.105	46.732	48.855	9.694	37.997	-1.288	-4.588	48.634	0.131	0.001	0	807.65	13.4609	47.4	11.9	42.4	2.921	0.020	0.020	0.000	0.461	0.39
839	11/7/2002	4:41:46 AM	24.335	19.576	25.06	19.333	19.088	45.769	47.613	9.546	37.229	-1.285	-6.01	47.604	0.134	0.001	0	808.65	13.4776	46.1	11.7	41.5	2.861	0.020	0.020	0.000	0.481	0.41
840	11/7/2002	4:42:46 AM	24.285	19.561	24.944	19.328	19.098	44.605	46.176	9.524	36.146	-1.288	-6.401	48.408	0.119	0.001	0	809.65	13.4942	44.7	11.9	40.4	2.784	0.018	0.018	0.000	0.440	0.37
841	11/7/2002	4:43:46 AM	24.304	19.575	25.024	19.327	19.107	44.497	46.002	9.903	35.692	-1.282	-6.485	48.691	0.116	0.001	0	810.65	13.5109	44.5	11.9	40.1	2.764	0.017	0.017	0.000	0.431	0.37
842	11/7/2002	4:44:46 AM	24.288	19.558	24.967	19.386	19.121	44.097	45.623	10.051	34.981	-1.285	-6.621	47.078	0.115	0.001	0	811.65	13.5276	44.2	11.5	39.5	2.726	0.017	0.017	0.000	0.434	0.37
843	11/7/2002	4:45:46 AM	24.282	19.557	24.901	19.39	19.13	44.768	46.244	9.711	36.052	-1.282	-6.569	48.045	0.113	0.001	0	812.65	13.5442	44.8	11.8	40.4	2.786	0.017	0.017	0.000	0.418	0.36
844	11/7/2002	4:46:46 AM	24.281	19.557	24.971	19.385	19.114	44.762	46.287	9.723	35.917	-1.285	-6.682	47.596	0.114	0.001	0	813.65	13.5609	44.8	11.7	40.3	2.781	0.017	0.017	0.000	0.422	0.36
845	11/7/2002	4:47:46 AM	24.275	19.551	24.92	19.353	19.113	44.064	45.279	9.454	36.996	-1.279	-6.663	48.936	0.11	0.001	0	814.65	13.5776	43.9	11.9	39.5	2.725	0.016	0.016	0.000	0.416	0.35
846	11/7/2002	4:48:46 AM	24.255	19.541	24.894	19.389	19.113	44.364	45.69	9.759	35.698	-1.285	-6.725	46.445	0.112	0.001	0	815.65	13.5942	44.2	11.4	40.0	2.760	0.017	0.017	0.000	0.418	0.36
847	11/7/2002	4:49:46 AM	24.249	19.53	24.949	19.368	19.118	44.416	45.925	9.767	35.733	-1.285	-6.716	48.638	0.113	0.001	0	816.65	13.6109	44.5	11.9	40.1	2.763	0.017	0.017	0.000	0.421	0.36
848	11/7/2002	4:50:46 AM	24.234	19.509	24.843	19.332	19.112	44.482	45.948	9.7	35.839	-1.285	-6.745	48.143	0.11	0.001	0	817.65	13.6276	44.5	11.8	40.2	2.769	0.016	0.016	0.000	0.410	0.35
849	11/7/2002	4:51:46 AM	24.244	19.52	24.893	19.347	19.147	44.607	46.091	9.77	35.902	-1.285	-6.722	49.14	0.109	0.001	0	818.65	13.6442	44.6	12.0	40.3	2.775	0.016	0.016	0.000	0.405	0.34
850	11/7/2002	4:52:46 AM	24.239	19.52	24.934	19.343	19.138	44.671	46.169	9.605	36.117	-1.282	-6.751	48.452	0.109	0.001	0	819.65	13.6609	44.7	11.9	40.4	2.785	0.016	0.016	0.000	0.403	0.34
851	11/7/2002	4:53:46 AM	24.224	19.499	24.833	19.393	19.112	44.472	46.182	9.625	35.757	-1.282	-6.722	47.154	0.112	0.001	0	820.65	13.6776	44.7	11.6	40.1	2.766	0.017	0.017	0.000	0.418	0.36
852	11/7/2002	4:54:46 AM	24.214	19.494	24.893	19.322	19.112	44.834	46.474	9.626	36.193	-1.285	-6.696	47.321	0.108	0.001	0	821.65	13.6942	45.0	11.6	40.5	2.793	0.016	0.016	0.000	0.399	0.34
853	11/7/2002	4:55:46 AM	24.204	19.484	24.873	19.378	19.122	44.251	46.137	9.727	35.454	-1.288	-6.763	48.221	0.109	0.001	0	822.65	13.7109	44.3	11.6	39.9	2.749	0.016	0.016	0.000	0.409	0.35
854	11/7/2002	4:56:46 AM	24.204	19.484	24.828	19.378	19.107	44.569	46.058	9.69	35.851	-1.282	-6.686	47.699	0.108	0.001	0	823.65	13.7276	44.6	11.7	40.2	2.772	0.016	0.016	0.000	0.402	0.34
855	11/7/2002	4:57:46 AM	24.193	19.468	24.898	19.337	19.142	43.764	45.191	10.44	34.388	-1.285	-6.763	51.845	0.108	0.001	0	824.65	13.7442	43.7	12.7	39.1	2.694	0.016	0.016	0.000	0.413	0.35
856	11/7/2002	4:58:46 AM	24.188	19.463	24.883	19.387	19.147	44.787	46.422	10.406	35.432	-1.282	-6.771	47.605	0.108	0.001	0	825.65	13.7609	44.9	11.7	40.1	2.765	0.016	0.016	0.000	0.403	0.34
857	11/7/2002	4:59:46 AM	24.183	19.473	24.923	19.382	19.136	45.182	46.883	10.293	35.79	-1.282	-6.769	49.92	0.107	0.001	0	826.65	13.7776	45.4	12.2	40.5	2.791	0.016	0.016	0.000	0.395	0.34
858	11/7/2002	5:00:46 AM	24.187	19.462	25.012	19.3	19.131	44.766	46.352	10.176	35.706	-1.282	-6.763	49.905	0.109	0.001	0	827.65	13.7942	44.9	12.2	40.2	2.774	0.016	0.016	0.000	0.404	0.34
859	11/7/2002	5:01:46 AM	24.186	19.441	24.931	19.335	19.115	44.805	46.48	10.397	35.317	-1.282	-6.766	51.579	0.108	0.001	0	828.65	13.8109	45.0	12.6	40.1	2.762	0.016	0.016	0.000	0.403	0.34
860	11/7/2002	5:02:46 AM	24.196	19.436	24.976	19.319	19.145	44.826	46.59	10.305	35.464	-1.285	-6.78	48.427	0.107	0.001	0	829.65	13.8276	45.1	11.9	40.1	2.768	0.016	0.016	0.000	0.398	0.34
861	11/7/2002	5:03:46 AM	24.201	19.431	25.056	19.309	19.16	44.839	46.46	10.297	35.505	-1.282	-6.705	49.626	0.106	0.001	0	830.65	13.8442	45.0	12.2	40.2	2.770	0.016	0.016	0.000	0.393	0.33
862	11/7/2002	5:04:46 AM	24.226	19.426	24.976	19.309	19.18	45.245	47.098	10.202	36.011	-1.285	-6.76	49.796	0.107	0.001	0	831.65	13.8609	45.8	12.2	40.6	2.801	0.016	0.016	0.000	0.393	0.33
863	11/7/2002	5:05:46 AM	24.221	19.426	25.056	19.299	19.18	44.758	46.327	10.253	35.55	-1.282	-6.74	49.97	0.107	0.001	0	832.65	13.8776	44.9	12.2	40.2	2.768	0.016	0.016	0.000	0.397	0.34
864	11/7/2002	5:06:46 AM	24.221	19.415	25.071	19.314	19.195	44.809	46.67	10.334	35.346	-1.285	-6.774	49.22	0.106	0.001	0	833.65	13.8942	45.2	12.1	40.1	2.763	0.016	0.016	0.000	0.394	0.33
865	11/7/2002	5:07:46 AM	24.225	19.41	25.01	19.313	19.164	44.743	46.55	10.365	35.405	-1.282	-6.786	50.182	0.106	0.001	0	834.65	13.9109	45.1	12.3	40.1	2.763	0.016	0.016	0.000	0.394	0.34
866	11/7/2002	5:08:46 AM	24.235	19.399	25.09	19.293	19.169	44.781	46.672	10.366	35.419	-1.285	-6.774	48.863	0.107	0.001	0	835.65	13.9276	45.2	12.0	40.1	2.765	0.016	0.016	0.000	0.397	0.34
867	11/7/2002	5:09:46 AM	24.249	19.388	25.074	19.327	19.188	44.571	46.352	10.219	35.446	-1.282	-6.795	49.096	0.106	0.001	0	836.65	13.9442	44.9	12.0	40.0	2.758	0.016	0.016	0.000	0.394	0.34
868	11/7/2002	5:10:46 AM	24.258	19.387	25.063	19.331	19.167	44.83	46.625	10.525	35.165	-1.282	-6.792	49.926	0.105	0.001	0	837.65	13.9609	45.2	12.2	40.0	2.758	0.016	0.016

911	11/7/2002	5:53:46 AM	24.747	19.158	25.426	19.162	19.19	44.764	46.863	9.91	35.64	-1.282	-6.748	48.838	0.097	0.001	0	880.65	14.6776	45.4	12.0	40.2	2.772	0.014	0.014	0.000	0.355	0.30
912	11/7/2002	5:54:46 AM	24.707	19.158	25.366	19.167	19.2	45.013	47.227	9.878	35.86	-1.285	-6.835	48.267	0.098	0.001	0	881.65	14.6942	45.8	11.8	40.4	2.788	0.015	0.014	0.000	0.358	0.30
913	11/7/2002	5:55:46 AM	24.671	19.162	25.395	19.162	19.209	44.656	46.809	9.767	35.655	-1.279	-6.818	48.555	0.098	0.001	0	882.65	14.7109	45.3	11.9	40.2	2.769	0.015	0.014	0.000	0.360	0.31
914	11/7/2002	5:56:46 AM	24.641	19.162	25.28	19.212	19.204	45.039	46.976	9.413	36.57	-1.279	-6.809	47.653	0.1	0.001	0	883.65	14.7276	45.5	11.7	40.8	2.813	0.015	0.015	0.000	0.363	0.31
915	11/7/2002	5:57:46 AM	24.606	19.162	25.26	19.176	19.209	45.052	47.268	9.644	36.105	-1.282	-6.803	48.366	0.1	0.001	0	884.65	14.7442	45.8	11.9	40.6	2.798	0.015	0.015	0.000	0.365	0.31
916	11/7/2002	5:58:46 AM	24.57	19.151	25.269	19.166	19.183	45.164	47.469	9.561	36.263	-1.285	-6.745	47.491	0.097	0.001	0	885.65	14.7609	46.0	11.6	40.7	2.807	0.014	0.014	0.000	0.353	0.30
917	11/7/2002	5:59:46 AM	24.525	19.14	25.144	19.17	19.147	45.3	47.568	9.627	36.4	-1.285	-6.821	49.681	0.098	0.001	0	886.65	14.7776	46.1	12.2	40.9	2.816	0.015	0.015	0.000	0.356	0.30
918	11/7/2002	6:00:46 AM	24.478	19.139	25.163	19.124	19.121	44.776	46.896	9.506	36.136	-1.285	-6.835	47.923	0.099	0.001	0	887.65	14.7942	45.4	11.7	40.5	2.789	0.015	0.015	0.000	0.363	0.31
919	11/7/2002	6:01:46 AM	24.447	19.144	25.142	19.163	19.085	45.008	47.338	9.538	36.214	-1.282	-6.815	47.152	0.098	0.001	0	888.65	14.8109	45.9	11.6	40.6	2.800	0.015	0.015	0.000	0.358	0.30
920	11/7/2002	6:02:46 AM	24.406	19.132	25.055	19.172	19.088	44.733	47.171	9.748	35.7	-1.285	-6.821	48.225	0.099	0.001	0	889.65	14.8276	45.7	11.8	40.2	2.773	0.015	0.015	0.000	0.366	0.31
921	11/7/2002	6:03:46 AM	24.385	19.131	25.115	19.09	19.093	44.526	46.805	9.953	35.288	-1.282	-6.847	48.951	0.096	0.001	0	890.65	14.8442	45.3	12.0	39.9	2.751	0.014	0.014	0.000	0.357	0.30
922	11/7/2002	6:04:46 AM	24.36	19.136	25.064	19.146	19.128	44.814	47.274	9.865	35.503	-1.282	-6.853	48.185	0.096	0.001	0	891.65	14.8609	45.8	11.8	40.2	2.769	0.014	0.014	0.000	0.356	0.30
923	11/7/2002	6:05:46 AM	24.329	19.115	25.033	19.145	19.091	44.468	46.745	9.857	35.368	-1.282	-6.835	48.229	0.096	0.001	0	892.65	14.8776	45.3	11.8	39.9	2.752	0.014	0.014	0.000	0.358	0.30
924	11/7/2002	6:06:46 AM	24.309	19.11	25.093	19.104	19.086	44.283	46.565	10.094	34.916	-1.285	-6.861	49.505	0.096	0.001	0	893.65	14.8942	45.1	12.1	39.6	2.730	0.014	0.014	0.000	0.360	0.31
925	11/7/2002	6:07:46 AM	24.277	19.109	25.007	19.098	19.05	44.901	47.378	9.759	35.745	-1.285	-6.853	48.175	0.096	0.001	0	894.65	14.9109	45.9	11.8	40.3	2.780	0.014	0.014	0.000	0.355	0.30
926	11/7/2002	6:08:46 AM	24.272	19.104	25.032	19.073	19.06	44.462	46.811	9.867	35.464	-1.282	-6.853	49.217	0.096	0.001	0	895.65	14.9276	45.3	12.1	40.0	2.755	0.014	0.014	0.000	0.358	0.30
927	11/7/2002	6:09:46 AM	24.253	19.099	25.078	19.099	19.071	44.488	46.734	9.889	35.37	-1.282	-6.867	49.364	0.096	0.001	0	896.65	14.9442	45.3	12.1	39.9	2.753	0.014	0.014	0.000	0.358	0.30
928	11/7/2002	6:10:46 AM	24.237	19.088	24.977	19.144	19.09	44.499	47.04	9.903	35.294	-1.285	-6.812	48.983	0.096	0.001	0	897.65	14.9609	45.6	12.0	39.9	2.751	0.014	0.014	0.000	0.359	0.31
929	11/7/2002	6:11:46 AM	24.238	19.094	25.057	19.083	19.071	44.48	46.794	9.907	35.409	-1.279	-6.861	48.878	0.095	0.001	0	898.65	14.9776	45.3	12.0	39.9	2.754	0.014	0.014	0.000	0.354	0.30
930	11/7/2002	6:12:46 AM	24.248	19.1	25.083	19.104	19.066	44.362	46.645	9.889	35.209	-1.282	-6.867	47.993	0.095	0.001	0	899.65	14.9942	45.2	11.8	39.8	2.743	0.014	0.014	0.000	0.355	0.30
931	11/7/2002	6:13:46 AM	24.219	19.08	24.978	19.13	19.097	44.346	46.813	9.801	35.319	-1.285	-6.87	48.471	0.095	0.001	0	900.65	15.0109	45.3	11.9	39.8	2.746	0.014	0.014	0.000	0.356	0.30
932	11/7/2002	6:14:46 AM	24.209	19.08	25.058	19.095	19.082	43.973	46.201	10.112	34.774	-1.276	-6.821	49.22	0.094	0.001	0	901.65	15.0276	44.7	12.1	39.4	2.715	0.014	0.014	0.000	0.355	0.30
933	11/7/2002	6:15:46 AM	24.188	19.059	25.013	19.109	19.036	44.364	46.871	9.898	35.125	-1.285	-6.876	48.204	0.094	0.001	0	902.65	15.0442	45.4	11.8	39.7	2.740	0.014	0.014	0.000	0.352	0.30
934	11/7/2002	6:16:46 AM	24.178	19.064	24.983	19.099	19.061	43.944	46.443	10.051	34.707	-1.282	-6.572	49.429	0.093	0.001	0	903.65	15.0609	45.0	12.1	39.3	2.711	0.014	0.014	0.000	0.353	0.30
935	11/7/2002	6:17:46 AM	24.183	19.064	25.068	19.043	19.046	44.217	46.701	10.117	34.777	-1.285	-6.835	50.753	0.092	0.001	0	904.65	15.0776	45.2	12.4	39.5	2.723	0.014	0.014	0.000	0.347	0.29
936	11/7/2002	6:18:46 AM	24.168	19.069	25.008	19.089	19.026	44.221	46.778	10.051	34.932	-1.282	-6.745	49.429	0.092	0.001	0	905.65	15.0942	45.3	12.1	39.6	2.729	0.014	0.014	0.000	0.347	0.29
937	11/7/2002	6:19:46 AM	24.168	19.064	25.018	19.059	19.026	44.184	46.536	10.021	35.012	-1.282	-6.818	50.904	0.094	0.001	0	906.65	15.1109	45.1	12.5	39.6	2.730	0.014	0.014	0.000	0.354	0.30
938	11/7/2002	6:20:46 AM	24.163	19.049	25.078	19.059	19.005	44.319	46.91	10.076	34.924	-1.285	-6.858	48.207	0.095	0.001	0	907.65	15.1276	45.4	11.8	39.6	2.732	0.014	0.014	0.000	0.357	0.30
939	11/7/2002	6:21:46 AM	24.159	19.05	25.003	19.105	19.026	44.174	46.432	10.105	34.883	-1.285	-7.133	49.803	0.113	0.001	0	908.65	15.1442	45.0	12.2	39.5	2.725	0.017	0.017	0.000	0.426	0.36
940	11/7/2002	6:22:46 AM	24.159	19.05	25.059	19.024	19.027	44.437	46.85	10.145	34.969	-1.285	-7.243	50.084	0.09	0.001	0	909.65	15.1609	45.4	12.3	39.7	2.737	0.013	0.013	0.000	0.337	0.29
941	11/7/2002	6:23:46 AM	24.154	19.044	25.619	19.069	18.996	43.935	46.405	10.022	34.674	-1.282	-7.319	49.268	0.103	0.001	0	910.65	15.1776	44.9	12.1	39.3	2.710	0.015	0.015	0.000	0.384	0.33
942	11/7/2002	6:24:46 AM	24.193	19.034	25.593	19.038	19.005	44.433	46.958	9.606	35.464	-1.282	-7.099	48.557	0.095	0.001	0	911.65	15.1942	45.5	11.9	39.9	2.754	0.014	0.014	0.000	0.349	0.30
943	11/7/2002	6:25:46 AM	24.283	19.029	25.558	19.008	19.01	44.921	47.491	9.705	35.792	-1.285	-7.246	47.827	0.088	0.001	0	912.65	15.2109	46.0	11.7	40.4	2.782	0.013	0.013	0.000	0.320	0.27
944	11/7/2002	6:26:46 AM	24.354	19.034	25.479	19.054	19.036	44.414	46.935	9.647	35.491	-1.285	-7.267	48.219	0.095	0.001	0	913.65	15.2276	45.5	11.8	40.0	2.755	0.014	0.014	0.000	0.350	0.30
945	11/7/2002	6:27:46 AM	24.38	19.035	25.379	19.08	19.067	44.754	47.072	9.547	35.995	-1.282	-7.261	49.478	0.093	0.001	0	914.65	15.2442	45.6	12.1	40.4	2.784	0.014	0.014	0.000	0.340	0.29
946	11/7/2002	6:28:46 AM	24.395	19.025	25.369	19.014	19.027	45.255	47.887	9.155	36.793	-1.285	-7.116	46.363	0.097	0.001	0	915.65	15.2609	46.4	11.4	41.0	2.828	0.014	0.014	0.000	0.349	0.30
947	11/7/2002	6:29:46 AM	24.4	19.03	25.26	19.07	18.992	44.834	47.525	9.316	36.164	-1.285	-7.096	47.426	0.096	0.001	0	916.65	15.2776	46.1	11.6	40.5	2.792	0.014	0.014	0.000	0.351	0.30
948	11/7/2002	6:30:46 AM	24.39	19.02	25.204	19.044	18.966	45.058	47.767	9.323	36.332	-1.282	-7.122	45.639	0.097	0.001	0	917.65	15.2942	46.3	11.2	40.7	2.806	0.014	0.014	0.000	0.353	0.30
949	11/7/2002	6:31:46 AM	24.39	19.02	25.24	19.045	18.951	45.274	47.905	9.343	36.639	-1.282	-7.076	47.026	0.097	0.001	0	918.65	15.3109	46.4	11.5	41.0	2.824	0.014	0.014	0.000	0.351	0.30
950	11/7/2002	6:32:46 AM	24.37	19.01	25.12	19.07	18.941	44.768	47.312	9.494	35.98	-1.282	-7.278	46.956	0.094	0.001	0	919.65	15.3276	45.8	11.5	40.4	2.784	0.014	0.014	0.000	0.346	0.29
951	11/7/2002	6:33:46 AM	24.349	19.004	25.139	19.034	18.92	44.82	47.467	9.645	35.886	-1.279	-7.076	48.307	0.095	0.001	0	920.65	15.3442	46.0	11.8	40.4	2.782	0.014	0.014	0.000	0.350	0.30
952	11/7/2002	6:34:46 AM	24.319	18.998	25.108	18.963	18.909	45.087	47.703	9.406	36.271	-1.285	-7.284	47.768	0.096	0.001	0	921.65	15.3609	46.2	11.7	40.7	2.805	0.014	0.014	0.000	0.351	0.30
953	11/7/2002	6:35:46 AM	24.303	18.993	25.032	18.992	18.899	42.695	45.357	10.757	32.75	-1.282	-7.139	53.613	0.091	0.001	0	922.65	15.3776	43.9	13.1	37.7	2.601	0.014	0.014	0.000	0.359	0.31
954	11/7/2002	6:36:46 AM	24.262	18.982	25.087	18.931	18.863	43.65	46.105	10.388	33.9	-1.285	-7.206	52.214	0.089	0.001	0	923.65	15.3942	44.6	12.8	38.8	2.673	0.013	0.013	0.000	0.341	0.29
955	11/7/2002	6:37:46 AM	24.232	18.987	25.056	18.986	18.877	44.963	47.512	9.433	36.199	-1.285	-7.298	48.827	0.092	0.001	0	924.65	15.4109	46.0	12.0	40.6	2.798	0.014	0.014	0.000	0.337	0.29
956	11/7/2002	6:38:46 AM	24.201	18.976	24.98	18.98	18.866	44.749	47.431	9.392	36.058	-1.285	-7.128	47.514	0.095	0.001	0	925.65	15.4276	46.0	11.6	40.4	2.786	0.014	0.014	0.000	0.351	0.30
957	11/7/2002	6:39:46 AM	24.2	18.985	25.05	18.99	18.876	45.23	47.831	9.217	36.773	-1.282	-7.107	46.539	0.093	0.001	0	926.65	15.4442	46.4	11.4	41.0	2.827	0.014	0.014	0.000	0.338	0.29
958	11/7/2002	6:40:46 AM	24.175	18.98	24.99	19.046	18.881	43.759	46.455	10.255	34.095	-1.282	-7.009	49.121	0.084	0.001	0	927.65	15.4609	45.0	12.0	38.9	2.684	0.013	0.013	0.000	0.322	0.27
959	11/7/2002	6:41:46 AM	24.15	18.975	24.965	19.005	18.871	44.238	46.991	9.86	35.09	-1.285	-6.968	50.1	0.093	0.001	0	928.65	15.4776	45.5	12.3	39.7	2.735	0.014	0.014	0.000	0.350	0.30
960	11/7/2002	6:42:46 AM	24.145	18.97	25.03	18.96	18.861	44.209	47.001	9.911	34.955	-1.282	-6.989	47.982	0.092	0.001	0	929.65	15.4942	45.5	11.8	39.6	2.729	0.014	0.014	0.000	0.346	0.29
961	11/7/2002	6:43:46 AM	24.146	18.976	24.945	19.001	18.907	44.789	47.632	9.582	35.859	-1.285	-6.98	47.305	0.093	0.001	0	930.65	15.5109	46.2	11.6	40.3	2.780	0.014	0.014	0.000	0.344	0.29
962	11/7/2002	6:44:46 AM	24.135	18.97	24.965	18.98	18.891	44.547	47.367	9.629	35.534	-1.279	-6.965	46.751	0.094	0.001	0	931.65	15.5276	45.9	11.5	40.0	2.761	0.014	0.014	0.000	0.350	0.30
963	11/7/2002	6:45:46 AM	24.114	18.955	24.989	18.954	18.875	44.905	47.75	9.725	35.741	-1.285	-6.986	46.398	0.092	0.001	0	932.65	15.5442	46.3	11.4	40.3	2.780	0.014	0.014	0.000	0.340	0.29
964	11/7/2002	6:46:46 AM	24.114	18.955	24.909	18.994	18.875	44.53	47.357	9.642	35.636	-1.282	-6.98	48.125	0.092	0.001	0	933.65	15.5609	45.9	11.8	40.1	2.764	0.014	0.014	0.000	0.343	0.29
965	11/7/2002	6:47:46 AM	24.119	18.944	24.949	18.933	18.91	44.822	47.62	9.58	35.86	-1.282	-6.939	48.11	0.093	0.001	0	934.65	15.5776	46.1	11.8	40.3	2.781	0.014	0.014	0.000	0.344	0.29
966	11/7/2002	6:48:46 AM	24.093	18.928	24.923	18.897	18.9	44.528	47.398	9.693	35.436	-1.288	-6.986	46.831	0.092	0.001	0	935.65	15.5942	45.9	11.5	40.0	2.757	0.014	0.014	0.000	0.344	0.29
967	11/7/2002	6:49:46 AM	24.083	18.933	25.209	18.892	18.935	44.083	47.024	9.771	34.949	-1.285	-6.986	48.255	0.092	0.001	0	936.65	15.6109	45.6	11.8	39.5	2.724	0.014	0.014	0.000	0.345	0.29
968	11/7/2002	6:50:46 AM	24.108	18.933	25.334	18.872	18.935	44.199	46.989	9.701	35.233	-1.285	-6.965	49.113	0.093	0.001	0	937.65	15.6276	45.5	12.0	39.7	2.738	0.014	0.014	0.000	0.346	0.29
969	11/7/2002	6:51:46 AM	24.164	18.943	25.274	18.968	18.935	44.257	47.293	9.829	35.014	-1.282	-6.968	50.044	0.092	0.001	0	938.65	15.6442	45.8	12.3	39.6	2.733	0.014	0.014	0.000	0.343	0.29
970	11/7/2002	6:52:46 AM	24.173	18.928	25.188	18.937	18.95	44.157	47.154	9.699	35.106	-1.282	-6.977	47.712	0.091	0.001	0	939.65	15.6609	45.7	11.7	39.6	2.732	0.014	0.013	0.000	0.341	0.29
971	11/7/2002	6:53:46 AM	24.194	18.923	25.224	18.892	18.965	44.078	47.117	9.727	34.991	-1.282	-6.965	48.764	0.092	0.001	0	940.65	15.6776	45.6	12.0	39.5	2.726	0.014	0.014	0.000	0.345	0.29
972	11/7/2002	6:54:46 AM	24.194	18.914	25.114	18.943	18.951	44.455	47.367	9.438	35.733	-1.285	-6.963	47.489	0.092	0.001	0	941.65	15.6942	45.9	11.6	40.1	2.764	0.014	0.014	0.000	0.341	0.29
973	11/7/2002	6:55:46 AM	24.225	18.93	25.125	18.919	18.982	44.439	47.429	9.536	35.681	-1.282	-6.919	48.114	0.092	0.001	0	942.65	15.7109	46.0	11.8	40.1	2.762	0.014	0.014	0.000	0.341	0.29
974	11/7/2002	6:56:46 AM	24.2	18.909	25.135	18.909	18.982	44.232	47.243	9.503	35.325	-1.282	-6.957	47.787	0.092	0.001	0	943.65	15.7276	45.8	11.7	39.8	2.743	0.014	0.014	0.000	0.344	0.29
975	11/7/2002	6:57:46 AM	24.191	18.91	25.031	18.925	19.003	44.435	47.407	9.598	35.526	-1.282	-6.954	48.062	0.092	0.001	0	944.65	15.7442	45.9	11.8	40.0	2.757	0.014	0.014	0.000	0.343	0.29
976	11/7/2002	6:58:46 AM	24.182	18.911	25.277	18.911	18.994	44.605	47.601	9.596	35.559	-1.282	-6.948	48.139	0.092	0.001	0	945.65	15.7609	46.1	11.8	40.1	2.764	0.014	0.014	0.000	0.340	0.29
977	11/7/2002	6:59:46 AM	24.187	18.911	25.432	19.032	18.984	44.395	47.487	9.596	35.452	-1.282	-6.945	47.489	0.092	0.001	0	946.65	15.7776	46.0	11.6	39.9	2.753	0.014	0.014	0.000	0.339	0.29
978	11/7/2002	7:00:46 AM	24.223	18.897	25.668	19.033	18.98	44.654	47.744	9.435	35.964	-1.285	-6.899	47.77	0.093	0.001	0	947.65	15.7942	46.3	11.7	40.3	2.779	0.014	0.014	0.000	0.338	0.29
979	11/7/2002	7:01:46 AM	24.278	18.892	25.803	19.104	18.985	44.82	47.889	9.492	36.058	-1.282	-6.913	47.349	0.094	0.001	0	948.65	15.8109	46.4	11.6	40.4	2.788	0.014	0.014	0.000	0.339	0.29
980	11/7/2002	7:02:46 AM	24.333	18.881	25.962	19.027	18.959	44.501	47.891	9.531	35.511	-1.282	-6.91	47.401	0.094	0.001	0	949.65	15.8276	46.4	11.6	40.0	2.758	0.014	0.014	0.000	0.341	0.29
981	11/7/2002	7:03:46 AM	24.413	18.887	25.973	19.129	18.959	44.505	47.62	9.432	35.816	-1.282	-6.908	47.527	0.095	0.001	0	950.65	15.8442	46.1	11.6	40.2	2.769	0.014	0.014	0.000	0.343	0.29
982	11/7/2002	7:04:46 AM	24.488	18.886	26.017	19.123	18.964	44.704	47.858	9.441	35.903	-1.282	-6.792	46.535	0.096	0.001	0	951.65	15.8609	46.4	11.4	40.3	2.779	0.014	0.014	0.000	0.345	0.29
983	11/7/2002	7:05:46 AM	24.548	18.881	26.027	19.138	18.968	44.662	47.887	9.57	35.608	-1.279	-6.882	47.724	0.095	0.001	0	952.65	15.8776	46.4	11.7	40.1	2.767	0.014	0.014	0.000	0.343	0.29
984	11/7/2002	7:06:46 AM	24.603	18.891	25.987	19.219	19.004	44.315	47.68	9.44	35.485	-1.282	-6.87	48.337	0.096	0.001	0	953.65	15.8942	46.2	11.8	39.9	2.751	0.014	0.014	0.000	0.349	0.30
985	11/7/2002	7:07:46 AM	24.633	18.876	26.042	19.163	19.009	44.58	47.835	9.381	35.929	-1.285	-6.864	47.453	0.095	0.001	0	954.65	15.9109	46.4	11.6	40.3	2.775	0.014	0.014	0.000	0.342	0.29
986	11/7/2002	7:08:46 AM	24.674	18.887	25.988	19.225	18.98	44.745	48.065	9.501	35.829	-1.285	-6.855	47.24	0.095	0.001	0	955.65	15.9276	46.6	11.6	40.3	2.778	0.014	0.014	0.000	0.342	0.29
987	11/7/2002	7:09:46 AM	24.699	18.877	26.018	19.215	19.01	44.605	47.974	9.508	35.706	-1.288	-6.858	47.567	0.095	0.001	0	956.65	15.9442	46.5	11.7	40.2	2.769	0.014	0.014	0.000	0.343	0.29
988	11/7/2002	7:10:46 AM	24.725	18.883	26.059	19.236	18.965	44.109	47.386	9.611	35.247	-1.282	-6.85	47.114	0.094	0.001	0	957.65	15.9609	45.9	11.5	39.7	2.736	0.014	0.014	0.000	0.343	0.29
989	11/7/2002	7:11:46 AM	24.741	18.883	25.999	19.252	18.986	44.025	47.326	9.596	35.016	-1.285	-6.858	46.789	0.094	0.001	0	958.65	15.9776	45.9	11.5	39.5	2.725	0.014	0.014	0.000	0.345	0.29
990	11/7/2002	7:12:29 AM	24.746	18.874	26.06	19.242	18.997	44.083	47.301	9.604	35.194	-1.285	-6.858	47.919	0.093	0.001	0	959.37	15.9895	45.8	11.7	39.6	2.733	0.014	0.013	0.000	0.340	0.29
991	11/7/2002	7:13:29 AM	24.782	18.89	26.026	19.329	18.983	44.501	47.779	9.7	35.456	-1.279	-6.85	47.89	0.094	0.001	0	960.37	16.0062	46.3	11.7	40.0	2.756	0.014	0.014	0.000	0.341	0.29
992	11/7/2002	7:14:29 AM	24.793	18.885	26.086	19.228	19.029	44.31	47.686	9.619	35.254	-1.282	-6.809	47.657	0.092	0.001	0	961.37	16.0228	46.2	11.7	39.8	2.743	0.014	0.013	0.000	0.334	0.28
993	11/7/2002	7:15:29 AM	24.813	18.881	26.042	19.29	19.004	44.18	47.553	9.654	35.131	-1.285	-6.85	48.11	0.093	0.001	0	962.37	16.0395	46.1	11.8	39.7	2.734	0.014	0.013	0.000	0.340	0.29
994	11/7/2002	7:16:29 AM	24.818	18.87	26.051	19.249	19.018	44.383	47.808	9.707	35.213	-1.282	-6.835	48.034	0.094	0.001	0	963.37	16.0562	46.3	11.8	39.8	2.744	0.014	0.014	0.000	0.342	0.29
995	11/7/2002	7:17:29 AM	24.828	18.876	26.107	19.279	19.024	44.416	47.913	9.668	35.356	-1.282	-6.815	46.537	0.093	0.001	0	964.37	16.0728	46.4	11.4	39.9	2.750	0.014	0.013	0.000	0.337	0.29
996	11/7/2002	7:18:29 AM	24.828	18.865	26.017	19.259	19.044	44.194	47.674	9.717	35.032	-1.285	-6.841	48.076	0.092	0.001	0	965.37	16.0895	46.2	11.8	39.6	2.731	0.014	0.013	0.000	0.337	0.29
997	11/7/2002	7:19:29 AM	24.833	18.855	26.061	19.198	19.039	44.052	47.485	9.66	34.938	-1.282	-6.829	48.402	0.093	0.001	0	966.37	16.1062	46.0	11.9	39.5	2.723	0.014	0.013	0.000	0.341	0.29
998	11/7/2002	7:20:29 AM	24.858	18.87	26.061	19.239	19.054	44.304	47.864	9.603	35.362	-1.282	-6.824	47.911	0.092	0.001	0	967.37	16.1228	46.4	11.7	39.8	2.746	0.014	0.013	0.000	0.334	0.28
999	11/7/2002	7:21:29 AM	24.873	18.88	26.056	19.304	19.059	43.898	47.359	9.618	34.879	-1.282	-6.855	47.554	0.093	0.001	0	968.37	16.1395	45.9	11.7	39.4	2.716	0.014	0.013	0.000	0.342	0.29
1000	11/7/2002	7:22:29 AM	24.863	18.865	26.081	19.254	19.059	44.066	47.638	9.643	34.906	-1.285	-6.829	48.078	0.093	0.001	0	969.37	16.1562	46.2	11.8	39.5	2.722	0.014	0.013	0.000	0.341	0.29
1001	11/7/2002	7:23:29 AM	24.858	18.88	26.011	19.324	19.069	44.285	47.756	9.635	35.198	-1.285	-6.882	48.016	0.093	0.001	0	970.37	16.1728	46.3	11.8	39.7	2.740	0.014	0.013	0.000	0.339	0.29
1002	11/7/2002	7:24:29 AM	24.858	18.88	26.056	19.208	19.069	44.049	47.613	9.632	34.973	-1.285	-6.809	49.32	0.09	0.001	0	971.37	16.1895	46.1	12.1	39.5	2.724	0.013	0.013	0.000	0.330	0.28
1003	11/7/2002	7:25:29 AM	24.853	18.876	26.047	19.224	19.075	44.157	47.5	9.741	35.049	-1.288	-6.879	47.152	0.091	0.001	0	972.37	16.2062	46.0	11.6	39.6	2.730	0.014	0.013	0.000	0.333	0.28
1004	11/7/2002	7:26:29 AM	24.849	18.871	25.992	19.275	19.07	44.029	47.421	9.697	34.844	-1.291	-6.876	48.924	0.092	0.001	0	973.37	16.2228	45.9	12.0	39.4	2.719	0.014	0.013	0.000	0.338	0.29
1005	11/7/2002	7:27:29 AM	24.864	18.892	26.083	19.27	19.081	43.936	47.405	9.535	35.014	-1.282	-6.876	47.906	0.091	0.001	0	974.37	16.2395	45.9	11.7	39.5	2.722	0.014	0.013	0.000	0.333	0.28
1006	11/7/2002	7:28:29 AM	24.844	18.866	25.983	19.225	19.06	44.014	47.417	9.636	35.067	-1.285	-6.876	47.607	0.091	0.001	0	975.37	16.2562	45.9	11.7	39.5	2.726	0.014	0.013	0.000	0.334	0.28
1007	11/7/2002	7:29:29 AM	24.849	18.882	26.038	19.245	19.055	44.138	47.477	9.648	35.19	-1.285	-6.855	48.087	0.091	0.001	0	976.37	16.2728	46.0	11.8	39.7	2.735	0.014	0.013	0.000	0.332	0.28
1008	11/7/2002	7:30:29 AM	24.839	18.877	26.058	19.28	19.071	43.844	47.409	9.653	34.787	-1.282	-6.873	45.306	0.091	0.001	0	977.37	16.2895	45.9	11.1	39.3	2.711	0.014	0.013	0.000	0.335	0.29
1009	11/7/2002	7:31:29 AM	24.844	18.887	25.993	19.311	19.076	44.105	47.564	9.551	35.241	-1.282	-6.85	47.63	0.091	0.001	0	978.37	16.3062	46.1	11.7	39.7	2.735	0.014	0.013	0.000	0.333	0.28
1010	11/7/2002	7:32:29 AM	24.855	18.892	26.068	19.276	19.091	43.826	47.357	9.625	34.713	-1.282	-6.864	48.261	0.091	0.001	0	979.37	16.3228	45.9	11.8	39.3	2.707	0.014	0.013	0.000	0.335	0.29
1011	11/7/2002	7:33:29 AM	24.825	18.872	25.988	19.271	19.081	44.078	47.793	9.616	35.035	-1.285	-6.867	48.834	0.091	0.001	0	980.37	16.3395	46.3	12.0	39.6	2.727	0.014	0.013	0.000	0.334	0.28
1012	11/7/2002	7:34:29 AM	24.83	18.883	26.019	19.256	19.097	43.53	47.061	9.747	34.39	-1.282	-6.847	48.708	0.091	0.001	0	981.37	16.3562	45.6	11.9	39.0	2.686	0.014	0.013	0.000	0.338	0.29
1013	11/7/2002	7:35:29 AM	24.846	18.883	26.064	19.247	19.102	43.877	47.324	9.729	34.727	-1.285	-6.876	49.853	0.09	0.001	0	982.37	16.3728	45.9	12.2	39.3	2.710	0.013	0.013	0.000	0.331	0.28
1014	11/7/2002	7:39:10 AM	25.005	18.897	25.768	19.256	19.071	8.51	47.467	9.836	-0.5	33.044	87.619	48.156	0.001	0.001	0	986.05	16.4342	46.0	11.8	4.0	0.276	0.000	0.000	0.000	0.036	0.03
1015	11/7/2002	7:39:26 AM	25.005	18.897	25.768	19.256	19.071	8.51	47.467	9.836	-0.5	33.044	87.619	48.156	0.001	0.001	0	986.32	16.4387	46.0	11.8	4.0	0.276	0.000	0.000	0.000	0.036	0.03
1016	11/7/2002	7:40:26 AM	24.78	18.902	25.708	19.22	19.101	20.606	47.369	9.792	11.662	21.497	2.063	49.062	0.232	0.001	0	987.32	16.4553	45.9	12.0	16.1	1.112	0.035	0.034	0.002	2.102	1.79
1017	11/7/2002	7:41:26 AM	25.145	18.902	25.573	19.155	19.101	39.704	47.413	9.764	30.787	1.669	2.103	48.97	0.095	0.001	0	988.32	16.472	45.9	12.0	35.2	2.430	0.014	0.014	0.000	0.395	0.34
1018	11/7/2002	7:42:04 AM	25.356	18.913	25.604	19.079	19.097	39.47	47.312	9.761	30.582	1.851	1.967	48.813	0.116	0.001	0	988.95	16.4826	45.8	12.0	35.0	2.415	0.017	0.017	0.000	0.485	0.41
1019	11/7/2002	7:43:04 AM	25.551	18.908	25.479	19.13	19.117	39.613	47.504	9.728	30.643	1.886	2.283	48.332	0.085	0.001	0	989.95	16.4992	46.0	11.8	35.1	2.422	0.013	0.013	0.000	0.356	0.30
1020	11/7/2002	7:44:04 AM	25.577	18.913	25.429	19.14	19.118	39.559	47.467	9.771	30.531	1.834	2.251	49.459	0.09	0.001	0	990.95	16.5159	46.0	12.1	35.0	2.416	0.013	0.013	0.000	0.378	0.32
1021	11/7/2002	7:45:04 AM	25.602	18.914	25.445	19.146	19.128	39.665	47.417	9.795	30.731	1.839	2.271	48.406	0.103	0.001	0	991.95	16.5326	45.9	11.9	35.2	2.427	0.015	0.015	0.000	0.431	0.37
1022	11/7/2002	7:46:04 AM	25.622	18.913	25.314	19.161	19.123	39.511	47.469	9.798	30.498	1.987	2.176	48.521	0.11	0.001	0	992.95	16.5492	46.0	11.9	35.0	2.413	0.016	0.016	0.000	0.464	0.40
1023	11/7/2002	7:47:04 AM	25.392	18.924	25.364	19.146	19.158	43.053	47.045	9.761	34.322	-1.276	-2.011	48.748	0.163	0.001	0	993.95	16.5659	45.6	11.9	38.7	2.667	0.024	0.024	0.001	0.622	0.53
1024	11/7/2002	7:48:04 AM	24.931	18.924	25.374	19.13	19.183	45.137	47.293	9.775	36.478	-1.282	-5.248	48.624	0.127	0.001	0	994.95	16.5826	45.8	11.9	40.8	2.814	0.019	0.019	0.000	0.459	0.39
1025	11/7/2002	7:49:04 AM	24.741	18.924	25.294	19.181	19.214	45.634	47.489	9.78	36.932	-1.285	-6.175	46.268	0.115	0.001	0	995.95	16.5992	46.0	11.3	41.3	2.846	0.017	0.017	0.000	0.412	0.35
1026	11/7/2002	7:50:04 AM	24.665	18.928	25.359	19.074	19.188	45.487	47.088	9.768	36.914	-1.282	-6.43	47.485	0.111	0.001	0	996.95	16.6159	45.6	11.6	41.2	2.841	0.017	0.016	0.000	0.398	0.34
1027	11/7/2002	7:51:04 AM	24.63	18.939	25.349	19.201	19.219	45.507	47.132	9.975	36.637	-1.285	-6.595	48.54	0.109	0.001	0	997.95	16.6326	45.7	11.9	41.1	2.832	0.016	0.016	0.000	0.392	0.33
1028	11/7/2002	7:52:04 AM	24.621	18.939	25.325	19.247	19.254	45.433	47.074	9.929	36.682	-1.285	-6.638	49.717	0.107	0.001	0	998.95	16.6492	45.6	12.2	41.1	2.831	0.016	0.016	0.000	0.385	0.33
1029	11/7/2002	7:53:04 AM	24.591	18.94	25.415	19.207	19.245	45.51	47.022	9.94	36.762	-1.279	-6.612	50.115	0.102	0.001	0	999.95	16.6659	45.5	12.3	41.1	2.836	0.015	0.015	0.000	0.365	0.31
1030	11/7/2002	7:54:04 AM	24.587	18.946	25.321	19.289	19.286	45.64	47.4	9.818	36.969	-1.282	-6.659	48.131	0.106	0.001	0	1000.95	16.6826	45.9	11.8	41.3	2.848	0.016	0.016	0.000	0.379	0.32
1031	11/7/2002	7:55:04 AM	24.567	18.941	25.341	19.188	19.286	45.435	47.088	10.128	36.369	-1.282	-6.638	48.745	0.105	0.001	0	1001.95	16.6992	45.6	11.9	40.9	2.820	0.016	0.016	0.000	0.379	0.32
1032	11/7/2002	7:56:04 AM	24.569	18.957	25.393	19.23	19.333	45.53	47.365	9.894	36.656	-1.282	-6.69	49.058	0.104	0.001	0	1002.95	16.7159	45.9	12.0	41.1	2.833	0.016	0.015	0.000	0.373	0.32
1033	11/7/2002	7:57:04 AM	24.579	18.963	25.323	19.22	19.334	45.16	46.757	10.121	36.273	-1.279	-6.711	49.375	0.104	0.001	0	1003.95	16.7326	45.3	12.1	40.7	2.807	0.016	0.015	0.000	0.377	0.32
1034	11/7/2002	7:58:04 AM	24.575	18.969	25.399	19.272	19.36	44.983	46.666	10.496	35.585	-1.282	-6.725	51.038	0.102	0.001	0	1004.95	16.7492	45.2	12.5	40.3	2.777	0.015	0.015	0.000	0.373	0.32
1035	11/7/2002	7:59:04 AM	24.565	18.964	25.379	19.348	19.36	45.29	47.312	10.252	36.085	-1.282	-6.702	49.702	0.105	0.001	0	1005.95	16.7659	45.8	12.2	40.7	2.805	0.016	0.015	0.000	0.381	0.32
1036	11/7/2002	8:00:04 AM	24.571	18.97	25.355	19.268	19.386	45.048	46.616	10.133	36.158	-1.282	-6.722	49.991	0.102	0.001	0	1006.95	16.7826	45.1	12.3	40.6	2.799	0.015	0.015	0.000	0.371	0.32
1037	11/7/2002	8:01:04 AM	24.566	18.98	25.43	19.147	19.391	45.292	47.212	10.036	36.345	-1.282	-6.728	49.484	0.102	0.001	0	1007.95	16.7992	45.7	12.1	40.8	2.814	0.015	0.015	0.000	0.368	0.31
1038	11/7/2002	8:02:04 AM	24.551	18.975	25.355	19.298	19.422	45.265	47.084	10.088	36.263	-1.285	-6.74	49.672	0.101	0.001	0	1008.95	16.8159	45.6	12.2	40.8	2.811	0.015	0.015	0.000	0.366	0.31
1039	11/7/2002	8:03:04 AM	24.537	18.976	25.361	19.249	19.443	45.11	46.921	10.116	36.144	-1.282	-6.745	47.691	0.101	0.001	0	1009.95	16.8326	45.4	11.7	40.6	2.801	0.015	0.015	0.000	0.367	0.31
1040	11/7/2002	8:04:04 AM	24.557	19.001	25.461	19.304	19.432	44.888	46.765	10.339	35.72	-1.282	-6.737	50.178	0.1	0.001	0	1010.95	16.8492	45.3	12.3	40.3	2.779	0.015	0.015	0.000	0.365	0.31

Figure D6-8: Dewatering of the AN-102R2, batch 3A, insoluble solids concentrations from 1.6 to 25 wt% - Raw & Calculated Data

Figure D6-9: Dewatering of the AN-102R2, batch 3A, insoluble solids concentrations from 1.6 to 25 wt% - Raw & Calculated Data

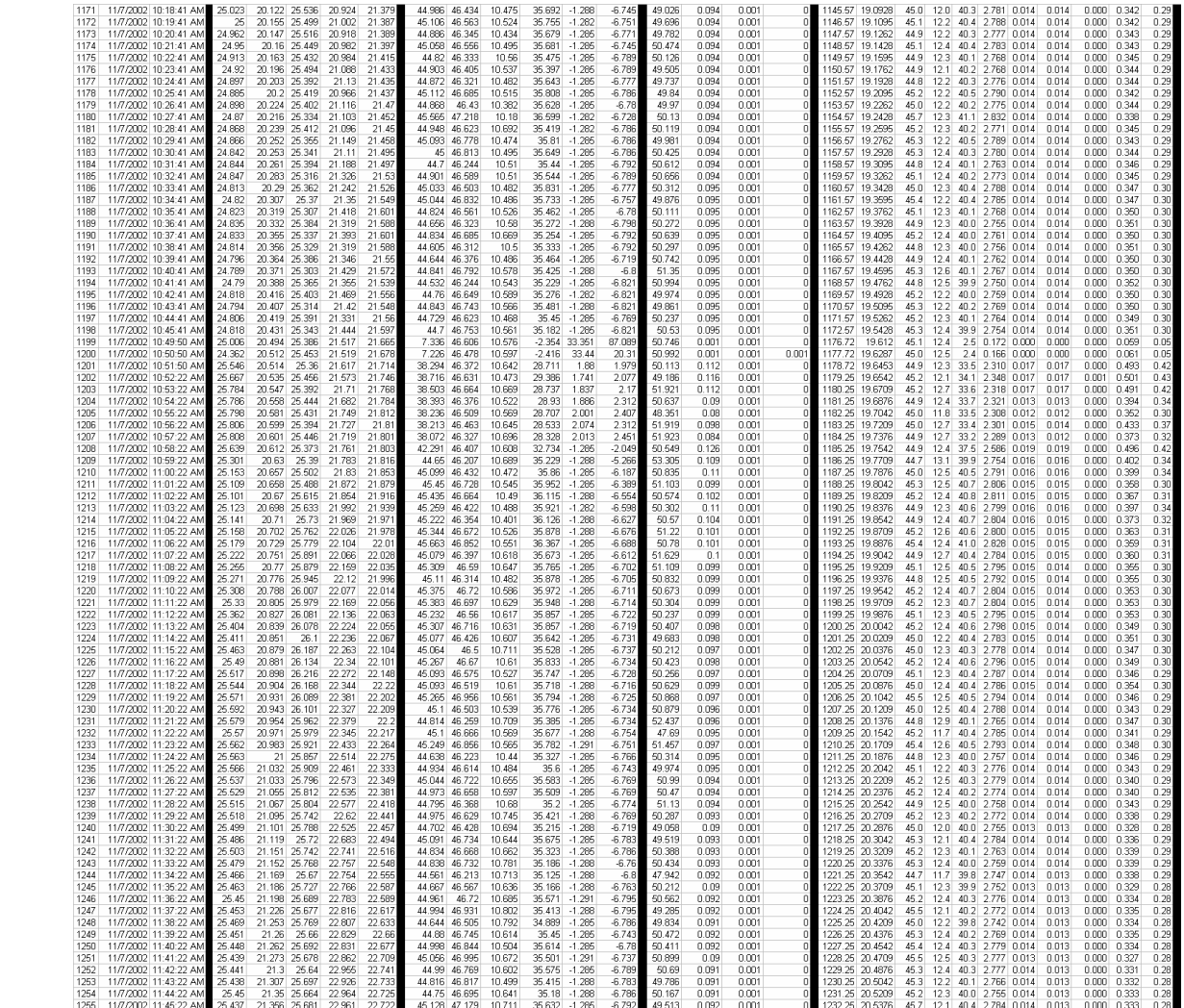


Figure D6-10: Dewatering of the AN-102R2, batch 3A, insoluble solids concentrations from 1.6 to 25 wt% - Raw & Calculated Data

1301	11/7/2002	12:33:01 PM	25.527	22.131	25.556	23.834	23.445	45.317	46.801	10.574	35.966	-1.288	-6.774	49.215	0.092	0.001	0	1279.90	21.3317	45.3	12.1	40.6	2.802	0.014	0.014	0.000	0.332	0.28
1302	11/7/2002	12:34:01 PM	25.542	22.152	25.642	23.885	23.465	45.305	47.03	10.465	36.07	-1.285	-6.766	50.123	0.092	0.001	0	1280.90	21.3484	45.6	12.3	40.7	2.805	0.014	0.013	0.000	0.331	0.28
1303	11/7/2002	12:35:01 PM	25.544	22.164	25.549	23.907	23.507	45.228	46.9	10.486	35.919	-1.291	-6.771	49.253	0.092	0.001	0	1281.90	21.3651	45.4	12.1	40.6	2.797	0.014	0.014	0.000	0.333	0.28
1304	11/7/2002	12:36:01 PM	25.546	22.175	25.7	23.908	23.509	45.307	46.885	10.473	36.132	-1.291	-6.766	48.848	0.092	0.001	0	1282.90	21.3817	45.4	12.0	40.7	2.807	0.014	0.013	0.000	0.330	0.28
1305	11/7/2002	12:37:01 PM	25.572	22.192	25.836	24	23.52	45.11	46.714	10.496	35.81	-1.285	-6.76	50.123	0.092	0.001	0	1283.90	21.3984	45.2	12.3	40.5	2.790	0.014	0.013	0.000	0.331	0.28
1306	11/7/2002	12:38:01 PM	25.594	22.204	25.878	23.997	23.547	45.238	46.952	10.584	35.753	-1.291	-6.751	49.878	0.093	0.001	0	1284.90	21.4151	45.5	12.2	40.5	2.792	0.014	0.014	0.000	0.334	0.28
1307	11/7/2002	12:39:01 PM	25.642	22.231	26.036	24.009	23.555	45.228	46.987	10.536	35.864	-1.291	-6.737	50.9	0.092	0.001	0	1285.90	21.4317	45.6	12.5	40.5	2.796	0.014	0.013	0.000	0.329	0.28
1308	11/7/2002	12:40:01 PM	25.684	22.244	25.983	24.067	23.577	45.062	46.931	10.583	35.491	-1.291	-6.751	50.939	0.092	0.001	0	1286.90	21.4484	45.5	12.5	40.3	2.777	0.014	0.013	0.000	0.331	0.28
1309	11/7/2002	12:41:01 PM	25.731	22.266	25.89	24.064	23.589	46.549	48.385	9.29	38.459	-1.288	-6.699	46.441	0.097	0.001	0	1287.90	21.4651	46.9	11.4	42.5	2.931	0.014	0.014	0.000	0.332	0.28
1310	11/7/2002	12:42:01 PM	25.753	22.278	25.762	24.111	23.621	46.698	48.524	9.291	38.515	-1.291	-6.702	47.013	0.097	0.001	0	1288.90	21.4817	47.1	11.5	42.6	2.938	0.014	0.014	0.000	0.332	0.28
1311	11/7/2002	12:43:01 PM	25.755	22.29	25.714	24.158	23.633	45.818	47.673	10.003	37.006	-1.288	-6.763	49.391	0.09	0.001	0	1289.90	21.4984	46.2	12.1	41.4	2.855	0.013	0.013	0.000	0.318	0.27
1312	11/7/2002	12:44:01 PM	25.752	22.312	25.727	24.135	23.621	45.901	47.721	9.549	37.526	-1.288	-6.716	48.878	0.094	0.001	0	1290.90	21.5151	46.2	12.0	41.7	2.876	0.014	0.014	0.000	0.329	0.28
1313	11/7/2002	12:45:01 PM	25.739	22.325	25.614	24.172	23.636	45.978	47.885	9.719	37.44	-1.291	-6.734	48.332	0.093	0.001	0	1291.90	21.5317	46.4	11.8	41.7	2.876	0.014	0.014	0.000	0.327	0.28
1314	11/7/2002	12:46:01 PM	25.745	22.355	25.639	24.218	23.683	46.191	48.199	9.732	37.53	-1.285	-6.728	47.955	0.093	0.001	0	1292.90	21.5484	46.7	11.8	41.9	2.886	0.014	0.014	0.000	0.325	0.28
1315	11/7/2002	12:47:01 PM	25.722	22.353	25.597	24.216	23.736	45.942	47.81	9.732	37.442	-1.288	-6.725	48.397	0.094	0.001	0	1293.90	21.5651	46.3	11.9	41.7	2.875	0.014	0.014	0.000	0.331	0.28
1316	11/7/2002	12:48:01 PM	25.726	22.391	25.534	24.269	23.769	45.708	47.614	9.81	37.098	-1.288	-6.763	48.487	0.092	0.001	0	1294.90	21.5817	46.1	11.9	41.4	2.855	0.014	0.014	0.000	0.326	0.28
1317	11/7/2002	12:49:01 PM	25.712	22.403	25.576	24.286	23.786	45.862	47.825	9.838	37.258	-1.288	-6.771	48.71	0.091	0.001	0	1295.90	21.5984	46.4	11.9	41.6	2.865	0.014	0.013	0.000	0.321	0.27
1318	11/7/2002	12:50:01 PM	25.7	22.426	25.494	24.293	23.789	46.021	47.967	9.697	37.493	-1.288	-6.763	47.791	0.092	0.001	0	1296.90	21.6151	46.5	11.7	41.8	2.879	0.014	0.014	0.000	0.324	0.28
1319	11/7/2002	12:51:01 PM	25.677	22.438	25.501	24.27	23.826	46.061	48.091	9.406	37.782	-1.288	-6.76	47.147	0.093	0.001	0	1297.90	21.6317	46.6	11.6	41.9	2.890	0.014	0.014	0.000	0.326	0.28
1320	11/7/2002	12:52:01 PM	25.664	22.44	25.488	24.317	23.843	45.905	47.829	9.65	37.493	-1.291	-6.786	48.854	0.092	0.001	0	1298.90	21.6484	46.4	12.0	41.7	2.875	0.014	0.014	0.000	0.324	0.28
1321	11/7/2002	12:53:01 PM	25.65	22.456	25.399	24.304	23.849	46.083	48.215	9.69	37.485	-1.294	-6.777	46.629	0.092	0.001	0	1299.90	21.6651	46.7	11.4	41.8	2.881	0.014	0.014	0.000	0.325	0.28
1322	11/7/2002	12:54:01 PM	25.642	22.478	25.471	24.281	23.831	45.853	47.781	9.667	37.34	-1.288	-6.774	47.46	0.092	0.001	0	1300.90	21.6817	46.3	11.6	41.6	2.868	0.014	0.014	0.000	0.325	0.28
1323	11/7/2002	12:55:01 PM	25.64	22.506	25.404	24.313	23.864	45.916	48.027	9.826	37.2	-1.291	-6.78	47.527	0.091	0.001	0	1301.90	21.6984	46.5	11.6	41.6	2.865	0.014	0.013	0.000	0.323	0.27
1324	11/7/2002	12:56:01 PM	25.627	22.523	25.416	24.31	23.871	45.998	48.036	9.561	37.606	-1.288	-6.777	46.441	0.091	0.001	0	1302.90	21.7151	46.6	11.4	41.8	2.882	0.014	0.013	0.000	0.321	0.27
1325	11/7/2002	12:57:01 PM	25.623	22.535	25.432	24.327	23.898	46.025	48.201	9.543	37.647	-1.285	-6.769	47.451	0.092	0.001	0	1303.90	21.7317	46.7	11.6	41.8	2.884	0.014	0.014	0.000	0.324	0.28
1326	11/7/2002	12:58:01 PM	25.604	22.541	25.334	24.358	23.929	46.235	48.344	9.491	37.986	-1.291	-6.728	47.485	0.088	0.001	0	1304.90	21.7484	46.9	11.6	42.1	2.903	0.013	0.013	0.000	0.309	0.26
1327	11/7/2002	12:59:01 PM	25.586	22.553	25.381	24.335	23.941	46.448	48.526	9.245	38.339	-1.291	-6.734	46.111	0.092	0.001	0	1305.90	21.7651	47.1	11.3	42.4	2.923	0.014	0.014	0.000	0.320	0.27
1328	11/7/2002	12:00:01 PM	26.057	21.628	25.541	23.357	23.073	38.586	46.784	10.368	29.362	2.004	2.442	50.415	0.074	0.001	0	1246.90	20.7817	45.3	12.4	34.0	2.342	0.011	0.011	0.000	0.320	0.27
1329	11/7/2002	12:01:01 PM	26.045	21.641	25.549	23.365	23.126	38.737	46.964	10.375	29.378	1.996	2.436	49.815	0.082	0.001	0	1247.90	20.7984	45.5	12.2	34.1	2.348	0.012	0.012	0.000	0.353	0.30
1330	11/7/2002	12:02:01 PM	26.037	21.673	25.491	23.428	23.133	38.25	46.494	10.351	29.012	2.097	2.48	49.972	0.081	0.001	0	1248.90	20.8151	45.0	12.2	33.6	2.319	0.012	0.012	0.000	0.354	0.30
1331	11/7/2002	12:03:01 PM	25.735	21.686	25.534	23.335	23.141	44.907	46.821	10.466	35.656	-1.288	-4.571	50.371	0.126	0.001	0	1249.90	20.8317	45.3	12.3	40.2	2.774	0.019	0.019	0.000	0.460	0.39
1332	11/7/2002	12:04:01 PM	25.676	21.672	25.44	23.316	23.097	45.522	46.908	10.348	36.515	-1.291	-5.781	50.446	0.109	0.001	0	1250.90	20.8484	45.4	12.4	41.0	2.828	0.016	0.016	0.000	0.391	0.33
1333	11/7/2002	12:05:01 PM	25.533	21.71	25.477	23.323	23.115	45.698	46.887	10.33	36.515	-1.288	-6.334	49.792	0.109	0.001	0	1251.90	20.8651	45.4	12.2	41.1	2.834	0.016	0.016	0.000	0.390	0.33
1334	11/7/2002	12:06:01 PM	25.501	21.722	25.51	23.401	23.117	45.878	47.011	10.245	36.826	-1.288	-6.554	50.709	0.102	0.001	0	1252.90	20.8817	45.5	12.4	41.4	2.851	0.015	0.015	0.000	0.363	0.31
1335	11/7/2002	12:07:01 PM	25.488	21.739	25.442	23.443	23.114	45.959	47.16	10.37	36.789	-1.288	-6.514	49.331	0.102	0.001	0	1253.90	20.8984	45.7	12.1	41.4	2.853	0.015	0.015	0.000	0.363	0.31
1336	11/7/2002	12:08:01 PM	25.474	21.766	25.514	23.455	23.141	45.681	46.875	10.237	36.707	-1.288	-6.638	50.26	0.102	0.001	0	1254.90	20.9151	45.4	12.3	41.2	2.840	0.015	0.015	0.000	0.364	0.31
1337	11/7/2002	12:09:01 PM	25.467	21.774	25.461	23.493	23.174	45.901	46.894	10.345	36.805	-1.288	-6.685	50.061	0.099	0.001	0	1255.90	20.9317	45.4	12.3	41.4	2.851	0.015	0.015	0.000	0.352	0.30
1338	11/7/2002	12:10:01 PM	25.448	21.79	25.447	23.489	23.185	45.582	46.753	10.198	36.531	-1.285	-6.693	50.111	0.099	0.001	0	1256.90	20.9484	45.3	12.3	41.1	2.831	0.015	0.015	0.000	0.355	0.30
1339	11/7/2002	12:11:01 PM	25.451	21.813	25.51	23.482	23.182	45.619	46.811	10.369	36.453	-1.288	-6.702	50.327	0.098	0.001	0	1257.90	20.9651	45.3	12.3	41.0	2.829	0.015	0.014	0.000	0.351	0.30
1340	11/7/2002	12:12:01 PM	25.448	21.83	25.427	23.499	23.184	45.936	47.229	10.378	36.875	-1.288	-6.693	49.312	0.099	0.001	0	1258.90	20.9817	45.8	12.1	41.4	2.865	0.015	0.015	0.000	0.352	0.30
1341	11/7/2002	12:13:01 PM	25.44	21.832	25.469	23.46	23.191	45.702	46.867	10.36	36.564	-1.288	-6.714	49.823	0.097	0.001	0	1259.90	20.9984	45.4	12.2	41.1	2.836	0.014	0.014	0.000	0.347	0.30
1342	11/7/2002	12:14:01 PM	25.451	21.869	25.481	23.482	23.198	45.605	46.891	10.38	36.418	-1.288	-6.719	50.476	0.097	0.001	0	1260.90	21.0151	45.4	12.4	41.0	2.828	0.014	0.014	0.000	0.348	0.30
1343	11/7/2002	12:15:01 PM	25.433	21.876	25.438	23.434	23.185	45.667	46.943	10.298	36.519	-1.285	-6.719	50.094	0.097	0.001	0	1261.90	21.0317	45.5	12.3	41.1	2.833	0.014	0.014	0.000	0.348	0.30
1344	11/7/2002	12:16:01 PM	25.441	21.889	25.51	23.397	23.168	45.775	47.072	10.369	36.65	-1.285	-6.734	49.266	0.096	0.001	0	1262.90	21.0484	45.6	12.1	41.2	2.841	0.014	0.014	0.000	0.342	0.29
1345	11/7/2002	12:17:01 PM	25.432	21.9	25.431	23.473	23.174	45.586	46.912	10.424	36.359	-1.288	-6.664	50.027	0.096	0.001	0	1263.90	21.0651	45.4	12.3	41.0	2.825	0.014	0.014	0.000	0.345	0.29
1346	11/7/2002	12:18:01 PM	25.423	21.901	25.473	23.464	23.175	45.634	46.999	10.36	36.457	-1.288	-6.743	49.293	0.096	0.001	0	1264.90	21.0817	45.5	12.1	41.0	2.830	0.014	0.014	0.000	0.344	0.29
1347	11/7/2002	12:19:01 PM	25.435	21.934	25.5	23.501	23.187	45.663	47.036	10.396	36.449	-1.288	-6.74	50.056	0.095	0.001	0	1265.90	21.0984	45.6	12.3	41.1	2.831	0.014	0.014	0.000	0.340	0.29
1348	11/7/2002	12:20:01 PM	25.437	21.945	25.466	23.543	23.188	45.445	46.978	10.371	36.253	-1.288	-6.661	50.138	0.095	0.001	0	1266.90	21.1151	45.6	12.3	40.8	2.816	0.014	0.014	0.000	0.342	0.29
1349	11/7/2002	12:21:01 PM	25.434	21.952	25.518	23.54	23.205	45.512	46.944	10.415	36.234	-1.288	-6.74	49.928	0.094	0.001	0	1267.90	21.1317	45.4	12.2	40.9	2.818	0.014	0.014	0.000	0.338	0.29
1350	11/7/2002	12:22:01 PM	25.434	21.963	25.459	23.601	23.231	45.077	46.529	10.515	35.773	-1.288	-6.751	50.128	0.095	0.001	0	1268.90	21.1484	45.1	12.3	40.4	2.787	0.014	0.014	0.000	0.346	0.29
1351	11/7/2002	12:23:01 PM	25.451	21.985	25.495	23.603	23.263	45.244	46.687	10.545	35.841	-1.291	-6.757	50.105	0.094	0.001	0	1269.90	21.1651	45.2	12.3	40.5	2.795	0.014	0.014	0.000	0.341	0.29
1352	11/7/2002	12:24:01 PM	25.463	22.002	25.542	23.67	23.28	45.441	46.906	10.472	36.244	-1.288	-6.76	52.015	0.093	0.001	0	1270.90	21.1817	45.4	12.7	40.8	2.816	0.014	0.014	0.000	0.334	0.28
1353	11/7/2002	12:25:01 PM	25.474	22.018	25.484	23.696	23.312	45.273	46.662	10.522	35.997	-1.288	-6.754	49.651	0.093	0.001	0	1271.90	21.1984	45.2	12.2	40.6	2.802	0.014	0.014	0.000	0.337	0.29
1354	11/7/2002	12:26:01 PM	25.471	22.019	25.55	23.667	23.328	45.441	46.902	10.493	36.208	-1.291	-6.711	50.631	0.095	0.001	0	1272.90	21.2151	45.4	12.4	40.8	2.815	0.014	0.014	0.000	0.342	0.29
1355	11/7/2002	12:27:01 PM	25.483	22.036	25.507	23.755	23.355	45.265	46.687	10.581	35.786	-1.285	-6.743	50.824	0.093	0.001	0	1273.90	21.2317	45.2	12.5	40.5	2.794	0.014	0.014	0.000	0.337	0.29
1356	11/7/2002	12:28:01 PM	25.489	22.053	25.528	23.766	23.336	45.354	46.79	10.591	35.99	-1.288	-6.754	49.983	0.093	0.001	0	1274.90	21.2484	45.3	12.2	40.7	2.804	0.014	0.014	0.000	0.336	0.29
1357	11/7/2002	12:29:01 PM	25.496	22.07	25.575	23.748	23.363	45.677	47.189	10.665	36.251	-1.291	-6.767	49.771	0.093	0.001	0	1275.90	21.2651	45.7	12.2	41.0	2.824	0.014	0.014	0.000	0.333	0.29
1358	11/7/2002	12:30:01 PM	25.507	22.081	25.507	23.769	23.405	45.309	46.962	10.652	35.819	-1.291	-6.725	50.476	0.093	0.001	0	1276.90	21.2817	45.5	12.4	40.6	2.797	0.014	0.014	0.000	0.337	0.29
1359	11/7/2002	12:31:01 PM	25.514	22.103	25.584	23.791	23.412	45.226	46.858	10.703	35.724	-1.288	-6.705	49.861	0.089	0.001	0	1277.90	21.2984	45.4	12.2	40.5	2.791	0.013	0.013	0.000	0.322	0.27
1360	11/7/2002	12:32:01 PM	25.515	22.115	25.57	23.843	23.433	44.882	46.575	10.673	35.315	-1.288	-6.783	50.373	0.092	0.001	0	1278.90	21.3151	45.1	12.3	40.1	2.765	0.014	0.013	0.000	0.337	0.29
1361	11/7/2002	12:33:01 PM	25.527	22.131	25.556	23.834	23.445	45.317	46.801	10.574	35.966	-1.288	-6.774	49.215	0.092	0.001	0	1279.90	21.3317	45.3	12.1	40.6	2.802	0.014	0.014	0.000	0.332	0.28
1362	11/7/2002	12:34:01 PM	25.542	22.152	25.642	23.885	23.465	45.305	47.03	10.465	36.07	-1.285	-6.766	50.123	0.092	0.001	0	1280.90	21.3484	45.6	12.3	40.7	2.805	0.014	0.013	0.000	0.331	0.28
1363	11/7/2002	12:35:01 PM	25.544	22.164	25.549	23.907	23.507	45.228	46.9	10.486	35.919	-1.291	-6.771	49.253	0.092	0.001	0	1281.90	21.3651	45.4	12.1	40.6	2.797	0.014	0.014	0.000	0.333	0.28
1364	11/7/2002	12:36:01 PM	25.546	22.175	25.7	23.908	23.509	45.307	46.885	10.473	36.132	-1.291	-6.766	48.848	0.092	0.001	0	1282.90	21.3817	45.4	12.0	40.7	2.807	0.014	0.013	0.000	0.330	0.28
1365	11/7/2002	12:37:01 PM	25.572	22.192	25.836	24	23.52	45.11	46.714	10.496	35.81	-1.285	-6.76	50.123	0.092	0.001	0	1283.90	21.3984	45.2	12.3	40.5	2.790	0.014	0.013	0.000	0.331	0.28
1366	11/7/2002	12:38:01 PM	25.594	22.204	25.878	23.997	23.547	45.238	46.952	10.584	35.753	-1.291	-6.751	49.878	0.093	0.001	0	1284.90	21.4151	45.5	12.2	40.5	2.792	0.014	0.014	0.000	0.334	0.28
1367	11/7/2002	12:39:01 PM	25.642	22.231	26.036	24.009	23.555	45.228	46.987	10.536	35.864	-1.291	-6.737	50.9	0.092	0.001	0	1285.90	21.4317	45.6	12.5	40.5	2.796	0.014	0.013	0.000	0.329	0.28
1368	11/7/2002	12:40:01 PM	25.684	22.244	25.983	24.067	23.577	45.062	46.931	10.583	35.491	-1.291	-6.751	50.939	0.092	0.001	0	1286.90	21.4484	45.5	12.5	40.3	2.777	0.014	0.013	0.000	0.331	0.28
1369	11/7/2002	12:41:01 PM	25.731	22.266	25.89	24.064	23.589	46.549	48.385	9.29	38.459	-1.288	-6.699	46.441	0.097	0.001	0	1287.90	21.4651	46.9	11.4	42.5	2.931	0.014	0.014	0.000	0.332	0.28
1370	11/7/2002	12:42:01 PM	25.753	22.278	25.762	24.111	23.621	46.698	48.524	9.291	38.515	-1.291	-6.702	47.013	0.097	0.001	0	1288.90	21.4817	47.1	11.5	42.6	2.938	0.014	0.014	0.000	0.332	0.28
1371	11/7/2002	12:43:01 PM	25.755	22.29	25.714	24.158	23.633	45.818	47.673	10.003	37.006	-1.288	-6.763	49.391	0.09	0.001	0	1289.90	21.4984	46.2	12.1	41.4	2.855	0.013	0.013	0.000	0.318	0.27
1372	11/7/2002	12:44:01 PM	25.752	22.312	25.727	24.135	23.621	45.901	47.721	9.549	37.526	-1.288	-6.716	48.878	0.094	0.001	0	1290.90	21.5151	46.2	12.0	41.7	2.876	0.014	0.014	0.000	0.329	0.28
1373	11/7/2002	12:45:01 PM	25.739	22.325	25.614	24.172	23.636	45.978	47.885	9.719	37.44	-1.291	-6.734	48.332	0.093	0.001	0	1291.90	21.5317	46.4	11.8	41.7	2.876	0.014	0.014	0.000	0.327	0.28
1374	11/7/2002	12:46:01 PM	25.745	22.355	25.639	24.218	23.683	46.191	48.199	9.732	37.53	-1.285	-6.728	47.955	0.093	0.001	0	1292.90	21.5484	46.7	11.8	41.9	2.886	0.014	0.014	0.000	0.325	0.28
1375	11/7/2002	12:47:01 PM	25.722	22.353	25.597	24.216	23.736	45.942	47.81	9.732	37.442	-1.288	-6.725	48.397	0.094	0.001	0	1293.90	21.5651	46.3	11.9	41.7	2.875	0.014	0.014	0.000	0.331	0.28
1376	11/7/2002	12:48:01 PM	25.726	22.391	25.534	24.269	23.769	45.708	47.614	9.81	37.098	-1.288	-6.763	48.487	0.092	0.001	0	1294.90	21.5817	46.1	11.9	41.4	2.855	0.014	0.014	0.000	0.326	0.28
1377	11/7/2002	12:49:01 PM	25.712	22.403	25.576	24.286	23.786	45.862	47.825	9.838	37.258	-1.288	-6.771	48.71	0.091	0.001	0	1295.90	21.5984	46.4	11.9	41.6	2.865	0.014	0.013	0.000	0.321	0.27
1378	11/7/2002	12:50:01 PM	25.7	22.426	25.494	24.293	23.789	46.021	47.967	9.697	37.493	-1.288	-6.763	47.791	0.092	0.001	0	1296.90	21.6151	46.5	11.7	41.8	2.879	0.014	0.014	0.000	0.324	0.28
1379	11/7/2002	12:51:01 PM	25.677	22.438	25.501	24.27	23.826	46.061	48.091	9.406	37.782	-1.288	-6.76	47.147	0.093	0.001	0	1297.90	21.6317	46.6	11.6	41.9	2.890	0.014	0.014	0.000	0.326	0.28
1380	11/7/2002	12:52:01 PM	25.664	22.44	25.488	24.317	23.843	45.905	47.829	9.65	37.493	-1.291	-6.786	48.854	0.092	0.001	0	1298.90	21.6484	46.4	12.0	41.7	2.875	0.014	0.014	0.000	0.324	0.28
1381	11/7/2002	12:53:01 PM	25.65	22.456	25.399	24.304	23.849	46.083	48.215	9.69	37.485	-1.294	-6.777	46.629	0.092	0.001	0	1299.90	21.6651	46.7	11.4	41.8	2.881	0.014	0.014	0.000	0.325	0.28
1382	11/7/2002	12:54:01 PM	25.642	22.478	25.471	24.281	23.831	45.853	47.781	9.667	37.34	-1.288	-6.774	47.46	0.092	0.001	0	1300.90	21.6817	46.3	11.6	41.6	2.868	0.014	0.014	0.000	0.325	0.28
1383	11/7/2002	12:55:01 PM	25.64	22.506	25.404	24.313	23.864	45.916	48.027	9.826	37.2	-1.291	-6.78	47.527	0.091	0.001	0	1301.90	21.6984	46.6	11.6	41.6	2.865	0.014	0.013	0.000	0.323	0.27
1384	11/7/2002	12:56:01 PM	25.627	22.523	25.416	24.31	23.871	45.998	48.036	9.561	37.606	-1.288	-6.777	46.441	0.091	0.001	0	1302.90	21.7151	46.6	11.4	41.8	2.882	0.014	0.013	0.000	0.321	0.27
1385	11/7/2002	12:57:01 PM	25.623	22.535	25.432	24.327	23.898	46.025	48.201	9.543	37.647	-1.285	-6.769	47.451	0.092	0.001	0	1303.90	21.7317	46.7	11.6	41.8	2.884	0.014	0.014	0.000	0.324	0.28
1386	11/7/2002	12:58:01 PM	25.604	22.541	25.334	24.358	23.929	46.235	48.344	9.491	37.986	-1.291	-6.728	47.485	0.088	0.001	0	1304.90	21.7484	46.9	11.6	42.1	2.903	0.013	0.013	0.000	0.309	0.26
1387	11/7/2002	12:59:01 PM	25.586	22.553	25.381	24.335	23.941	46.448	48.526	9.245	38.339	-1.291	-6.734	46.111	0.092	0.001	0	1305.90	21.7651	47.1	11.3	42.4	2.923	0.014	0.014

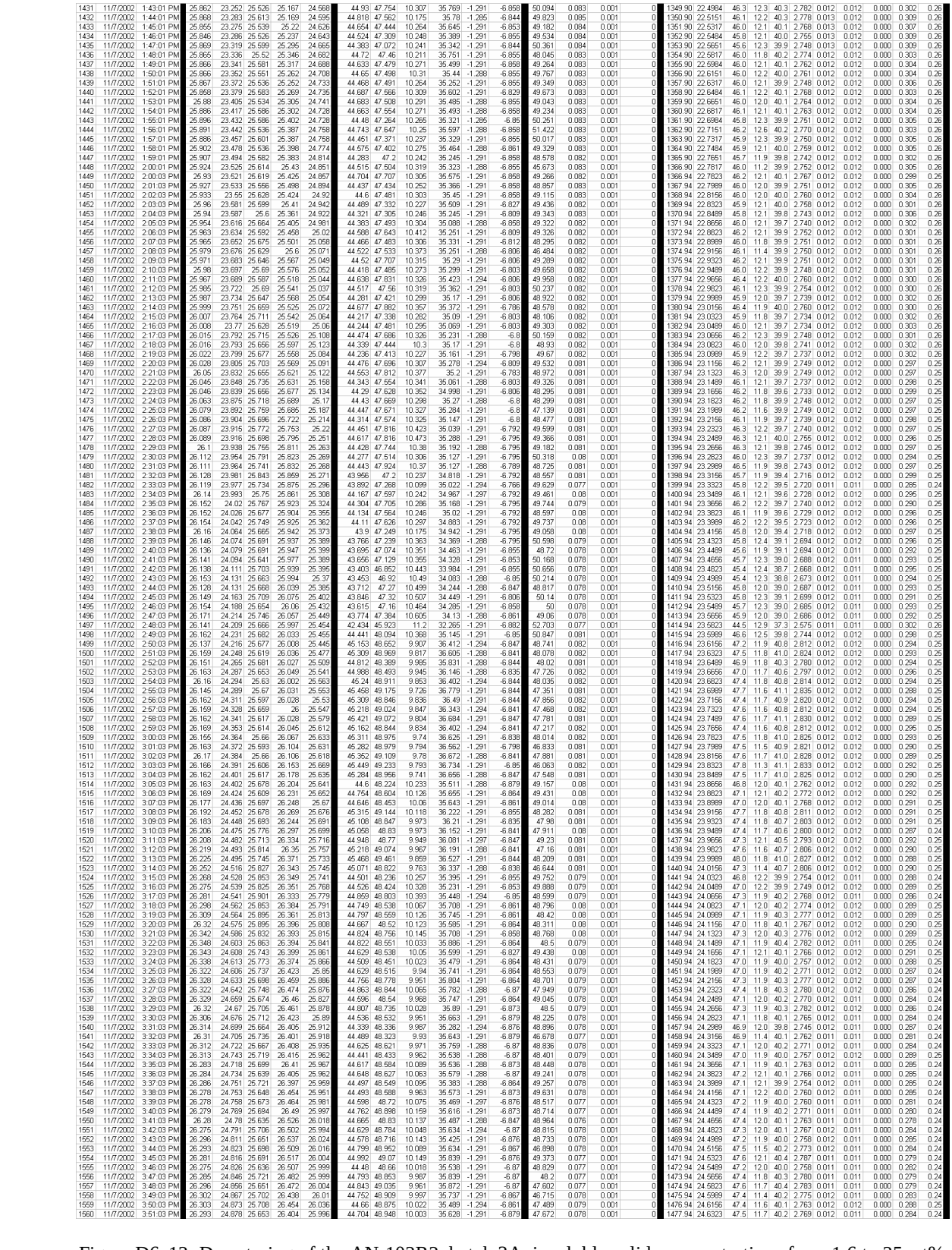
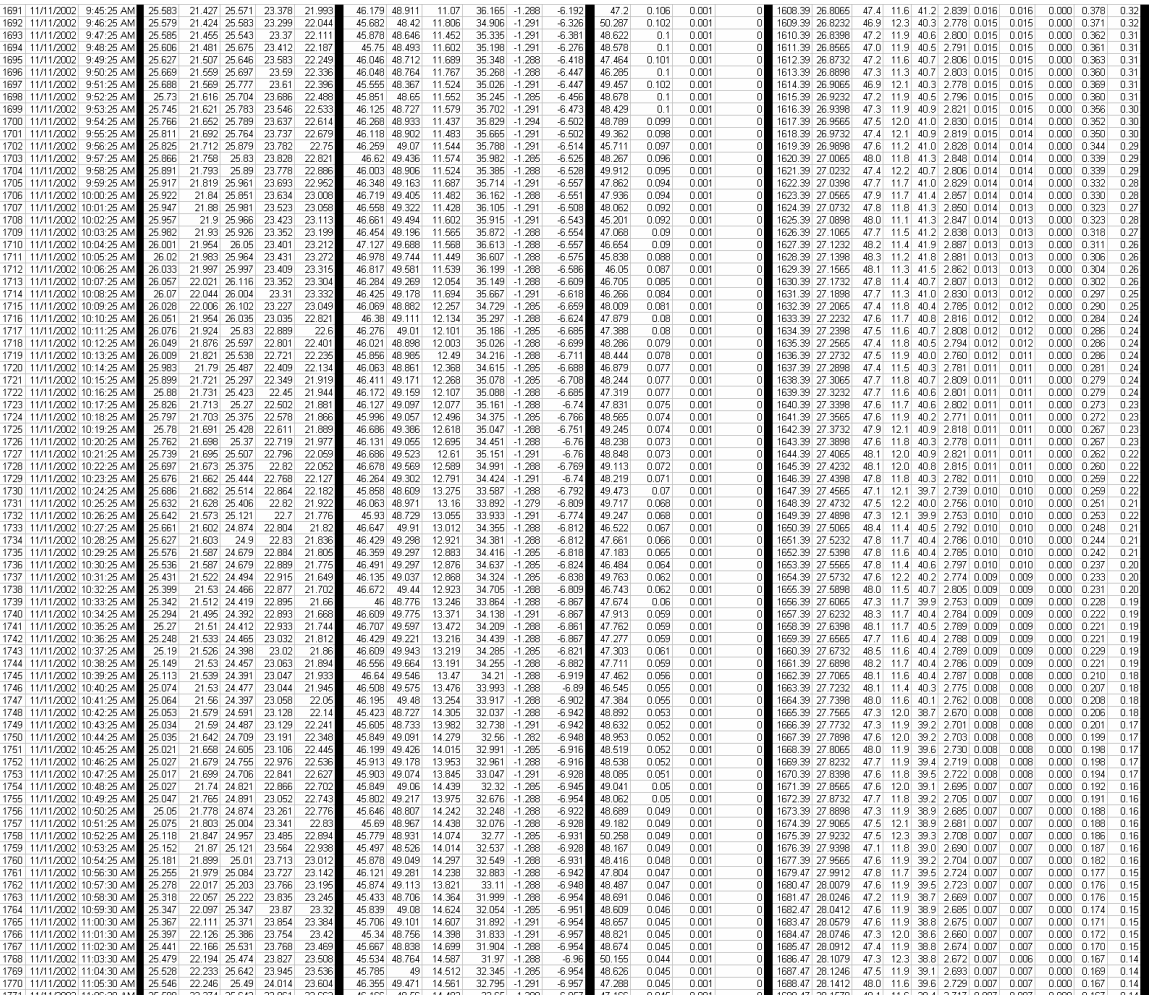


Figure D6-12: Dewatering of the AN-102R2, batch 3A, insoluble solids concentrations from 1.6 to 25 wt% - Raw & Calculated Data

1561	11/7/2002	3:52:03 PM	26.313	24.893	25.748	26.429	25.991	44.878	49.033	9.94	36.085	-1.288	-6.861	48.244	0.078	0.001	0	1478.94	24.6489	47.6	11.8	40.5	2.791	0.012	0.011	0.000	0.281	0.24
1562	11/7/2002	3:53:03 PM	26.299	24.899	25.674	26.44	25.992	44.832	49.138	10.024	35.796	-1.285	-6.867	48.412	0.077	0.001	0	1479.94	24.6656	47.7	11.9	40.3	2.780	0.011	0.011	0.000	0.279	0.24
1563	11/7/2002	3:54:03 PM	26.304	24.915	25.715	26.48	26.026	44.571	48.96	9.945	35.569	-1.288	-6.864	48.427	0.077	0.001	0	1480.94	24.6823	47.5	11.9	40.1	2.763	0.011	0.011	0.000	0.281	0.24
1564	11/7/2002	3:55:03 PM	26.322	24.933	25.758	26.484	26.051	44.646	48.799	9.9	35.78	-1.288	-6.861	48.378	0.078	0.001	0	1481.94	24.6989	47.3	11.9	40.2	2.773	0.012	0.011	0.000	0.283	0.24
1565	11/7/2002	3:56:03 PM	26.313	24.929	25.663	26.449	26.066	44.515	48.675	9.961	35.544	-1.297	-6.87	47.726	0.078	0.001	0	1482.94	24.7156	47.2	11.7	40.0	2.760	0.012	0.011	0.000	0.285	0.24
1566	11/7/2002	3:57:03 PM	26.319	24.939	25.754	26.455	26.052	44.648	48.82	10.019	35.616	-1.291	-6.867	50.126	0.077	0.001	0	1483.94	24.7323	47.3	12.3	40.1	2.767	0.011	0.011	0.000	0.280	0.24
1567	11/7/2002	3:58:03 PM	26.314	24.944	25.684	26.495	26.032	44.634	48.958	10.032	35.405	-1.291	-6.87	48.179	0.077	0.001	0	1484.94	24.7489	47.5	11.8	40.0	2.759	0.011	0.011	0.000	0.281	0.24
1568	11/7/2002	3:59:03 PM	26.315	24.95	25.715	26.436	26.043	44.861	49.058	10.02	35.849	-1.294	-6.815	47.869	0.078	0.001	0	1485.94	24.7656	47.6	11.7	40.4	2.782	0.012	0.011	0.000	0.282	0.24
1569	11/7/2002	4:00:03 PM	26.33	24.965	25.765	26.461	26.028	44.617	48.756	9.997	35.677	-1.291	-6.867	49.35	0.077	0.001	0	1486.94	24.7823	47.3	12.1	40.1	2.768	0.011	0.011	0.000	0.280	0.24
1570	11/7/2002	4:00:30 PM	26.321	24.966	25.746	26.447	26.049	44.814	49.091	10.009	35.751	-1.294	-6.867	47.682	0.077	0.001	0	1487.39	24.7898	47.6	11.7	40.3	2.777	0.011	0.011	0.000	0.279	0.24
1571	11/7/2002	4:01:30 PM	26.326	24.981	25.726	26.457	26.074	44.679	48.9	10.038	35.642	-1.291	-6.873	49.538	0.077	0.001	0	1488.39	24.8064	47.4	12.1	40.2	2.769	0.011	0.011	0.000	0.280	0.24
1572	11/7/2002	4:02:30 PM	26.332	24.993	25.727	26.488	26.045	45.247	49.595	10.026	36.257	-1.294	-6.87	48.55	0.078	0.001	0	1489.39	24.8231	48.1	11.9	40.8	2.810	0.012	0.011	0.000	0.280	0.24
1573	11/7/2002	4:03:30 PM	26.339	24.994	25.739	26.49	26.057	45.224	49.529	10.017	36.293	-1.294	-6.87	47.63	0.078	0.001	0	1490.39	24.8398	48.1	11.7	40.8	2.810	0.012	0.011	0.000	0.279	0.24
1574	11/7/2002	4:04:30 PM	26.351	25.022	25.631	26.522	26.089	45.017	49.208	10.015	36.027	-1.288	-6.847	48.71	0.077	0.001	0	1491.39	24.8564	47.7	11.9	40.5	2.794	0.011	0.011	0.000	0.278	0.24
1575	11/7/2002	4:05:30 PM	26.343	25.023	25.678	26.494	26.081	45.149	49.434	10.127	36.013	-1.291	-6.853	48.087	0.078	0.001	0	1492.39	24.8731	48.0	11.8	40.6	2.798	0.012	0.011	0.000	0.281	0.24
1576	11/7/2002	4:06:30 PM	26.323	25.019	25.589	26.53	26.072	45.292	49.699	10.179	36.015	-1.294	-6.864	47.919	0.078	0.001	0	1493.39	24.8898	48.2	11.7	40.7	2.803	0.012	0.011	0.000	0.281	0.24
1577	11/7/2002	4:07:30 PM	26.329	25.045	25.6	26.56	26.058	45.155	49.446	10.142	35.99	-1.291	-6.858	47.936	0.078	0.001	0	1494.39	24.9064	48.0	11.7	40.6	2.797	0.012	0.011	0.000	0.282	0.24
1578	11/7/2002	4:08:30 PM	26.319	25.05	25.63	26.55	26.068	45.143	49.451	10.225	35.882	-1.291	-6.818	48.909	0.076	0.001	0	1495.39	24.9231	48.0	12.0	40.5	2.793	0.011	0.011	0.000	0.275	0.23
1579	11/7/2002	4:09:30 PM	26.317	25.067	25.537	26.538	26.115	44.87	49.279	10.133	35.63	-1.291	-6.867	48.739	0.077	0.001	0	1496.39	24.9398	47.8	11.9	40.3	2.775	0.011	0.011	0.000	0.281	0.24
1580	11/7/2002	4:10:30 PM	26.298	25.074	25.589	26.509	26.126	45.392	49.722	10.142	36.236	-1.291	-6.867	48.414	0.077	0.001	0	1497.39	24.9564	48.2	11.9	40.8	2.814	0.011	0.011	0.000	0.277	0.24
1581	11/7/2002	4:11:30 PM	26.296	25.081	25.541	26.577	26.144	45.495	49.823	10.223	36.253	-1.291	-6.864	47.997	0.077	0.001	0	1498.39	24.9731	48.4	11.8	40.9	2.818	0.011	0.011	0.000	0.277	0.24
1582	11/7/2002	4:12:30 PM	26.288	25.084	25.538	26.579	26.176	45.066	49.333	10.126	35.909	-1.291	-6.873	47.635	0.077	0.001	0	1499.39	24.9898	47.9	11.7	40.5	2.791	0.011	0.011	0.000	0.279	0.24
1583	11/7/2002	4:13:30 PM	26.264	25.09	25.564	26.6	26.172	44.838	49.146	10.124	35.603	-1.297	-6.861	47.793	0.077	0.001	0	1500.39	25.0064	47.7	11.7	40.2	2.773	0.011	0.011	0.000	0.281	0.24
1584	11/7/2002	4:14:30 PM	26.265	25.086	25.486	26.626	26.194	44.969	49.358	10.125	35.747	-1.291	-6.867	47.953	0.077	0.001	0	1501.39	25.0231	47.9	11.8	40.4	2.782	0.011	0.011	0.000	0.281	0.24
1585	11/7/2002	4:15:30 PM	26.256	25.107	25.561	26.612	26.224	45.129	49.583	10.149	35.845	-1.288	-6.861	48.487	0.077	0.001	0	1502.39	25.0398	48.1	11.9	40.5	2.791	0.011	0.011	0.000	0.279	0.24
1586	11/7/2002	4:16:30 PM	26.262	25.113	25.502	26.588	26.25	45.075	49.575	10.145	35.802	-1.291	-6.864	48.869	0.077	0.001	0	1503.39	25.0564	48.1	12.0	40.4	2.788	0.011	0.011	0.000	0.280	0.24
1587	11/7/2002	4:17:30 PM	26.246	25.122	25.521	26.587	26.219	45.096	49.666	10.181	35.792	-1.291	-6.864	48.785	0.077	0.001	0	1504.39	25.0731	48.2	12.0	40.4	2.788	0.011	0.011	0.000	0.280	0.24
1588	11/7/2002	4:18:30 PM	26.256	25.137	25.561	26.627	26.234	45.269	49.746	10.183	36.003	-1.288	-6.861	47.212	0.077	0.001	0	1505.39	25.0898	48.3	11.6	40.6	2.802	0.011	0.011	0.000	0.278	0.24
1589	11/7/2002	4:19:30 PM	26.241	25.142	25.471	26.587	26.204	45.149	49.606	10.166	35.886	-1.291	-6.867	48.366	0.077	0.001	0	1506.39	25.1064	48.1	11.9	40.5	2.794	0.011	0.011	0.000	0.280	0.24
1590	11/7/2002	4:20:30 PM	26.24	25.146	25.556	26.576	26.219	45.197	49.585	10.088	36.122	-1.291	-6.858	46.279	0.077	0.001	0	1507.39	25.1231	48.1	11.3	40.7	2.803	0.011	0.011	0.000	0.278	0.24
1591	11/7/2002	4:21:30 PM	26.23	25.141	25.471	26.542	26.229	44.87	49.411	10.138	35.675	-1.297	-6.867	47.795	0.077	0.001	0	1508.39	25.1398	47.9	11.7	40.3	2.777	0.011	0.011	0.000	0.281	0.24
1592	11/7/2002	4:22:30 PM	26.231	25.162	25.526	26.557	26.204	45.162	49.484	10.193	36.06	-1.291	-6.861	47.69	0.077	0.001	0	1509.39	25.1564	48.0	11.7	40.6	2.800	0.011	0.011	0.000	0.279	0.24
1593	11/7/2002	4:23:30 PM	26.237	25.168	25.557	26.548	26.24	44.946	49.48	10.118	35.749	-1.291	-6.867	47.745	0.077	0.001	0	1510.39	25.1731	48.0	11.7	40.3	2.782	0.011	0.011	0.000	0.280	0.24
1594	11/7/2002	4:24:30 PM	26.212	25.163	25.472	26.503	26.17	45.122	49.647	10.193	35.823	-1.294	-6.867	47.798	0.077	0.001	0	1511.39	25.1898	48.2	11.7	40.5	2.790	0.011	0.011	0.000	0.280	0.24
1595	11/7/2002	4:25:30 PM	26.227	25.178	25.572	26.533	26.165	45.095	49.581	10.135	35.878	-1.294	-6.864	48.49	0.076	0.001	0	1512.39	25.2064	48.1	11.9	40.5	2.791	0.011	0.011	0.000	0.275	0.23
1596	11/7/2002	4:26:30 PM	26.239	25.194	25.529	26.55	26.182	45.06	49.562	10.154	35.868	-1.291	-6.861	47.684	0.077	0.001	0	1513.39	25.2231	48.1	11.7	40.5	2.790	0.011	0.011	0.000	0.280	0.24
1597	11/7/2002	4:27:30 PM	26.224	25.189	25.549	26.545	26.147	45.052	49.552	10.246	35.771	-1.291	-6.87	48.217	0.076	0.001	0	1514.39	25.2398	48.1	11.8	40.4	2.786	0.011	0.011	0.000	0.276	0.23
1598	11/7/2002	4:28:30 PM	26.23	25.206	25.586	26.586	26.153	44.942	49.329	10.15	35.806	-1.291	-6.864	48.196	0.076	0.001	0	1515.39	25.2564	47.9	11.8	40.4	2.784	0.011	0.011	0.000	0.276	0.23
1599	11/7/2002	4:29:30 PM	26.237	25.203	25.522	26.543	26.175	45.019	49.465	10.24	35.729	-1.294	-6.867	48.068	0.076	0.001	0	1516.39	25.2731	48.0	11.8	40.4	2.784	0.011	0.011	0.000	0.277	0.24
1600	11/7/2002	4:30:30 PM	26.245	25.221	25.62	26.546	26.198	45.162	49.719	10.188	35.878	-1.288	-6.795	48.016	0.073	0.001	0	1517.39	25.2898	48.2	11.9	40.5	2.794	0.011	0.011	0.000	0.264	0.22
1601	11/7/2002	4:31:30 PM	26.247	25.223	25.553	26.588	26.226	45.153	49.715	10.215	35.87	-1.294	-6.864	47.986	0.077	0.001	0	1518.39	25.3064	48.2	11.8	40.5	2.793	0.011	0.011	0.000	0.279	0.24
1602	11/7/2002	4:32:30 PM	26.234	25.21	25.569	26.53	26.217	45.062	49.597	10.04	35.948	-1.294	-6.85	46.22	0.077	0.001	0	1519.39	25.3231	48.1	11.3	40.5	2.793	0.011	0.011	0.000	0.279	0.24
1603	11/7/2002	4:33:30 PM	26.234	25.22	25.594	26.55	26.267	45.07	49.593	10.116	35.888	-1.291	-6.861	48.456	0.076	0.001	0	1520.39	25.3398	48.1	11.9	40.5	2.791	0.011	0.011	0.000	0.275	0.23
1604	11/7/2002	4:34:30 PM	26.239	25.225	25.539	26.56	26.217	44.942	49.465	9.981	35.972	-1.291	-6.855	48.053	0.077	0.001	0	1521.39	25.3564	48.0	11.8	40.5	2.789	0.011	0.011	0.000	0.279	0.24
1605	11/7/2002	4:35:30 PM	26.238	25.229	25.614	26.569	26.221	45.015	49.488	10.11	35.808	-1.291	-6.855	47.319	0.077	0.001	0	1522.39	25.3731	48.0	11.6	40.4	2.786	0.011	0.011	0.000	0.279	0.24
1606	11/7/2002	4:36:30 PM	26.238	25.229	25.524	26.574	26.226	45.191	49.763	10.098	35.95	-1.294	-6.85	48.055	0.077	0.001	0	1523.39	25.3898	48.3	11.8	40.6	2.797	0.011	0.011	0.000	0.279	0.24
1607	11/7/2002	4:37:30 PM	26.237	25.228	25.573	26.519	26.196	45.472	49.953	10.117	36.255	-1.294	-6.858	47.542	0.076	0.001	0	1524.39	25.4064	48.5	11.7	40.9	2.817	0.011	0.011	0.000	0.273	0.23
1608	11/7/2002	4:38:30 PM	26.262	25.263	25.626	26.583	26.186	44.894	49.662	10.179	35.956	-1.288	-6.847	47.217	0.076	0.001	0	1525.39	25.4231	48.1	11.6	40.2	2.773	0.011	0.011	0.000	0.277	0.24
1609	11/7/2002	4:39:30 PM	26.242	25.253	25.548	26.544	26.186	45.139	49.734	10.118	35.976	-1.291	-6.853	50.814	0.076	0.001	0	1526.39	25.4398	48.3	12.5	40.6	2.796	0.011	0.011	0.000	0.275	0.23
1610	11/7/2002	4:40:30 PM	26.257	25.263	25.663	26.554	26.186	44.809	49.358	10.06	35.726	-1.291	-6.853	47.714	0.076	0.001	0	1527.39	25.4564	47.9	11.7	40.3	2.776	0.011	0.011	0.000	0.276	0.24
1611	11/7/2002	4:41:30 PM	26.263	25.254	25.559	26.509	26.181	45.122	49.74	10.188	35.749	-1.291	-6.855	49.333	0.076	0.001	0	1528.39	25.4731	48.3	12.1	40.4	2.788	0.011	0.011	0.000	0.276	0.23
1612	11/7/2002	4:42:30 PM	26.259	25.265	25.619	26.49	26.197	45.404	49.935	10.174	36.255	-1.291	-6.853	48.703	0.076	0.001	0	1529.39	25.4898	48.5	11.9	40.8	2.815	0.011	0.011	0.000	0.273	0.23
1613	11/7/2002	4:43:30 PM	26.274	25.275	25.654	26.515	26.192	45.099	49.875	10.22	35.743	-1.291	-6.809	47.707	0.076	0.001	0	1530.39	25.5064	48.4	11.7	40.4	2.787	0.011	0.011	0.000	0.275	0.23
1614	11/7/2002	4:44:30 PM	26.268	25.269	25.604	26.504	26.171	45.015	49.72	10.198	35.638	-1.291	-6.855	48.158	0.076	0.001	0	1531.39	25.5231	48.2	11.8	40.3	2.780	0.011	0.011	0.000	0.276	0.24
1615	11/7/2002	4:45:30 PM	26.274	25.28	25.589	26.475	26.217	45.176	49.806	10.217	35.892	-1.294	-6.85	47.726	0.076	0.001	0	1532.39	25.5398	48.3	11.7	40.5	2.795	0.011	0.011	0.000	0.274	0.23
1616	11/7/2002	4:46:30 PM	26.264	25.285	25.614	26.47	26.197	45.197	49.802	10.169	36.036	-1.288	-6.863	48.416	0.076	0.001	0	1533.39	25.5564	48.3	11.9	40.6	2.800	0.011	0.011	0.000	0.274	0.23
1617	11/7/2002	4:47:30 PM	26.284	25.295	25.679	26.455	26.177	45.295	49.937	10.206	35.978	-1.291	-6.863	47.892	0.076	0.001	0	1534.39	25.5731	48.5	11.7	40.6	2.800	0.011	0.011	0.000	0.274	0.23
1618	11/7/2002	4:48:30 PM	26.283	25.294	25.689	26.449	26.186	45.168	49.968	10.263	35.698	-1.291	-6.847	47.468	0.076	0.001	0	1535.39	25.5898	48.5	11.6	40.4	2.788	0.011	0.011	0.000	0.275	0.23
1619	11/7/2002	4:49:30 PM	26.29	25.296	25.635	26.401	26.163	45.046	49.757	10.145	35.855	-1.291	-6.855	47.309	0.076	0.001	0	1536.39	25.6064	48.3	11.6	40.5	2.789	0.011	0.011	0.000	0.275	0.23
1620	11/7/2002	4:50:30 PM	26.279	25.285	25.704	26.375	26.152	45.131	49.759	10.22	35.87	-1.294	-6.847	48.139	0.076	0.001	0	1537.39	25.6231	48.3	11.8	40.5	2.792	0.011	0.011	0.000	0.274	0.23
1621	11/7/2002	4:51:30 PM	26.299	25.3	25.649	26.425	26.157	45.116	49.689	9.955	36.089	-1.288	-6.85	47.951	0.076	0.001	0	1538.39	25.6398	48.2	11.8	40.6	2.799	0.011	0.011	0.000	0.274	0.23
1622	11/7/2002	4:52:30 PM	26.309	25.3	25.699	26.41	26.157	45.124	49.96	10.218	35.661	-1.291	-6.85	47.862	0.076	0.001	0	1539.39	25.6564	48.5	11.7	40.4	2.785	0.011	0.011	0.000	0.275	0.23
1623	11/7/2002	4:53:30 PM	26.315	25.306	25.72	26.411	26.153	45.133	49.809	10.124	35.97	-1.291	-6.853	47.883	0.076	0.001	0	1540.39	25.6731	48.3	11.7	40.6	2.796	0.011	0.011	0.000	0.274	0.23
1624	11/7/2002	4:54:30 PM	26.319	25.31	25.674	26.39	26.097	44.942	49.581	10.086	35.87	-1.291	-6.85	46.459	0.076	0.001	0	1541.39	25.6898	48.1	11.4	40.4	2.786	0.011	0.011	0.000	0.275	0.23
1625	11/7/2002	4:55:30 PM	26.308	25.294	25.744	26.364	26.111	45.242	49.799	10.192	35.99	-1.291	-6.853	47.424	0.076	0.001	0	1542.39	25.7064	48.5	11.9	40.6	2.800	0.011	0.011	0.000	0.273	0.23
1626	11/7/2002	4:56:30 PM	26.324	25.31	25.679	26.365	26.097	45.062	49.806	10.162	35.767	-1.291	-6.853	47.556	0.075	0.001	0	1543.39	25.7231	48.3	11.7	40.4	2.786	0.011	0.011	0.000	0.271	0.23
1627	11/7/2002	4:57:30 PM	26.314	25.3	25.729	26.315	26.097	45.286	50.077	10.168	36.054	-1.291	-6.85	47.621	0.075	0.001	0	1544.39	25.7398	48.6	11.7	40.7	2.804	0.011	0.011	0.000	0.269	0.23
1628	11/7/2002	4:58:30 PM	26.328	25.304	25.769	26.314	26.121	45.085	49.933	10.206	35.757	-1.288	-6.803	47.302	0.074	0.001	0	1545.39	25.7564	48.5	11.6	40.4	2.787	0.011	0.011	0.000	0.267	0.23
1629	11/7/2002	4:59:30 PM	26.317	25.288	25.678	26.244	26.106	45.311	50.04	10.224	35.925	-1.297	-6.838	47.546	0.077	0.001	0	1546.39	25.7731	48.6	11.7	40.6	2.800	0.011	0.011	0.000	0.277	0.24
1630	11/7/2002	5:00:30 PM	26.349	25.33	25.819	26.3	26.092	45.203	50.015	10.202	35.909	-1.288	-6.844	47.093	0.075	0.001	0	1547.39	25.7898	48.5	11.5	40.6	2.796	0.011	0.011	0.000	0.269	0.23
1631	11/7/2002	5:01:30 PM	26.34	25.311	25.73	26.331	26.103	45.186	49.962	10.23	35.872	-1.288	-6.835	47.298	0.075	0.001	0	1548.39	25.8064	48.5	11.6	40.5	2.794	0.011	0.011	0.000	0.270	0.23
1632	11/7/2002	5:02:30 PM	26.346	25.307	25.782	26.293	26.095	45.133	49.976	10.232	35.776	-1.291	-6.827	47.003	0.075	0.001	0	1549.39	25.8231	48.5	11.5	40.5	2.789	0.011	0.011	0.000	0.270	0.23
1633	11/7/2002	5:03:30 PM	26.341	25.297	25.797	26.278	26.095	45.141	49.966	10.214	36.81	-1.291	-6.835	46.954	0.075	0.001	0	1550.39	25.8398	48.5	11.6	40.5	2.791	0.011	0.011	0.000	0.271	0.23
1634	11/7/2002	5:04:30 PM	26.361	25.307	25.742	26.308	26.04	45.077	49.9	10.194	35.79	-1.291	-6.835	47.177	0.075	0.001	0	1551.39	25.8564	48.4	11.6	40.4	2.788	0.011	0.011	0.000	0.271	0.23
1635	11/7/2002	5:05:30 PM	26.35	25.296	25.82	26.236	26.068	44.984	49.842	10.227	35.573	-1.288	-6.827	47.909	0.075	0.001	0	1552.39	25.8731	48.4	11.7	40.3	2.777	0.011	0.011	0.000	0.271	0.23
1636	11/7/2002	5:06:30 PM	26.344	25.295	25.724	26.21	26.037	45.164	49.949	10.263	35.751	-1.291	-6.829	47.877	0.075	0.001	0	1553.39	25.8898	48.5	11.7	40.5	2.789	0.011	0.011	0.000	0.271	0.23
1637	11/7/2002	5:07:30 PM	26.359	25.295	25.784	26.2	26.027	44.888	49.647	10.151	35.673	-1.291	-6.827	47.6	0.075	0.001	0	1554.39	25.9064	48.2	11.7	40.3	2.777	0.011	0.011	0.000	0.272	0.23
1638	11/7/2002	5:08:30 PM	26.374	25.29	25.824	26.215	26.027	45.172	49.895	10.194	35.903	-1.291	-6.815	47.852	0.077	0.001	0	1555.39	25.9231	48.4	11.7	40.5	2.795	0.011	0.011	0.000	0.277	0.24
1639	11/7/2002	5:09:30 PM	26.368	25.284	25.749	26.169	25.971	45.416	50.326	10.283	35.968	-1.288	-6.827	46.258	0.075	0.001	0	1556.39	25.9398	48.9	11.3	40.7	2.806	0.011	0.011	0.000	0.269	0.23
1640	11/11/2002	8:54:25 AM	22.215	21.517	23.084	21.194	20.354	42.546	49.697	11.202	32.283	0.909	-3.149	49.339	0.035	0.001	0.155	1557.39	25.9565	48.2	12.1	37.4	2.580	0.005	0.006	0.000	0.147	0.13
1641	11/11/2002	8:55:25 AM	22.409	21.49	23.96	21.278	20.388	44.314	49.8	10.739	34.582	-0.779	4.05	46.226	0.141	0.001	0	1558.39	25.9732	48.3	11.3	39.4	2.720	0.021	0.022	0.001	0.549	0.47
1642	11/11/2002	8:56:25 AM	22.704	21.428	24.755	21.557	20.356	43.809	50.061	10.991	33.767	0.128	-2.674	47.311	0.052	0.001	0	1559.39	25.9898	48.6	11.6	39.8	2.674	0.023	0.023	0.001	0.588	0.50
1643	11/11/2002	8:57:25 AM	23.081	21.388	25.025	21.422	20.358	44.52	49.991	10.767	34.762	-0.652	-1.838	47.686	0.075	0.001	0	1560.39	26.0065	48.5	11.7	39.6	2.733	0.011	0.011	0.000	0.282	0.24
1644	11/11/2002	8:58:25 AM	23.419	21.344	25.017	21.58	20.352	45.768	50.137	10.741	36.085	-1.288	-4.151	48.114	0.149	0.001	0	1561.39	26.0232	48.7	11.8	40.9	2.821	0.022	0.022	0.001	0.543	0.46
1645	11/11/2002	8:59:25 AM	23.684	21.332	24.885	21.82	20.381	45.657	49.928	10.742	35.935	-1.288	-3.888	48.416	0.126	0.001	0	1562.39	26.0398	48.5	11.9	40.8	2.813	0.019	0.019	0.000	0.462	0.39
1646	11/11/2002	9:00:25 AM	23.846	21.284	24.882	21.903	20.368	46.734	50.251	10.678	37.194	-1.288	-5.286	46.575	0.126	0.001	0	1563.39	26.0565	48.8	11.4	42.0	2.893	0.019	0.019	0.000	0.449	0.38
1647	11/11/2002	9:01:25 AM	23.912	21.229	24.767	21.968	20.312	46.788	49.943	10.8	36.963	-1.291	-5.222	47.447	0.113	0.001	0	1564.39	26.0732	48.5	11.6	41.9	2.887	0.017	0.017



1691	11/11/2002	9:45:25 AM	25.583	21.427	25.571	23.378	21.993	46.179	48.911	11.07	36.165	-1.288	-6.192		47.2	0.106	0.001	0	1608.39	26.8065	47.4	11.6	41.2	2.839	0.016	0.016	0.000	0.378	0.32
1692	11/11/2002	9:46:25 AM	25.579	21.424	25.583	23.299	22.044	45.682	48.42	11.806	34.906	-1.291	-6.326		50.287	0.102	0.001	0	1609.39	26.8232	46.9	12.3	40.3	2.778	0.015	0.015	0.000	0.371	0.32
1693	11/11/2002	9:47:25 AM	25.585	21.455	25.543	23.37	22.111	45.878	48.646	11.452	35.335	-1.291	-6.381		48.622	0.1	0.001	0	1610.39	26.8398	47.2	11.9	40.6	2.800	0.015	0.015	0.000	0.362	0.31
1694	11/11/2002	9:48:25 AM	25.606	21.481	25.675	23.412	22.187	45.75	48.493	11.602	35.198	-1.291	-6.276		48.578	0.1	0.001	0	1611.39	26.8565	47.0	11.9	40.5	2.791	0.015	0.015	0.000	0.361	0.31
1695	11/11/2002	9:49:25 AM	25.627	21.507	25.646	23.583	22.249	46.046	48.712	11.689	35.348	-1.288	-6.418		47.464	0.101	0.001	0	1612.39	26.8732	47.2	11.6	40.7	2.806	0.015	0.015	0.000	0.363	0.31
1696	11/11/2002	9:50:25 AM	25.669	21.559	25.697	23.59	22.336	46.048	48.764	11.767	35.268	-1.288	-6.447		46.285	0.1	0.001	0	1613.39	26.8898	47.3	11.3	40.7	2.803	0.015	0.015	0.000	0.360	0.31
1697	11/11/2002	9:51:25 AM	25.688	21.569	25.777	23.61	22.396	45.555	48.367	11.524	35.026	-1.291	-6.447		49.457	0.102	0.001	0	1614.39	26.9065	46.9	12.1	40.3	2.778	0.015	0.015	0.000	0.369	0.31
1698	11/11/2002	9:52:25 AM	25.73	21.616	25.704	23.686	22.488	45.851	48.65	11.552	35.245	-1.285	-6.456		48.678	0.1	0.001	0	1615.39	26.9232	47.2	11.9	40.5	2.796	0.015	0.015	0.000	0.360	0.31
1699	11/11/2002	9:53:25 AM	25.745	21.621	25.783	23.546	22.533	46.125	48.727	11.579	35.702	-1.291	-6.473		48.429	0.1	0.001	0	1616.39	26.9398	47.3	11.9	40.9	2.821	0.015	0.015	0.000	0.356	0.30
1700	11/11/2002	9:54:25 AM	25.766	21.652	25.789	23.637	22.614	46.268	48.933	11.437	35.829	-1.294	-6.502		48.789	0.099	0.001	0	1617.39	26.9565	47.5	12.0	41.0	2.830	0.015	0.014	0.000	0.352	0.30
1701	11/11/2002	9:55:25 AM	25.811	21.692	25.764	23.737	22.679	46.118	48.902	11.483	35.665	-1.291	-6.502		49.362	0.098	0.001	0	1618.39	26.9732	47.4	12.1	40.9	2.819	0.015	0.014	0.000	0.350	0.30
1702	11/11/2002	9:56:25 AM	25.825	21.712	25.879	23.782	22.75	46.259	49.07	11.544	35.788	-1.291	-6.514		45.711	0.097	0.001	0	1619.39	26.9898	47.6	11.2	41.0	2.828	0.014	0.014	0.000	0.344	0.29
1703	11/11/2002	9:57:25 AM	25.866	21.758	25.83	23.828	22.821	46.62	49.436	11.574	35.982	-1.285	-6.525		48.267	0.096	0.001	0	1620.39	27.0065	48.0	11.8	41.3	2.848	0.014	0.014	0.000	0.339	0.29
1704	11/11/2002	9:58:25 AM	25.891	21.793	25.89	23.778	22.886	46.003	48.906	11.524	35.385	-1.288	-6.528		49.912	0.095	0.001	0	1621.39	27.0232	47.4	12.2	40.7	2.806	0.014	0.014	0.000	0.339	0.29
1705	11/11/2002	9:59:25 AM	25.917	21.819	25.961	23.693	22.952	46.348	49.163	11.687	35.714	-1.291	-6.557		47.862	0.094	0.001	0	1622.39	27.0398	47.7	11.7	41.0	2.829	0.014	0.014	0.000	0.332	0.28
1706	11/11/2002	10:00:25 AM	25.922	21.84	25.851	23.634	23.008	46.719	49.405	11.482	36.162	-1.288	-6.551		47.936	0.094	0.001	0	1623.39	27.0565	47.9	11.7	41.4	2.857	0.014	0.014	0.000	0.330	0.28
1707	11/11/2002	10:01:25 AM	25.947	21.88	25.981	23.523	23.058	46.558	49.322	11.428	36.105	-1.291	-6.508		48.062	0.092	0.001	0	1624.39	27.0732	47.8	11.8	41.3	2.850	0.014	0.013	0.000	0.323	0.27
1708	11/11/2002	10:02:25 AM	25.957	21.9	25.966	23.423	23.113	46.661	49.494	11.602	35.915	-1.291	-6.543		45.201	0.092	0.001	0	1625.39	27.0898	48.0	11.1	41.3	2.847	0.014	0.013	0.000	0.323	0.28
1709	11/11/2002	10:03:25 AM	25.982	21.93	25.926	23.352	23.199	46.454	49.196	11.565	35.872	-1.288	-6.554		47.068	0.09	0.001	0	1626.39	27.1065	47.7	11.5	41.2	2.838	0.013	0.013	0.000	0.318	0.27
1710	11/11/2002	10:04:25 AM	26.001	21.954	26.05	23.401	23.212	47.127	49.688	11.568	36.613	-1.288	-6.557		46.654	0.09	0.001	0	1627.39	27.1232	48.2	11.4	41.9	2.887	0.013	0.013	0.000	0.311	0.26
1711	11/11/2002	10:05:25 AM	26.02	21.983	25.964	23.431	23.272	46.978	49.744	11.449	36.607	-1.288	-6.575		45.838	0.088	0.001	0	1628.39	27.1398	48.3	11.2	41.8	2.881	0.013	0.013	0.000	0.306	0.26
1712	11/11/2002	10:06:25 AM	26.033	21.997	25.997	23.409	23.315	46.817	49.581	11.539	36.199	-1.288	-6.586		46.05	0.087	0.001	0	1629.39	27.1565	48.1	11.3	41.5	2.862	0.013	0.013	0.000	0.304	0.26
1713	11/11/2002	10:07:25 AM	26.057	22.021	26.116	23.352	23.304	46.284	49.269	12.054	35.149	-1.288	-6.609		46.705	0.085	0.001	0	1630.39	27.1732	47.8	11.4	40.7	2.807	0.013	0.012	0.000	0.302	0.26
1714	11/11/2002	10:08:25 AM	26.07	22.044	26.004	23.31	23.332	46.425	49.178	11.694	35.667	-1.291	-6.618		46.266	0.084	0.001	0	1631.39	27.1898	47.7	11.3	41.0	2.830	0.013	0.012	0.000	0.297	0.25
1715	11/11/2002	10:09:25 AM	26.028	22.006	26.102	23.227	23.049	46.069	48.882	12.257	34.729	-1.285	-6.659		48.009	0.081	0.001	0	1632.39	27.2065	47.4	11.8	40.4	2.785	0.012	0.012	0.000	0.290	0.25
1716	11/11/2002	10:10:25 AM	26.051	21.954	26.035	23.035	22.821	46.38	49.111	12.134	35.297	-1.288	-6.624		47.879	0.08	0.001	0	1633.39	27.2232	47.6	11.7	40.8	2.816	0.012	0.012	0.000	0.284	0.24
1717	11/11/2002	10:11:25 AM	26.076	21.924	25.83	22.889	22.6	46.276	49.01	12.101	35.186	-1.285	-6.685		47.388	0.08	0.001	0	1634.39	27.2398	47.5	11.6	40.7	2.808	0.012	0.012	0.000	0.286	0.24
1718	11/11/2002	10:12:25 AM	26.049	21.876	25.597	22.801	22.401	46.021	48.898	12.003	35.026	-1.288	-6.699		48.286	0.079	0.001	0	1635.39	27.2565	47.4	11.8	40.5	2.794	0.012	0.012	0.000	0.286	0.24
1719	11/11/2002	10:13:25 AM	26.009	21.821	25.538	22.721	22.235	45.856	48.985	12.49	34.216	-1.288	-6.711		48.444	0.078	0.001	0	1636.39	27.2732	47.5	11.9	40.0	2.760	0.012	0.011	0.000	0.286	0.24
1720	11/11/2002	10:14:25 AM	25.983	21.79	25.487	22.409	22.134	46.063	48.861	12.368	34.615	-1.285	-6.688		46.879	0.077	0.001	0	1637.39	27.2898	47.4	11.5	40.3	2.781	0.011	0.011	0.000	0.281	0.24
1721	11/11/2002	10:15:25 AM	25.899	21.721	25.297	22.349	21.919	46.411	49.171	12.268	35.078	-1.285	-6.708		48.244	0.077	0.001	0	1638.39	27.3065	47.7	11.8	40.7	2.809	0.011	0.011	0.000	0.279	0.24
1722	11/11/2002	10:16:25 AM	25.88	21.731	25.423	22.45	21.944	46.172	49.159	12.107	35.088	-1.288	-6.685		47.319	0.077	0.001	0	1639.39	27.3232	47.7	11.6	40.6	2.801	0.011	0.011	0.000	0.279	0.24
1723	11/11/2002	10:17:25 AM	25.826	21.713	25.27	22.502	21.881	46.127	49.097	12.077	35.161	-1.288	-6.74		47.831	0.075	0.001	0	1640.39	27.3398	47.6	11.7	40.6	2.802	0.011	0.011	0.000	0.273	0.23
1724	11/11/2002	10:18:25 AM	25.797	21.703	25.375	22.578	21.866	45.996	49.057	12.496	34.375	-1.285	-6.766		48.565	0.074	0.001	0	1641.39	27.3565	47.6	11.9	40.2	2.771	0.011	0.011	0.000	0.272	0.23
1725	11/11/2002	10:19:25 AM	25.78	21.691	25.428	22.611	21.889	46.686	49.386	12.618	35.047	-1.288	-6.751		49.245	0.074	0.001	0	1642.39	27.3732	47.9	12.1	40.9	2.818	0.011	0.011	0.000	0.267	0.23
1726	11/11/2002	10:20:25 AM	25.762	21.698	25.37	22.719	21.977	46.131	49.055	12.695	34.451	-1.288	-6.76		48.238	0.073	0.001	0	1643.39	27.3898	47.6	11.8	40.3	2.778	0.011	0.011	0.000	0.267	0.23
1727	11/11/2002	10:21:25 AM	25.739	21.695	25.507	22.796	22.059	46.686	49.523	12.61	35.151	-1.291	-6.76		48.848	0.073	0.001	0	1644.39	27.4065	48.1	12.0	40.9	2.821	0.011	0.011	0.000	0.262	0.22
1728	11/11/2002	10:22:25 AM	25.697	21.673	25.375	22.82	22.052	46.678	49.569	12.589	34.991	-1.288	-6.769		49.113	0.072	0.001	0	1645.39	27.4232	48.1	12.0	40.8	2.815	0.011	0.011	0.000	0.260	0.22
1729	11/11/2002	10:23:25 AM	25.676	21.662	25.444	22.768	22.127	46.264	49.302	12.791	34.424	-1.291	-6.74		48.219	0.071	0.001	0	1646.39	27.4398	47.8	11.8	40.3	2.782	0.011	0.010	0.000	0.259	0.22
1730	11/11/2002	10:24:25 AM	25.686	21.682	25.514	22.864	22.182	45.858	48.609	13.275	33.587	-1.288	-6.792		49.473	0.07	0.001	0	1647.39	27.4565	47.1	12.1	39.7	2.739	0.010	0.010	0.000	0.259	0.22
1731	11/11/2002	10:25:25 AM	25.632	21.628	25.406	22.82	21.922	46.063	48.971	13.16	33.892	-1.279	-6.809		49.717	0.068	0.001	0	1648.39	27.4732	47.5	12.2	40.0	2.756	0.010	0.010	0.000	0.251	0.21
1732	11/11/2002	10:26:25 AM	25.642	21.573	25.121	22.7	21.776	45.93	48.729	13.055	33.933	-1.291	-6.774		49.247	0.068	0.001	0	1649.39	27.4898	47.3	12.1	39.9	2.753	0.010	0.010	0.000	0.253	0.22
1733	11/11/2002	10:27:25 AM	25.661	21.602	24.874	22.804	21.82	46.647	49.91	13.012	34.355	-1.288	-6.812		46.522	0.067	0.001	0	1650.39	27.5065	48.4	11.4	40.5	2.792	0.010	0.010	0.000	0.248	0.21
1734	11/11/2002	10:28:25 AM	25.627	21.603	24.9	22.83	21.836	46.429	49.298	12.921	34.381	-1.288	-6.812		47.661	0.066	0.001	0	1651.39	27.5232	47.8	11.7	40.4	2.786	0.010	0.010	0.000	0.244	0.21
1735	11/11/2002	10:29:25 AM	25.576	21.587	24.679	22.884	21.805	46.359	49.297	12.883	34.416	-1.285	-6.818		47.183	0.065	0.001	0	1652.39	27.5398	47.8	11.6	40.4	2.785	0.010	0.010	0.000	0.242	0.21
1736	11/11/2002	10:30:25 AM	25.536	21.587	24.679	22.889	21.775	46.491	49.297	12.876	34.637	-1.285	-6.824		46.484	0.064	0.001	0	1653.39	27.5565	47.8	11.4	40.6	2.797	0.010	0.010	0.000	0.237	0.20
1737	11/11/2002	10:31:25 AM	25.431	21.522	24.494	22.915	21.649	46.135	49.037	12.868	34.324	-1.285	-6.838		49.763	0.062	0.001	0	1654.39	27.5732	47.6	12.2	40.2	2.774	0.009	0.009	0.000	0.233	0.20
1738	11/11/2002	10:32:25 AM	25.399	21.53	24.466	22.877	21.702	46.672	49.44	12.923	34.705	-1.288	-6.809		46.743	0.062	0.001	0	1655.39	27.5898	48.0	11.5	40.7	2.805	0.009	0.009	0.000	0.231	0.20
1739	11/11/2002	10:33:25 AM	25.342	21.512	24.419	22.895	21.66	46	48.776	13.246	33.864	-1.288	-6.867		47.674	0.06	0.001	0	1656.39	27.6065	47.3	11.7	39.9	2.753	0.009	0.009	0.000	0.228	0.19
1740	11/11/2002	10:34:25 AM	25.294	21.495	24.392	22.893	21.668	46.609	49.775	13.371	34.138	-1.291	-6.867		47.913	0.059	0.001	0	1657.39	27.6232	48.3	11.7	40.4	2.784	0.009	0.009	0.000	0.222	0.19
1741	11/11/2002	10:35:25 AM	25.27	21.51	24.412	22.933	21.744	46.707	49.597	13.472	34.209	-1.288	-6.861		47.762	0.059	0.001	0	1658.39	27.6398	48.1	11.7	40.5	2.789	0.009	0.009	0.000	0.221	0.19
1742	11/11/2002	10:36:25 AM	25.248	21.533	24.465	23.032	21.812	46.429	49.221	13.216	34.439	-1.288	-6.867		47.277	0.059	0.001	0	1659.39	27.6565	47.7	11.6	40.4	2.788	0.009	0.009	0.000	0.221	0.19
1743	11/11/2002	10:37:25 AM	25.19	21.526	24.398	23.02	21.86	46.609	49.943	13.219	34.285	-1.285	-6.821		47.303	0.061	0.001	0	1660.39	27.6732	48.5	11.6	40.4	2.789	0.009	0.009	0.000	0.229	0.19
1744	11/11/2002	10:38:25 AM	25.149	21.53	24.457	23.063	21.894	46.556	49.664	13.191	34.255	-1.288	-6.882		47.711	0.059	0.001	0	1661.39	27.6898	48.2	11.7	40.4	2.786	0.009	0.009	0.000	0.221	0.19
1745	11/11/2002	10:39:25 AM	25.113	21.539	24.391	23.047	21.933	46.64	49.546	13.47	34.21	-1.288	-6.919		47.462	0.056	0.001	0	1662.39	27.7065	48.1	11.6	40.4	2.787	0.008	0.008	0.000	0.210	0.18
1746	11/11/2002	10:40:25 AM	25.074	21.53	24.477	23.044	21.945	46.508	49.575	13.476	33.993	-1.288	-6.89		46.545	0.055	0.001	0	1663.39	27.7232	48.1	11.4	40.3	2.775	0.008	0.008	0.000	0.207	0.18
1747	11/11/2002	10:41:25 AM	25.064	21.56	24.397	23.058	22.05	46.195	49.48	13.254	33.917	-1.288	-6.902		47.384	0.055	0.001	0	1664.39	27.7398	48.0	11.6	40.1	2.762	0.008	0.008	0.000	0.208	0.18
1748	11/11/2002	10:42:25 AM	25.053	21.579	24.591	23.128	22.14	45.423	48.727	14.305	32.037	-1.288	-6.942		48.892	0.053	0.001	0	1665.39	27.7565	47.3	12.0	38.7	2.670	0.008	0.008	0.000	0.206	0.18
1749	11/11/2002	10:43:25 AM	25.034	21.59	24.487	23.129	22.241	45.605	48.733	13.982	32.738	-1.291	-6.942		48.632	0.052	0.001	0	1666.39	27.7732	47.3	11.9	39.2	2.701	0.008	0.008	0.000	0.201	0.17
1750	11/11/2002	10:44:25 AM	25.035	21.642	24.709	23.191	22.348	45.849	49.091	14.279	32.56	-1.282	-6.948		48.953	0.052	0.001	0	1667.39	27.7898	47.6	12.0	39.2	2.703	0.008	0.008	0.000	0.199	0.17
1751	11/11/2002	10:45:25 AM	25.021	21.658	24.605	23.106	22.445	46.199	49.426	14.015	32.991	-1.285	-6.916		48.519	0.052	0.001	0	1668.39	27.8065	48.0	11.9	39.6	2.730	0.008	0.008	0.000	0.198	0.17
1752	11/11/2002	10:46:25 AM	25.027	21.679	24.755	22.976	22.536	45.913	49.178	13.953	32.961	-1.288	-6.916		48.538	0.052	0.001	0	1669.39	27.8232	47.7	11.9	39.4	2.719	0.008	0.008	0.000	0.198	0.17
1753	11/11/2002	10:47:25 AM	25.017	21.699	24.706	22.841	22.627	45.903	49.074	13.845	33.047	-1.291	-6.928		48.085	0.051	0.001	0	1670.39	27.8398	47.6	11.8	39.5	2.722	0.008	0.008	0.000	0.194	0.17
1754	11/11/2002	10:48:25 AM	25.027	21.74	24.821	22.866	22.702	45.849	49.06	14.439	32.32	-1.285	-6.945		49.041	0.05	0.001	0	1671.39	27.8565	47.6	12.0	39.1	2.695	0.007	0.007	0.000	0.192	0.16
1755	11/11/2002	10:49:25 AM	25.047	21.765	24.891	23.052	22.743	45.802	49.217	13.975	32.676	-1.288	-6.954		48.062	0.05	0.001	0	1672.39	27.8732	47.7	11.8	39.2	2.705	0.007	0.007	0.000	0.191	0.16
1756	11/11/2002	10:50:25 AM	25.05	21.778	24.874	23.261	22.776	45.646	48.807	14.242	32.248	-1.288	-6.922		48.689	0.049	0.001	0	1673.39	27.8898	47.3	11.9	38.9	2.685	0.007	0.007	0.000	0.188	0.16
1757	11/11/2002	10:51:25 AM	25.075	21.803	25.004	23.341	22.83	45.69	48.967	14.438	32.076	-1.288	-6.928		49.182	0.049	0.001	0	1674.39	27.9065	47.5	12.1	38.9	2.681	0.007	0.007	0.000	0.188	0.16
1758	11/11/2002	10:52:25 AM	25.118	21.847	24.957	23.485	22.894	45.779	48.931	14.074	32.77	-1.285	-6.931		50.258	0.049	0.001	0	1675.39	27.9232	47.5	12.3	39.3	2.708	0.007	0.007	0.000	0.186	0.16
1759	11/11/2002	10:53:25 AM	25.152	21.87	25.121	23.564	22.938	45.497	48.526	14.014	32.537	-1.288	-6.928		48.167	0.049	0.001	0	1676.39	27.9398	47.1	11.8	39.0	2.690	0.007	0.007	0.000	0.187	0.16
1760	11/11/2002	10:54:25 AM	25.181	21.899	25.01	23.713	23.012	45.878	49.049	14.297	32.549	-1.288	-6.931		48.416	0.048	0.001	0	1677.39	27.9565	47.6	11.9	39.2	2.704	0.007	0.007	0.000	0.182	0.16
1761	11/11/2002	10:56:30 AM	25.255	21.979	25.084	23.727	23.142	46.121	49.281	14.238	32.883	-1.288	-6.942		47.804	0.047	0.001	0	1679.47	27.9912	47.8	11.7	39.5	2.724	0.007	0.007	0.000	0.177	0.15
1762	11/11/2002	10:57:30 AM	25.278	22.017	25.203	23.766	23.195	45.874	49.113	13.821	33.11	-1.288	-6.948		48.487	0.047	0.001	0	1680.47	28.0079	47.6	11.9	39.5	2.723	0.007	0.007	0.000	0.176	0.15
1763	11/11/2002	10:58:30 AM	25.318	22.057	25.222	23.835	23.245	45.433	48.706	14.364	31.999	-1.288	-6.954		48.691	0.046	0.001	0	1681.47	28.0246	47.2	11.9	38.7	2.669	0.007	0.007	0.000	0.176	0.15
1764	11/11/2002	10:59:30 AM	25.347	22.097	25.347	23.87	23.32	45.839	49.08	14.624	32.054	-1.285	-6.951		48.609	0.046	0.001	0	1682.47	28.0412	47.6	11.9	38.9	2.685	0.007	0.007	0.000	0.174	0.15
1765	11/11/2002	11:00:30 AM	25.367	22.111	25.371	23.854	23.384	45.706	49.101	14.607	31.892	-1.291	-6.954		48.657	0.045	0.001	0	1683.47	28.0579	47.6	11.9	38.8	2.675	0.007	0.007	0.000	0.171	0.15
1766	11/11/2002	11:01:30 AM	25.397	22.126	25.386	23.754	23.42	45.34	48.756	14.398	31.833	-1.291	-6.957		48.821	0.045	0.001	0	1684.47	28.0746	47.3	12.0	38.6	2.660	0.007	0.007	0.000	0.172	0.15
1767	11/11/2002	11:02:30 AM	25.441	22.166	25.531	23.768	23.469	45.667	48.838	14.699	31.904	-1.288	-6.954		48.674	0.045	0.001	0	1685.47	28.0912	47.4	11.9	38.8	2.674	0.007	0.007	0.000	0.170	0.15
1768	11/11/2002	11:03:30 AM	25.479	22.194	25.474	23.827	23.508	45.534	48.764	14.587	31.97	-1.288	-6.96		50.155	0.044	0.001	0	1686.47	28.1079	47.3	12.3	38.8	2.672	0.007	0.006	0.000	0.167	0.14
1769	11/11/2002	11:04:30 AM	25.528	22.233	25.642	23.945	23.536	45.785	49	14.512	32.345	-1.285	-6.954		48.626	0.045	0.001	0	1687.47	28.1246	47.5	11.9	39.1	2.693	0.007	0.007	0.000	0.169	0.14
1770	11/11/2002	11:05:30 AM	25.546	22.246	25.49	24.014	23.604	46.355	49.471	14.561	32.795	-1.291	-6.957		47.288	0.045	0.001	0	1688.47	28.1412	48.0	11.6	39.6	2.729	0.007	0.007	0.000	0.167	0.14
1771	11/11/2002	11:06:30 AM	25.588	22.274	25.643	23.961	23.662	46.166	49.56	14.482	32.65	-1.288	-6.957		47.166	0.045	0.001	0	1689.47	28.1579	48.1	11.6	39.4	2.717	0.007	0.007	0.000	0.167	0.14
1772	11/11/2002	11:07:30 AM	25.637	22.313	25.516	24.035	23.711	46.642	49.931	14.536	33.047	-1.285	-6.96		46.833	0.044	0.001	0	1690.47	28.1746	48.5	11.5	39.8	2.747	0.007	0.006	0.000	0.162	0.14
1773	11/11/2002	11:08:30 AM	25.676	22.341	25.765	23.978	23.769	45.75	49.231	15.253	31.358	-1.282	-6.971		48.433	0.043	0.001	0	1691.47	28.1912	47.8	11.9	38.6	2.658	0.006	0.006	0.000	0.163	0.14
1774	11/11/2002	11:09:30 AM	25.688	22.359	25.672	24.071	23.782	45.632	49.157	14.989	31.585	-1.285	-6.977		48.007	0.043	0.001	0	1692.47	28.2079	47.7	11.8	38.6	2.662	0.006	0.006	0.000	0.163	0.14
1775	11/11/2002	11:10:30 AM	25.712	22.383	25.866	24.01	23.826	45.688	48.929	15.16	31.509	-1.288	-6.968		47.923	0.043	0.001	0	1693.47	28.2246	47.5	11.7	38.6	2.661	0.006	0.006	0.000	0.162	0.14
1776	11/11/2002	11:11:30 AM	25.76	22.416	25.819	24.002	23.859	46.071	49.537	15.369	31.464	-1.288	-6.968		47.8	0.042	0.001	0	1694.47	28.2412	48.1	11.7	38.8	2.673	0.006	0.006	0.000	0.158	0.13
1777	11/11/2002	11:12:30 AM	25.782	22.433	25.941	23.94	23.912	46.22	49.86	15.237	31.777	-1.288	-6.968		47.584	0.043	0.001	0	1695.47	28.2579	48.4	11.7	39.0	2.689	0.006	0.006	0.000	0.160	0.14
1778	11/11/2002	11:13:30 AM	25.825	22.461	25.919	24.063	23.929	46.303	49.808	15.185	31.986	-1.288	-6.968		47.185	0.042	0.001	0	1696.47	28.2746	48.3	11.6	39.1	2.699	0.006	0.006	0.000	0.156	0.13
1779	11/11/2002	11:14:30 AM	25.867	22.488	26.001	24.14	23.941	46.404	49.585	15.148	32.334	-1.285	-6.968		46.919	0.043	0.001	0	1697.47	28.2912	48.1	11.5	39.4	2.714	0.006	0.006	0.000	0.158	0.13
1780	11/11/2002	11:15:30 AM	25.894	22.501	25.854	24.158	23.999	46.38	49.902	15.53	31.708	-1.291	-6.971		47.607	0.042	0.001	0	1698.47	28.3079	48.4	11.7	39.0	2.692	0.006	0.006	0.000	0.157	0.13
1781	11/11/2002	11:16:30 AM	25.948	22.55	26.077	24.176	24.058	45.626	48.861	15.889	30.838	-1.285	-6.989		48.668	0.04	0.001	0	1699.47	28.3246	47.4	11.9	38.2	2.636	0.006	0.006	0.000	0.151	0.13
1782	11/11/2002	11:17:30 AM	25.962	22.563	26.061	24.19	24.066	45.64	48.96	15.995	30.652	-1.285	-6.992		48.548	0.04	0.001	0	1700.47	28.3412	47.5	11.9	38.1	2.630	0.006	0.006	0.000	0.152	0.13
1783	11/11/2002	11:18:30 AM	26.005	22.587	26.154	24.138	24.115	45.271	48.559	15.894	30.527	-1.288	-6.992		48.422	0.04	0.001	0	1701.47	28.3579	47.1	11.9	37.9	2.613	0.006	0.006	0.000	0.152	0.13
1784	11/11/2002	11:19:30 AM	26.032	22.604	26.182	24.105	24.157	45.57	48.704	15.904	30.826	-1.288	-6.986		48.322	0.04	0.001	0	1702.47	28.3746	47.2	11.8	38.2	2.634	0.006	0.006	0.000	0.151	0.13
1785	11/11/2002	11:20:30 AM	26.066	22.638	26.27	24.114	24.181	45.831	49.173	15.989	30.785	-1.288	-6.989		47.867	0.04	0.001	0	1703.47	28.3912	47.7	11.7	38.3	2.641	0.006	0.006	0.000	0.150	0.13
1786	11/11/2002	11:21:30 AM	26.098	22.65	26.292	24.156	24.209	45.793	49.221	16.212	30.641	-1.288	-6.989		47.756	0.04	0.001	0	1704.47	28.4079	47.7	11.7	38.2	2.635	0.006	0.006	0.000	0.150	0.13
1787	11/11/2002	11:22:30 AM	26.126	22.678	26.34	24.069	24.236	45.855	49.451	16.087	30.795	-1.285	-6.989		47.961	0.04	0.001	0	1705.47	28.4246	48.0	11.8	38.3	2.642	0.006	0.006	0.000	0.150	0.13
1788	11/11/2002	11:23:30 AM	26.169	22.701	26.423	24.152	24.234	46.187	49.614	16.229	30.86	-1.285	-6.989		47.682	0.04	0.001	0	1706.47	28.4412	48.1	11.7	38.5	2.656	0.006	0.006	0.000	0.149	0.13
1789	11/11/2002	11:24:30 AM	26.207	22.729	26.411	24.155	24.262	46.071	49.548	16.405	30.568	-1.291	-6.994		47.68	0.04	0.001	0	1707.47	28.4579	48.1	11.7	38.3	2.642	0.006	0.006	0.000	0.150	0.13
1790	11/11/2002	11:25:30 AM	26.245	22.752	26.534	24.178	24.295	46.162	49.655	16.424	30.631	-1.291	-6.989		47.647	0.04	0.001	0	1708.47	28.4746	48.2	11.7	38.4	2.647	0.006	0.006	0.000	0.149	0.13
1791	11/11/2002	11:26:30 AM	26.298	22.781	26.532	24.181	24.338	45.992	49.364	16.428	30.574	-1.288	-6.989		47.59	0.04	0.001	0	1709.47	28.4912	47.9	11.7	38.3	2.639	0.006	0.006	0.000	0.149	0.13
1792	11/11/2002	11:27:30 AM	26.336	22.798	26.679	24.179	24.346	46.148	49.759	16.366	30.762	-1.288	-6.992		47.403	0.04	0.001	0	1710.47	28.5079	48.3	11.6	38.5	2.651	0.006	0.006	0.000	0.148	0.13
1793	11/11/2002	11:28:30 AM	26.363	22.816	26.647	24.312	24.339	46.22	49.782	16.533	30.543	-1.291	-6.994		47.206	0.039	0.001	0	1711.47	28.5246	48.3	11.6	38.4	2.646	0.006	0.006	0.000	0.145	0.12
1794	11/11/2002	11:29:30 AM	26.405	22.843	26.809	24.239	24.356	46.496	50.051	16.459	31.028	-1.285	-6.992		46.942	0.039	0.001	0	1712.47	28.5412	48.6	11.5	38.8	2.673	0.006	0.006	0.000	0.143	0.12
1795																													
1796		Averages	25.2	21.7	25.3	22.4	22.3	44.5	47.4	10.1	35.2	-0.9	-5.6	#	49.0	0.1	0.0	0.0			45.9	12.0	39.8	2.747	0.019	0.019	0.0005	0.481	0.409
1797		Maximum	27.4	25.3	27.1	26.6	26.3	52.5	55.4	16.5	48.7	61.2	87.8	#	53.6	0.4	0.0	0.5			54.0	13.1	50.6	3.491	0.063	0.062	0.0021	2.102	1.789
1798		Median	25.1	21.8	25.3	22.6	22.4	44.8	47.0	10.0	35.6	-1.3	-6.7	#	49.1	0.1	0.0	0.0			45.5	12.0	40.2	2.773	0.015	0.015	0.0004	0.380	0.323
1799		Minimum	22.2	18.9	23.1	18.9	18.9	-7.5	45.1	4.5	-18.6	-1.3	-7.3	#	27.4	0.0	0.0	0.0			43.6	6.7	-13.1	-0.902	0.000	0.000	0.0000	-0.011	-0.010
1800		2 x Std Dev	1.323	3.421	0.840	4.426	4.122	7.234	2.500	2.324	7.550	6.686	12.953	#	3.510	0.149	0.000	0.027			2.500	0.860	7.312	0.504	0.022	0.022	0.0005	0.545	0.464
1801		Number of Points Used*	1762	1762	1762	1762	1762	1762	1762	1762	1762	1762	1762	#	1762	1762	1762	1762			1762	1762	1762	1762	1762	1762	1762	1762	1762
1802		* Backpulse points in box are not included																											

Figure D6-14: Dewatering of the AN-102R2, batch 3A, insoluble solids concentrations from 1.6 to 25 wt% - Raw & Calculated Data

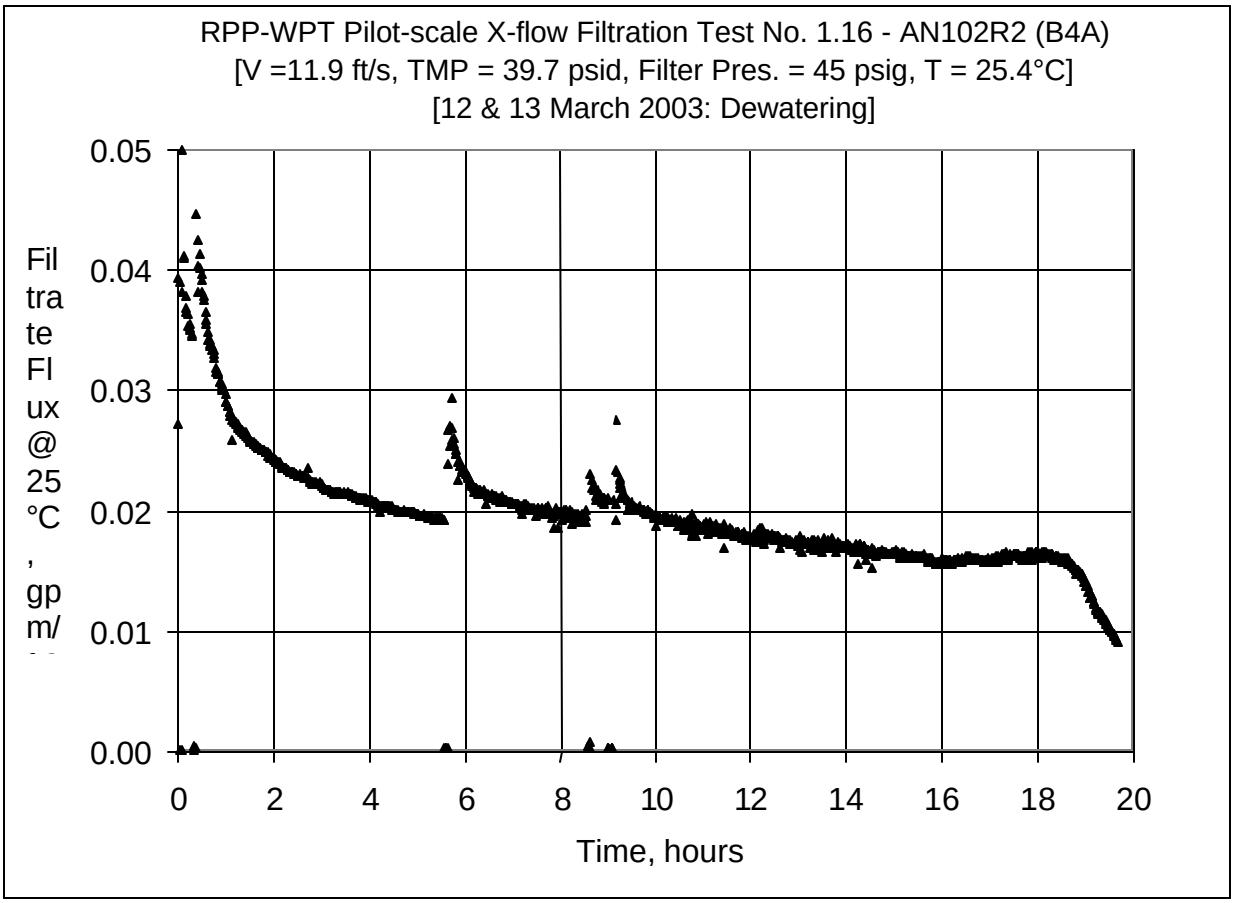


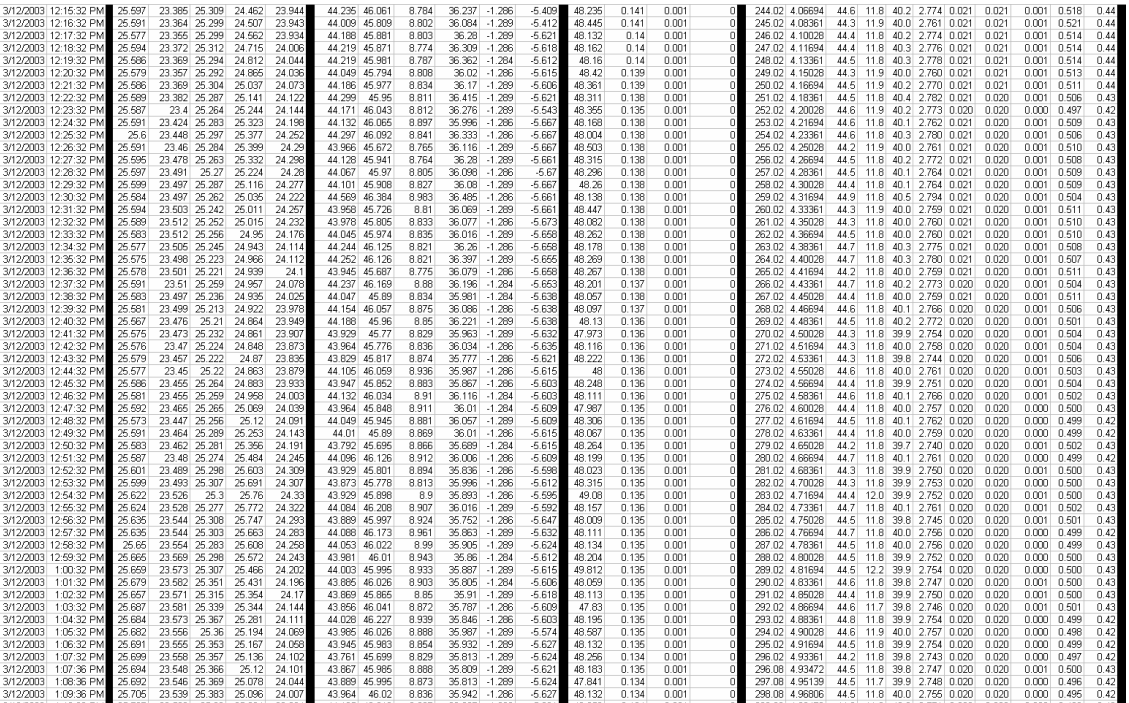
Figure D7: Dewatering of the AN-102R2, batch 4A, insoluble solids concentrations from 1.5 to 18 wt%

(Data from 10 Files)
(1.16-4a-rpp-pxu-031203-0810, -1045, -1306, -1505, -1708, -1906, 2106, -2303)
(1.16-3a-rpp-pxu-031303-77-0101, -0301)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1			<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
2	DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
3			deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
4			T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
5																												
6	Zeros- 11/11/2002																											
7	3/12/2003	7:01:12 AM	19.116	18.63	16.558	18.891	17.619	-0.125	-0.097	-0.057	0.058	-0.159	0.298	-0.22	0.001	0.001	0.003			Filter Surface	6.707	FT2						
8	3/12/2003	7:01:29 AM	19.116	18.63	16.558	18.891	17.619	-0.125	-0.097	-0.057	0.058	-0.159	0.298	-0.22	0.001	0.001	0.003			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
9	3/12/2003	7:01:30 AM	19.111	18.625	16.558	18.886	17.609	-0.125	-0.097	-0.057	0.058	-0.177	0.295	-0.221	0.002	0.001	0.004											
10	3/12/2003	7:01:31 AM	19.111	18.62	16.553	18.886	17.609	-0.125	-0.099	-0.057	0.058	-0.174	0.298	-0.216	0.002	0.001	0.004			Note: Gauge Pressure P1 is approximately 1.4 psig								
11	3/12/2003	7:01:32 AM	19.106	18.625	16.558	18.886	17.609	-0.125	-0.099	-0.057	0.058	-0.177	0.298	-0.221	0.001	0.001	0.003											
12	3/12/2003	7:01:33 AM	19.106	18.625	16.553	18.886	17.609	-0.125	-0.099	-0.057	0.058	-0.174	0.298	-0.218	0.002	0.001	0.003			Pressure P1 is corrected for 40.88 inches of water tubing								
13	3/12/2003	7:01:34 AM	19.106	18.62	16.553	18.881	17.609	-0.125	-0.099	-0.057	0.058	-0.174	0.298	-0.221	0.001	0.001	0.003			VVVV				< Filtrate Flux <<		PERMIABILITY >>		
14	3/12/2003	7:01:35 AM	19.101	18.614	16.548	18.881	17.609	-0.125	-0.097	-0.057	0.058	-0.174	0.298	-0.216	0.002	0.001	0.003							at 25C		x 1000		
15																		Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
16	Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
17	3/12/2003	8:11:31 AM	22.082	18.924	26.066	20.67	19.36	46.298	50.366	8.525	38.458	-1.284	0.466	48.338	0.188	0.001	0	0	0	48.9	11.8	42.4	2.922	0.028	0.027	0.001	0.642	0.55
18	3/12/2003	8:12:31 AM	25.644	18.954	26	20.805	19.431	42.727	50.393	8.426	35.019	1.809	0.579	47.809	0.272	0.001	0	1.00	0.01667	48.9	11.7	38.9	2.680	0.041	0.039	0.001	1.014	0.86
19	3/12/2003	8:13:31 AM	25.774	18.988	25.94	20.794	19.501	42.728	50.3	8.352	35.158	1.841	0.671	47.667	0.269	0.001	0	2.00	0.03333	48.8	11.7	38.9	2.685	0.040	0.039	0.001	1.003	0.85
20	3/12/2003	8:14:31 AM	25.863	19.013	25.869	20.879	19.571	44.146	51.951	8.599	36.37	1.948	0.773	49.135	0.276	0.001	0	3.00	0.05	50.5	12.0	40.3	2.776	0.000	0.000	0.000	0.004	0.00
21	3/12/2003	8:15:31 AM	25.998	19.043	25.813	20.964	19.636	44.312	52.191	8.616	36.509	2.003	0.888	48.81	0.268	0.001	0	4.00	0.06667	50.7	12.0	40.4	2.786	0.000	0.000	0.000	0.004	0.00
22	3/12/2003	8:16:31 AM	25.998	19.073	25.783	20.994	19.696	44.567	52.537	8.642	36.708	2.069	0.952	48.762	0.262	0.001	0	5.00	0.08333	51.1	11.9	40.6	2.802	0.039	0.038	0.001	0.940	0.80
23	3/12/2003	8:17:31 AM	25.951	19.092	25.757	21.034	19.756	47.068	52.129	8.511	39.41	-0.668	-2.207	48.503	0.343	0.001	0	6.00	0.1	50.7	11.9	43.2	2.981	0.051	0.050	0.001	1.158	0.99
24	3/12/2003	8:18:31 AM	25.936	19.137	25.722	21.079	19.826	47.773	52.334	8.59	40.03	-1.284	-2.476	48.495	0.362	0.001	0	7.00	0.11667	50.9	11.9	43.9	3.027	0.042	0.041	0.001	0.938	0.80
25	3/12/2003	8:19:31 AM	25.916	19.162	25.667	21.129	19.896	47.926	52.4	8.663	40.076	-1.286	-2.633	48.575	0.28	0.001	0	8.00	0.13333	50.9	11.9	44.0	3.034	0.042	0.041	0.001	0.931	0.79
26	3/12/2003	8:20:31 AM	25.675	19.187	25.621	21.143	19.956	44.318	48.081	8.835	36.153	-1.284	-3.284	49.313	0.258	0.001	0	9.00	0.15	46.6	12.1	40.2	2.774	0.038	0.038	0.001	0.939	0.80
27	3/12/2003	8:21:31 AM	25.544	19.211	25.576	21.183	20.026	44.664	48.196	8.751	36.685	-1.284	-3.438	49.095	0.251	0.001	0	10.00	0.16667	46.7	12.0	40.7	2.804	0.037	0.037	0.001	0.905	0.77
28	3/12/2003	8:22:31 AM	25.513	19.241	25.499	21.227	20.081	44.94	48.426	8.808	36.927	-1.284	-3.501	48.575	0.249	0.001	0	11.00	0.18333	47.0	11.9	40.9	2.822	0.037	0.037	0.001	0.894	0.76
29	3/12/2003	8:23:31 AM	25.497	19.27	25.433	21.312	20.145	44.815	48.254	8.685	36.841	-1.286	-3.553	49.193	0.247	0.001	0	12.00	0.2	46.8	12.1	40.8	2.815	0.037	0.036	0.001	0.891	0.76
30	3/12/2003	8:24:31 AM	25.431	19.294	25.367	21.255	20.2	44.26	47.66	8.68	36.282	-1.284	-3.699	48.539	0.24	0.001	0	13.00	0.21667	46.2	11.9	40.3	2.777	0.036	0.035	0.001	0.879	0.75
31	3/12/2003	8:25:31 AM	25.335	19.334	25.326	21.325	20.264	44.598	47.915	8.659	36.649	-1.284	-3.71	48.915	0.241	0.001	0	14.00	0.23333	46.4	12.0	40.6	2.801	0.036	0.036	0.001	0.876	0.75
32	3/12/2003	8:26:31 AM	25.289	19.363	25.27	21.344	20.329	44.815	48.106	8.643	36.503	-1.284	-3.698	48.986	0.238	0.001	0	15.00	0.25	46.7	11.9	40.9	2.818	0.036	0.035	0.001	0.862	0.74
33	3/12/2003	8:27:31 AM	25.242	19.392	25.209	21.383	20.368	44.78	48.051	8.608	36.96	-1.289	-3.724	48.355	0.236	0.001	0	16.00	0.26667	46.6	11.9	40.9	2.818	0.035	0.035	0.001	0.866	0.73
34	3/12/2003	8:28:31 AM	25.175	19.405	25.152	21.381	20.432	44.482	47.557	8.647	36.667	-1.284	-3.814	48.642	0.234	0.001	0	17.00	0.28333	46.1	11.9	40.6	2.797	0.035	0.035	0.001	0.856	0.73
35	3/12/2003	8:29:31 AM	25.134	19.444	25.136	21.435	20.486	44.666	47.828	8.526	36.956	-1.281	-3.834	48.017	0.233	0.001	0	18.00	0.3	46.4	11.8	40.8	2.813	0.035	0.035	0.001	0.848	0.72
36	3/12/2003	8:30:31 AM	25.168	19.473	25.114	21.439	20.545	36.905	47.952	8.476	29.082	5.249	17.928	47.862	0.003	0.001	0	19.00	0.31667	46.5	11.7	33.0	2.275	0.000	0.000	0.000	0.014	0.01
37	3/12/2003	8:31:31 AM	25.051	19.502	25.048	21.533	20.604	5.873	48.004	8.398	-1.387	36.644	18.151	47.904	0.002	0.001	0	20.00	0.33333	46.5	11.7	2.2	0.155	0.000	0.000	0.000	0.133	0.11
38	3/12/2003	8:32:31 AM	24.946	19.527	25.012	21.543	20.674	6.049	47.609	8.547	-1.281	36.115	19.975	48.558	0.001	0.001	0	21.00	0.35	46.1	11.9	2.4	0.164	0.000	0.000	0.000	0.063	0.05
39	3/12/2003	8:33:31 AM	24.438	19.561	25.006	21.592	20.728	6.061	47.69	8.469	-1.336	36.136	33.231	48.612	0.002	0.001	0	22.00	0.36667	46.2	11.9	2.4	0.163	0.000	0.000	0.000	0.126	0.11
40	3/12/2003	8:34:31 AM	24.673	19.575	24.98	21.611	20.793	40.132	47.599	8.462	32.336	1.666	1.016	48.969	0.3	0.001	0	23.00	0.38333	46.1	12.0	36.2	2.498	0.045	0.045	0.001	1.295	1.05
41	3/12/2003	8:35:31 AM	24.661	19.614	24.944	21.67	20.837	40.192	47.679	8.458	32.499	1.665	1.221	48.606	0.27	0.001	0	24.00	0.4	46.2	11.9	36.3	2.506	0.045	0.040	0.001	1.109	0.94
42	3/12/2003	8:36:31 AM	24.746	19.644	24.918	21.69	20.897	40.018	47.567	8.495	32.053	1.714	1.088	48.606	0.256	0.001	0	25.00	0.41667	46.1	11.9	36.0	2.485	0.038	0.038	0.001	1.062	0.90
43	3/12/2003	8:37:31 AM	24.83	19.667	24.911	21.703	20.94	43.494	47.404	8.462	35.903	-1.286	-2.453	48.596	0.284	0.001	0	26.00	0.43333	45.9	11.9	39.7	2.737	0.042	0.042	0.001	1.069	0.91
44	3/12/2003	8:38:31 AM	24.829	19.707	24.916	21.763	20.991	44.009	47.723	8.559	36.155	-1.281	-2.74	48.468	0.277	0.001	0	27.00	0.45	46.3	11.9	40.1	2.764	0.041	0.041	0.001	1.033	0.88
45	3/12/2003	8:39:31 AM	24.818	19.726	24.88	21.782	21.05	44.3	47.841	8.581	36.483	-1.286	-2.905	48.675	0.269	0.001	-0.001	28.00	0.46667	46.4	11.9	40.4	2.785	0.040	0.040	0.001	0.996	0.85
46	3/12/2003	8:40:31 AM	24.787	19.756	24.844	21.872	21.094	44.268	47.576	8.616	36.475	-1.284	-3.087	48.803	0.265	0.001	0	29.00	0.48333	46.1	12.0	40.4	2.783	0.040	0.040	0.001	0.983	0.84
47	3/12/2003	8:41:31 AM	24.771	19.795	24.858	21.89	21.133	44.602	47.64	8.526	36.743	-1.284	-3.649	48.745	0.262	0.001	0	30.00	0.5	46.2	11.9	40.7	2.804	0.039	0.039	0.001	0.964	0.82
48	3/12/2003	8:42:31 AM	24.765	19.834	24.867	21.869	21.198	44.836	47.698	8.596	36.996	-1.286	-3.698	48.596	0.255	0.001	0	31.00	0.51667	46.2	11.9	40.9	2.821	0.038	0.038	0.001	0.933	0.79
49	3/12/2003	8:43:31 AM	24.753	19.858	24.845	21.908	21.241	45.072	47.88	8.603	37.296	-1.284	-3.768	48.625	0.253	0.001	0	32.00	0.53333	46.4	11.9	41.2	2.839	0.038	0.038	0.001	0.920	0.78
50	3/12/2003	8:44:31 AM	24.742	19.882	24.804	21.988	21.296	44.811	47.365	8.491	37.138	-1.286	-3.86	48.688	0.25	0.001	0	33.00	0.55	45.9	11.9	41.0	2.825	0.037	0.037	0.001	0.915	0.78
51	3/12/2003	8:45:31 AM	24.741	19.916	24.813	22.027	21.335	44.538	47.038	8.895	36.497	-1.286	-3.962	49.852	0.244	0.001	0	34.00	0.56667	45.6	12.2	40.5	2.794	0.036	0.037	0.001	0.903	0.77
52	3/12/2003	8:46:31 AM	24.734	19.95	24.827	22.065	21.374	44.293	46.632	8.695	36.544	-1.284	-4.101	49.252	0.239	0.001	0	35.00	0.58333	45.2	12.1	40.4	2.787	0.036	0.036	0.001	0.886	0.75
53	3/12/2003	8:47:31 AM	24.734	19.98	24.826	22.075	21.429	44.324	46.579	8.704	36.532	-1.286	-4.095	49.252	0.237	0.001	0	36.00	0.6	45.1	12.1	40.4	2.787	0.035	0.036	0.001	0.878	0.75
54	3/12/2003	8:48:31 AM	24.712	19.998	24.774	22.053	21.472	44.513	46.696	8.745	36.681	-1.286	-4.179	49.313	0.228	0.001	0	37.00	0.61667	45.2	12.1	40.6	2.799	0.034	0.034	0.001	0.843	0.72
55	3/12/2003	8:49:31 AM	24.712	20.038	24.779	22.103	21.522	44.361	46.376	8.702	36.503	-1.284	-4.271	49.322	0.232	0.001	0	38.00	0.63333	44.9	12.1	40.4	2.787	0.035	0.035	0.001	0.861	0.73
56	3/12/2003	8:50:31 AM	24.716	20.068	24.778	22.188	21.577	44.807	46.872	8.758	36.943	-1.286	-4.315	49.468	0.228	0.001	0	39.00	0.65	45.4	12.1	40.9	2.818	0.034	0.034	0.001	0.837	0.71
57	3/12/2003	8:51:31 AM	24.706	20.097	24.782	22.247	21.606	44.621	46.683	8.737	36.759	-1.286	-4.332	49.498	0.226	0.001	0	40.00	0.66667	45.2	12.1	40.7	2.805	0.034	0.034	0.001	0.833	0.71
58	3/12/2003	8:52:31 AM	24.693	20.126	24.761	22.276	21.645	44.521	46.461	8.733	36.606	-1.284	-4.405	49.407	0.225	0.001	0	41.00	0.68333	45.0	12.1	40.6	2.797	0.034	0.034	0.001	0.833	0.71
59	3/12/2003	8:53:31 AM	24.697	20.165	24.77	22.29	21.684	44.964	46.943	8.62	37.146	-1.284	-4.41	48.833	0.225	0.001	0	42.00	0.7	45.5	12.0	41.1	2.831	0.034	0.034	0.001	0.822	0.70
60	3/12/2003	8:54:31 AM	24.696	20.189	24.773	22.314	21.733	44.962	46.978	8.649	37.036	-1.289	-4.428	48.531	0.222	0.001	0	43.00	0.71667	45.5	11.9	41.0	2.827	0.033	0.033	0.001	0.812	0.69
61	3/12/2003	8:55:31 AM	24.71	20.228	24.847	22.343	21.767	45.045	46.959	8.659	37.142	-1.284	-4.468	48.749	0.223	0.001	0	44.00	0.73333	45.5	11.9	41.1	2.833	0.033	0.033	0.001	0.813	0.69
62	3/12/2003	8:56:31 AM	24.708	20.241	24.865	22.335	21.8	45.115	47.023	8.669	37.312	-1.286	-4.477	48.6	0.221	0.001	0	45.00	0.75	45.6	11.9	41.2	2.842	0.033	0.033	0.001	0.803	0.68
63	3/12/2003	8:57:31 AM	24.731	20.275	24.879	22.384	21.844	45.037	46.839	8.732	37.089	-1.289	-4.573	48.873	0.219	0.001	0	46.00	0.76667	45.4	12.0	41.1	2.831	0.033	0.033	0.001	0.798	0.68
64	3/12/2003	8:58:31 AM	24.739	20.303	24.887	22.362	21.862	44.15	45.898	8.767	36.186	-1.289	-4.645	49.466	0.213	0.001	0	47.00	0.78333	44.4	12.1	40.2	2.769	0.032	0.032	0.001	0.793	0.67
65	3/12/2003	8:59:31 AM	24.758	20.342	24.915	22.401	21.911	44.54	46.266	8.866	36.397	-1.286	-4.668	49.282	0.211	0.001	0	48.00	0.8	44.8	12.1	40.5	2.790	0.031	0.032	0.001	0.799	0.66
66	3/12/2003	9:00:31 AM	24.775	20.365	24.948	22.418	21.939	44.474	46.105	8.826	36.421	-1.286	-4.683	49.149	0.211	0.001	0	49.00	0.81667	44.6	12.0	40.4	2.789	0.031	0.032	0.001	0.779	0.66
67	3/12/2003	9:01:31 AM	24.784	20.393	24.966	22.432	21.952	44.544	46.237	8.828	36.407	-1.286	-4.683	49.984	0.21	0.001	0	50.00	0.83333	44.8	12.2	40.5	2.791	0.031	0.031	0.001	0.774	0.66
68	3/12/2003	9:02:31 AM	24.818	20.423	24.97	22.516	22.006	44.629	46.208	8.77	36.679	-1.284	-4.709	48.975	0.21	0.001	0	51.00	0.85	44.7	12.0	40.7	2.803	0.031	0.031	0.001	0.771	0.66
69	3/12/2003	9:03:31 AM	24.815	20.451	24.953	22.444	22.024	44.328	45.974	8.826	36.245	-1.284	-4.738	49.267	0.206	0.001	0	52.00	0.86667	44.5	12.1	40.3	2.778	0.031	0.031	0.001	0.763	0.65
70	3/12/2003	9:04:31 AM	24.814	20.475	25.132	22.452	22.073	44.579	46.237	8.779	36.563	-1.281	-4.769	48.978	0.207	0.001	0	53.00	0.88333	44.8	12.0	40.6	2.797	0.031	0.031	0.001	0.758	0.64
71	3/12/2003	9:05:31 AM	24.848	20.513	25.251	22.561	22.092	44.654	46.262	8.727	36.747	-1.284	-4.769	49.242	0.206	0.001	0	54.00	0.9	44.8	12.1	40.7	2.806	0.031	0.030	0.001	0.749	0.64
72	3/12/2003	9:06:31 AM	24.876	20.537	25.299	22.6	22.135	44.678	46.229	8.697	36.904	-1.286	-4.758	49.149	0.204	0.001	0	55.00	0.91667	44.8	12.0	40.8	2.812	0.030	0.030	0.001	0.739	0.63
73	3/12/2003	9:07:31 AM	24.904	20.565	25.332	22.623	22.173	44.993	46.428	8.743	37.169	-1.284	-4.778	49.185	0.204	0.001	0	56.00	0.93333	44.6	12.1	41.1	2.832	0.030	0.030	0.001	0.733	0.63
74	3/12/2003	9:08:31 AM	24.913	20.594	25.411	22.692	22.213	45.144	46.686	8.707	37.324	-1.284	-4.769	48.931	0.204	0.001	0	57.00	0.95	45.2	12.0	41.2	2.843	0.030	0.030	0.001	0.729	0.62
75	3/12/2003	9:09:31 AM	24.912	20.624	25.4	22.767	22.267	44.968	46.456	8.656	37.207	-1.284	-4.764	48.415	0.204	0.001	0	58.00	0.96667	45.0	11.9	41.1	2.832	0.030	0.030	0.001	0.732	0.62
76	3/12/2003	9:10:31 AM	24.931	20.658	25.369	22.776	22.291	44.995	46.498	8.637	37.324	-1.286	-4.804	49.187	0.202	0.001	0	59.00	0.98333	45.0	12.1	41.2	2.838	0.030	0.030	0.001	0.724	0.62
77	3/12/2003	9:11:31 AM	24.934	20.671	25.317	22.784	22.335	44.036	45.478	8.878	36.047	-1.286	-4.886	49.665	0.197	0.001	0	60.00	1	44.0	12.2	40.0	2.761	0.029	0.029	0.001	0.727	0.62
78	3/12/2003	9:12:31 AM	24.952	20.694	25.285	22.842	22.383	44.202	45.526	8.958	35.967	-1.289	-4.958	49.835	0.196	0.001	0	61.00	1.01667	44.1	12.2	40.1	2.764	0.029	0.029	0.001	0.723	0.62
79	3/12/2003	9:13:31 AM	24.98	20.727	25.263	22.88	22.401	43.968	45.341	8.805	36.022	-1.284	-4.99	49.248	0.194	0.001	0	62.00	1.03333	43.9	12.1	40.0	2.758	0.029	0.029	0.001	0.717	0.61
80	3/12/2003	9:14:31 AM	24.994	20.767	25.262	22.909	22.46	44.302	45.786	8.96	36.104	-1.284	-4.94	48.975	0.194	0.001	0	63.00	1.05	44.3	12.0	40.2	2.772	0.029	0.029	0.001	0.714	0.61
81	3/12/2003	9:15:31 AM	25.008	20.795	25.226	22.923	22.494	44.109	45.29	8.733	36.427	-1.286	-5.056	49.233	0.191	0.001	0	64.00	1.06667	43.9	12.1	40.3	2.776	0.028	0.028	0.001	0.703	0.60
82	3/12/2003	9:16:31 AM	25.006	20.824	25.199	22.946	22.542	44.316	45.184	8.759	36.487	-1.284	-6	49.143	0.191	0.001	0	65.00	1.08333	43.7	12.0	40.4	2.786	0.028	0.028	0.001	0.701	0.60
83	3/12/2003	9:17:31 AM	24.999	20.842	25.176	22.984	22.575	44.084	45.372	8.839	36.163	-1.286	-5.459	48.956	0.188	0.001	0	66.00	1.1	43.9	12.0	40.1	2.766	0.028	0.028	0.001	0.695	0.59
84	3/12/2003	9:18:31 AM	24.992	20.88	25.159	22.992	22.608	44.107	45.341	8.726	36.231	-1.284	-5.493	48.858	0.186	0.001	0	67.00	1.11667	43.9	12.0	40.2	2.770	0.028	0.028	0.001	0.687	0.58
85	3/12/2003	9:19:31 AM	24.99	20.903	25.122	22.96	22.657	44.186	45.404	8.826	36.102	-1.289	-5.676	49.338	0.174	0.001	0	68.00	1.13333	43.9	12.1	40.1	2.768	0.026	0.026	0.001	0.644	0.55
86	3/12/2003	9:20:31 AM	24.987	20.951	25.125	22.993	22.705	43.881	45.255	8.843	35.969	-1.281	-5.456	48.998	0.186	0.001	0	69.00	1.15	43.8	12.0	39.9	2.752	0.028	0.028	0.001	0.692	0.59
87	3/12/2003	9:21:31 AM	24.975	20.964	25.107	22.96	22.742	44.038	45.588	8.815	36.026	-1.286	-5.447	48.908	0.185	0.001	0	70.00	1.16667	44.1	12.0	40.0	2.760	0.028	0.027	0.001	0.687	0.58
88	3/12/2003	9:22:31 AM	24.972	21.012	25.125	22.983	22.795	43.736	45.139	8.822	35.772	-1.284	-5.436	49.126	0.185	0.001	0	71.00	1.18333	43.7	12.0	39.8	2.741	0.028	0.027	0.001	0.691	0.59
89	3/12/2003	9:23:31 AM	24.969	21.023	25.077	22.96	22.847	44.093	45.428	8.809	36.194	-1.284	-5.43	49.217	0.184	0.001	0	72.00	1.2	43.9	12.1	40.1	2.768	0.027	0.027	0.001	0.682	0.58
90	3/12/2003	9:24:31 AM	24.946	21.061	25.064	22.977	22.869	43.943	45.426	8.82	36.006	-1.284	-5.418	49.114	0.183	0.001	0	73.00	1.21667	44.0	12.0	40.0	2.756	0.027	0.027	0.001	0.681	0.58
91	3/12/2003	9:25:31 AM	24.953	21.084	25.071	23.065	22.907	44.053	45.379	8.787	36.196	-1.284	-5.412	49.122	0.183	0.001	0	74.00	1.23333	43.9	12.0	40.1	2.766	0.027	0.027	0.001	0.679	0.58
92	3/12/2003	9:26:31 AM	24.971	21.131	25.099	23.102	22.949	43.807	45.279	8.756	35.768	-1.284	-5.418	48.992	0.182	0.001	0	75.00	1.25	43.8	12.0	39.8	2.743	0.027	0.027	0.001	0.680	0.58
93	3/12/2003	9:27:31 AM	24.953	21.139	25.061	23.099	22.982	44.067	45.575	8.818	36.071	-1.286	-5.418	49.244	0.181	0.001	0	76.00	1.26667	44.1	12.1	40.1	2.763	0.027	0.027	0.001	0.672	0.57
94	3/12/2003	9:28:31 AM	24.95	21.166	25.058	23.077	23.014	43.92	45.453	8.754	36.065	-1.286	-5.412	48.927	0.181	0.001	0	77.00	1.28333	44.0	12.0	40.0	2.757	0.027	0.027	0.001	0.674	0.57
95

131	3/12/2003	10:05:31 AM	25.115	22.112	25.218	23.89	23.923	44.003	45.552	8.814	36.067	-1.286	-5.328	48.726	0.167	0.001	0	114.00	1.9	44.1	11.9	40.0	2.760	0.025	0.025	0.001	0.618	0.53
132	3/12/2003	10:06:31 AM	25.148	22.135	25.306	23.907	23.95	43.701	45.153	8.736	35.908	-1.286	-5.32	48.935	0.166	0.001	0	115.00	1.91667	43.7	12.0	39.8	2.744	0.025	0.025	0.001	0.616	0.52
133	3/12/2003	10:07:31 AM	25.185	22.178	25.384	23.935	23.993	44.188	45.708	8.849	36.2	-1.284	-5.311	48.82	0.166	0.001	0	116.00	1.93333	44.2	12.0	40.2	2.771	0.025	0.024	0.001	0.609	0.52
134	3/12/2003	10:08:31 AM	25.209	22.201	25.392	23.943	24.036	43.914	45.41	8.78	36.036	-1.284	-5.311	48.814	0.166	0.001	0	117.00	1.95	43.9	12.0	40.0	2.756	0.025	0.024	0.001	0.612	0.52
135	3/12/2003	10:09:31 AM	25.222	22.219	25.365	24.001	24.074	44.256	45.883	8.816	36.233	-1.286	-5.317	48.512	0.166	0.001	0	118.00	1.96667	44.4	11.9	40.2	2.775	0.025	0.024	0.001	0.609	0.52
136	3/12/2003	10:10:31 AM	25.224	22.237	25.352	24.054	24.092	44.005	45.507	8.771	36.159	-1.289	-5.322	48.935	0.165	0.001	0	119.00	1.98333	44.0	12.0	40.1	2.764	0.025	0.024	0.001	0.608	0.52
137	3/12/2003	10:11:31 AM	25.222	22.265	25.325	24.112	24.145	44.285	45.877	8.844	36.27	-1.286	-5.32	48.661	0.165	0.001	0	120.00	2	44.4	11.9	40.3	2.777	0.025	0.024	0.001	0.605	0.52
138	3/12/2003	10:12:31 AM	25.22	22.283	25.278	24.12	24.178	44.007	45.643	8.864	36.008	-1.289	-5.317	48.738	0.164	0.001	0	121.00	2.01667	44.2	11.9	40.0	2.758	0.024	0.024	0.001	0.606	0.52
139	3/12/2003	10:13:31 AM	25.212	22.29	25.235	24.107	24.201	44.07	45.559	8.732	36.276	-1.289	-5.317	48.762	0.164	0.001	0	122.00	2.03333	44.1	11.9	40.2	2.770	0.024	0.024	0.001	0.605	0.51
140	3/12/2003	10:14:31 AM	25.246	22.334	25.259	24.156	24.219	44.109	45.759	8.835	36.065	-1.289	-5.32	48.633	0.163	0.001	0	123.00	2.05	44.3	11.9	40.1	2.764	0.024	0.024	0.001	0.602	0.51
141	3/12/2003	10:15:31 AM	25.258	22.356	25.236	24.198	24.281	43.954	45.577	8.858	35.961	-1.292	-5.32	48.608	0.163	0.001	0	124.00	2.06667	44.1	11.9	40.0	2.755	0.024	0.024	0.001	0.604	0.51
142	3/12/2003	10:16:31 AM	25.266	22.379	25.219	24.151	24.314	43.989	45.563	8.779	36.098	-1.286	-5.325	48.638	0.162	0.001	0	125.00	2.08333	44.1	11.9	40.0	2.761	0.024	0.024	0.001	0.599	0.51
143	3/12/2003	10:17:31 AM	25.263	22.396	25.195	24.147	24.316	44.148	45.734	8.849	36.149	-1.286	-5.322	48.81	0.162	0.001	0	126.00	2.1	44.3	12.0	40.1	2.768	0.024	0.024	0.001	0.598	0.51
144	3/12/2003	10:18:31 AM	25.27	22.424	25.203	24.16	24.334	44.148	45.703	8.903	36.167	-1.289	-5.331	49.005	0.161	0.001	0	127.00	2.11667	44.2	12.0	40.2	2.769	0.024	0.024	0.001	0.594	0.51
145	3/12/2003	10:19:31 AM	25.267	22.441	25.205	24.172	24.35	44.126	45.724	8.876	36.092	-1.289	-5.325	48.81	0.162	0.001	0	128.00	2.13333	44.3	12.0	40.1	2.765	0.024	0.024	0.001	0.599	0.51
146	3/12/2003	10:20:31 AM	25.295	22.484	25.223	24.245	24.389	43.962	45.61	8.86	35.973	-1.284	-5.328	49.206	0.161	0.001	0	129.00	2.15	44.1	12.1	40.0	2.756	0.024	0.024	0.001	0.597	0.51
147	3/12/2003	10:21:31 AM	25.283	22.497	25.171	24.288	24.386	43.964	45.505	8.828	36.071	-1.289	-5.337	48.896	0.16	0.001	0	130.00	2.16667	44.0	12.0	40.0	2.759	0.024	0.024	0.001	0.593	0.50
148	3/12/2003	10:22:31 AM	25.292	22.526	25.184	24.337	24.365	44.02	45.621	8.873	35.944	-1.286	-5.346	48.665	0.159	0.001	0	131.00	2.18333	44.1	11.9	40.0	2.757	0.024	0.024	0.001	0.590	0.50
149	3/12/2003	10:23:31 AM	25.304	22.559	25.202	24.435	24.388	43.979	45.65	8.778	36.153	-1.284	-5.343	48.678	0.159	0.001	0	132.00	2.2	44.2	11.9	40.1	2.762	0.024	0.024	0.001	0.588	0.50
150	3/12/2003	10:24:31 AM	25.296	22.571	25.174	24.447	24.375	44.119	45.716	8.807	36.131	-1.286	-5.343	48.606	0.159	0.001	0	133.00	2.21667	44.2	11.9	40.1	2.766	0.024	0.024	0.001	0.588	0.50
151	3/12/2003	10:25:31 AM	25.303	22.598	25.151	24.579	24.392	44.055	45.639	8.819	36.122	-1.286	-5.343	48.497	0.159	0.001	0	134.00	2.23333	44.2	11.9	40.1	2.764	0.024	0.024	0.001	0.589	0.50
152	3/12/2003	10:26:31 AM	25.305	22.62	25.158	24.646	24.399	44.03	45.54	8.773	36.11	-1.286	-5.343	48.717	0.159	0.001	0	135.00	2.25	44.1	11.9	40.1	2.763	0.024	0.024	0.001	0.589	0.50
153	3/12/2003	10:27:31 AM	25.302	22.642	25.16	24.678	24.405	44.115	45.662	8.82	36.08	-1.286	-5.34	48.573	0.159	0.001	0	136.00	2.26667	44.2	11.9	40.1	2.765	0.024	0.024	0.001	0.589	0.50
154	3/12/2003	10:28:31 AM	25.314	22.669	25.142	24.68	24.417	44.045	45.546	8.779	36.139	-1.289	-5.334	48.304	0.158	0.001	0	137.00	2.28333	44.1	11.8	40.1	2.764	0.024	0.023	0.001	0.585	0.50
155	3/12/2003	10:29:31 AM	25.31	22.69	25.128	24.711	24.404	44.275	45.935	8.888	36.215	-1.286	-5.334	48.566	0.158	0.001	0	138.00	2.3	44.5	11.9	40.2	2.775	0.024	0.023	0.001	0.583	0.50
156	3/12/2003	10:30:31 AM	25.312	22.717	25.15	24.703	24.411	44.196	45.78	8.856	36.188	-1.284	-5.334	48.243	0.158	0.001	0	139.00	2.31667	44.3	11.8	40.2	2.771	0.024	0.023	0.001	0.584	0.50
157	3/12/2003	10:31:31 AM	25.32	22.745	25.168	24.791	24.433	43.896	45.54	8.81	35.883	-1.284	-5.331	48.778	0.157	0.001	0	140.00	2.33333	44.1	12.0	39.9	2.750	0.023	0.023	0.001	0.584	0.50
158	3/12/2003	10:32:31 AM	25.332	22.763	25.145	24.864	24.466	43.879	45.499	8.76	35.905	-1.289	-5.334	48.74	0.157	0.001	0	141.00	2.35	44.0	11.9	39.9	2.750	0.023	0.023	0.001	0.584	0.50
159	3/12/2003	10:33:31 AM	25.335	22.79	25.143	24.897	24.499	44.132	45.704	8.781	36.229	-1.286	-5.34	48.063	0.157	0.001	0	142.00	2.36667	44.2	11.8	40.2	2.770	0.023	0.023	0.001	0.580	0.49
160	3/12/2003	10:34:31 AM	25.327	22.803	25.15	24.894	24.501	43.949	45.54	8.758	36.041	-1.286	-5.349	48.814	0.157	0.001	0	143.00	2.38333	44.1	12.0	40.0	2.758	0.023	0.023	0.001	0.583	0.50
161	3/12/2003	10:35:31 AM	25.34	22.836	25.158	24.957	24.514	43.854	45.515	8.781	35.92	-1.286	-5.357	48.579	0.157	0.001	0	144.00	2.4	44.0	11.9	39.9	2.750	0.023	0.023	0.001	0.584	0.50
162	3/12/2003	10:36:31 AM	25.349	22.87	25.147	24.996	24.543	43.885	45.468	8.809	35.951	-1.286	-5.349	48.573	0.157	0.001	0	145.00	2.41667	44.0	11.9	39.9	2.752	0.023	0.023	0.001	0.584	0.50
163	3/12/2003	10:37:31 AM	25.357	22.883	25.14	25.019	24.566	43.825	45.408	8.822	35.815	-1.289	-5.346	48.545	0.156	0.001	0	146.00	2.43333	43.9	11.9	39.8	2.745	0.023	0.023	0.001	0.582	0.50
164	3/12/2003	10:38:31 AM	25.361	22.912	25.158	25.032	24.605	44.026	45.718	8.794	36.051	-1.289	-5.354	48.655	0.156	0.001	0	147.00	2.45	44.2	11.9	40.0	2.761	0.023	0.023	0.001	0.578	0.49
165	3/12/2003	10:39:31 AM	25.369	22.935	25.167	25.086	24.613	43.947	45.466	8.827	35.951	-1.286	-5.351	48.592	0.156	0.001	0	148.00	2.46667	44.0	11.9	39.9	2.754	0.023	0.023	0.001	0.579	0.49
166	3/12/2003	10:40:31 AM	25.377	22.969	25.145	25.094	24.641	44.072	45.641	8.844	36.168	-1.286	-5.354	48.537	0.156	0.001	0	149.00	2.48333	44.2	11.9	40.1	2.766	0.023	0.023	0.001	0.577	0.49
167	3/12/2003	10:41:31 AM	25.38	23.001	25.163	25.142	24.694	44.291	45.968	8.89	36.253	-1.284	-5.34	48.483	0.155	0.001	0	150.00	2.5	44.5	11.9	40.3	2.777	0.023	0.023	0.001	0.571	0.49
168	3/12/2003	10:42:31 AM	25.388	23.02	25.176	25.17	24.712	43.995	45.629	8.863	35.957	-1.286	-5.337	48.948	0.155	0.001	0	151.00	2.51667	44.2	12.0	40.0	2.756	0.023	0.023	0.001	0.575	0.49
169	3/12/2003	10:43:31 AM	25.391	23.053	25.174	25.133	24.655	44.047	45.693	8.896	35.981	-1.289	-5.346	48.652	0.155	0.001	0	152.00	2.53333	44.2	11.9	40.0	2.759	0.023	0.023	0.001	0.575	0.49
170	3/12/2003	10:44:31 AM	25.392	23.069	25.14	25.139	24.646	44.043	45.755	8.88	35.946	-1.286	-5.346	48.594	0.155	0.001	0	153.00	2.55	44.3	11.9	40.0	2.757	0.023	0.023	0.001	0.576	0.49
171	3/12/2003	10:45:32 AM	25.398	23.085	25.141	25.085	24.592	43.811	45.348	8.907	35.754	-1.286	-5.351	48.778	0.154	0.001	0	154.02	2.56694	43.9	12.0	39.8	2.743	0.023	0.023	0.001	0.575	0.49
172	3/12/2003	10:46:32 AM	25.403	23.1	25.146	24.965	24.517	43.689	45.211	8.767	35.918	-1.289	-5.346	48.64	0.154	0.001	-0.001	155.02	2.58361	43.7	11.9	39.8	2.744	0.023	0.023	0.001	0.574	0.49
173	3/12/2003	10:47:32 AM	25.411	23.119	25.144	24.848	24.49	44.059	45.619	8.814	36.12	-1.286	-5.34	48.378	0.154	0.001	0	156.02	2.60028	44.1	11.9	40.1	2.764	0.023	0.023	0.001	0.570	0.49
174	3/12/2003	10:48:32 AM	25.425	23.142	25.143	24.756	24.454	43.927	45.495	8.753	35.977	-1.286	-5.337	48.428	0.154	0.001	0	157.02	2.61694	44.0	11.9	40.0	2.755	0.023	0.023	0.001	0.572	0.49
175	3/12/2003	10:49:32 AM	25.402	23.12	25.105	24.644	24.326	44.186	45.693	8.797	36.384	-1.286	-5.34	48.55	0.153	0.001	0	158.02	2.63361	44.2	11.9	40.3	2.778	0.023	0.023	0.001	0.565	0.48
176	3/12/2003	10:50:32 AM	25.41	23.132	25.133	24.581	24.288	44.03	45.658	8.812	36.014	-1.286	-5.34	48.535	0.154	0.001	0	159.02	2.65028	44.2	11.9	40.0	2.759	0.023	0.023	0.001	0.572	0.49
177	3/12/2003	10:51:32 AM	25.422	23.144	25.145	24.518	24.27	44.248	45.908	8.84	36.253	-1.284	-5.34	48.432	0.153	0.001	0	160.02	2.66694	44.4	11.9	40.3	2.775	0.023	0.023	0.001	0.564	0.48
178	3/12/2003	10:52:32 AM	25.413	23.141	25.121	24.429	24.236	44.045	45.71	8.912	35.922	-1.286	-5.337	48.457	0.153	0.001	0	161.02	2.68361	44.2	11.9	40.0	2.757	0.023	0.023	0.001	0.569	0.48
179	3/12/2003	10:53:32 AM	25.42	23.142	25.183	24.37	24.178	43.943	45.604	8.866	35.905	-1.284	-5.328	48.31	0.153	0.001	0	162.02	2.70028	44.1	11.8	39.9	2.753	0.023	0.023	0.001	0.568	0.48
180	3/12/2003	10:54:32 AM	25.41	23.122	25.258	24.27	24.092	44.096	45.637	8.756	36.368	-1.286	-5.392	48.476	0.159	0.001	0	163.02	2.71694	44.2	11.9	40.2	2.774	0.024	0.024	0.001	0.585	0.50
181	3/12/2003	10:55:32 AM	25.442	23.134	25.335	24.267	24.08	44.355	45.875	8.81	36.399	-1.284	-5.488	48.487	0.154	0.001	0	164.02	2.73361	44.4	11.9	40.4	2.784	0.023	0.023	0.001	0.563	0.48
182	3/12/2003	10:56:32 AM	25.445	23.132	25.348	24.325	24.107	44.204	45.575	8.798	36.311	-1.286	-5.499	48.401	0.153	0.001	0	165.02	2.75028	44.1	11.9	40.3	2.776	0.023	0.023	0.001	0.561	0.48
183	3/12/2003	10:57:32 AM	25.453	23.125	25.351	24.399	24.116	44.266	45.797	8.849	36.317	-1.286	-5.496	46.832	0.152	0.001	0	166.02	2.76694	44.3	11.5	40.3	2.778	0.023	0.022	0.001	0.557	0.47
184	3/12/2003	10:58:32 AM	25.478	23.13	25.361	24.494	24.176	44.353	45.91	8.87	36.219	-1.286	-5.496	48.524	0.152	0.001	0	167.02	2.78361	44.4	11.9	40.3	2.778	0.023	0.022	0.001	0.557	0.47
185	3/12/2003	10:59:32 AM	25.478	23.13	25.331	24.579	24.196	44.563	45.977	8.821	36.647	-1.289	-5.505	48.417	0.152	0.001	0	168.02	2.80028	44.5	11.9	40.6	2.800	0.023	0.022	0.001	0.553	0.47
186	3/12/2003	11:00:32 AM	25.463	23.125	25.306	24.644	24.221	44.3	45.718	8.776	36.405	-1.289	-5.508	48.571	0.151	0.001	0	169.02	2.81694	44.2	11.9	40.4	2.782	0.023	0.022	0.001	0.553	0.47
187	3/12/2003	11:01:32 AM	25.466	23.138	25.319	24.712	24.239	44.658	46.2	8.867	36.606	-1.286	-5.511	48.409	0.151	0.001	0	170.02	2.83361	44.7	11.9	40.6	2.801	0.023	0.022	0.001	0.549	0.47
188	3/12/2003	11:02:32 AM	25.458	23.14	25.321	24.759	24.256	44.208	45.639	8.839	36.217	-1.286	-5.505	48.441	0.152	0.001	0	171.02	2.85028	44.2	11.9	40.2	2.773	0.023	0.022	0.001	0.558	0.48
189	3/12/2003	11:03:32 AM	25.46	23.143	25.278	24.827	24.279	44.36	45.85	8.805	36.393	-1.289	-5.505	48.577	0.152	0.001	0	172.02	2.86694	44.4	11.9	40.4	2.784	0.023	0.022	0.001	0.557	0.47
190	3/12/2003	11:04:32 AM	25.469	23.161	25.287	24.895	24.307	44.438	45.97	8.89	36.366	-1.289	-5.493	48.504	0.151	0.001	0	173.02	2.88361	44.5	11.9	40.4	2.786	0.023	0.022	0.001	0.553	0.47
191	3/12/2003	11:05:32 AM	25.471	23.164	25.294	24.943	24.305	44.517	46.026	8.909	36.376	-1.289	-5.488	48.533	0.151	0.001	0	174.02	2.90028	44.6	11.9	40.4	2.789	0.023	0.022	0.001	0.552	0.47
192	3/12/2003	11:06:32 AM	25.475	23.177	25.303	24.961	24.313	44.169	45.662	8.745	36.327	-1.286	-5.485	48.52	0.151	0.001	0	175.02	2.91694	44.2	11.9	40.2	2.775	0.023	0.022	0.001	0.555	0.47
193	3/12/2003	11:07:32 AM	25.484	23.201	25.282	25.025	24.332	44.343	45.83	8.82	36.307	-1.286	-5.485	48.524	0.151	0.001	0	176.02	2.93361	44.4	11.9	40.3	2.780	0.023	0.022	0.001	0.554	0.47
194	3/12/2003	11:08:32 AM	25.481	23.208	25.264	25.077	24.319	44.409	45.854	8.786	36.554	-1.286	-5.479	45.859	0.15	0.001	0	177.02	2.95028	44.4	11.2	40.5	2.791	0.022	0.022	0.001	0.548	0.47
195	3/12/2003	11:09:32 AM	25.497	23.219	25.265	25.094	24.3	44.273	45.646	8.757	36.419	-1.286	-5.473	48.539	0.151	0.001	0	178.02	2.96694	44.2	11.9	40.3	2.782	0.023	0.022	0.001	0.554	0.47
196	3/12/2003	11:10:32 AM	25.482	23.214	25.24	25.019	24.28	44.32	45.782	8.824	36.352	-1.286	-5.473	48.489	0.15	0.001	0	179.02	2.98361	44.3	11.9	40.3	2.781	0.022	0.022	0.001	0.551	0.47
197	3/12/2003	11:11:32 AM	25.491	23.233	25.218	24.957	24.249	44.393	45.966	8.768	36.509	-1.286	-5.473	48.189	0.15	0.001	0	180.02	3.00028	44.5	11.8	40.5	2.789	0.022	0.022	0.001	0.549	0.47
198	3/12/2003	11:12:32 AM	25.499	23.236	25.201	24.84	24.202	44.258	45.741	8.744	36.368	-1.292	-5.476	48.342	0.149	0.001	0	181.02	3.01694	44.3	11.8	40.3	2.779	0.022	0.022	0.001	0.548	0.47
199	3/12/2003	11:13:32 AM	25.497	23.244	25.21	24.753	24.195	44.297	45.664	8.755	36.507	-1.286	-5.467	48.422	0.148	0.001	0	182.02	3.03361	44.2	11.9	40.4	2.786	0.022	0.022	0.001	0.543	0.46
200	3/12/2003	11:14:32 AM	25.503	23.256	25.211	24.704	24.136	44.27	45.763	8.823	36.266	-1.286	-5.461	48.47	0.148	0.001	0	183.02	3.05028	44.3	11.9	40.3	2.776	0.022	0.022	0.001	0.545	0.46
201	3/12/2003	11:15:32 AM	25.506	23.274	25.214	24.642	24.129	44.36	45.881	8.818	36.446	-1.284	-5.45	48.436	0.148	0.001	0	184.02	3.06694	44.4	11.9	40.4	2.786	0.022	0.022	0.001	0.543	0.46
202	3/12/2003	11:16:32 AM	25.477	23.239	25.17	24.563	24.084	44.101	45.592	8.768	36.237	-1.286	-5.447	48.503	0.147	0.001	0	185.02	3.08361	44.1	11.9	40.2	2.770	0.022	0.022	0.001	0.543	0.46
203	3/12/2003	11:17:32 AM	25.473	23.235	25.186	24.508	24.025	44.343	45.886	8.848	36.364	-1.289	-5.447	48.462	0.147	0.001	0	186.02	3.10028	44.4	11.9	40.4	2.782	0.022	0.022	0.001	0.540	0.46
204	3/12/2003	11:18:32 AM	25.475	23.242	25.187	24.435	23.997	44.212	45.755	8.818	36.288	-1.286	-5.438	48.422	0.147	0.001	0	187.02	3.11694	44.3	11.9	40.3	2.775	0.022	0.022	0.001	0.542	0.46
205	3/12/2003	11:19:32 AM	25.481	23.244	25.184	24.377	23.948	44.304	45.734	8.79	36.491	-1.284	-5.435	48.359	0.147	0.001	0	188.02	3.13361	44.3	11.9	40.4	2.785	0.022	0.022	0.001	0.540	0.46
206	3/12/2003	11:20:32 AM	25.458	23.231	25.156	24.328	23.97	44.128	45.581	8.742	36.37	-1.286	-5.433	48.407	0.147	0.001	0	189.02	3.15028	44.1	11.9	40.2	2.775	0.022	0.022	0.001	0.542	0.46
207	3/12/2003	11:21:32 AM	25.472	23.244	25.21	24.397	23.999	44.401	45.906	8.859	36.405	-1.286	-5.427	48.353	0.147	0.001	0	190.02	3.16694	44.4	11.8	40.4	2.786	0.022	0.022	0.001	0.539	0.46
208	3/12/2003	11:22:32 AM	25.455	23.228	25.178	24.446	24.023	44.227	45.784	8.809	36.352	-1.289	-5.433	48.283	0.147	0.001	-0.001	191.02	3.18361	44.3	11.8	40.3	2.778	0.022	0.022	0.001	0.541	0.46
209	3/12/2003	11:23:32 AM	25.45	23.233	25.188	24.601	24.038	44.173	45.759	8.76	36.307	-1.286	-5.427	48.447	0.146	0.001	0	192.02	3.20028	44.3	11.9	40.2	2.774	0.022	0.022	0.001	0.538	0.46
210	3/12/2003	11:24:32 AM	25.445	23.233	25.168	24.717	24.068	44.289	45.743	8.81	36.401	-1.289	-5.43	48.277	0.146	0.001	0	193.02	3.21694	44.3	11.8	40.3	2.782	0.022	0.022	0.001	0.537	0.46
211	3/12/2003	11:25:32 AM	25.452	23.244	25.2	24.868	24.109	44.088	45.492	8.764	36.227	-1.286	-5.43	48.126	0.146	0.001	0	194.02	3.23361	44.0	11.8	40.2	2.769	0.022	0.022	0.001	0.539	0.46
212	3/12/2003	11:26:32 AM	25.464	23.256	25.227	24.97	24.156	44.434	45.902	8.791	36.624	-1.284	-5.43	48.353	0.146	0.001	0	195.02	3.25028	44.4	11.8	40.5	2.794	0.022	0.022	0.001	0.534	0.45
213	3/12/2003	11:27:32 AM	25.451	23.243	25.178	25.017	24.184	44.15	45.745	8.822	36.229	-1.289	-5.433	48.673	0.145	0.001	0	196.02	3.26694	44.3	11.9	40.2	2.771	0.022	0.022	0.001	0.535	0.46
214	3/12/2003	11:28:32 AM	25.453	23.26	25.19	25.13	24.231	44.159	45.66	8.859	36.2	-1.286	-5.43	48.289	0.146	0.001	0	197.02	3.28361	44.2	11.8	40.2	2.770	0.022	0.022	0.001	0.539	0.46
215	3/12/2003	11:29:32 AM	25.455	23.273	25.213	25.197	24.263	44.293	45.896	8.804	36.452	-1.286	-5.424	48.459	0.145	0.001	0	198.02	3.30028	44.4	11.9	40.4	2.784	0.022	0.021	0.001	0.532	0.45
216	3/12/2003	11:30:32 AM	25.468	23.296	25.216	25.266	24.302	44.07	45.633	8.791	36.161	-1.286	-5.424	48.294	0.146	0.001	0	199.02	3.31694	44.2	11.8	40.1	2.766	0.022	0.022	0.001	0.539	0.46
217	3/12/2003	11:31:32 AM	25.477	23.31	25.2	25.324	24.34	44.196	45.805	8.858	36.159	-1.286	-5.424	48.281	0.146	0.001	0	200.02	3.33361	44.3	11.8	40.2	2.770	0.022	0.022	0.001	0.539	0.46
218	3/12/2003	11:32:32 AM	25.474	23.317	25.207	25.381	24.327	44.09	45.712	8.831	36.112	-1.286	-5.427	48.195	0.146	0.001	0	201.02	3.35028	44.2	11.8	40.1	2.765	0.022	0.022	0.001	0.540	0.46
219	3/12/2003	11:33:32 AM	25.48	23.333	25.223	25.357	24.298	44.208	45.929	8.879	36.174	-1.289	-5.427	48.426	0.146	0.001	0	202.02	3.36694	44.5	11.9	40.2	2.771	0.022	0.022	0.001	0.538	0.46
220	3/12/2003	11:34:32 AM	25.496	23.355	25.214	25.309	24.29	44.111	45.747	8.923	35.926	-1.289	-5.433	48.16	0.146	0.001	0	203.02	3.38361	44.3	11.8	40.0	2.759	0.022	0.022	0.001	0.541	0.46
221	3/12/2003	11:35:32 AM	25.491	23.349	25.189	25.223	24.244	44.196	45.842	8.937	36.028	-1.286	-5.43	47.751	0.145	0.001	0	204.02	3.40028	44.4	11.7	40.1	2.766	0.022	0.022	0.001	0.536	0.46
222	3/12/2003	11:36:32 AM	25.495	23.358	25.188	25.152	24.208	44.271	45.865	8.802	36.374	-1.286	-5.433	48.206	0.145	0.001	0	205.02	3.41694	44.4	11.8	40.3	2.780	0.022	0.022	0.001	0.533	0.45
223	3/12/2003	11:37:32 AM	25.494	23.357	25.192	25.061	24.157	44.034	45.586	8.852	36.014	-1.292	-5.421	48.355	0.145	0.001	0	206.02	3.43361	44.1	11.9	40.0	2.760	0.022	0.022	0.001	0.537	0.46
224	3/12/2003	11:38:32 AM	25.502	23.356	25.18	24.954	24.13	44.25	45.883	8.811	36.272	-1.286	-5.415	48.439	0.145	0.001	0	207.02	3.45028	44.4	11.9	40.3	2.776	0.022	0.022	0.001	0.534	0.45
225	3/12/2003	11:39:32 AM	25.495	23.353	25.148	24.881	24.087	44.239	45.91	8.918	36.129	-1.292	-5.412	48.306	0.145	0.001	-0.001	208.02	3.46694	44.4	11.8	40.2	2.771	0.022	0.022	0.001	0.536	0.46
226	3/12/2003	11:40:32 AM	25.497	23.355	25.17	24.849	24.08	44.01	45.608	8.861	35.946	-1.289	-5.412	48.279	0.144	0.001	0	209.02	3.48361	44.1	11.8	40.0	2.756	0.021	0.021	0.001	0.534	0.45
227	3/12/2003	11:41:32 AM	25.495	23.348	25.187	24.776	23.997	44.285	45.885	8.898	36.254	-1.286	-5.409	48.913	0.144	0.001	0	210.02	3.50028	44.4	12.0	40.3	2.776	0.021	0.021	0.001	0.530	0.45
228	3/12/2003	11:42:32 AM	25.503	23.356	25.195	24.749	23.98	44.254	45.898	8.906	36.178	-1.281	-5.395	48.524	0.145	0.001	0	211.02	3.51694	44.4	11.9	40.2	2.773	0.022	0.021	0.001	0.535	0.45
229	3/12/2003	11:43:32 AM	25.494	23.343	25.162	24.695	23.992	44.202	45.821	8.856	36.286	-1.289	-5.389	48.008	0.145	0.001	0	212.02	3.53361	44.3	11.8	40.2	2.775	0.022	0.022	0.001	0.535	0.46
230	3/12/2003	11:44:32 AM	25.497	23.345	25.185	24.643	23.959	44.258	45.846	8.844	36.274	-1.286	-5.383	48.487	0.144	0.001	0	213.02	3.55028	44.4	11.9	40.3	2.776	0.021	0.021	0.001	0.530	0.45
231	3/12/2003	11:45:32 AM	25.484	23.317	25.176	24.559	23.931	44.119	45.71	8.851	36.09	-1.292	-5.389	48.21	0.144	0.001	0	214.02	3.56694	44.2	11.8	40.1	2.765	0.021	0.021	0.001	0.533	0.45
232	3/12/2003	11:46:32 AM	25.486	23.314	25.184	24.542	23.908	44.159	45.728	8.874	36.137	-1.286	-5.386	48.285	0.144	0.001	0	215.02	3.58361	44.3	11.8	40.1	2.768	0.021	0.021	0.001	0.532	0.45
233	3/12/2003	11:47:32 AM	25.499	23.322	25.187	24.57	23.931	44.287	45.883	8.863	36.387	-1.289	-5.383	48.157	0.144	0.001	0	216.02	3.60028	44.4	11.8	40.3	2.781	0.021	0.021	0.001	0.529	0.45
234	3/12/2003	11:48:32 AM	25.482	23.31	25.185	24.638	23.974	43.854	45.435	8.796	36.032	-1.286	-5.383	48.239	0.144	0.001	0	217.02	3.61694	44.0	11.8	39.9	2.754	0.021	0.021	0.001	0.535	0.46
235	3/12/2003	11:49:32 AM	25.487	23.315	25.225	24.733	24.014	44.244	46.008	8.929	36.108	-1.286	-5.378	48.371	0.144	0.001	0	218.02	3.63361	44.5	11.9	40.2	2.770	0.021	0.021	0.001	0.531	0.45
236	3/12/2003	11:50:32 AM	25.498	23.316	25.225	24.829	24.04	43.802	45.511	8.912	35.758	-1.286	-5.372	48.216	0.144	0.001	0	219.02	3.65028	44.0	11.8	39.8	2.743	0.021	0.021	0.001	0.536	0.46
237	3/12/2003	11:51:32 AM	25.5	23.323	25.212	24.946	24.092	44.036	45.668	8.827	36.079	-1.289	-5.378	48.222	0.144	0.001	0	220.02	3.66694	44.2	11.8	40.1	2.762	0.021	0.021	0.001	0.533	0.45
238	3/12/2003	11:52:32 AM	25.501	23.324	25.224	25.063	24.134	44.024	45.584	8.822	36.233	-1.286	-5.369	47.969	0.144	0.001	0	221.02	3.68361	44.1	11.8	40.1	2.767	0.021	0.021	0.001	0.532	0.45
239	3/12/2003	11:53:32 AM	25.515	23.348	25.253	25.132	24.193	44.111	45.766	8.935	36.028	-1.289	-5.378	48.26	0.144	0.001	0	222.02	3.70028	44.3	11.8	40.1	2.763	0.021	0.021	0.001	0.532	0.45
240	3/12/2003	11:54:32 AM	25.517	23.35	25.255	25.219	24.24	43.883	45.567	8.847	35.908	-1.289	-5.375	48.174	0.143	0.001	0	223.02	3.71694	44.1	11.8	39.9	2.751	0.021	0.021	0.001	0.531	0.45
241	3/12/2003	11:55:32 AM	25.521	23.364	25.238	25.328	24.294	43.784	45.426	8.823	35.693	-1.289	-5.375	48.269	0.143	0.001	0	224.02	3.73361	44.0	11.8	39.7	2.740	0.021	0.021	0.001	0.533	0.45
242	3/12/2003	11:56:32 AM	25.54	23.388	25.262	25.402	24.348	44.053	45.735	8.871	36.002	-1.289	-5.375	48.216	0.143	0.001	0	225.02	3.75028	44.3	11.8	40.0	2.760	0.021	0.021	0.001	0.529	0.45
243	3/12/2003	11:57:32 AM	25.532	23.391	25.285	25.47	24.366	44.067	45.644	8.815	36.237	-1.286	-5.349	48.197	0.143	0.001	0	226.02	3.76694	44.2	11.8	40.2	2.768	0.021	0.021	0.001	0.527	0.45
244	3/12/2003	11:58:32 AM	25.535	23.393	25.253	25.482	24.383	44.047	45.604	8.907	36.016	-1.292	-5.354	48.155	0.142	0.001	0	227.02	3.78361	44.1	11.8	40.0	2.760	0.021	0.021	0.001	0.525	0.45
245	3/12/2003	11:59:32 AM	25.553	23.416	25.255	25.495	24.386	44.038	45.714	8.863	36.086	-1.289	-5.36	48.202	0.142	0.001	0	228.02	3.80028	44.2	11.8	40.1	2.762	0.021	0.021	0.001	0.525	0.45
246	3/12/2003	12:00:32 PM	25.558	23.437	25.316	25.4	24.361	44.165	45.935	8.883	36.075	-1.286	-5.357	48.367	0.142	0.001	0	229.02	3.81694	44.5	11.9	40.1	2.766	0.021	0.021	0.001	0.523	0.45
247	3/12/2003	12:01:32 PM	25.568	23.442	25.386	25.305	24.311	43.856	45.561	8.826	35.996	-1.289	-5.349	48.025	0.142	0.001	0	230.02	3.83361	44.1	11.8	39.9	2.753	0.021	0.021	0.001	0.525	0.45
248	3/12/2003	12:02:32 PM	25.582	23.44	25.415	25.224	24.29	44.053	45.871	8.84	36.045	-1.289	-5.34	48.81	0.143	0.001	0	231.02	3.85028	44.4	12.0	40.0	2.761	0.021	0.021	0.001	0.526	0.45
249	3/12/2003	12:03:32 PM	25.612	23.46	25.455	25.169	24.265	44.355	46.08	8.861	36.313	-1.289	-5.337	48.162	0.143	0.001	0	232.02	3.86694	44.6	11.8	40.3	2.781	0.021	0.021	0.001	0.522	0.44
250	3/12/2003	12:04:32 PM	25.631	23.464	25.504	25.082	24.248	44.059	45.693	8.735	36.217	-1.289	-5.337	47.371	0.142	0.001	0	233.02	3.88361	44.2	11.6	40.1	2.767	0.021	0.021	0.001	0.520	0.44
251	3/12/2003	12:05:32 PM	25.639	23.453	25.532	24.931	24.192	44.198	46.063	8.798	36.254	-1.289	-5.334	48.266	0.142	0.001	0	234.02	3.90028	44.6	11.8	40.2	2.773	0.021	0.021	0.001	0.518	0.44
252	3/12/2003	12:06:32 PM	25.643	23.451	25.486	24.839	24.156	44.223	46.03	8.876	36.11	-1.289	-5.343	48.373	0.142	0.001	0	235.02	3.91694	44.6	11.9	40.2	2.769	0.021	0.021	0.001	0.520	0.44
253	3/12/2003	12:07:32 PM	25.642	23.456	25.45	24.733	24.1	44.287	46.101	8.855	36.296	-1.289	-5.349	48.464	0.143	0.001	0	236.02	3.93361	44.6	11.9	40.3	2.778	0.021	0.021	0.001	0.522	0.44
254	3/12/2003	12:08:32 PM	25.64	23.444	25.433	24.741	24.103	44.192	45.941	8.775	36.305	-1.286	-5.375	48.235	0.142	0.001	0	237.02	3.95028	44.5	11.8	40.2	2.775	0.021	0.021	0.001	0.520	0.44
255	3/12/2003	12:09:32 PM	25.633	23.427	25.411	24.694	24.061	44.068	45.809	8.753	36.233	-1.286	-5.389	48.235	0.142	0.001	0	238.02	3.96694	44.3	11.8	40.2	2.768	0.021	0.021	0.001	0.521	0.44
256	3/12/2003	12:10:32 PM	25.637	23.431	25.38	24.633	24.059	44.223	45.945	8.857	36.163	-1.286	-5.406	48.575	0.141	0.001	0	239.02	3.98361	44.5	11.9	40.2	2.771	0.021	0.021	0.001	0.517	0.44
257	3/12/2003	12:11:32 PM	25.62	23.413	25.337	24.6	23.921	44.024	45.703	8.816	36.133	-1.289	-5.409	48.271	0.141	0.001	0	240.02	4.00028	44.2	11.8	40.1	2.763	0.021	0.021	0.001	0.520	0.44
258	3/12/2003	12:12:32 PM	25.611	23.4	25.334	24.577	23.913	44.293	45.958	8.823	36.401	-1.286	-5.406	48.25	0.141	0.001	0	241.02	4.01694	44.5	11.8	40.3	2.782	0.021	0.021	0.001	0.516	0.44
259	3/12/2003	12:13:32 PM	25.639	23.413	25.372	24.535	23.996	44.084	45.697	8.785	36.2	-1.286	-5.406	48.443	0.142	0.001	0	242.02	4.03361	44.2	11.9	40.1	2.768	0.021	0.021	0.001	0.522	0.44
260	3/12/2003	12:14:32 PM	25.612	23.391	25.325	24.488	24.02	44.206	46.039	8.747	36.317	-1.284	-5.415	48.218	0.141	0.001	0	243.02	4.05028	44.6	11.8	40.3	2.776	0.021	0.021	0.001	0.517	0.44

Figure D8-2: Dewatering of the AN-102R2, batch 4A, insoluble solids concentrations from 1.5 to 81 wt% - Raw & Calculated Data



261	3/12/2003	12:15:32 PM	25.597	23.385	25.309	24.462	23.944	44.235	46.061	8.784	36.237	-1.286	-5.409	48.235	0.141	0.001	0	244.02	4.06694	44.6	11.8	40.2	2.774	0.021	0.021	0.001	0.518	0.44
262	3/12/2003	12:16:32 PM	25.591	23.364	25.299	24.507	23.943	44.009	45.809	8.802	36.084	-1.289	-5.412	48.445	0.141	0.001	0	245.02	4.08361	44.3	11.9	40.0	2.761	0.021	0.021	0.001	0.521	0.44
263	3/12/2003	12:17:32 PM	25.577	23.355	25.299	24.562	23.934	44.188	45.881	8.803	36.28	-1.289	-5.621	48.132	0.14	0.001	0	246.02	4.10028	44.4	11.8	40.2	2.774	0.021	0.021	0.001	0.514	0.44
264	3/12/2003	12:18:32 PM	25.594	23.372	25.312	24.715	24.006	44.219	45.871	8.774	36.309	-1.286	-5.618	48.162	0.14	0.001	0	247.02	4.11694	44.4	11.8	40.3	2.776	0.021	0.021	0.001	0.514	0.44
265	3/12/2003	12:19:32 PM	25.586	23.369	25.294	24.812	24.044	44.219	45.981	8.787	36.362	-1.284	-5.612	48.16	0.14	0.001	0	248.02	4.13361	44.5	11.8	40.3	2.778	0.021	0.021	0.001	0.514	0.44
266	3/12/2003	12:20:32 PM	25.579	23.357	25.292	24.865	24.036	44.049	45.794	8.808	36.02	-1.286	-5.615	48.42	0.139	0.001	0	249.02	4.15028	44.3	11.9	40.0	2.760	0.021	0.021	0.001	0.513	0.44
267	3/12/2003	12:21:32 PM	25.586	23.369	25.304	25.037	24.073	44.186	45.977	8.834	36.17	-1.289	-5.606	48.361	0.139	0.001	0	250.02	4.16694	44.5	11.9	40.2	2.770	0.021	0.021	0.001	0.511	0.44
268	3/12/2003	12:22:32 PM	25.589	23.382	25.287	25.141	24.122	44.299	45.95	8.811	36.415	-1.289	-5.621	48.311	0.138	0.001	0	251.02	4.18361	44.5	11.8	40.4	2.782	0.021	0.020	0.001	0.506	0.43
269	3/12/2003	12:23:32 PM	25.587	23.4	25.264	25.244	24.144	44.171	46.043	8.812	36.276	-1.289	-5.543	48.355	0.135	0.001	0	252.02	4.20028	44.6	11.9	40.2	2.773	0.020	0.020	0.000	0.497	0.42
270	3/12/2003	12:24:32 PM	25.591	23.424	25.283	25.323	24.198	44.132	46.065	8.897	35.996	-1.286	-5.667	48.168	0.138	0.001	0	253.02	4.21694	44.6	11.8	40.1	2.762	0.021	0.020	0.001	0.509	0.43
271	3/12/2003	12:25:32 PM	25.6	23.448	25.297	25.377	24.252	44.297	46.092	8.841	36.333	-1.286	-5.667	48.004	0.138	0.001	0	254.02	4.23361	44.6	11.8	40.3	2.780	0.021	0.020	0.001	0.506	0.43
272	3/12/2003	12:26:32 PM	25.591	23.46	25.284	25.399	24.29	43.966	45.672	8.765	36.116	-1.289	-5.667	48.503	0.138	0.001	0	255.02	4.25028	44.2	11.9	40.0	2.761	0.021	0.020	0.001	0.510	0.43
273	3/12/2003	12:27:32 PM	25.595	23.478	25.263	25.332	24.298	44.128	45.941	8.764	36.28	-1.289	-5.661	48.315	0.138	0.001	0	256.02	4.26694	44.5	11.8	40.2	2.772	0.021	0.020	0.001	0.508	0.43
274	3/12/2003	12:28:32 PM	25.597	23.491	25.27	25.224	24.28	44.067	45.97	8.805	36.098	-1.286	-5.67	48.296	0.138	0.001	0	257.02	4.28361	44.5	11.8	40.1	2.764	0.021	0.020	0.001	0.509	0.43
275	3/12/2003	12:29:32 PM	25.599	23.497	25.287	25.116	24.277	44.101	45.908	8.827	36.08	-1.289	-5.667	48.26	0.138	0.001	0	258.02	4.30028	44.4	11.8	40.1	2.764	0.021	0.020	0.001	0.509	0.43
276	3/12/2003	12:30:32 PM	25.584	23.497	25.262	25.035	24.222	44.569	46.384	8.983	36.485	-1.286	-5.661	48.138	0.138	0.001	0	259.02	4.31694	44.9	11.8	40.5	2.794	0.021	0.020	0.001	0.504	0.43
277	3/12/2003	12:31:32 PM	25.594	23.503	25.242	25.011	24.257	43.958	45.726	8.81	36.069	-1.289	-5.661	48.447	0.138	0.001	0	260.02	4.33361	44.3	11.9	40.0	2.759	0.021	0.020	0.001	0.511	0.43
278	3/12/2003	12:32:32 PM	25.589	23.512	25.252	25.015	24.232	43.978	45.805	8.833	36.077	-1.286	-5.673	48.082	0.138	0.001	0	261.02	4.35028	44.3	11.8	40.0	2.760	0.021	0.020	0.001	0.510	0.43
279	3/12/2003	12:33:32 PM	25.583	23.512	25.256	24.95	24.176	44.045	45.974	8.835	36.016	-1.289	-5.658	48.262	0.138	0.001	0	262.02	4.36694	44.5	11.8	40.0	2.760	0.021	0.020	0.001	0.510	0.43
280	3/12/2003	12:34:32 PM	25.577	23.505	25.245	24.943	24.114	44.244	46.125	8.821	36.26	-1.286	-5.658	48.178	0.138	0.001	0	263.02	4.38361	44.7	11.8	40.3	2.775	0.021	0.020	0.001	0.508	0.43
281	3/12/2003	12:35:32 PM	25.575	23.498	25.223	24.966	24.112	44.252	46.126	8.821	36.397	-1.289	-5.655	48.269	0.138	0.001	0	264.02	4.40028	44.7	11.8	40.3	2.780	0.021	0.020	0.001	0.507	0.43
282	3/12/2003	12:36:32 PM	25.578	23.501	25.221	24.939	24.1	43.945	45.687	8.775	36.079	-1.286	-5.658	48.267	0.138	0.001	0	265.02	4.41694	44.2	11.8	40.0	2.759	0.021	0.020	0.001	0.511	0.43
283	3/12/2003	12:37:32 PM	25.591	23.51	25.259	24.957	24.078	44.237	46.169	8.88	36.196	-1.284	-5.653	48.201	0.137	0.001	0	266.02	4.43361	44.7	11.8	40.2	2.773	0.020	0.020	0.001	0.504	0.43
284	3/12/2003	12:38:32 PM	25.583	23.497	25.236	24.935	24.025	44.047	45.89	8.834	35.981	-1.284	-5.638	48.057	0.138	0.001	0	267.02	4.45028	44.4	11.8	40.0	2.759	0.021	0.020	0.001	0.511	0.43
285	3/12/2003	12:39:32 PM	25.581	23.499	25.213	24.922	23.978	44.154	46.057	8.875	36.086	-1.286	-5.638	48.097	0.137	0.001	0	268.02	4.46694	44.6	11.8	40.1	2.766	0.020	0.020	0.001	0.506	0.43
286	3/12/2003	12:40:32 PM	25.567	23.476	25.21	24.864	23.949	44.188	45.96	8.85	36.221	-1.289	-5.638	48.13	0.136	0.001	0	269.02	4.48361	44.5	11.8	40.2	2.772	0.020	0.020	0.001	0.501	0.43
287	3/12/2003	12:41:32 PM	25.575	23.473	25.232	24.861	23.907	43.929	45.77	8.829	35.963	-1.289	-5.632	47.973	0.136	0.001	0	270.02	4.50028	44.3	11.8	39.9	2.754	0.020	0.020	0.001	0.504	0.43
288	3/12/2003	12:42:32 PM	25.576	23.47	25.224	24.848	23.873	43.964	45.776	8.836	36.034	-1.286	-5.635	48.116	0.136	0.001	0	271.02	4.51694	44.3	11.8	40.0	2.758	0.020	0.020	0.001	0.504	0.43
289	3/12/2003	12:43:32 PM	25.579	23.457	25.222	24.87	23.835	43.829	45.817	8.874	35.777	-1.286	-5.621	48.222	0.136	0.001	0	272.02	4.53361	44.3	11.8	39.8	2.744	0.020	0.020	0.001	0.506	0.43
290	3/12/2003	12:44:32 PM	25.577	23.45	25.22	24.863	23.879	44.105	46.059	8.936	35.987	-1.286	-5.615	48	0.136	0.001	0	273.02	4.55028	44.6	11.8	40.0	2.761	0.020	0.020	0.001	0.503	0.43
291	3/12/2003	12:45:32 PM	25.586	23.455	25.264	24.883	23.933	43.947	45.852	8.883	35.867	-1.286	-5.603	48.248	0.136	0.001	0	274.02	4.56694	44.4	11.8	39.9	2.751	0.020	0.020	0.001	0.504	0.43
292	3/12/2003	12:46:32 PM	25.581	23.455	25.259	24.958	24.003	44.132	46.034	8.91	36.116	-1.284	-5.603	48.111	0.136	0.001	0	275.02	4.58361	44.6	11.8	40.1	2.766	0.020	0.020	0.001	0.502	0.43
293	3/12/2003	12:47:32 PM	25.592	23.465	25.265	25.069	24.039	43.964	45.848	8.911	36.01	-1.284	-5.609	47.987	0.135	0.001	0	276.02	4.60028	44.4	11.8	40.0	2.757	0.020	0.020	0.000	0.500	0.43
294	3/12/2003	12:48:32 PM	25.573	23.447	25.256	25.12	24.091	44.049	45.945	8.881	36.057	-1.289	-5.609	48.306	0.135	0.001	0	277.02	4.61694	44.5	11.8	40.1	2.762	0.020	0.020	0.000	0.499	0.42
295	3/12/2003	12:49:32 PM	25.591	23.464	25.289	25.253	24.143	44.01	45.89	8.869	36.01	-1.286	-5.615	48.067	0.135	0.001	0	278.02	4.63361	44.4	11.8	40.0	2.759	0.020	0.020	0.000	0.499	0.42
296	3/12/2003	12:50:32 PM	25.583	23.462	25.281	25.356	24.191	43.792	45.695	8.866	35.689	-1.284	-5.615	48.264	0.135	0.001	0	279.02	4.65028	44.2	11.8	39.7	2.740	0.020	0.020	0.001	0.502	0.43
297	3/12/2003	12:51:32 PM	25.587	23.48	25.274	25.484	24.245	44.096	46.126	8.912	36.006	-1.286	-5.609	48.199	0.135	0.001	0	280.02	4.66694	44.7	11.8	40.1	2.761	0.020	0.020	0.000	0.499	0.42
298	3/12/2003	12:52:32 PM	25.601	23.489	25.298	25.603	24.309	43.929	45.801	8.894	35.836	-1.286	-5.598	48.023	0.135	0.001	0	281.02	4.68361	44.3	11.8	39.9	2.750	0.020	0.020	0.001	0.500	0.43
299	3/12/2003	12:53:32 PM	25.599	23.493	25.307	25.691	24.307	43.873	45.778	8.813	35.996	-1.286	-5.612	48.315	0.135	0.001	0	282.02	4.70028	44.3	11.8	39.9	2.753	0.020	0.020	0.000	0.500	0.43
300	3/12/2003	12:54:32 PM	25.622	23.526	25.3	25.76	24.33	43.929	45.898	8.9	35.893	-1.286	-5.595	49.08	0.135	0.001	0	283.02	4.71694	44.4	12.0	39.9	2.752	0.020	0.020	0.001	0.500	0.43
301	3/12/2003	12:55:32 PM	25.624	23.528	25.277	25.772	24.322	44.084	46.208	8.907	36.016	-1.289	-5.592	48.157	0.136	0.001	0	284.02	4.73361	44.7	11.8	40.1	2.761	0.020	0.020	0.001	0.502	0.43
302	3/12/2003	12:56:32 PM	25.635	23.544	25.308	25.747	24.293	43.889	45.997	8.924	35.752	-1.286	-5.647	48.009	0.135	0.001	0	285.02	4.75028	44.5	11.8	39.8	2.745	0.020	0.020	0.001	0.501	0.43
303	3/12/2003	12:57:32 PM	25.635	23.544	25.303	25.663	24.283	44.088	46.173	8.961	35.863	-1.289	-5.632	48.111	0.135	0.001	0	286.02	4.76694	44.7	11.8	40.0	2.756	0.020	0.020	0.000	0.499	0.42
304	3/12/2003	12:58:32 PM	25.65	23.554	25.283	25.608	24.258	44.053	46.022	8.99	35.905	-1.289	-5.624	48.134	0.135	0.001	0	287.02	4.78361	44.5	11.8	40.0	2.756	0.020	0.020	0.000	0.499	0.43
305	3/12/2003	12:59:32 PM	25.665	23.569	25.298	25.572	24.243	43.981	46.01	8.943	35.86	-1.284	-5.612	48.204	0.135	0.001	0	288.02	4.80028	44.5	11.8	39.9	2.752	0.020	0.020	0.000	0.500	0.43
306	3/12/2003	1:00:32 PM	25.659	23.573	25.307	25.466	24.202	44.003	45.995	8.933	35.887	-1.289	-5.615	49.812	0.135	0.001	0	289.02	4.81694	44.5	12.2	39.9	2.754	0.020	0.020	0.000	0.500	0.43
307	3/12/2003	1:01:32 PM	25.679	23.582	25.351	25.431	24.196	43.885	46.026	8.903	35.805	-1.284	-5.606	48.059	0.135	0.001	0	290.02	4.83361	44.6	11.8	39.8	2.747	0.020	0.020	0.001	0.500	0.43
308	3/12/2003	1:02:32 PM	25.657	23.571	25.315	25.354	24.17	43.869	45.865	8.85	35.91	-1.289	-5.618	48.113	0.135	0.001	0	291.02	4.85028	44.4	11.8	39.9	2.750	0.020	0.020	0.001	0.500	0.43
309	3/12/2003	1:03:32 PM	25.687	23.581	25.339	25.344	24.144	43.856	46.041	8.872	35.787	-1.286	-5.609	47.83	0.135	0.001	0	292.02	4.86694	44.6	11.7	39.8	2.746	0.020	0.020	0.001	0.501	0.43
310	3/12/2003	1:04:32 PM	25.684	23.573	25.367	25.281	24.111	44.028	46.227	8.939	35.846	-1.286	-5.603	48.195	0.135	0.001	0	293.02	4.88361	44.8	11.8	39.9	2.754	0.020	0.020	0.000	0.499	0.42
311	3/12/2003	1:05:32 PM	25.682	23.556	25.36	25.194	24.069	43.985	46.026	8.888	35.987	-1.289	-5.574	48.587	0.135	0.001	0	294.02	4.90028	44.6	11.9	40.0	2.757	0.020	0.020	0.000	0.498	0.42
312	3/12/2003	1:06:32 PM	25.691	23.555	25.353	25.167	24.058	43.945	45.983	8.854	35.932	-1.289	-5.627	48.132	0.135	0.001	0	295.02	4.91694	44.5	11.8	39.9	2.754	0.020	0.020	0.000	0.499	0.42
313	3/12/2003	1:07:32 PM	25.699	23.558	25.357	25.136	24.102	43.761	45.699	8.829	35.813	-1.289	-5.624	48.256	0.134	0.001	0	296.02	4.93361	44.2	11.8	39.8	2.743	0.020	0.020	0.000	0.497	0.42
314	3/12/2003	1:07:36 PM	25.694	23.548	25.366	25.12	24.101	43.867	45.985	8.888	35.809	-1.289	-5.621	48.183	0.135	0.001	0	296.08	4.93472	44.5	11.8	39.8	2.747	0.020	0.020	0.001	0.500	0.43
315	3/12/2003	1:08:36 PM	25.692	23.546	25.369	25.078	24.044	43.889	45.995	8.873	35.813	-1.289	-5.624	47.841	0.134	0.001	0	297.08	4.95139	44.5	11.7	39.9	2.748	0.020	0.020	0.000	0.496	0.42
316	3/12/2003	1:09:36 PM	25.705	23.539	25.383	25.096	24.007	43.964	46.02	8.836	35.942	-1.286	-5.627	48.132	0.134	0.001	0	298.08	4.96806	44.5	11.8	40.0	2.755	0.020	0.020	0.000	0.495	0.42
317	3/12/2003	1:10:36 PM	25.707	23.536	25.36	25.084	23.984	44.165	46.316	8.867	36.227	-1.286	-5.621	48.256	0.134	0.001	0	299.08	4.98472	44.8	11.8	40.2	2.771	0.020	0.020	0.000	0.492	0.42
318	3/12/2003	1:11:36 PM	25.695	23.508	25.352	25.036	23.941	43.964	46.065	8.851	35.969	-1.289	-5.615	48.271	0.134	0.001	0	300.08	5.00139	44.6	11.8	40.0	2.756	0.020	0.020	0.000	0.495	0.42
319	3/12/2003	1:12:36 PM	25.708	23.516	25.38	25.034	23.945	43.985	46.045	8.88	36.028	-1.286	-5.612	48.13	0.134	0.001	0	301.08	5.01806	44.6	11.8	40.0	2.758	0.020	0.020	0.000	0.494	0.42
320	3/12/2003	1:13:36 PM	25.701	23.504	25.348	25.007	23.923	43.869	46.101	8.947	35.629	-1.289	-5.615	47.849	0.133	0.001	0	302.08	5.03472	44.6	11.7	39.7	2.741	0.020	0.020	0.000	0.494	0.42
321	3/12/2003	1:14:36 PM	25.693	23.492	25.341	25	23.86	43.887	46.095	8.906	35.758	-1.286	-5.609	48.254	0.133	0.001	0	303.08	5.05139	44.6	11.8	39.8	2.746	0.020	0.020	0.000	0.493	0.42
322	3/12/2003	1:15:36 PM	25.696	23.48	25.344	25.033	23.858	43.647	45.77	8.822	35.557	-1.286	-5.615	47.937	0.133	0.001	0	304.08	5.06806	44.3	11.7	39.6	2.730	0.020	0.020	0.000	0.496	0.42
323	3/12/2003	1:16:36 PM	25.704	23.482	25.371	25.04	23.825	43.935	46.138	8.899	35.928	-1.286	-5.606	48.212	0.133	0.001	0	305.08	5.08472	44.7	11.8	39.9	2.753	0.020	0.020	0.000	0.491	0.42
324	3/12/2003	1:17:36 PM	25.702	23.466	25.34	25.019	23.784	43.968	46.19	8.897	36.037	-1.289	-5.609	48.153	0.133	0.001	0	306.08	5.10139	44.7	11.8	40.0	2.758	0.020	0.020	0.000	0.491	0.42
325	3/12/2003	1:18:36 PM	25.71	23.469	25.348	25.067	23.782	43.622	45.817	8.786	35.697	-1.286	-5.655	47.933	0.134	0.001	0	307.08	5.11806	44.3	11.7	39.7	2.734	0.020	0.020	0.000	0.499	0.42
326	3/12/2003	1:19:36 PM	25.693	23.452	25.336	25.055	23.76	43.991	46.225	8.844	35.971	-1.286	-5.687	48.095	0.133	0.001	0	308.08	5.13472	44.8	11.8	40.0	2.757	0.020	0.020	0.000	0.491	0.42
327	3/12/2003	1:20:36 PM	25.697	23.451	25.335	25.059	23.738	43.782	45.931	8.843	35.809	-1.289	-5.682	47.828	0.133	0.001	0	309.08	5.15139	44.5	11.7	39.8	2.744	0.020	0.020	0.000	0.494	0.42
328	3/12/2003	1:21:36 PM	25.696	23.439	25.328	25.047	23.742	43.846	46.01	8.87	35.733	-1.286	-5.687	48.162	0.133	0.001	0	310.08	5.16806	44.5	11.8	39.8	2.743	0.020	0.020	0.000	0.494	0.42
329	3/12/2003	1:22:36 PM	25.699	23.442	25.317	25.041	23.715	43.78	46.01	8.936	35.699	-1.284	-5.684	48.258	0.133	0.001	0	311.08	5.18472	44.5	11.8	39.7	2.740	0.020	0.020	0.000	0.495	0.42
330	3/12/2003	1:23:36 PM	25.682	23.42	25.315	25.004	23.683	43.933	46.07	8.897	35.906	-1.286	-5.676	48.063	0.133	0.001	0	312.08	5.20139	44.6	11.8	39.9	2.752	0.020	0.020	0.000	0.492	0.42
331	3/12/2003	1:24:36 PM	25.686	23.419	25.323	24.992	23.732	43.794	45.946	8.856	35.719	-1.289	-5.673	48.036	0.133	0.001	0	313.08	5.21806	44.5	11.8	39.8	2.741	0.020	0.020	0.000	0.494	0.42
332	3/12/2003	1:25:36 PM	25.686	23.424	25.318	25.042	23.802	43.8	46.003	8.854	35.754	-1.286	-5.67	47.899	0.132	0.001	0	314.08	5.23472	44.5	11.7	39.8	2.742	0.020	0.020	0.000	0.490	0.42
333	3/12/2003	1:26:36 PM	25.692	23.43	25.335	25.154	23.864	43.707	46.01	8.821	35.733	-1.284	-5.664	48.208	0.133	0.001	0	315.08	5.25139	44.5	11.8	39.7	2.739	0.020	0.020	0.000	0.495	0.42
334	3/12/2003	1:27:36 PM	25.674	23.422	25.352	25.271	23.921	43.744	45.972	8.816	35.736	-1.286	-5.661	48.099	0.132	0.001	0	316.08	5.26806	44.5	11.8	39.7	2.740	0.020	0.019	0.000	0.490	0.42
335	3/12/2003	1:28:36 PM	25.676	23.42	25.349	25.379	23.983	43.8	46.086	8.868	35.725	-1.286	-5.653	47.983	0.133	0.001	0	317.08	5.28472	44.6	11.8	39.8	2.741	0.020	0.020	0.000	0.494	0.42
336	3/12/2003	1:29:36 PM	25.675	23.433	25.327	25.512	24.052	43.939	46.212	8.906	35.83	-1.289	-5.653	48.181	0.132	0.001	0	318.08	5.30139	44.7	11.8	39.9	2.750	0.020	0.019	0.000	0.489	0.42
337	3/12/2003	1:30:36 PM	25.678	23.436	25.346	25.605	24.1	43.691	46.014	8.888	35.568	-1.289	-5.641	48.311	0.132	0.001	0	319.08	5.31806	44.5	11.8	39.6	2.732	0.020	0.019	0.000	0.492	0.42
338	3/12/2003	1:31:36 PM	25.698	23.462	25.376	25.721	24.181	43.778	45.902	8.895	35.77	-1.286	-5.629	48.04	0.132	0.001	0	320.08	5.33472	44.4	11.8	39.8	2.742	0.020	0.019	0.000	0.490	0.42
339	3/12/2003	1:32:36 PM	25.692	23.47	25.36	25.829	24.21	43.945	46.306	8.985	35.733	-1.286	-5.641	47.922	0.131	0.001	0	321.08	5.35139	44.8	11.7	39.8	2.747	0.020	0.019	0.000	0.485	0.41
340	3/12/2003	1:33:36 PM	25.69	23.489	25.333	25.888	24.228	43.674	45.952	8.858	35.648	-1.289	-5.632	47.757	0.132	0.001	0	322.08	5.36806	44.5	11.7	39.7	2.734	0.020	0.019	0.000	0.492	0.42
341	3/12/2003	1:34:36 PM	25.703	23.501	25.356	25.92	24.241	43.761	46.119	8.903	35.617	-1.286	-5.627	47.937	0.132	0.001	0	323.08	5.38472	44.6	11.7	39.7	2.736	0.020	0.019	0.000	0.491	0.42
342	3/12/2003	1:35:36 PM	25.71	23.513	25.363	25.912	24.228	43.587	45.956	8.89	35.455	-1.289	-5.627	47.832	0.132	0.001	0	324.08	5.40139	44.5	11.7	39.5	2.725	0.020	0.019	0.000	0.493	0.42
343	3/12/2003	1:36:36 PM	25.706	23.52	25.324	25.829	24.224	43.771	46.103	8.912	35.617	-1.289	-5.632	47.948	0.132	0.001	0	325.08	5.41806	44.6	11.8	39.7	2.737	0.020	0.020	0.000	0.491	0.42
344	3/12/2003	1:37:36 PM	25.727	23.536	25.329	25.804	24.184	43.916	46.235	8.888	35.895	-1.289	-5.624	47.801	0.132	0.001	0	326.08	5.43472	44.8	11.7	39.9	2.751	0.020	0.019	0.000	0.489	0.42
345	3/12/2003	1:38:36 PM	25.716	23.535	25.339	25.739	24.159	43.691	45.95	8.866	35.731	-1.289	-5.621	48.011	0.132	0.001	0	327.08	5.45139	44.5	11.8	39.7	2.738	0.020	0.019	0.000	0.491	0.42
346	3/12/2003	1:39:36 PM	25.71	23.534	25.323	25.653	24.128	43.641	45.964	8.845	35.711	-1.289	-5.627	48.088	0.132	0.001	0	328.08	5.46806	44.5	11.8	39.7	2.736	0.020	0.020	0.000	0.492	0.42
347	3/12/2003	1:40:36 PM	25.735	23.564	25.348	25.657	24.122	43.74	46.03	8.915	35.736	-1.284	-5.618	48.013	0.132	0.001	0	329.08	5.48472	44.6	11.8	39.7	2.740	0.020	0.019	0.000	0.490	0.42
348	3/12/2003	1:41:36 PM	25.718	23.552	25.336	25.596	24.116	43.848	46.219	8.931	35.734	-1.286	-5.627	47.895	0.131	0.001	0	330.08	5.50139	44.7	11.7	39.8	2.743	0.020	0.019	0.000	0.486	0.41
349	3/12/2003	1:42:36 PM	25.738	23.567	25.361	25.55	24.12	43.885	46.268	8.935	35.731	-1.289	-5.621	48.073	0.132	0.001	0	331.08	5.51806	44.8	11.8	39.8	2.745	0.020	0.019	0.000	0.489	0.42
350	3/12/2003	1:43:36 PM	25.738	23.567	25.366	25.51	24.1	43.448	45.819	8.81	35.441	-1.286	-5.621	48.009	0.131	0.001	0	332.08	5.53472	44.3	11.8	39.4	2.720	0.020	0.019	0.000	0.490	0.42
351	3/12/2003	1:44:36 PM	25.737	23.565	25.394	25.469	24.099	43.744	46.072	8.797	35.74	-1.286	-5.615	48.044	0.131	0.001	0	333.08	5.55139	44.6	11.8	39.7	2.740	0.020	0.019	0.000	0.486	0.41
352	3/12/2003	1:45:36 PM	25.695	23.559	25.448	25.457	24.123	31.707	46.161	8.899	23.522	8.512	19.069	47.958	0.002	0.001	0	334.08	5.56806	44.7	11.8	27.6	1.904	0.000	0.000	0.000	0.011	0.01
353	3/12/2003	1:46:36 PM	25.709	23.558	25.507	25.396	24.076	8.081	46.496	8.849	0.283	32.69	18.823	47.788	0.002	0.001	0	335.08	5.58472	45.0	11.7	4.2	0.288	0.000	0.000	0.000	0.070	0.06
354	3/12/2003	1:47:36 PM	25.709	23.563	25.507	25.421	24.066	5.676	46.097	8.794	-2.036	34.719	85.776	47.832	0.002	0.001	0	336.08	5.60139	44.6	11.7	1.8	0.125	0.000	0.000	0.000	0.162	0.14
355	3/12/2003	1:48:36 PM	25.397	23.556	25.475	25.435	24.025	6.159	46.256	8.754	-1.59	34.329	11.752	47.891	0.002	0.001	0	337.08	5.61806	44.8	11.7	2.3	0.158	0.000	0.000	0.000	0.129	0.11
356	3/12/2003	1:49:36 PM	25.577	23.556	25.465	25.424	24.054	38.571	46.146	8.769	30.481	1.445	1.288	48.202	0.182	0.001	0	338.08	5.63472	44.7	11.8	34.5	2.380	0.027	0.027	0.001	0.776	0.66
357	3/12/2003	1:50:36 PM	25.63	23.559	25.443	25.402	24.042	38.48	46.119	8.72	30.434	1.659	1.647	48.183	0.163	0.001	0	339.08	5.65139	44.6	11.8	34.5	2.376	0.024	0.024	0.001	0.697	0.59
358	3/12/2003	1:51:36 PM	25.669	23.553	25.416	25.411	24.026	38.629	46.146	8.831	30.384	1.384	1.407	48.122	0.184	0.001	0	340.08	5.66806	44.7	11.8	34.5	2.379	0.027	0.027	0.001	0.786	0.67
359	3/12/2003	1:52:36 PM	25.688	23.552	25.396	25.395	23.995	38.755	46.08	8.806	30.653	1.324	1.456	48.283	0.172	0.001	0	341.08	5.68472	44.6	11.8	34.7	2.393	0.026	0.025	0.001	0.731	0.62
360	3/12/2003	1:53:36 PM	25.712	23.551	25.4	25.394	23.974	43.985	45.892	8.788	36.151	-1.286	-4.625	48.069	0.199	0.001	0	342.08	5.70139	44.4	11.8	40.1	2.763	0.030	0.029	0.001	0.732	0.62
361	3/12/2003	1:54:36 PM	25.731	23.539	25.393	25.323	23.937	44.658	46.105	8.778	36.898	-1.286	-5.305	47.902	0.182	0.001	0	343.08	5.71806	44.6	11.7	40.8	2.812	0.027	0.027	0.001	0.658	0.56
362	3/12/2003	1:55:36 PM	25.734	23.533	25.367	25.311	23.931	44.455	45.809	8.69	36.698	-1.289	-5.453	47.822	0.176	0.001	0	344.08	5.73472	44.3	11.7	40.6	2.798	0.026	0.026	0.001	0.640	0.54
363	3/12/2003	1:56:36 PM	25.742	23.536	25.365	25.319	23.914	44.807	46.167	8.856	36.88	-1.286	-5.543	47.996	0.177	0.001	0	345.08	5.75139	44.7	11.8	40.8	2.816	0.026	0.026	0.001	0.640	0.54
364	3/12/2003	1:57:36 PM	25.731	23.52	25.359	25.313	23.883	44.809	46.252	8.817	36.837	-1.289	-5.632	48.053	0.173	0.001	0	346.08	5.76806	44.8	11.8	40.8	2.815	0.026	0.026	0.001	0.625	0.53
365	3/12/2003	1:58:36 PM	25.729	23.508	25.347	25.301	23.876	44.56	45.999	8.769	36.608	-1.289	-5.687	48.176	0.17	0.001	0	347.08	5.78472	44.5	11.8	40.6	2.798	0.025	0.025	0.001	0.618	0.53
366	3/12/2003	1:59:36 PM	25.723	23.506	25.33	25.3	23.834	44.819	46.063	8.834	36.843	-1.286	-5.731	48.063	0.168	0.001	0	348.08	5.80139	44.6	11.8	40.8	2.815	0.025	0.025	0.001	0.608	0.52
367	3/12/2003	2:00:36 PM	25.717	23.49	25.309	25.253	23.833	44.761	46.092	8.868	36.755	-1.292	-5.754	48	0.167	0.001	0	349.08	5.81806	44.6	11.8	40.8	2.810	0.025	0.025	0.001	0.606	0.52
368	3/12/2003	2:01:36 PM	25.72	23.489	25.338	25.212	23.852	44.751	46.043	8.832	36.87	-1.286	-5.667	47.944	0.153	0.001	0	350.08	5.83472	44.6	11.7	40.8	2.814	0.023	0.023	0.001	0.554	0.47
369	3/12/2003	2:02:36 PM	25.72	23.484	25.348	25.247	23.907	44.979	46.126	8.789	37.158	-1.289	-5.87	48.292	0.163	0.001	0	351.08	5.85139	44.7	11.8	41.1	2.832	0.024	0.024	0.001	0.586	0.50
370	3/12/2003	2:03:36 PM	25.727	23.51	25.344	25.344	23.983	45.055	46.295	8.862	37.072	-1.284	-5.876	47.881	0.163	0.001	0	352.08	5.86806	44.8	11.7	41.1	2.831	0.024	0.024	0.001	0.586	0.50
371	3/12/2003	2:04:36 PM	25.718	23.507	25.346	25.496	24.041	44.929	46.142	8.801	37.023	-1.286	-5.896	47.969	0.161	0.001	0	353.08	5.88472	44.7	11.8	41.0	2.825	0.024	0.024	0.001	0.580	0.49
372	3/12/2003	2:05:36 PM	25.722	23.5	25.354	25.589	24.109	45.006	46.322	8.875	36.984	-1.292	-5.904	47.837	0.161	0.001	0	354.08	5.90139	44.8	11.7	41.0	2.826	0.024	0.024	0.001	0.580	0.49
373	3/12/2003	2:06:36 PM	25.73	23.514	25.363	25.717	24.172	44.937	46.175	8.818	37.013	-1.289	-5.922	47.581	0.158	0.001	0	355.08	5.91806	44.7	11.7	41.0	2.825	0.024	0.023	0.001	0.569	0.48
374	3/12/2003	2:07:36 PM	25.735	23.529	25.338	25.888	24.263	44.89	46.095	8.801	37.009	-1.292	-5.919	48.38	0.159	0.001	0	356.08	5.93472	44.6	11.9	40.9	2.823	0.024	0.023	0.001	0.573	0.49
375	3/12/2003	2:08:36 PM	25.75	23.548	25.367	26.012	24.323	44.797	46.057	8.898	36.827	-1.289	-5.928	48.084	0.159	0.001	0	357.08	5.95139	44.6	11.8	40.8	2.814	0.024	0.023	0.001	0.575	0.49
376	3/12/2003	2:09:36 PM	25.749	23.563	25.377	26.102	24.362	44.759	45.948	8.799	36.935	-1.286	-5.942	48.099	0.158	0.001	0	358.08	5.96806	44.5	11.8	40.8	2.816	0.024	0.023	0.001	0.571	0.49
377	3/12/2003	2:10:36 PM	25.754	23.568	25.356	26.161	24.392	44.834	45.987	8.72	37.154	-1.292	-5.965	47.956	0.157	0.001	0	359.08	5.98472	44.5	11.8	41.0	2.826	0.023	0.023	0.001	0.565	0.48
378	3/12/2003	2:11:36 PM	25.752	23.596	25.355	26.19	24.39	45.024	46.324	8.775	37.212	-1.289	-5.962	47.893	0.157	0.001	0	360.08	6.00139	44.9	11.7	41.1	2.835	0.023	0.023	0.001	0.564	0.48
379	3/12/2003	2:12:36 PM	25.755	23.614	25.367	26.172	24.393	44.969	46.306	8.852	36.982	-1.286	-5.991	47.822	0.156	0.001	0	361.08	6.01806	44.8	11.7	41.0	2.825	0.023	0.023	0.001	0.562	0.48
380	3/12/2003	2:13:36 PM	25.777	23.636	25.375	26.15	24.385	44.699	46.078	8.836	36.753	-1.286	-6.006	47.862	0.155	0.001	0	362.08	6.03472	44.6	11.7	40.7	2.808	0.023	0.023	0.001	0.561	0.48
381	3/12/2003	2:14:36 PM	25.779	23.653	25.351	26.086	24.377	44.9	46.202	8.85	36.913	-1.289	-6	47.887	0.155	0.001	0	363.08	6.05139	44.7	11.7	40.9	2.820	0.023	0.023	0.001	0.559	0.48
382	3/12/2003	2:15:36 PM	25.784	23.653	25.356	26.056	24.352	44.792	46.13	8.878	36.837	-1.284	-6.02	47.95	0.154	0.001	0	364.08	6.06806	44.7	11.8	40.8	2.814	0.023	0.023	0.001	0.557	0.47
383	3/12/2003	2:16:36 PM	25.789	23.674	25.387	26.007	24.362	44.679	45.952	8.834	36.806	-1.286	-6.035	48.533	0.153	0.001	0	365.08	6.08472	44.5	11.9	40.7	2.809	0.023	0.023	0.001	0.554	0.47
384	3/12/2003	2:17:36 PM	25.789	23.679	25.377	25.902	24.357	44.186	45.515	9.294	35.803	-1.289	-6.075	49.131	0.151	0.001	0	366.08	6.10139	44.0	12.0	40.0	2.757	0.023	0.022	0.001	0.557	0.47
385	3/12/2003	2:18:36 PM	25.789	23.678	25.366	25.826	24.327	44.088	45.494	9.199	35.748	-1.286	-6.087	49.271	0.15	0.001	0	367.08	6.11806	44.0	12.1	39.9	2.752	0.022	0.022	0.001	0.555	0.47
386	3/12/2003	2:19:36 PM	25.778	23.667	25.341	25.73	24.301	44.188	45.615	9.175	35.903	-1.289	-6.084	48.965	0.151	0.001	0	368.08	6.13472	44.1	12.0	40.0	2.761	0.023	0.022	0.001	0.557	0.47
387	3/12/2003	2:20:36 PM	25.792	23.687	25.445	25.745	24.275	44.364	45.724	9.153	36.127	-1.289	-6.087	48.933	0.151	0.001	0	369.08	6.15139	44.3	12.0	40.2	2.775	0.023	0.022	0.001	0.552	0.47
388	3/12/2003	2:21:36 PM	25.796	23.675	25.479	25.723	24.264	44.256	45.629	9.087	36.055	-1.286	-6.101	48.938	0.149	0.001	0	370.08	6.16806	44.2	12.0	40.2	2.769	0.022	0.022	0.001	0.546	0.46
389	3/12/2003	2:22:36 PM	25.831	23.69	25.524	25.743	24.254	44.159	45.648	9.132	35.994	-1.286	-6.043	49.17	0.147	0.001	0	371.08	6.18472	44.2	12.0	40.1	2.763	0.022	0.022	0.001	0.539	0.46
390	3/12/2003	2:23:36 PM	25.89	23.684	25.512	25.737	24.227	44.366	45.848	9.159	36.049	-1.286	-6.093	49.097	0.149	0.001	0	372.08	6.20139	44.4	12.0	40.2	2.772	0.022	0.022	0.001	0.545	0.46

Figure D8-3: Dewatering of the AN-102R2, batch 4A, insoluble solids concentrations from 1.5 to 81 wt% - Raw & Calculated Data

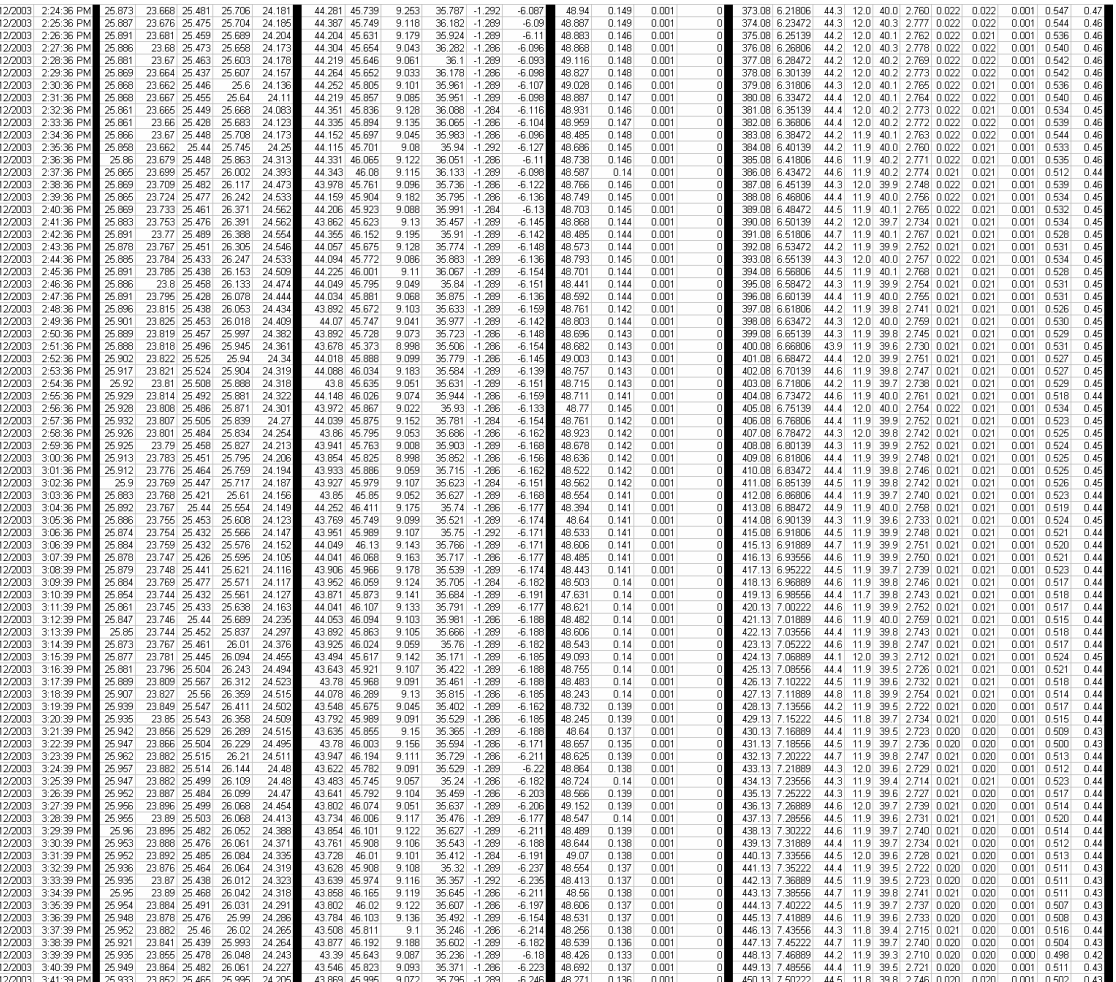


Figure D8-4: Dewatering of the AN-102R2, batch 4A, insoluble solids concentrations from 1.5 to 81 wt% - Raw & Calculated Data

521	3/12/2003	4:33:39 PM	25.99	23.88	25.548	25.992	24.303	43.809	46.262	9.145	35.576	-1.289	-6.197	48.189	0.132	0.001	0	502.13	8.36889	44.8	11.8	39.7	2.737	0.020	0.019	0.000	0.488	0.42
522	3/12/2003	4:34:39 PM	26.008	23.898	25.565	26.09	24.386	43.798	46.266	9.129	35.639	-1.286	-6.232	48.18	0.133	0.001	0	503.13	8.38556	44.8	11.8	39.7	2.738	0.020	0.020	0.000	0.491	0.42
523	3/12/2003	4:35:39 PM	25.995	23.89	25.588	26.128	24.428	43.889	46.245	9.105	35.776	-1.292	-6.18	48.243	0.13	0.001	0	504.13	8.40222	44.8	11.8	39.8	2.746	0.019	0.019	0.000	0.479	0.41
524	3/12/2003	4:36:39 PM	25.999	23.909	25.667	26.262	24.518	43.963	46.417	9.238	35.633	-1.289	-6.206	48.181	0.135	0.001	0	505.13	8.41889	44.9	11.8	39.8	2.745	0.020	0.020	0.000	0.496	0.42
525	3/12/2003	4:37:39 PM	26.019	23.924	25.702	26.381	24.572	43.763	46.208	9.143	35.439	-1.286	-6.191	48.271	0.133	0.001	0	506.13	8.43556	44.7	11.8	39.6	2.730	0.020	0.019	0.000	0.491	0.42
526	3/12/2003	4:38:39 PM	26.058	23.948	25.776	26.53	24.602	43.664	46.117	9.114	35.4	-1.289	-6.148	48.216	0.134	0.001	0	507.13	8.45222	44.6	11.8	39.5	2.726	0.020	0.020	0.000	0.494	0.42
527	3/12/2003	4:39:39 PM	26.067	23.947	25.795	26.569	24.606	43.852	46.37	9.198	35.514	-1.292	-6.148	48.434	0.133	0.001	0	508.13	8.46889	44.9	11.9	39.7	2.736	0.020	0.019	0.000	0.489	0.42
528	3/12/2003	4:40:39 PM	26.085	23.955	25.743	26.537	24.598	44.024	46.454	9.036	35.926	-1.289	-6.165	48.573	0.133	0.001	0	509.13	8.48556	45.0	11.9	40.0	2.756	0.020	0.019	0.000	0.486	0.41
529	3/12/2003	4:41:39 PM	26.102	23.957	25.695	26.519	24.6	43.593	46.022	9.056	35.42	-1.289	-6.174	48.82	0.134	0.001	0	510.13	8.50222	44.5	12.0	39.5	2.724	0.020	0.020	0.000	0.496	0.42
530	3/12/2003	4:42:39 PM	26.122	23.978	25.7	26.49	24.576	43.778	46.169	9.038	35.723	-1.289	-6.174	48.55	0.138	0.001	0	511.13	8.51889	44.7	11.9	39.8	2.741	0.021	0.020	0.001	0.508	0.43
531	3/12/2003	4:43:39 PM	26.128	23.963	25.666	26.445	24.582	43.452	45.875	9.077	35.226	-1.292	-6.13	48.271	0.13	0.001	0	512.13	8.53556	44.4	11.8	39.3	2.712	0.019	0.019	0.000	0.484	0.41
532	3/12/2003	4:44:39 PM	26.128	23.988	25.626	26.395	24.582	-2.72	0.079	1.256	-3.099	-1.289	-7.448	21.519	0.003	0.001	0	513.13	8.55222	-1.4	5.3	-2.9	-0.201	0.000	0.000	0.000	-0.151	-0.13
533	3/12/2003	4:45:39 PM	26.142	24.013	25.65	26.355	24.591	-3.466	-1.497	1.056	-3.584	-1.286	-7.972	-0.202	0.002	0.001	0	514.13	8.56889	-3.0	0.0	-3.5	-0.243	0.000	0.000	0.000	-0.083	-0.07
534	3/12/2003	4:46:39 PM	26.132	24.013	25.615	26.245	24.576	-2.778	-1.506	1.051	-2.894	-1.292	-7.908	-0.208	0.006	0.001	0	515.13	8.58556	-3.0	-0.1	-2.8	-0.196	0.001	0.001	0.000	-0.310	-0.26
535	3/12/2003	4:47:39 PM	26.141	24.031	25.324	26.168	24.586	44.21	46.32	8.895	36.202	-1.284	-7.891	47.337	0.002	0.001	0	516.13	8.60222	44.8	11.6	40.2	2.772	0.000	0.000	0.000	0.007	0.01
536	3/12/2003	4:48:39 PM	26.092	24.033	25.36	26.035	24.568	43.626	46.256	8.84	35.686	-1.286	-5.754	47.883	0.156	0.001	0	517.13	8.61889	44.8	11.7	39.7	2.734	0.023	0.023	0.001	0.581	0.49
537	3/12/2003	4:49:39 PM	26.021	24.031	25.339	25.893	24.524	44.067	46.636	9.023	35.899	-1.286	-5.852	47.803	0.153	0.001	0	518.13	8.63556	45.2	11.7	40.0	2.757	0.023	0.023	0.001	0.565	0.48
538	3/12/2003	4:50:39 PM	25.985	24.036	25.343	25.833	24.499	43.784	46.217	8.921	35.766	-1.286	-5.844	47.956	0.148	0.001	0	519.13	8.65222	44.7	11.8	39.8	2.742	0.022	0.022	0.001	0.549	0.47
539	3/12/2003	4:51:39 PM	25.949	24.024	25.327	25.816	24.437	44.036	46.49	8.949	35.951	-1.286	-5.835	47.937	0.147	0.001	0	520.13	8.66889	45.0	11.7	40.0	2.757	0.022	0.022	0.001	0.543	0.46
540	3/12/2003	4:52:39 PM	25.928	24.013	25.34	25.845	24.416	43.802	46.206	8.96	35.648	-1.289	-5.977	47.797	0.15	0.001	0	521.13	8.68556	44.7	11.7	39.7	2.739	0.022	0.022	0.001	0.558	0.47
541	3/12/2003	4:53:39 PM	25.926	24.022	25.354	25.879	24.404	43.896	46.306	9.02	35.658	-1.286	-5.974	47.922	0.15	0.001	0	522.13	8.70222	44.8	11.7	39.8	2.742	0.022	0.022	0.001	0.557	0.47
542	3/12/2003	4:54:39 PM	25.909	24.01	25.337	25.857	24.387	43.869	46.341	9.067	35.547	-1.286	-5.974	48.099	0.142	0.001	0	523.13	8.71889	44.9	11.8	39.7	2.738	0.021	0.021	0.001	0.528	0.45
543	3/12/2003	4:55:39 PM	25.907	24.008	25.36	25.89	24.36	43.8	46.237	9.014	35.521	-1.286	-5.997	47.954	0.144	0.001	0	524.13	8.73556	44.8	11.8	39.7	2.734	0.021	0.021	0.001	0.536	0.46
544	3/12/2003	4:56:39 PM	25.902	24.007	25.394	25.874	24.345	43.858	46.267	9.013	35.633	-1.286	-5.997	47.793	0.146	0.001	0	525.13	8.75222	44.8	11.7	39.7	2.740	0.022	0.022	0.001	0.542	0.46
545	3/12/2003	4:57:39 PM	25.88	23.999	25.382	25.782	24.282	44.353	46.808	9.04	36.157	-1.284	-6.017	48.126	0.143	0.001	0	526.13	8.76889	45.3	11.9	40.3	2.775	0.021	0.021	0.001	0.524	0.45
546	3/12/2003	4:58:39 PM	25.878	23.989	25.381	25.736	24.266	44.875	47.191	9.079	36.681	-1.289	-5.991	48.021	0.148	0.001	0	527.13	8.78556	45.7	11.8	40.8	2.812	0.022	0.022	0.001	0.535	0.46
547	3/12/2003	4:59:39 PM	25.856	23.977	25.389	25.693	24.239	44.6	46.879	9.134	36.448	-1.286	-6.023	48.547	0.145	0.001	0	528.13	8.80222	45.4	11.9	40.5	2.794	0.022	0.021	0.001	0.528	0.45
548	3/12/2003	5:00:39 PM	25.849	23.959	25.416	25.651	24.236	44.73	47.044	9.129	36.434	-1.286	-5.942	48.317	0.144	0.001	0	529.13	8.81889	45.6	11.8	40.6	2.798	0.021	0.021	0.001	0.523	0.44
549	3/12/2003	5:01:39 PM	25.852	23.967	25.444	25.619	24.199	44.844	47.352	9.122	36.554	-1.284	-5.988	48.296	0.141	0.001	0	530.13	8.83556	45.9	11.8	40.7	2.806	0.021	0.021	0.001	0.510	0.43
550	3/12/2003	5:02:39 PM	25.846	23.951	25.429	25.568	24.178	44.687	47.197	9.184	36.296	-1.289	-5.988	48.202	0.144	0.001	0	531.13	8.85222	45.7	11.8	40.5	2.792	0.021	0.021	0.001	0.524	0.45
551	3/12/2003	5:03:39 PM	25.851	23.951	25.444	25.528	24.136	44.645	47.044	9.227	36.235	-1.286	-5.997	48.218	0.143	0.001	0	532.13	8.86889	45.6	11.8	40.4	2.788	0.021	0.021	0.001	0.521	0.44
552	3/12/2003	5:04:39 PM	25.845	23.935	25.468	25.562	24.108	44.668	46.992	9.105	36.415	-1.286	-6.07	48.306	0.143	0.001	0	533.13	8.88556	45.5	11.8	40.5	2.795	0.021	0.021	0.001	0.519	0.44
553	3/12/2003	5:05:39 PM	25.866	23.936	25.498	25.547	24.108	44.869	47.299	9.192	36.421	-1.286	-6.078	48.311	0.143	0.001	0	534.13	8.90222	45.8	11.8	40.6	2.802	0.021	0.021	0.001	0.517	0.44
554	3/12/2003	5:06:39 PM	25.839	23.909	25.462	25.471	24.076	44.681	47.154	9.129	36.395	-1.284	-6.07	48.434	0.14	0.001	0	535.13	8.91889	45.7	11.9	40.5	2.795	0.021	0.021	0.001	0.508	0.43
555	3/12/2003	5:07:39 PM	25.817	23.882	25.445	25.319	24.049	44.848	47.265	9.124	36.698	-1.286	-6.104	48.426	0.142	0.001	0	536.13	8.93556	45.8	11.9	40.8	2.811	0.021	0.021	0.001	0.513	0.44
556	3/12/2003	5:08:39 PM	25.825	23.885	25.478	25.352	24.032	44.857	47.114	9.157	36.622	-1.289	-6.116	48.246	0.142	0.001	0	537.13	8.95222	45.6	11.8	40.7	2.809	0.021	0.021	0.001	0.513	0.44
557	3/12/2003	5:09:01 PM	25.834	23.879	25.481	25.345	24.036	44.697	47.038	9.227	36.303	-1.286	-6.116	48.388	0.143	0.001	0	537.50	8.95833	45.6	11.9	40.5	2.792	0.021	0.021	0.001	0.519	0.44
558	3/12/2003	5:10:01 PM	25.851	23.876	25.474	25.428	24.038	44.697	47.056	9.129	36.368	-1.286	-6.133	48.405	0.142	0.001	0	538.50	8.975	45.6	11.9	40.5	2.794	0.021	0.021	0.001	0.516	0.44
559	3/12/2003	5:11:01 PM	25.899	23.869	25.507	25.481	24.011	27.492	47.321	9.136	19.315	13.764	13.492	47.975	0.002	0.001	0	539.50	8.99167	45.8	11.8	23.4	1.614	0.000	0.000	0.000	0.013	0.01
560	3/12/2003	5:12:01 PM	25.876	23.866	25.534	25.473	23.998	6.505	47.069	9.098	-1.782	34.916	19.674	48.172	0.002	0.001	0	540.50	9.00833	45.6	11.8	2.4	0.163	0.000	0.000	0.000	0.124	0.11
561	3/12/2003	5:13:01 PM	25.869	23.849	25.521	25.491	23.981	5.993	47.222	9.158	-2.488	36.503	19.724	48.199	0.002	0.001	0	541.50	9.025	45.7	11.8	1.8	0.121	0.000	0.000	0.000	0.168	0.14
562	3/12/2003	5:14:01 PM	25.866	23.836	25.514	25.488	23.963	6.173	47.433	9.194	-2.396	36.468	70.473	48.348	0.002	0.001	0	542.50	9.04167	46.0	11.8	1.9	0.130	0.000	0.000	0.000	0.156	0.13
563	3/12/2003	5:15:01 PM	25.869	23.829	25.542	25.476	23.951	6.082	47.249	9.045	-2.259	36.396	87.076	48.105	0.002	0.001	0	543.50	9.05833	45.8	11.8	1.9	0.131	0.000	0.000	0.000	0.154	0.13
564	3/12/2003	5:16:01 PM	25.436	23.816	25.559	25.479	23.933	5.898	47.102	9.054	-2.407	36.523	53.45	48.097	0.002	0.001	0	544.50	9.075	45.6	11.8	1.7	0.120	0.000	0.000	0.000	0.168	0.14
565	3/12/2003	5:17:01 PM	25.564	23.799	25.527	25.466	23.961	35.267	46.713	9.173	26.824	5.705	1.317	48.384	0.353	0.001	0	545.50	9.09167	45.2	11.9	31.0	2.140	0.053	0.052	0.002	1.670	1.42
566	3/12/2003	5:18:01 PM	25.657	23.802	25.54	25.449	24.004	39.385	47.061	9.164	30.892	1.639	1.508	48.327	0.142	0.001	0	546.50	9.10833	45.6	11.8	35.1	2.423	0.021	0.021	0.001	0.593	0.51
567	3/12/2003	5:19:01 PM	25.737	23.802	25.58	25.54	24.07	39.215	47.027	9.161	30.712	1.711	1.528	48.218	0.14	0.001	0	547.50	9.125	45.6	11.8	35.0	2.411	0.021	0.021	0.001	0.587	0.50
568	3/12/2003	5:20:01 PM	25.788	23.813	25.601	25.655	24.115	39.169	46.86	9.03	30.929	1.662	1.618	48.375	0.132	0.001	0	548.50	9.14167	45.4	11.9	35.0	2.417	0.020	0.019	0.001	0.562	0.47
569	3/12/2003	5:21:01 PM	25.825	23.815	25.593	25.782	24.173	39.463	47.145	9.151	31.007	1.659	1.488	48.233	0.16	0.001	0	549.50	9.15833	45.7	11.8	35.2	2.429	0.024	0.023	0.001	0.666	0.57
570	3/12/2003	5:22:01 PM	25.848	23.823	25.611	25.916	24.241	44.84	47.261	9.201	36.448	-1.286	-4.379	48.191	0.188	0.001	0	550.50	9.175	45.8	11.8	40.6	2.802	0.028	0.028	0.001	0.678	0.58
571	3/12/2003	5:23:01 PM	25.877	23.837	25.635	25.994	24.3	45.778	47.224	9.175	37.48	-1.286	-5.526	48.116	0.159	0.001	0	551.50	9.19167	45.8	11.8	41.6	2.870	0.024	0.023	0.001	0.569	0.48
572	3/12/2003	5:24:01 PM	25.915	23.86	25.658	26.117	24.368	45.613	46.829	9.101	37.529	-1.286	-5.647	48.204	0.156	0.001	0	552.50	9.20833	45.4	11.8	41.6	2.866	0.023	0.023	0.001	0.549	0.47
573	3/12/2003	5:25:01 PM	25.939	23.864	25.637	26.196	24.427	45.896	47.038	9.198	37.623	-1.286	-5.951	48.21	0.154	0.001	0	553.50	9.225	45.6	11.8	41.8	2.879	0.023	0.023	0.001	0.540	0.46
574	3/12/2003	5:26:01 PM	25.967	23.867	25.65	26.23	24.435	45.954	47.092	9.125	37.844	-1.289	-5.994	48.489	0.152	0.001	0	554.50	9.24167	45.6	11.9	41.9	2.889	0.023	0.022	0.001	0.531	0.45
575	3/12/2003	5:27:01 PM	25.99	23.885	25.693	26.212	24.433	45.936	47.162	9.148	37.807	-1.284	-6.046	48.264	0.15	0.001	0	555.50	9.25833	45.7	11.8	41.9	2.887	0.022	0.022	0.001	0.524	0.45
576	3/12/2003	5:28:01 PM	26.001	23.886	25.724	26.114	24.414	45.685	46.92	9.093	37.58	-1.286	-5.98	48.17	0.144	0.001	0	556.50	9.275	45.4	11.8	41.6	2.870	0.021	0.021	0.001	0.505	0.43
577	3/12/2003	5:29:01 PM	26.018	23.893	25.75	26.015	24.396	45.921	47.15	9.158	37.654	-1.289	-6.081	48.287	0.149	0.001	0	557.50	9.29167	45.7	11.8	41.8	2.881	0.022	0.022	0.001	0.521	0.44
578	3/12/2003	5:30:01 PM	26.038	23.888	25.776	25.946	24.386	45.186	46.486	9.43	36.692	-1.289	-6.122	49.626	0.146	0.001	0	558.50	9.30833	45.0	12.2	40.9	2.823	0.022	0.021	0.001	0.520	0.44
579	3/12/2003	5:31:01 PM	26.063	23.903	25.771	25.866	24.341	44.973	46.181	9.405	36.526	-1.284	-6.133	49.544	0.146	0.001	0	559.50	9.325	44.7	12.1	40.7	2.810	0.022	0.021	0.001	0.523	0.44
580	3/12/2003	5:32:01 PM	26.078	23.903	25.74	25.81	24.295	45.412	46.678	9.445	36.925	-1.286	-6.154	49.16	0.145	0.001	0	560.50	9.34167	45.2	12.0	41.2	2.838	0.022	0.021	0.001	0.514	0.44
581	3/12/2003	5:33:01 PM	26.077	23.897	25.725	25.754	24.26	45.484	46.845	9.434	36.952	-1.289	-6.148	49.561	0.145	0.001	0	561.50	9.35833	45.4	12.1	41.2	2.842	0.022	0.021	0.001	0.514	0.44
582	3/12/2003	5:34:01 PM	26.09	23.9	25.738	25.727	24.278	45.383	46.576	9.399	37.003	-1.286	-6.165	49.236	0.144	0.001	0	562.50	9.375	45.1	12.1	41.2	2.840	0.021	0.021	0.001	0.510	0.43
583	3/12/2003	5:35:01 PM	26.098	23.903	25.731	25.665	24.246	45.153	46.444	9.395	36.741	-1.286	-6.174	49.007	0.143	0.001	0	563.50	9.39167	45.0	12.0	40.9	2.823	0.021	0.021	0.001	0.510	0.43
584	3/12/2003	5:36:01 PM	26.08	23.88	25.673	25.622	24.213	45.397	46.692	9.355	36.964	-1.286	-6.182	49.43	0.143	0.001	0	564.50	9.40833	45.2	12.1	41.2	2.839	0.021	0.021	0.001	0.508	0.43
585	3/12/2003	5:37:01 PM	26.103	23.893	25.706	25.615	24.186	45.2	46.554	9.418	36.73	-1.284	-6.159	49.468	0.138	0.001	0	565.50	9.425	45.1	12.1	41.0	2.824	0.021	0.020	0.000	0.492	0.42
586	3/12/2003	5:38:01 PM	26.101	23.881	25.714	25.568	24.179	45.29	46.81	9.499	36.733	-1.286	-6.156	49.491	0.138	0.001	0	566.50	9.44167	45.3	12.1	41.0	2.828	0.021	0.020	0.000	0.492	0.42
587	3/12/2003	5:39:01 PM	26.099	23.874	25.697	25.536	24.132	45.393	46.721	9.405	36.866	-1.284	-6.197	49.38	0.142	0.001	0	567.50	9.45833	45.2	12.1	41.1	2.836	0.021	0.021	0.001	0.505	0.43
588	3/12/2003	5:40:01 PM	26.097	23.862	25.675	25.504	24.115	44.983	46.425	9.36	36.468	-1.286	-6.211	49.359	0.141	0.001	0	568.50	9.475	45.0	12.1	40.7	2.808	0.021	0.021	0.001	0.506	0.43
589	3/12/2003	5:41:01 PM	26.095	23.855	25.688	25.467	24.127	45.186	46.483	9.411	36.751	-1.286	-6.217	49.378	0.141	0.001	0	569.50	9.49167	45.2	12.0	41.0	2.826	0.021	0.021	0.001	0.503	0.43
590	3/12/2003	5:42:01 PM	26.077	23.837	25.634	25.434	24.099	45.283	46.637	9.408	36.913	-1.289	-6.229	49.321	0.14	0.001	0	570.50	9.50833	45.2	12.1	41.1	2.834	0.021	0.020	0.000	0.498	0.42
591	3/12/2003	5:43:01 PM	26.09	23.845	25.698	25.427	24.062	45.333	46.874	9.391	36.798	-1.284	-6.217	49.414	0.14	0.001	0	571.50	9.525	45.4	12.1	41.1	2.831	0.021	0.020	0.000	0.498	0.42
592	3/12/2003	5:44:01 PM	26.068	23.822	25.665	25.369	24.06	45.155	46.686	9.371	36.714	-1.286	-6.237	49.254	0.139	0.001	0	572.50	9.54167	45.2	12.1	40.9	2.822	0.021	0.020	0.000	0.497	0.42
593	3/12/2003	5:45:01 PM	26.073	23.827	25.7	25.415	24.11	45.134	46.612	9.412	36.624	-1.286	-6.211	49.158	0.14	0.001	0	573.50	9.55833	45.1	12.0	40.9	2.818	0.021	0.020	0.001	0.501	0.43
594	3/12/2003	5:46:01 PM	26.083	23.832	25.725	25.475	24.15	45.265	46.785	9.386	36.804	-1.286	-6.237	49.051	0.139	0.001	0	574.50	9.575	45.3	12.0	41.0	2.830	0.021	0.020	0.000	0.495	0.42
595	3/12/2003	5:47:01 PM	26.078	23.823	25.701	25.57	24.211	45.087	46.727	9.35	36.569	-1.286	-6.243	49.03	0.139	0.001	0	575.50	9.59167	45.3	12.0	40.8	2.815	0.021	0.020	0.000	0.498	0.42
596	3/12/2003	5:48:01 PM	26.06	23.814	25.697	25.652	24.262	45.055	46.589	9.36	36.622	-1.289	-6.214	48.992	0.138	0.001	0	576.50	9.60833	45.1	12.0	40.8	2.816	0.021	0.020	0.000	0.494	0.42
597	3/12/2003	5:49:01 PM	26.068	23.823	25.721	25.74	24.336	45.364	46.972	9.43	36.827	-1.286	-6.237	49.036	0.139	0.001	0	577.50	9.625	45.5	12.0	41.1	2.833	0.021	0.020	0.000	0.494	0.42
598	3/12/2003	5:50:01 PM	26.066	23.831	25.734	25.838	24.384	45.136	46.864	9.367	36.695	-1.286	-6.243	48.906	0.138	0.001	0	578.50	9.64167	45.4	12.0	40.9	2.820	0.021	0.020	0.000	0.493	0.42
599	3/12/2003	5:51:01 PM	26.08	23.85	25.733	25.962	24.436	45.397	47.11	9.3	37.07	-1.284	-6.223	48.936	0.14	0.001	0	579.50	9.65833	45.6	12.0	41.2	2.843	0.021	0.020	0.000	0.496	0.42
600	3/12/2003	5:52:01 PM	26.079	23.864	25.737	26.041	24.507	44.933	46.574	9.441	36.37	-1.284	-6.246	49.477	0.138	0.001	0	580.50	9.675	45.1	12.1	40.7	2.803	0.021	0.020	0.000	0.496	0.42
601	3/12/2003	5:53:01 PM	26.083	23.868	25.751	26.1	24.526	45.209	46.798	9.277	36.862	-1.286	-6.261	48.749	0.138	0.001	0	581.50	9.69167	45.3	11.9	41.0	2.829	0.021	0.020	0.000	0.491	0.42
602	3/12/2003	5:54:01 PM	26.086	23.876	25.724	26.114	24.535	45.016	46.566	9.232	36.769	-1.286	-6.243	48.604	0.137	0.001	0	582.50	9.70833	45.1	11.9	40.9	2.819	0.020	0.020	0.000	0.489	0.42
603	3/12/2003	5:55:01 PM	26.084	23.889	25.712	26.061	24.497	45.072	46.709	9.381	36.616	-1.289	-6.264	48.839	0.137	0.001	0	583.50	9.725	45.2	12.0	40.8	2.816	0.020	0.020	0.000	0.490	0.42
604	3/12/2003	5:56:01 PM	26.095	23.9	25.732	25.997	24.483	45.128	46.757	9.379	36.604	-1.286	-6.261	48.946	0.138	0.001	0	584.50	9.74167	45.3	12.0	40.9	2.818	0.021	0.020	0.000	0.493	0.42
605	3/12/2003	5:57:01 PM	26.101	23.906	25.734	25.913	24.489	45.147	46.893	9.408	36.636	-1.286	-6.249	48.931	0.138	0.001	0	585.50	9.75833	45.4	12.0	40.9	2.819	0.021	0.020	0.000	0.493	0.42
606	3/12/2003	5:58:01 PM	26.095	23.905	25.707	25.822	24.453	45.049	46.707	9.326	36.671	-1.286	-6.258	48.789	0.137	0.001	0	586.50	9.775	45.2	12.0	40.9	2.817	0.020	0.020	0.000	0.490	0.42
607	3/12/2003	5:59:01 PM	26.105	23.902	25.712	25.767	24.403	45.084	46.771	9.36	36.634	-1.286	-6.264	48.969	0.137	0.001	0	587.50	9.79167	45.3	12.0	40.8	2.816	0.020	0.020	0.000	0.490	0.42
608	3/12/2003	6:00:01 PM	26.098	23.903	25.735	25.63	24.376	45.103	46.852	9.384	36.497	-1.286	-6.246	48.948	0.138	0.001	0	588.50	9.80833	45.4	12.0	40.8	2.813	0.021	0.020	0.000	0.494

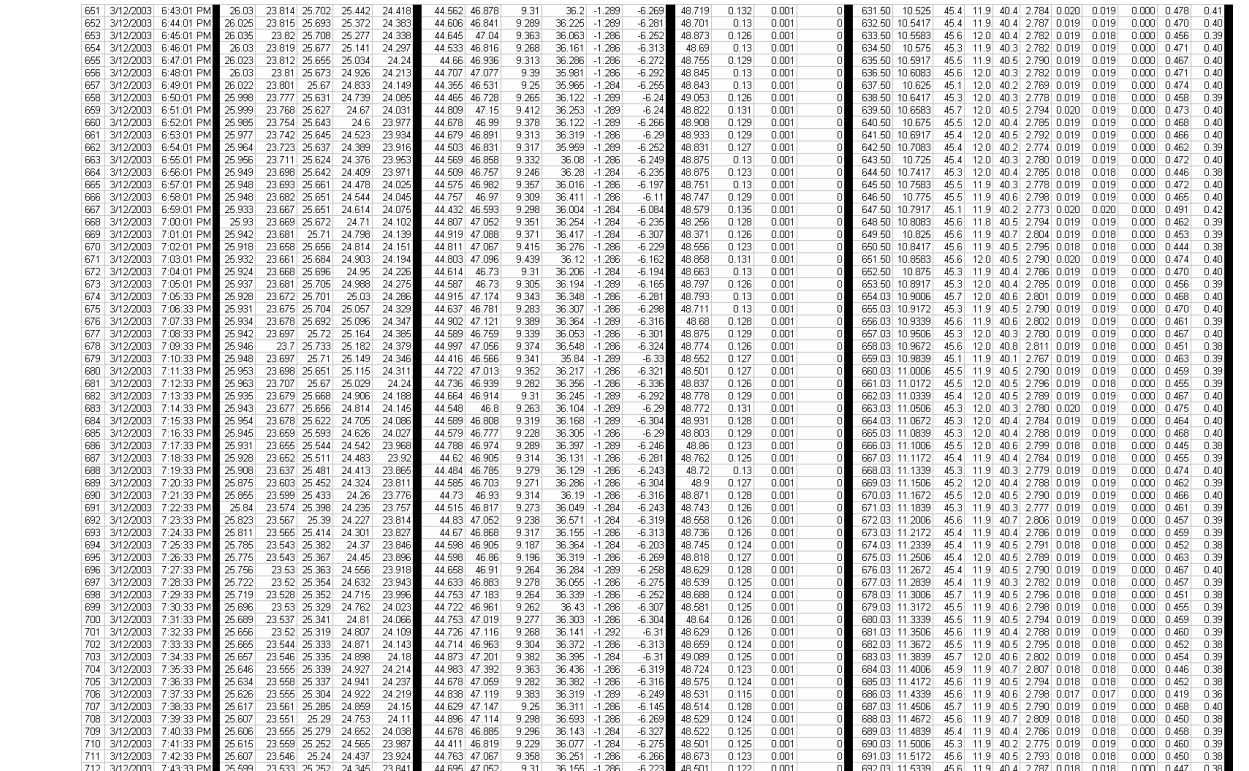


Figure D8-6: Dewatering of the AN-102R2, batch 4A, insoluble solids concentrations from 1.5 to 81 wt% - Raw & Calculated Data

781	3/12/2003	8:52:33 PM	25.418	23.131	25.201	23.767	23.494	44.788	47.147	9.339	36.428	-1.286	-6.316	48.38	0.119	0.001	0	761.03	12.6839	45.7	11.9	40.6	2.800	0.018	0.018	0.000	0.434	0.37
782	3/12/2003	8:53:33 PM	25.413	23.126	25.221	23.827	23.514	44.548	47.059	9.363	36.065	-1.286	-6.321	48.107	0.119	0.001	0	762.03	12.7006	45.6	11.8	40.3	2.779	0.018	0.018	0.000	0.437	0.37
783	3/12/2003	8:54:33 PM	25.414	23.121	25.247	23.888	23.54	44.674	47.145	9.368	36.137	-1.284	-6.316	48.283	0.119	0.001	0	763.03	12.7172	45.7	11.8	40.4	2.786	0.018	0.018	0.000	0.436	0.37
784	3/12/2003	8:55:33 PM	25.41	23.117	25.252	23.954	23.555	44.625	47.069	9.416	36.045	-1.284	-6.304	48.294	0.119	0.001	0	764.03	12.7339	45.6	11.8	40.3	2.781	0.018	0.018	0.000	0.437	0.37
785	3/12/2003	8:56:33 PM	25.417	23.119	25.25	24.041	23.598	44.656	47.125	9.377	36.086	-1.289	-6.313	48.027	0.12	0.001	0	765.03	12.7506	45.7	11.8	40.4	2.783	0.018	0.018	0.000	0.440	0.37
786	3/12/2003	8:57:33 PM	25.414	23.111	25.247	24.083	23.605	44.944	47.478	9.404	36.458	-1.289	-6.307	48.092	0.119	0.001	0	766.03	12.7672	46.0	11.8	40.7	2.806	0.018	0.018	0.000	0.433	0.37
787	3/12/2003	8:58:33 PM	25.418	23.12	25.291	24.137	23.669	44.751	47.253	9.435	36.149	-1.286	-6.301	48.338	0.118	0.001	0	767.03	12.7839	45.8	11.8	40.5	2.789	0.018	0.017	0.000	0.431	0.37
788	3/12/2003	8:59:33 PM	25.417	23.119	25.279	24.196	23.683	44.416	47.007	9.413	35.84	-1.289	-6.298	48.225	0.118	0.001	0	768.03	12.8006	45.5	11.8	40.1	2.767	0.018	0.017	0.000	0.435	0.37
789	3/12/2003	9:00:33 PM	25.42	23.112	25.338	24.205	23.716	44.565	47.056	9.343	36.08	-1.289	-6.295	48.346	0.119	0.001	0	769.03	12.8172	45.6	11.8	40.3	2.780	0.018	0.018	0.000	0.436	0.37
790	3/12/2003	9:01:33 PM	25.434	23.131	25.436	24.264	23.755	44.513	47.112	9.282	36.055	-1.286	-6.272	48.386	0.117	0.001	0	770.03	12.8339	45.6	11.9	40.3	2.777	0.017	0.017	0.000	0.428	0.36
791	3/12/2003	9:02:33 PM	25.446	23.128	25.474	24.286	23.773	44.171	46.694	9.257	35.721	-1.286	-6.284	48.566	0.119	0.001	0	771.03	12.8506	45.2	11.9	39.9	2.754	0.018	0.018	0.000	0.438	0.37
792	3/12/2003	9:03:33 PM	25.479	23.137	25.507	24.345	23.776	44.562	47.178	9.303	36.159	-1.286	-6.266	48.713	0.118	0.001	0	772.03	12.8672	45.7	11.9	40.4	2.783	0.018	0.017	0.000	0.430	0.37
793	3/12/2003	9:04:33 PM	25.498	23.14	25.486	24.333	23.794	44.486	47.222	9.221	35.987	-1.289	-6.284	48.894	0.117	0.001	0	773.03	12.8839	45.7	12.0	40.2	2.774	0.017	0.017	0.000	0.428	0.36
794	3/12/2003	9:05:24 PM	25.515	23.142	25.463	24.395	23.827	44.384	47.005	9.161	36.143	-1.289	-6.269	48.612	0.117	0.001	0	773.88	12.8981	45.5	11.9	40.3	2.776	0.017	0.017	0.000	0.428	0.36
795	3/12/2003	9:06:24 PM	25.534	23.151	25.462	24.389	23.841	44.289	46.862	9.268	35.875	-1.286	-6.264	48.464	0.117	0.001	0	774.88	12.9147	45.4	11.9	40.1	2.764	0.017	0.017	0.000	0.430	0.37
796	3/12/2003	9:07:24 PM	25.548	23.165	25.416	24.423	23.88	44.248	46.998	9.309	35.674	-1.289	-6.264	48.713	0.12	0.001	0	775.88	12.9314	45.5	11.9	40.0	2.755	0.018	0.018	0.000	0.443	0.38
797	3/12/2003	9:08:24 PM	25.547	23.179	25.395	24.462	23.909	44.386	47.021	9.224	36.061	-1.289	-6.313	48.69	0.117	0.001	0	776.88	12.9481	45.5	11.9	40.2	2.773	0.017	0.017	0.000	0.429	0.36
798	3/12/2003	9:09:24 PM	25.545	23.187	25.388	24.461	23.942	44.14	46.75	9.348	35.785	-1.289	-6.327	49.026	0.118	0.001	0	777.88	12.9647	45.3	12.0	40.0	2.755	0.018	0.017	0.000	0.435	0.37
799	3/12/2003	9:10:24 PM	25.537	23.184	25.38	24.437	23.964	44.155	46.742	9.374	35.637	-1.284	-6.31	49.072	0.118	0.001	0	778.88	12.9814	45.3	12.0	39.9	2.751	0.018	0.017	0.000	0.436	0.37
800	3/12/2003	9:11:24 PM	25.524	23.181	25.327	24.409	23.956	44.016	46.68	9.365	35.445	-1.292	-6.327	48.961	0.116	0.001	0	779.88	12.9981	45.2	12.0	39.7	2.739	0.017	0.017	0.000	0.431	0.37
801	3/12/2003	9:12:24 PM	25.53	23.192	25.302	24.42	23.937	44.13	46.87	9.315	35.627	-1.286	-6.229	48.686	0.113	0.001	0	780.88	13.0147	45.4	11.9	39.9	2.749	0.017	0.017	0.000	0.419	0.36
802	3/12/2003	9:13:24 PM	25.523	23.196	25.306	24.343	23.865	44.248	46.841	9.352	35.709	-1.284	-6.266	48.573	0.121	0.001	0	781.88	13.0314	45.4	11.9	40.0	2.756	0.018	0.018	0.000	0.447	0.38
803	3/12/2003	9:14:24 PM	25.521	23.194	25.279	24.256	23.808	44.389	47.063	9.365	35.865	-1.286	-6.31	48.766	0.118	0.001	0	782.88	13.0481	45.6	12.0	40.1	2.767	0.018	0.017	0.000	0.435	0.37
804	3/12/2003	9:15:24 PM	25.514	23.196	25.252	24.153	23.755	44.184	46.777	9.308	35.74	-1.286	-6.272	48.707	0.112	0.001	0	783.88	13.0647	45.3	11.9	40.0	2.755	0.017	0.017	0.000	0.415	0.35
805	3/12/2003	9:16:24 PM	25.499	23.182	25.217	24.008	23.675	44.368	46.957	9.231	36.069	-1.286	-6.31	48.717	0.117	0.001	0	784.88	13.0814	45.5	11.9	40.2	2.773	0.017	0.017	0.000	0.431	0.37
806	3/12/2003	9:17:24 PM	25.505	23.188	25.238	23.909	23.631	44.54	47.063	9.339	36.151	-1.286	-6.298	48.684	0.119	0.001	0	785.88	13.0981	45.6	11.9	40.3	2.782	0.018	0.018	0.000	0.437	0.37
807	3/12/2003	9:18:24 PM	25.495	23.172	25.212	23.808	23.57	44.428	47.087	9.378	35.803	-1.284	-6.339	48.684	0.117	0.001	0	786.88	13.1147	45.6	11.9	40.1	2.766	0.017	0.017	0.000	0.432	0.37
808	3/12/2003	9:19:24 PM	25.479	23.161	25.186	23.722	23.499	44.478	47.294	9.365	35.854	-1.284	-6.347	48.545	0.117	0.001	0	787.88	13.1314	45.8	11.9	40.2	2.769	0.017	0.017	0.000	0.432	0.37
809	3/12/2003	9:20:24 PM	25.474	23.151	25.181	23.641	23.449	44.241	46.876	9.353	35.858	-1.286	-6.292	49.024	0.116	0.001	0	788.88	13.1481	45.4	12.0	40.0	2.761	0.017	0.017	0.000	0.430	0.37
810	3/12/2003	9:21:24 PM	25.458	23.13	25.186	23.575	23.423	44.291	46.938	9.279	35.891	-1.286	-6.307	48.648	0.116	0.001	0	789.88	13.1647	45.5	11.9	40.1	2.764	0.017	0.017	0.000	0.429	0.37
811	3/12/2003	9:22:24 PM	25.453	23.121	25.171	23.551	23.439	44.341	46.945	9.333	35.797	-1.286	-6.347	48.612	0.117	0.001	0	790.88	13.1814	45.5	11.9	40.1	2.763	0.017	0.017	0.000	0.433	0.37
812	3/12/2003	9:23:24 PM	25.445	23.107	25.157	23.607	23.47	44.277	46.85	9.291	35.824	-1.286	-6.287	48.246	0.117	0.001	0	791.88	13.1981	45.4	11.8	40.1	2.761	0.017	0.017	0.000	0.434	0.37
813	3/12/2003	9:24:24 PM	25.442	23.099	25.18	23.675	23.488	44.413	47.096	9.279	35.977	-1.284	-6.31	48.631	0.118	0.001	0	792.88	13.2147	45.6	11.9	40.2	2.771	0.018	0.018	0.000	0.435	0.37
814	3/12/2003	9:25:24 PM	25.43	23.092	25.203	23.743	23.541	44.353	47.027	9.31	35.942	-1.286	-6.307	48.289	0.117	0.001	0	793.88	13.2314	45.6	11.8	40.1	2.768	0.017	0.017	0.000	0.432	0.37
815	3/12/2003	9:26:24 PM	25.418	23.085	25.196	23.767	23.544	44.583	47.238	9.303	36.049	-1.286	-6.319	48.348	0.114	0.001	0	794.88	13.2481	45.8	11.8	40.3	2.780	0.017	0.017	0.000	0.419	0.36
816	3/12/2003	9:27:24 PM	25.408	23.075	25.176	23.807	23.569	44.434	46.959	9.185	36.118	-1.289	-6.31	48.717	0.119	0.001	0	795.88	13.2647	45.5	11.9	40.3	2.777	0.018	0.018	0.000	0.438	0.37
817	3/12/2003	9:28:24 PM	25.425	23.092	25.222	23.934	23.605	44.063	46.692	9.27	35.736	-1.284	-6.284	48.317	0.115	0.001	0	796.88	13.2814	45.2	11.8	39.9	2.751	0.017	0.017	0.000	0.427	0.36
818	3/12/2003	9:29:24 PM	25.406	23.083	25.218	23.965	23.627	44.482	47.152	9.465	35.865	-1.289	-6.353	48.569	0.117	0.001	0	797.88	13.2981	45.7	11.9	40.2	2.770	0.017	0.017	0.000	0.432	0.37
819	3/12/2003	9:30:24 PM	25.393	23.075	25.215	24.002	23.654	44.215	47.013	9.294	35.727	-1.286	-6.316	48.466	0.113	0.001	0	798.88	13.3147	45.5	11.9	40.0	2.756	0.017	0.017	0.000	0.419	0.36
820	3/12/2003	9:31:24 PM	25.386	23.078	25.204	24.09	23.662	44.575	47.212	9.285	36.235	-1.286	-6.327	48.787	0.119	0.001	0	799.88	13.3314	45.7	12.0	40.4	2.786	0.018	0.018	0.000	0.437	0.37
821	3/12/2003	9:32:24 PM	25.389	23.076	25.222	24.083	23.68	44.401	46.992	9.31	35.987	-1.286	-6.324	48.417	0.117	0.001	0	800.88	13.3481	45.5	11.9	40.2	2.771	0.017	0.017	0.000	0.431	0.37
822	3/12/2003	9:33:24 PM	25.382	23.079	25.24	24.087	23.714	44.463	47.162	9.358	35.869	-1.286	-6.319	48.568	0.116	0.001	0	801.88	13.3647	45.7	11.9	40.2	2.769	0.017	0.017	0.000	0.428	0.36
823	3/12/2003	9:34:24 PM	25.38	23.082	25.213	24.145	23.737	43.983	46.579	9.278	35.496	-1.286	-6.356	48.35	0.118	0.001	0	802.88	13.3814	45.1	11.8	39.7	2.740	0.018	0.017	0.000	0.440	0.37
824	3/12/2003	9:35:24 PM	25.389	23.091	25.221	24.239	23.75	44.376	46.883	9.333	35.951	-1.284	-6.35	48.386	0.119	0.001	0	803.88	13.3981	45.4	11.9	40.2	2.769	0.018	0.018	0.000	0.439	0.37
825	3/12/2003	9:36:24 PM	25.396	23.093	25.249	24.296	23.768	44.453	47.056	9.311	36.037	-1.284	-6.336	48.321	0.116	0.001	0	804.88	13.4147	45.6	11.8	40.2	2.775	0.017	0.017	0.000	0.427	0.36
826	3/12/2003	9:37:24 PM	25.379	23.086	25.227	24.269	23.776	44.718	47.468	9.298	36.202	-1.289	-6.295	48.485	0.114	0.001	0	805.88	13.4314	46.0	11.9	40.5	2.790	0.017	0.017	0.000	0.417	0.36
827	3/12/2003	9:38:24 PM	25.392	23.115	25.235	24.318	23.804	44.573	47.085	9.337	36.151	-1.286	-6.31	48.655	0.113	0.001	0	806.88	13.4481	45.6	11.9	40.4	2.783	0.017	0.017	0.000	0.415	0.35
828	3/12/2003	9:39:24 PM	25.386	23.108	25.219	24.301	23.838	44.594	47.272	9.466	36.028	-1.289	-6.336	48.743	0.117	0.001	0	807.88	13.4647	45.8	11.9	40.3	2.779	0.017	0.017	0.000	0.430	0.37
829	3/12/2003	9:40:24 PM	25.394	23.116	25.247	24.324	23.856	44.366	47.088	9.439	35.617	-1.289	-6.35	48.468	0.115	0.001	0	808.88	13.4814	45.6	11.9	40.0	2.757	0.017	0.017	0.000	0.426	0.36
830	3/12/2003	9:41:24 PM	25.376	23.114	25.219	24.297	23.853	44.318	46.91	9.403	35.738	-1.292	-6.342	48.784	0.112	0.001	0	809.88	13.4981	45.4	12.0	40.0	2.760	0.017	0.017	0.000	0.415	0.35
831	3/12/2003	9:42:24 PM	25.394	23.131	25.232	24.369	23.871	44.113	46.67	9.403	35.611	-1.286	-6.327	48.439	0.12	0.001	0	810.88	13.5147	45.2	11.9	39.9	2.748	0.018	0.018	0.000	0.446	0.38
832	3/12/2003	9:43:24 PM	25.402	23.134	25.235	24.372	23.889	44.476	47.168	9.413	35.791	-1.289	-6.356	48.449	0.114	0.001	0	811.88	13.5314	45.7	11.9	40.1	2.767	0.017	0.017	0.000	0.421	0.36
833	3/12/2003	9:44:24 PM	25.409	23.152	25.257	24.385	23.921	44.56	47.325	9.295	36.143	-1.284	-6.24	48.325	0.115	0.001	0	812.88	13.5481	45.9	11.8	40.4	2.782	0.017	0.017	0.000	0.422	0.36
834	3/12/2003	9:45:24 PM	25.401	23.143	25.213	24.371	23.948	44.474	47.16	9.326	36.026	-1.292	-6.275	48.707	0.115	0.001	0	813.88	13.5647	45.7	11.9	40.3	2.775	0.017	0.017	0.000	0.423	0.36
835	3/12/2003	9:46:24 PM	25.413	23.156	25.231	24.439	23.955	44.608	47.245	9.464	35.973	-1.286	-6.319	48.506	0.117	0.001	0	814.88	13.5814	45.8	11.9	40.3	2.778	0.017	0.017	0.000	0.430	0.37
836	3/12/2003	9:47:24 PM	25.416	23.168	25.259	24.381	23.978	44.295	46.984	9.364	35.717	-1.284	-6.321	48.353	0.118	0.001	0	815.88	13.5981	45.5	11.8	40.0	2.758	0.018	0.017	0.000	0.437	0.37
837	3/12/2003	9:48:24 PM	25.411	23.163	25.239	24.416	23.958	44.467	47.017	9.311	36.1	-1.286	-6.333	48.464	0.119	0.001	0	816.88	13.6147	45.5	11.9	40.3	2.777	0.018	0.018	0.000	0.437	0.37
838	3/12/2003	9:49:24 PM	25.416	23.163	25.219	24.371	23.908	44.562	47.255	9.431	35.944	-1.286	-6.356	48.376	0.114	0.001	0	817.88	13.6314	45.8	11.9	40.3	2.775	0.017	0.017	0.000	0.420	0.36
839	3/12/2003	9:50:24 PM	25.42	23.168	25.208	24.285	23.832	44.438	47.058	9.328	35.973	-1.286	-6.275	48.432	0.114	0.001	0	818.88	13.6481	45.6	11.9	40.2	2.772	0.017	0.017	0.000	0.420	0.36
840	3/12/2003	9:51:24 PM	25.433	23.165	25.235	24.167	23.749	44.293	47.032	9.354	35.77	-1.284	-6.304	48.275	0.118	0.001	0	819.88	13.6647	45.6	11.8	40.0	2.760	0.018	0.017	0.000	0.437	0.37
841	3/12/2003	9:52:24 PM	25.429	23.156	25.212	24.058	23.675	44.517	47.319	9.429	35.758	-1.286	-6.304	48.302	0.12	0.001	0	820.88	13.6814	45.8	11.8	40.1	2.767	0.018	0.018	0.000	0.443	0.38
842	3/12/2003	9:53:24 PM	25.425	23.148	25.188	23.949	23.637	44.467	47.038	9.338	36.047	-1.286	-6.35	48.409	0.115	0.001	0	821.88	13.6981	45.6	11.9	40.3	2.776	0.017	0.017	0.000	0.424	0.36
843	3/12/2003	9:54:24 PM	25.422	23.129	25.194	23.835	23.567	44.567	47.241	9.413	35.967	-1.286	-6.339	48.392	0.117	0.001	0	822.88	13.7147	45.8	11.9	40.3	2.776	0.017	0.017	0.000	0.431	0.37
844	3/12/2003	9:55:24 PM	25.427	23.124	25.295	23.72	23.493	44.409	47.013	9.39	35.879	-1.289	-6.304	48.457	0.115	0.001	0	823.88	13.7314	45.5	11.9	40.1	2.768	0.017	0.017	0.000	0.424	0.36
845	3/12/2003	9:56:24 PM	25.441	23.103	25.339	23.594	23.432	44.262	46.887	9.191	35.973	-1.286	-6.292	48.533	0.116	0.001	0	824.88	13.7481	45.4	11.9	40.1	2.766	0.017	0.017	0.000	0.427	0.36
846	3/12/2003	9:57:24 PM	25.456	23.093	25.369	23.513	23.356	44.403	47.077	9.246	35.989	-1.284	-6.298	48.434	0.113	0.001	0	825.88	13.7647	45.6	11.9	40.2	2.771	0.017	0.017	0.000	0.415	0.35
847	3/12/2003	9:58:24 PM	25.47	23.077	25.353	23.468	23.315	44.221	46.8	9.298	35.727	-1.286	-6.33	48.529	0.116	0.001	0	826.88	13.7814	45.3	11.9	40.0	2.756	0.017	0.017	0.000	0.428	0.36
848	3/12/2003	9:59:24 PM	25.486	23.073	25.349	23.428	23.341	44.343	47.036	9.234	35.883	-1.286	-6.333	48.441	0.116	0.001	0	827.88	13.7981	45.6	11.9	40.1	2.766	0.017	0.017	0.000	0.427	0.36
849	3/12/2003	10:00:24 PM	25.502	23.064	25.34	23.454	23.352	44.463	47.178	9.265	36.01	-1.281	-6.321	48.686	0.115	0.001	0	828.88	13.8147	45.7	11.9	40.2	2.774	0.017	0.017	0.000	0.422	0.36
850	3/12/2003	10:01:24 PM	25.485	23.041	25.292	23.467	23.38	44.38	46.974	9.192	36.057	-1.284	-6.324	48.273	0.118	0.001	0	829.88	13.8314	45.5	11.8	40.2	2.773	0.018	0.017	0.000	0.434	0.37
851	3/12/2003	10:02:24 PM	25.482	23.019	25.295	23.524	23.377	44.563	47.274	9.269	36.178	-1.286	-6.298	48.684	0.115	0.001	0	830.88	13.8481	45.8	11.9	40.4	2.783	0.017	0.017	0.000	0.421	0.36
852	3/12/2003	10:03:24 PM	25.482	23.019	25.305	23.58	23.407	44.48	47.147	9.21	36.082	-1.286	-6.316	48.719	0.116	0.001	0	831.88	13.8647	45.7	11.9	40.3	2.777	0.017	0.017	0.000	0.426	0.36
853	3/12/2003	10:04:24 PM	25.468	23.014	25.275	23.656	23.428	44.161	46.889	9.211	35.795	-1.286	-6.284	48.449	0.117	0.001	0	832.88	13.8814	45.4	11.9	40.0	2.756	0.017	0.017	0.000	0.433	0.37
854	3/12/2003	10:05:24 PM	25.458	22.999	25.26	23.721	23.463	44.357	47.036	9.178	36.077	-1.286	-6.316	48.468	0.116	0.001	0	833.88	13.8981	45.6	11.9	40.2	2.773	0.017	0.017	0.000	0.427	0.36
855	3/12/2003	10:06:24 PM	25.444	22.996	25.257	23.782	23.484	44.471	47.203	9.304	35.998	-1.286	-6.342	48.581	0.116	0.001	0	834.88	13.9147	45.7	11.9	40.2	2.774	0.017	0.017	0.000	0.427	0.36
856	3/12/2003	10:07:24 PM	25.442	22.998	25.269	23.81	23.517	44.463	47.028	9.283	35.959	-1.284	-6.35	48.537	0.114	0.001	0	835.88	13.9314	45.6	11.9	40.2	2.772	0.017	0.017	0.000	0.419	0.36
857	3/12/2003	10:08:24 PM	25.418	22.98	25.211	23.862	23.524	44.544	47.158	9.261	36.063	-1.286	-6.347	48.516	0.115	0.001	0	836.88	13.9481	45.7	11.9	40.3	2.779	0.017	0.017	0.000	0.423	0.36
858	3/12/2003	10:09:24 PM	25.421	22.993	25.219	23.89	23.547	44.347	46.924	9.142	36.075	-1.284	-6.33	48.604	0.115	0.001	0	837.88	13.9647	45.5	11.9	40.2	2.772	0.017	0.017	0.000	0.424	0.36
859	3/12/2003	10:10:24 PM	25.418	23.004	25.246	23.932	23.584	44.173	46.8	9.225	35.848	-1.284	-6.292	48.598	0.115	0.001	0	838.88	13.9814	45.3	11.9	40.0	2.759	0.017	0.017	0.000	0.426	0.36
860	3/12/2003	10:11:24 PM	25.416	23.008	25.239	23.955	23.607	44.449	47.108	9.352	35.948	-1.286	-6.368	48.092	0.116	0.001	0	839.88	13.9981	45.6	11.8	40.2	2.772	0.017	0.017	0.000	0.427	0.36
861	3/12/2003	10:12:24 PM	25.389	22.991	25.197	23.978	23.625	44.413	47.087	9.253	35.953	-1.289	-6.374	48.495	0.116	0.001	0	840.88	14.0147	45.6	11.9	40.2	2.770	0.017	0.017	0.000	0.428	0.36
862	3/12/2003	10:13:24 PM	25.382	22.983	25.189	24.011	23.638	44.25	46.868	9.227	35.903	-1.289	-6.336	48.51	0.114	0.001	0	841.88	14.0314	45.4	11.9	40.1	2.763	0.017	0.017	0.000	0.422	0.36
863	3/12/2003	10:14:24 PM	25.386	23.012	25.228	24.04	23.672	44.376	47.007	9.223	36.008	-1.284	-6.371	48.439	0.115	0.001	0	842.88	14.0481	45.5	11.9	40.2	2.771	0.017	0.017	0.000	0.424	0.36
864	3/12/2003	10:15:24 PM	25.372	22.999	25.205	24.042	23.664	44.548	47.187	9.263	36.086	-1.286	-6.319	48.409	0.114	0.001	0	843.88	14.0647	45.7	11.9	40.3	2.780	0.017	0.017	0.000	0.419	0.36
865	3/12/2003	10:16:24 PM	25.355	22.992	25.173	24.049	23.676	44.542	47.261	9.327	36.018	-1.289	-6.35	48.363	0.115	0.001	0	844.88	14.0814	45.8	11.9	40.3	2.777	0.017	0.017	0.000	0.424	0.36
866	3/12/2003	10:17:24 PM	25.368	23.014	25.21	24.057	23.689	44.415	47.069	9.358	35.934	-1.286	-6.382	48.696	0.113	0.001	0	845.88	14.0981	45.6	11.9	40.2	2.770	0.017	0.017	0.000	0.417	0.35
867	3/12/2003	10:18:24 PM	25.366	23.023	25.229	24.05	23.727	44.244	46.924	9.269	35.777	-1.286	-6.287	48.407	0.113	0.001	0	846.88	14.1147	45.5	11.9	40.0	2.759	0.017	0.017	0.000	0.418	0.36
868	3/12/2003	10:19:24 PM	25.363	23.025	25.216	24.108	23.73	44.728	47.423	9.293	36.288	-1.286	-6.298	48.296	0.114	0.001	0	847.88	14.1314	46.0	11.8	40.5	2.793	0.017	0.017	0.000	0.417	0.35
869	3/12/2003	10:20:24 PM	25.36	23.027	25.193	24.125	23.737	44.492	47.276	9.316	35.987	-1.289	-6.356	48.466	0.114	0.001	0	848.88	14.1481	45.8	11.9	40.2	2.774	0.017	0.017	0.000	0.420	0.36
870	3/12/2003	10:21:24 PM	25.362	23.033	25.205	24.156	23.748	44.589	47.243	9.312	36.176	-1.286	-6.321	48.396	0.112	0.001	0	849.88	14.1647	45.8	11.9	40.4	2.784	0.017	0.017	0.000	0.411	0.35
871	3/12/2003	10:22:24 PM	25.369	23.051	25.227	24.148	23.765	44.289	46.976	9.393	35.85	-1.286	-6.321	48.61	0.113	0.001	0	850.88	14.1814	45.5	11.9	40.1	2.763	0.017	0.017	0.000	0.418	0.36
872	3/12/2003	10:23:24 PM	25.355	23.042	25.198	24.175	23.762	44.832	47.555	9.379	36.313	-1.286	-6.33	48.424	0.116	0.001	0	851.88	14.1981	46.1	11.9	40.6	2.797	0.017	0.017	0.000	0.424	0.36
873	3/12/2003	10:24:24 PM	25.361	23.063	25.194	24.186	23.768	44.418	47.168	9.341	35.832	-1.286	-6.319	48.229	0.112	0.001	0	852.88	14.2147	45.7	11.8	40.1	2.766	0.017	0.017	0.000	0.414	0.35
874	3/12/2003	10:25:24 PM	25.369	23.066	25.207	24.204	23.801	44.094	46.734	9.254	35.754	-1.289	-6.29	48.684	0.105	0.001	0	853.88	14.2314	45.3	11.9	39.9	2.753	0.016	0.016	0.000	0.390	0.33
875	3/12/2003	10:26:24 PM	25.365	23.067	25.208	24.215	23.812	44.119	46.736	9.235	35.809	-1.286	-6.313	48.336	0.115	0.001	0	854.88	14.2481	45.3	11.8	40.0	2.755	0.017	0.017	0.000	0.427	0.36
876	3/12/2003	10:27:24 PM	25.367	23.084	25.205	24.217	23.829	44.43	47.108	9.422	35.83	-1.286	-6.342	48.738	0.116	0.001	0	855.88	14.2647	45.6	11.9	40.1	2.767	0.017	0.017	0.000	0.428	0.36
877	3/12/2003	10:28:24 PM	25.364	23.091	25.202	24.224	23.846	44.376	47.04	9.375	35.768	-1.286	-6.327	48.415	0.116	0.001	0	856.88	14.2814	45.6	11.9	40.1	2.763	0.017	0.017	0.000	0.429	0.37
878	3/12/2003	10:29:24 PM	25.375	23.092	25.223	24.255	23.867	44.407	47.005	9.333	35.944	-1.286	-6.321	48.38	0.115	0.001	0	857.88	14.2981	45.5	11.9	40.2	2.770	0.017	0.017	0.000	0.424	0.36
879	3/12/2003	10:30:24 PM	25.366	23.093	25.219	24.246	23.878	44.233	46.924	9.397	35.66	-1.284	-6.316	48.606	0.112	0.001	0	858.88	14.3147	45.5	11.9	39.9	2.754	0.017	0.017	0.000	0.415	0.35
880	3/12/2003	10:31:24 PM	25.378	23.11	25.211	24.298	23.9	44.387	47.05	9.391	35.746	-1.289	-6.342	48.483	0.114	0.001	0	859.88	14.3314	45.6	11.9	40.1	2.762	0.017	0.017	0.000	0.422	0.36
881	3/12/2003	10:32:24 PM	25.374	23.111	25.212	24.299	23.886	44.281	46.998	9.342	35.723	-1.286	-6.339	48.388	0.115	0.001	0	860.88	14.3481	45.5	11.9	40.0	2.758	0.017	0.017	0.000	0.426	0.36
882	3/12/2003	10:33:24 PM	25.372	23.104	25.215	24.222	23.839	44.212	46.746	9.33	35.781	-1.289	-6.313	48.957	0.115	0.001	0	861.88	14.3647	45.3	12.0	40.0	2.758	0.017	0.017	0.000	0.426	0.36
883	3/12/2003	10:34:24 PM	25.385	23.118	25.203	24.125	23.777	44.577	47.269	9.367	36.053	-1.286	-6.347	48.547	0.115	0.001	0	862.88	14.3814	45.8	11.9	40.3	2.780	0.017	0.017	0.000	0.423	0.36
884	3/12/2003	10:35:24 PM	25.381	23.104	25.179	24.046	23.723	44.776	47.516	9.429	36.057	-1.286	-6.321	48.524	0.107	0.001	0	863.88	14.3981	46.0	11.9	40.4	2.787	0.016	0.016	0.000	0.393	0.33
885	3/12/2003	10:36:24 PM	25.377	23.099	25.18	23.911	23.663	44.068	46.725	9.476	35.418	-1.284	-6.391	48.94	0.111	0.001	0	864.88	14.4147	45.3	12.0	39.7	2.740	0.017	0.016	0.000	0.414	0.35
886	3/12/2003	10:37:24 PM	25.387	23.094	25.28	23.795	23.598	44.157	46.676	9.385	35.674	-1.284	-6.379	48.931	0.113	0.001	0	865.88	14.4314	45.2	12.0	39.9	2.752	0.017	0.017	0.000	0.419	0.36
887	3/12/2003	10:38:24 PM	25.381	23.088	25.294	23.679	23.542	44.072	46.727	9.448	35.4	-1.289	-6.362	49.005	0.113	0.001	0	866.88	14.4481	45.3	12.0	39.7	2.740	0.017	0.017	0.000	0.420	0.36
888	3/12/2003	10:39:24 PM	25.395	23.077	25.288	23.583	23.466	44.358	47.009	9.401	35.766	-1.284	-6.362	49.068	0.113	0.001	0	867.88	14.4647	45.5	12.0	40.1	2.762	0.017	0.017	0.000	0.417	0.35
889	3/12/2003	10:40:24 PM	25.41	23.062	25.283	23.482	23.45	44.387	47.003	9.427	35.828	-1.284	-6.368	48.917	0.112	0.001	0	868.88	14.4814	45.5	12.0	40.1	2.765	0.017	0.017	0.000	0.413	0.35
890	3/12/2003	10:41:24 PM	25.43	23.067	25.278	23.438	23.431	44.142	46.804	9.464	35.613	-1.286	-6.362	49.179	0.112	0.001	0	869.88	14.4981	45.3	12.1	39.9	2.749	0.017	0.017	0.000	0.415	0.35
891	3/12/2003	10:42:24 PM	25.42	23.047	25.248	23.427	23.436	44.3	46.972	9.505	35.557	-1.286	-6.264	48.944	0.103	0.001	0	870.88	14.5147	45.5	12.0	39.9	2.753	0.015	0.015	0.000	0.382	0.33
892	3/12/2003	10:43:24 PM	25.423	23.045	25.241	23.471	23.474	44.306	47.007	9.375	35.725	-1.284	-6.345	49.175	0.114	0.001	0	871.88	14.5314	45.5	12.1	40.0	2.759	0.017	0.017	0.000	0.422	0.36
893	3/12/2003	10:44:24 PM	25.396	23.018	25.229	23.543	23.486	44.32	46.916	9.402	35.768	-1.286	-6.362	49.057	0.113	0.001	0	872.88	14.5481	45.4	12.0	40.0	2.761	0.017	0.017	0.000	0.418	0.36
894	3/12/2003	10:45:24 PM	25.39	23.011	25.242	23.597	23.505	44.378	46.928	9.434	35.934	-1.289	-6.371	49.208	0.111	0.001	0	873.88	14.5647	45.5	12.1	40.2	2.769	0.017	0.016	0.000	0.409	0.35
895	3/12/2003	10:46:24 PM	25.385	23.011	25.232	23.683	23.535	43.788	46.446	9.427	35.168	-1.286	-6.316	49.12	0.113	0.001	0	874.88	14.5814	45.0	12.0	39.5	2.722	0.017	0.017	0.000	0.424	0.36
896	3/12/2003	10:47:24 PM	25.375	23.002	25.228	23.774	23.576	44.25	47.056	9.512	35.531	-1.284	-6.295	49.047	0.11	0.001	0	875.88	14.5981	45.6	12.0	39.9	2.750	0.016	0.016	0.000	0.408	0.35
897	3/12/2003	10:48:24 PM	25.351	22.988	25.224	23.81	23.592	44.119	46.829	9.406	35.529	-1.286	-6.33	48.917	0.111	0.001	0	876.88	14.6147	45.4	12.0	39.8	2.746	0.017	0.016	0.000	0.413	0.35
898	3/12/2003	10:49:24 PM	25.368	23	25.266	23.857	23.609	44.393	47.106	9.423	35.871	-1.286	-6.339	48.805	0.111	0.001	0	877.88	14.6314	45.6	12.0	40.1	2.767	0.017	0.016	0.000	0.409	0.35
899	3/12/2003	10:50:24 PM	25.345	22.991	25.222	23.894	23.621	44.086	46.754	9.436	35.508	-1.286	-6.333	49.026	0.112	0.001	0	878.88	14.6481	45.3	12.0	39.8	2.744	0.017	0.017	0.000	0.417	0.35
900	3/12/2003	10:51:24 PM	25.342	22.983	25.214	23.936	23.638	44.258	47.083	9.457	35.611	-1.289	-6.327	48.921	0.112	0.001	0	879.88	14.6647	45.6	12.0	39.9	2.753	0.017	0.017	0.000	0.416	0.35
901	3/12/2003	10:52:24 PM	25.345	23.006	25.253	23.999	23.666	44.154	46.976	9.42	35.547	-1.286	-6.321	48.703	0.112	0.001	0	880.88	14.6814	45.5	11.9	39.9	2.748	0.017	0.017	0.000	0.416	0.35
902	3/12/2003	10:53:24 PM	25.342	23.009	25.245	24.022	23.669	44.256	47.098	9.405	35.75	-1.286	-6.284	48.898	0.111	0.001	0	881.88	14.6981	45.6	12.0	40.0	2.758	0.017	0.016	0.000	0.411	0.35
903	3/12/2003	10:54:24 PM	25.34	23.007	25.228	24.084	23.691	44.324	47.189	9.355	35.815	-1.286	-6.31	48.87	0.112	0.001	0	882.88	14.7147	45.7	12.0	40.1	2.763	0.017	0.017	0.000	0.414	0.35
904	3/12/2003	10:55:24 PM	25.332	23.009	25.22	24.092	23.709	44.194	47.061	9.443	35.48	-1.289	-6.307	48.797	0.112	0.001	-0.001	883.88	14.7314	45.6	12.0	39.8	2.747	0.017	0.017	0.000	0.417	0.35
905	3/12/2003	10:56:24 PM	25.325	23.012	25.243	24.07	23.716	44.246	47.079	9.386	35.66	-1.286	-6.295	48.663	0.113	0.001	0	884.88	14.7481	45.6	11.9	40.0	2.755	0.017	0.017	0.000	0.419	0.36
906	3/12/2003	10:57:24 PM	25.317	23.009	25.22	24.127	23.733	44.384	47.174	9.327	35.981	-1.289	-6.301	48.504	0.112	0.001	0	885.88	14.7647	45.7	11.9	40.2	2.770	0.017	0.017	0.000	0.413	0.35
907	3/12/2003	10:58:24 PM	25.329	23.021	25.217	24.134	23.756	44.364	47.179	9.302	35.944	-1.289	-6.304	49.032	0.112	0.001	0	886.88	14.7814	45.7	12.0	40.2	2.768	0.017	0.017	0.000	0.413	0.35
908	3/12/2003	10:59:24 PM	25.327	23.034	25.225	24.162	23.779	44.177	46.992	9.441	35.5	-1.289	-6.307	48.72	0.112	0.001	0	887.88	14.7981	45.5	11.9	39.8	2.747	0.017	0.017	0.000	0.417	0.35
909	3/12/2003	11:00:24 PM	25.325	23.027	25.223	24.175	23.807	44.252	47.118	9.35	35.822	-1.289	-6.301	48.483	0.112	0.001	0	888.88	14.8147	45.6	11.9	40.0	2.760	0.017	0.017	0.000	0.414	0.35
910	3/12/2003	11:01:24 PM	25.339	23.056	25.232	24.229	23.83	44.231	47.063	9.362	35.693	-1.289	-6.295	48.548	0.111	0.001	0	889.88	14.8314	45.6	11.9	40.0	2.755	0.017	0.016	0.000	0.411	0.35

Figure D8-7: Dewatering of the AN-102R2, batch 4A, insoluble solids concentrations from 1.5 to 81 wt% - Raw & Calculated Data

911	3/12/2003	11:02:24 PM	25.325	23.047	25.198	24.19	23.842	44.451	47.408	9.442	35.803	-1.292	-6.298	48.709	0.111	0.001	0	890.88	14.8481	45.9	11.9	40.1	2.767	0.017	0.016	0.000	0.410	0.35
912	3/12/2003	11:03:16 PM	25.322	23.054	25.205	24.202	23.88	44.714	47.569	9.268	36.29	-1.292	-6.295	48.657	0.111	0.001	0	891.75	14.8625	46.1	11.9	40.5	2.792	0.017	0.016	0.000	0.406	0.35
913	3/12/2003	11:04:16 PM	25.324	23.066	25.232	24.26	23.887	43.833	46.572	9.327	35.398	-1.284	-6.29	48.55	0.111	0.001	0	892.75	14.8792	45.1	11.9	39.6	2.731	0.017	0.016	0.000	0.415	0.35
914	3/12/2003	11:05:16 PM	25.343	23.085	25.246	24.273	23.93	44.138	46.93	9.352	35.689	-1.284	-6.292	48.313	0.111	0.001	0	893.75	14.8958	45.5	11.8	39.9	2.752	0.017	0.016	0.000	0.412	0.35
915	3/12/2003	11:06:16 PM	25.33	23.087	25.213	24.285	23.938	44.43	47.429	9.373	35.828	-1.286	-6.287	48.449	0.111	0.001	0	894.75	14.9125	46.0	11.9	40.1	2.767	0.017	0.016	0.000	0.410	0.35
916	3/12/2003	11:07:16 PM	25.334	23.101	25.237	24.329	23.956	44.277	47.166	9.329	35.815	-1.286	-6.272	48.214	0.112	0.001	0	895.75	14.9292	45.7	11.8	40.0	2.761	0.017	0.017	0.000	0.414	0.35
917	3/12/2003	11:08:16 PM	25.338	23.105	25.246	24.338	23.98	44.239	47.094	9.315	35.83	-1.289	-6.284	48.405	0.111	0.001	0	896.75	14.9458	45.6	11.9	40.0	2.760	0.017	0.016	0.000	0.411	0.35
918	3/12/2003	11:09:16 PM	25.335	23.102	25.223	24.335	23.993	44.291	47.234	9.428	35.682	-1.286	-6.281	48.558	0.111	0.001	0	897.75	14.9625	45.8	11.9	40.0	2.757	0.017	0.016	0.000	0.411	0.35
919	3/12/2003	11:10:16 PM	25.331	23.113	25.204	24.346	23.988	44.279	47.344	9.443	35.623	-1.286	-6.272	48.396	0.112	0.001	0	898.75	14.9792	45.9	11.9	40.0	2.754	0.017	0.017	0.000	0.416	0.35
920	3/12/2003	11:11:16 PM	25.336	23.108	25.304	24.296	23.938	44.02	46.943	9.313	35.564	-1.286	-6.292	48.378	0.112	0.001	0	899.75	14.9958	45.5	11.9	39.8	2.744	0.017	0.017	0.000	0.416	0.35
921	3/12/2003	11:12:16 PM	25.344	23.111	25.347	24.224	23.886	44.387	47.402	9.321	35.881	-1.284	-6.292	48.447	0.111	0.001	0	900.75	15.0125	45.9	11.9	40.1	2.767	0.017	0.016	0.000	0.408	0.35
922	3/12/2003	11:13:16 PM	25.366	23.118	25.304	24.141	23.818	44.192	47.156	9.372	35.656	-1.286	-6.287	48.659	0.111	0.001	0	901.75	15.0292	45.7	11.9	39.9	2.753	0.017	0.016	0.000	0.411	0.35
923	3/12/2003	11:14:16 PM	25.383	23.12	25.296	24.042	23.77	44.041	47.065	9.352	35.521	-1.286	-6.281	48.51	0.113	0.001	0	902.75	15.0458	45.6	11.9	39.8	2.743	0.017	0.017	0.000	0.420	0.36
924	3/12/2003	11:15:16 PM	25.389	23.116	25.277	23.903	23.695	44.111	47.11	9.284	35.639	-1.284	-6.327	48.755	0.111	0.001	0	903.75	15.0625	45.6	11.9	39.9	2.749	0.017	0.016	0.000	0.412	0.35
925	3/12/2003	11:16:16 PM	25.399	23.111	25.247	23.792	23.63	44.146	47.067	9.351	35.688	-1.284	-6.324	48.55	0.112	0.001	0	904.75	15.0792	45.6	11.9	39.9	2.752	0.017	0.017	0.000	0.415	0.35
926	3/12/2003	11:17:16 PM	25.394	23.096	25.217	23.677	23.555	44.142	47.081	9.353	35.576	-1.286	-6.333	48.281	0.109	0.001	0	905.75	15.0958	45.6	11.8	39.9	2.748	0.016	0.016	0.000	0.405	0.34
927	3/12/2003	11:18:16 PM	25.388	23.085	25.211	23.591	23.484	44.331	47.387	9.305	35.848	-1.286	-6.275	48.327	0.11	0.001	0	906.75	15.1125	45.9	11.8	40.1	2.764	0.016	0.016	0.000	0.407	0.35
928	3/12/2003	11:19:16 PM	25.398	23.08	25.226	23.526	23.419	44.254	47.325	9.326	35.795	-1.284	-6.345	48.669	0.111	0.001	0	907.75	15.1292	45.9	11.9	40.0	2.760	0.017	0.016	0.000	0.411	0.35
929	3/12/2003	11:20:16 PM	25.368	23.045	25.166	23.435	23.408	44.262	47.238	9.321	35.84	-1.289	-6.35	48.353	0.11	0.001	0	908.75	15.1458	45.8	11.8	40.1	2.761	0.016	0.016	0.000	0.408	0.35
930	3/12/2003	11:21:16 PM	25.374	23.046	25.172	23.446	23.445	44.057	47.05	9.306	35.557	-1.286	-6.324	48.466	0.112	0.001	0	909.75	15.1625	45.6	11.9	39.8	2.745	0.017	0.017	0.000	0.417	0.36
931	3/12/2003	11:22:16 PM	25.365	23.027	25.178	23.458	23.446	44.548	47.654	9.375	35.922	-1.286	-6.336	48.464	0.112	0.001	0	910.75	15.1792	46.2	11.9	40.2	2.774	0.017	0.017	0.000	0.413	0.35
932	3/12/2003	11:23:16 PM	25.363	23.015	25.186	23.551	23.454	44.347	47.325	9.357	35.797	-1.286	-6.347	48.9	0.111	0.001	0	911.75	15.1958	45.9	12.0	40.1	2.763	0.017	0.016	0.000	0.411	0.35
933	3/12/2003	11:24:16 PM	25.352	23.004	25.17	23.635	23.503	44.175	47.218	9.27	35.793	-1.289	-6.321	48.514	0.111	0.001	0	912.75	15.2125	45.7	11.9	40.0	2.757	0.017	0.016	0.000	0.412	0.35
934	3/12/2003	11:25:16 PM	25.347	23.003	25.184	23.71	23.512	44.343	47.342	9.346	35.789	-1.289	-6.33	48.506	0.111	0.001	0	913.75	15.2292	45.9	11.9	40.1	2.762	0.017	0.016	0.000	0.411	0.35
935	3/12/2003	11:26:16 PM	25.338	22.995	25.196	23.761	23.549	44.125	47.272	9.347	35.486	-1.286	-6.301	48.52	0.109	0.001	0	914.75	15.2458	45.8	11.9	39.8	2.744	0.016	0.016	0.000	0.406	0.35
936	3/12/2003	11:27:16 PM	25.318	22.984	25.191	23.781	23.549	44.161	47.212	9.302	35.74	-1.286	-6.345	48.573	0.11	0.001	0	915.75	15.2625	45.7	11.9	40.0	2.754	0.016	0.016	0.000	0.408	0.35
937	3/12/2003	11:28:16 PM	25.32	22.991	25.188	23.833	23.586	44.335	47.501	9.4	35.766	-1.286	-6.347	48.373	0.11	0.001	0	916.75	15.2792	46.0	11.9	40.1	2.761	0.016	0.016	0.000	0.407	0.35
938	3/12/2003	11:29:16 PM	25.317	22.993	25.189	23.921	23.583	44.289	47.503	9.423	35.623	-1.286	-6.319	48.319	0.11	0.001	0	917.75	15.2958	46.0	11.8	40.0	2.755	0.016	0.016	0.000	0.408	0.35
939	3/12/2003	11:30:16 PM	25.324	22.996	25.217	23.958	23.635	43.906	46.994	9.306	35.343	-1.286	-6.31	48.25	0.11	0.001	0	918.75	15.3125	45.5	11.8	39.6	2.732	0.016	0.016	0.000	0.411	0.35
940	3/12/2003	11:31:16 PM	25.312	22.993	25.205	23.976	23.648	44.119	47.218	9.392	35.613	-1.286	-6.313	48.424	0.11	0.001	0	919.75	15.3292	45.7	11.9	39.9	2.749	0.016	0.016	0.000	0.409	0.35
941	3/12/2003	11:32:16 PM	25.299	22.995	25.197	24.013	23.685	43.958	47.114	9.326	35.496	-1.286	-6.307	48.854	0.11	0.001	0	920.75	15.3458	45.6	12.0	39.7	2.739	0.016	0.016	0.000	0.411	0.35
942	3/12/2003	11:33:16 PM	25.301	22.992	25.188	24.06	23.717	44.306	47.545	9.317	35.717	-1.289	-6.307	48.321	0.111	0.001	0	921.75	15.3625	46.1	11.8	40.0	2.759	0.017	0.016	0.000	0.411	0.35
943	3/12/2003	11:34:16 PM	25.319	23.016	25.232	24.124	23.75	44.036	47.063	9.297	35.598	-1.289	-6.31	48.457	0.11	0.001	0	922.75	15.3792	45.6	11.9	39.8	2.745	0.016	0.016	0.000	0.409	0.35
944	3/12/2003	11:35:16 PM	25.306	23.003	25.214	24.131	23.742	44.194	47.201	9.326	35.813	-1.289	-6.29	48.959	0.109	0.001	0	923.75	15.3958	45.7	12.0	40.0	2.758	0.016	0.016	0.000	0.404	0.34
945	3/12/2003	11:36:16 PM	25.319	23.016	25.202	24.189	23.766	44.198	47.363	9.343	35.664	-1.286	-6.31	48.289	0.11	0.001	0	924.75	15.4125	45.9	11.8	39.9	2.753	0.016	0.016	0.000	0.408	0.35
946	3/12/2003	11:37:16 PM	25.321	23.028	25.224	24.226	23.753	43.823	46.92	9.312	35.32	-1.286	-6.301	48.294	0.11	0.001	0	925.75	15.4292	45.4	11.8	39.6	2.728	0.016	0.016	0.000	0.412	0.35
947	3/12/2003	11:38:16 PM	25.314	23.025	25.312	24.214	23.77	44.393	47.507	9.357	36	-1.286	-6.287	48.396	0.11	0.001	0	926.75	15.4458	46.0	11.9	40.2	2.771	0.016	0.016	0.000	0.404	0.34
948	3/12/2003	11:39:16 PM	25.33	23.027	25.319	24.215	23.787	44.15	47.313	9.406	35.537	-1.286	-6.333	48.575	0.11	0.001	0	927.75	15.4625	45.8	11.9	39.8	2.747	0.016	0.016	0.000	0.408	0.35
949	3/12/2003	11:40:16 PM	25.337	23.039	25.311	24.212	23.799	44.27	47.499	9.353	35.709	-1.286	-6.342	48.59	0.109	0.001	0	928.75	15.4792	46.0	11.9	40.0	2.757	0.016	0.016	0.000	0.403	0.34
950	3/12/2003	11:41:16 PM	25.354	23.046	25.317	24.244	23.821	44.198	47.445	9.387	35.666	-1.286	-6.345	48.441	0.11	0.001	0	929.75	15.4958	46.0	11.9	39.9	2.753	0.016	0.016	0.000	0.407	0.35
951	3/12/2003	11:42:16 PM	25.361	23.048	25.304	24.196	23.818	44.086	47.294	9.352	35.574	-1.289	-6.339	48.413	0.11	0.001	0	930.75	15.5125	45.8	11.9	39.8	2.746	0.016	0.016	0.000	0.408	0.35
952	3/12/2003	11:43:16 PM	25.373	23.07	25.286	24.228	23.835	43.999	47.158	9.392	35.308	-1.286	-6.342	48.524	0.109	0.001	0	931.75	15.5292	45.7	11.9	39.7	2.734	0.016	0.016	0.000	0.407	0.35
953	3/12/2003	11:44:16 PM	25.37	23.067	25.283	24.25	23.847	44.123	47.321	9.377	35.572	-1.286	-6.345	48.367	0.109	0.001	0	932.75	15.5458	45.8	11.9	39.8	2.747	0.016	0.016	0.000	0.405	0.34
954	3/12/2003	11:45:16 PM	25.387	23.079	25.295	24.267	23.869	44.109	47.23	9.396	35.637	-1.286	-6.292	48.468	0.109	0.001	0	933.75	15.5625	45.8	11.9	39.9	2.749	0.016	0.016	0.000	0.404	0.34
955	3/12/2003	11:46:16 PM	25.384	23.091	25.282	24.249	23.901	44.014	47.172	9.294	35.531	-1.289	-6.339	48.447	0.11	0.001	0	934.75	15.5792	45.7	11.9	39.8	2.742	0.016	0.016	0.000	0.409	0.35
956	3/12/2003	11:47:16 PM	25.385	23.092	25.268	24.3	23.907	44.049	47.212	9.329	35.65	-1.286	-6.327	48.99	0.11	0.001	0	935.75	15.5958	45.7	12.0	39.8	2.747	0.016	0.016	0.000	0.408	0.35
957	3/12/2003	11:48:16 PM	25.387	23.104	25.285	24.322	23.914	43.949	47.112	9.357	35.453	-1.284	-6.33	48.631	0.109	0.001	0	936.75	15.6125	45.6	11.9	39.7	2.737	0.016	0.016	0.000	0.406	0.35
958	3/12/2003	11:49:16 PM	25.393	23.105	25.271	24.278	23.915	43.964	47.284	9.46	35.275	-1.289	-6.31	48.539	0.111	0.001	0	937.75	15.6292	45.8	11.9	39.6	2.732	0.017	0.016	0.000	0.415	0.35
959	3/12/2003	11:50:16 PM	25.391	23.113	25.244	24.221	23.843	44.3	47.607	9.373	35.752	-1.284	-6.31	48.376	0.109	0.001	0	938.75	15.6458	46.1	11.9	40.0	2.760	0.016	0.016	0.000	0.403	0.34
960	3/12/2003	11:51:16 PM	25.394	23.116	25.237	24.069	23.781	43.983	47.245	9.42	35.414	-1.286	-6.31	48.424	0.109	0.001	0	939.75	15.6625	45.8	11.9	39.7	2.737	0.016	0.016	0.000	0.407	0.35
961	3/12/2003	11:52:16 PM	25.397	23.114	25.25	23.976	23.728	44.293	47.555	9.457	35.713	-1.289	-6.33	48.51	0.108	0.001	0	940.75	15.6792	46.1	11.9	40.0	2.758	0.016	0.016	0.000	0.400	0.34
962	3/12/2003	11:53:16 PM	25.398	23.115	25.241	23.882	23.684	43.637	46.879	9.466	34.874	-1.284	-6.333	48.491	0.109	0.001	0	941.75	15.6958	45.4	11.9	39.3	2.707	0.016	0.016	0.000	0.411	0.35
963	3/12/2003	11:54:16 PM	25.399	23.106	25.217	23.767	23.64	43.865	47.007	9.383	35.379	-1.286	-6.333	48.581	0.107	0.001	0	942.75	15.7125	45.5	11.9	39.6	2.732	0.016	0.016	0.000	0.400	0.34
964	3/12/2003	11:55:16 PM	25.389	23.086	25.202	23.657	23.555	43.807	47.034	9.497	35.115	-1.286	-6.345	48.434	0.109	0.001	0	943.75	15.7292	45.6	11.9	39.5	2.721	0.016	0.016	0.000	0.409	0.35
965	3/12/2003	11:56:16 PM	25.393	23.085	25.226	23.591	23.489	44.07	47.398	9.494	35.279	-1.286	-6.353	48.529	0.109	0.001	0	944.75	15.7458	45.9	11.9	39.7	2.735	0.016	0.016	0.000	0.407	0.35
966	3/12/2003	11:57:16 PM	25.367	23.049	25.18	23.469	23.412	43.809	47.123	9.451	35.203	-1.289	-6.298	48.644	0.109	0.001	0	945.75	15.7625	45.7	11.9	39.5	2.724	0.016	0.016	0.000	0.409	0.35
967	3/12/2003	11:58:16 PM	25.371	23.043	25.189	23.408	23.411	43.989	47.319	9.383	35.381	-1.286	-6.336	48.48	0.108	0.001	0	946.75	15.7792	45.8	11.9	39.7	2.736	0.016	0.016	0.000	0.404	0.34
968	3/12/2003	11:59:16 PM	25.366	23.018	25.179	23.373	23.416	44.096	47.447	9.558	35.306	-1.289	-6.339	48.464	0.108	0.001	0	947.75	15.7958	46.0	11.9	39.7	2.737	0.016	0.016	0.000	0.404	0.34
969	3/13/2003	12:00:16 AM	25.358	23.025	25.226	23.435	23.438	43.887	47.265	9.446	35.218	-1.284	-6.304	48.086	0.107	0.001	0	948.75	15.8125	45.8	11.8	39.6	2.727	0.016	0.016	0.000	0.401	0.34
970	3/13/2003	12:01:16 AM	25.35	23.006	25.207	23.502	23.46	43.415	46.632	9.799	34.429	-1.289	-6.336	49.756	0.107	0.001	0	949.75	15.8292	45.2	12.2	38.9	2.684	0.016	0.016	0.000	0.407	0.35
971	3/13/2003	12:02:16 AM	25.338	23	25.231	23.531	23.469	43.62	46.847	9.754	34.732	-1.286	-6.353	49.538	0.105	0.001	0	950.75	15.8458	45.4	12.1	39.2	2.701	0.016	0.016	0.000	0.397	0.34
972	3/13/2003	12:03:16 AM	25.338	22.989	25.251	23.616	23.493	43.581	46.988	9.784	34.575	-1.286	-6.342	49.368	0.106	0.001	0	951.75	15.8625	45.5	12.1	39.1	2.694	0.016	0.016	0.000	0.402	0.34
973	3/13/2003	12:04:16 AM	25.328	22.974	25.256	23.661	23.503	43.525	46.847	9.708	34.593	-1.292	-6.29	49.487	0.107	0.001	0	952.75	15.8792	45.4	12.1	39.1	2.693	0.016	0.016	0.000	0.405	0.35
974	3/13/2003	12:05:16 AM	25.333	22.98	25.271	23.772	23.529	43.496	46.804	9.696	34.651	-1.286	-6.307	49.019	0.107	0.001	0	953.75	15.8958	45.3	12.0	39.1	2.694	0.016	0.016	0.000	0.405	0.34
975	3/13/2003	12:06:16 AM	25.345	22.987	25.268	23.824	23.576	43.421	46.686	9.664	34.593	-1.286	-6.313	49.204	0.107	0.001	0	954.75	15.9125	45.2	12.1	39.0	2.689	0.016	0.016	0.000	0.406	0.35
976	3/13/2003	12:07:16 AM	25.331	22.972	25.284	23.89	23.592	43.736	47.11	9.695	34.773	-1.284	-6.342	49.114	0.106	0.001	0	955.75	15.9292	45.6	12.0	39.3	2.706	0.016	0.016	0.000	0.399	0.34
977	3/13/2003	12:08:16 AM	25.343	22.985	25.306	23.928	23.625	43.543	46.887	9.652	34.734	-1.286	-6.347	49.25	0.107	0.001	0	956.75	15.9458	45.4	12.1	39.1	2.698	0.016	0.016	0.000	0.404	0.34
978	3/13/2003	12:09:16 AM	25.34	22.986	25.293	23.994	23.636	43.583	47.009	9.73	34.606	-1.284	-6.365	49.032	0.107	0.001	0	957.75	15.9625	45.5	12.0	39.1	2.695	0.016	0.016	0.000	0.405	0.34
979	3/13/2003	12:10:16 AM	25.347	22.988	25.4	24.056	23.668	43.67	47.075	9.673	34.843	-1.284	-6.365	49.261	0.108	0.001	0	958.75	15.9792	45.6	12.1	39.3	2.707	0.016	0.016	0.000	0.406	0.35
980	3/13/2003	12:11:16 AM	25.354	22.986	25.447	24.079	23.686	43.802	47.127	9.768	34.884	-1.286	-6.365	49.508	0.108	0.001	0	959.75	15.9958	45.7	12.1	39.3	2.713	0.016	0.016	0.000	0.404	0.34
981	3/13/2003	12:12:16 AM	25.376	22.987	25.444	24.11	23.697	43.73	47.178	9.676	34.784	-1.286	-6.345	49.066	0.109	0.001	0	960.75	16.0125	45.7	12.0	39.3	2.707	0.016	0.016	0.000	0.409	0.35
982	3/13/2003	12:13:16 AM	25.393	22.99	25.411	24.148	23.74	43.689	47.079	9.693	34.917	-1.286	-6.368	49.078	0.108	0.001	0	961.75	16.0292	45.6	12.0	39.3	2.710	0.016	0.016	0.000	0.405	0.34
983	3/13/2003	12:14:16 AM	25.415	23.002	25.418	24.125	23.752	43.786	47.207	9.704	34.855	-1.286	-6.362	49.638	0.108	0.001	0	962.75	16.0458	45.7	12.2	39.3	2.711	0.016	0.016	0.000	0.405	0.34
984	3/13/2003	12:15:16 AM	25.421	22.998	25.414	24.166	23.788	43.602	47.098	9.651	34.734	-1.289	-6.35	49.028	0.108	0.001	0	963.75	16.0625	45.6	12.0	39.2	2.700	0.016	0.016	0.000	0.406	0.35
985	3/13/2003	12:16:16 AM	25.428	23.005	25.406	24.198	23.805	43.564	46.924	9.643	34.786	-1.286	-6.368	49.107	0.108	0.001	0	964.75	16.0792	45.5	12.0	39.2	2.701	0.016	0.016	0.000	0.406	0.35
986	3/13/2003	12:17:16 AM	25.435	23.007	25.378	24.22	23.837	43.517	46.881	9.681	34.604	-1.289	-6.359	48.948	0.108	0.001	0	965.75	16.0958	45.4	12.0	39.1	2.693	0.016	0.016	0.000	0.408	0.35
987	3/13/2003	12:18:16 AM	25.452	23.034	25.405	24.252	23.839	43.544	46.916	9.692	34.72	-1.289	-6.374	49.181	0.108	0.001	0	966.75	16.1125	45.4	12.1	39.1	2.698	0.016	0.016	0.000	0.407	0.35
988	3/13/2003	12:19:16 AM	25.453	23.04	25.406	24.263	23.845	43.562	47.021	9.73	34.622	-1.286	-6.339	49.038	0.106	0.001	0	967.75	16.1292	45.5	12.0	39.1	2.695	0.016	0.016	0.000	0.400	0.34
989	3/13/2003	12:20:16 AM	25.459	23.041	25.387	24.264	23.886	43.515	46.899	9.619	34.739	-1.286	-6.371	48.917	0.107	0.001	0	968.75	16.1458	45.4	12.0	39.1	2.698	0.016	0.016	0.000	0.403	0.34
990	3/13/2003	12:21:16 AM	25.47	23.052	25.388	24.295	23.922	43.722	47.139	9.698	34.833	-1.286	-6.362	48.938	0.108	0.001	0	969.75	16.1625	45.7	12.0	39.3	2.708	0.016	0.016	0.000	0.406	0.35
991	3/13/2003	12:22:16 AM	25.472	23.064	25.405	24.312	23.939	43.74	47.23	9.714	34.765	-1.286	-6.35	49.168	0.108	0.001	0	970.75	16.1792	45.8	12.0	39.3	2.706	0.016	0.016	0.000	0.406	0.35
992	3/13/2003	12:23:16 AM	25.478	23.08	25.406	24.338	23.95	43.794	47.22	9.688	34.915	-1.286	-6.359	48.885	0.107	0.001	0	971.75	16.1958	45.7	12.0	39.4	2.713	0.016	0.016	0.000	0.401	0.34
993	3/13/2003	12:24:16 AM	25.469	23.076	25.372	24.279	23.982	43.508	47.042	9.648	34.624	-1.292	-6.304	48.942	0.106	0.001	0	972.75	16.2125	45.6	12.0	39.1	2.693	0.016	0.016	0.000	0.400	0.34
994	3/13/2003	12:25:16 AM	25.481	23.093	25.389	24.336	24.003	43.778	47.179	9.701	34.886	-1.286	-6.365	49.051	0.107	0.001	0	973.75	16.2292	45.7	12.0	39.3	2.712	0.016	0.016	0.000	0.401	0.34
995	3/13/2003	12:26:16 AM	25.488	23.115	25.416	24.368	24.045	43.939	47.45	9.74	35.048	-1.289	-6.324	49.001	0.108	0.001	0	974.75	16.2458	46.0	12.0	39.5	2.723	0.016	0.016	0.000	0.403	0.34
996	3/13/2003	12:27:16 AM	25.493	23.12	25.406	24.384	24.066	43.618	47.178	9.668	34.7	-1.284	-6.365	48.873	0.108	0.001	0	975.75	16.2625	45.7	12.0	39.2	2.700	0.016	0.016	0.000	0.407	0.35
997	3/13/2003	12:28:16 AM	25.505	23.137	25.403	24.386	24.083	43.744	47.332	9.762	34.796	-1.286	-6.368	48.749	0.108	0.001	0	976.75	16.2792	45.9	11.9	39.3	2.708	0.016	0.016	0.000	0.405	0.35
998	3/13/2003	12:29:16 AM	25.495	23.137	25.403	24.376	24.053	43.606	47.168	9.625	34.732	-1.289	-6.374	48.829	0.108	0.001	0	977.75	16.2958	45.7	12.0	39.2	2.701	0.016	0.016	0.000	0.406	0.35
999	3/13/2003	12:30:16 AM	25.5	23.142	25.408	24.345	23.997	43.782	47.27	9.617	35.056	-1.289	-6.382	48.849	0.108	0.001	0	978.75	16.3125	45.8	12.0	39.4	2.718	0.016	0.016	0.000	0.404	0.34
1000	3/13/2003	12:31:16 AM	25.514	23.161	25.397	24.289	23.961	43.891	47.613	9.576	35.078	-1.286	-6.362	48.239	0.108	0.001	0	979.75	16.3292	46.1	11.8	39.5	2.722	0.016	0.016	0.000	0.403	0.34
1001	3/13/2003	12:32:16 AM	25.512	23.154	25.375	24.147	23.904	44.295	47.789	9.324	35.924	-1.286	-6.365	48.011	0.109	0.001	0	980.75	16.3458	46.3	11.8	40.1	2.765	0.016	0.016	0.000	0.401	0.34
1002	3/13/2003	12:33:16 AM	25.515	23.152	25.388	24.019	23.822	43.8	47.261	9.683	34.821	-1.286	-6.391	48.543	0.108	0.001	0	981.75	16.3625	45.8	11.9	39.3	2.710	0.016	0.016	0.000	0.405	0.34
1003	3/13/2003	12:34:16 AM	25.511	23.138	25.364	23.92	23.733	44.099	47.64	9.531	35.41	-1.286	-6.368	48.323	0.108	0.001	0	982.75	16.3792	46.2	11.8	39.8	2.741	0.016	0.016	0.000	0.401	0.34
1004	3/13/2003	12:35:16 AM	25.487	23.114	25.319	23.815	23.678	43.906	47.452	9.597	35.156	-1.286	-6.371	48.411	0.107	0.001	0	983.75	16.3958	46.0	11.9	39.5	2.726	0.016	0.016	0.000	0.400	0.34
1005	3/13/2003	12:36:16 AM	25.497	23.114	25.34	23.745	23.638	44.134	47.654	9.343	35.658	-1.289	-6.31	47.799	0.109	0.001	0	984.75	16.4125	46.2	11.7	39.9	2.751	0.016	0.016	0.000	0.403	0.34
1006	3/13/2003	12:37:16 AM	25.497	23.094	25.355	23.67	23.568	43.974	47.601	9.471	35.285	-1.286	-6.342	48.105	0.108	0.001	0	985.75	16.4292	46.1	11.8	39.6	2.732	0.016	0.016	0.000	0.402	0.34
1007	3/13/2003	12:38:16 AM	25.501	23.083	25.339	23.614	23.502	44.212	47.822	9.313	35.731	-1.284	-6.304	47.568	0.108	0.001	0	986.75	16.4458	46.3	11.7	40.0	2.756	0.016	0.016	0.000	0.399	0.34
1008	3/13/2003	12:39:16 AM	25.511	23.073	25.349	23.544	23.451	44.024	47.677	9.454	35.424	-1.281	-6.336	47.958	0.108	0.001	0	987.75	16.4625	46.2	11.8	39.7	2.739	0.016	0.016	0.000	0.401	0.34
1009	3/13/2003	12:40:16 AM	25.487	23.049	25.325	23.535	23.468	44.154	47.749	9.316	35.682	-1.286	-6.336	47.772	0.109	0.001	0	988.75	16.4792	46.3	11.7	39.9	2.752	0.016	0.016	0.000	0.403	0.34
1010	3/13/2003	12:41:16 AM	25.479	23.026	25.332	23.552	23.51	43.784	47.431	9.507	35.089	-1.289	-6.339	48.109	0.11	0.001	0	989.75	16.4958	46.0	11.8	39.4	2.719	0.016	0.016	0.000	0.412	0.35
1011	3/13/2003	12:42:16 AM	25.487	23.034	25.35	23.635	23.523	44.121	47.702	9.401	35.58	-1.286	-6.33	47.799	0.108	0.001	0	990.75	16.5125	46.2	11.7	39.9	2.748	0.016	0.016	0.000	0.400	0.34
1012	3/13/2003	12:43:16 AM	25.487	23.033	25.354	23.69	23.547	43.815	47.392	9.507	35.156	-1.284	-6.316	48.088	0.11	0.001	0	991.75	16.5292	45.9	11.8	39.5	2.722	0.016	0.016	0.000	0.411	0.35
1013	3/13/2003	12:44:16 AM	25.481	23.023	25.364	23.799	23.582	44.055	47.743	9.446	35.459	-1.286	-6.321	47.771	0.109	0.001	0	992.75	16.5458	46.3	11.7	39.8	2.741	0.016	0.016	0.000	0.405	0.34
1014	3/13/2003	12:45:16 AM	25.465	23.012	25.383	23.889	23.606	44.055	47.714	9.31	35.594	-1.286	-6.304	47.507	0.11	0.001	0	993.75	16.5625	46.2	11.6	39.8	2.746	0.016	0.016	0.000	0.407	0.35
1015	3/13/2003	12:46:16 AM	25.471	23.018	25.384	23.915	23.617	44.057	47.718	9.396	35.41	-1.284	-6.307	47.748	0.109	0.001	0	994.75	16.5792	46.2	11.7	39.7	2.739	0.016	0.016	0.000	0.405	0.34
1016	3/13/2003	12:47:16 AM	25.468	23.019	25.386	23.972	23.639	44.125	47.828	9.496	35.514	-1.286	-6.255	47.792	0.108	0.001	0	995.75	16.5958	46.4	11.7	39.8	2.745	0.016	0.016	0.000	0.400	0.34
1017	3/13/2003	12:48:16 AM	25.468	23.01	25.401	23.972	23.675	43.941	47.727	9.434	35.259	-1.286	-6.275	47.803	0.109	0.001	0	996.75	16.6125	46.3	11.7	39.6	2.730	0.016	0.016	0.000	0.406	0.35
1018	3/13/2003	12:49:16 AM	25.465	23.012	25.418	23.979	23.702	43.887	47.588	9.482	35.244	-1.286	-6.281	48.021	0.108	0.001	0	997.75	16.6292	46.1	11.8	39.6	2.728	0.016	0.016	0.000	0.402	0.34
1019	3/13/2003	12:50:16 AM	25.463	23.01	25.401	24.012	23.714	43.577	47.474	9.51	34.716	-1.289	-6.226	47.879	0.109	0.001	0	998.75	16.6458	46.0	11.7	39.1	2.699	0.016	0.016	0.000	0.410	0.35
1020	3/13/2003	12:51:16 AM	25.476	23.018	25.419	24.106	23.747	43.983	47.741	9.485	35.431	-1.289	-6.281	48.021	0.108	0.001	0	999.75	16.6625	46.3	11.8	39.7	2.738	0.016	0.016	0.000	0.401	0.34
1021	3/13/2003	12:52:16 AM	25.469	23.02	25.436	24.128	23.77	43.906	47.654	9.506	35.173	-1.289	-6.284	47.904	0.108	0.001	0	1000.75	16.6792	46.2	11.7	39.5	2.726	0.016	0.016	0.000	0.402	0.34
1022	3/13/2003	12:53:16 AM	25.482	23.034	25.45	24.182	23.803	44.117	47.731	9.464	35.533	-1.286	-6.292	47.037	0.108	0.001	0	1001.75	16.6958	46.3	11.5	39.8	2.746	0.016	0.016	0.000	0.399	0.34
1023	3/13/2003	12:54:16 AM	25.48	23.032	25.433	24.225	23.832	43.805	47.565	9.521	35.035	-1.289	-6.292	48.103	0.109	0.001	0	1002.75	16.7125	46.1	11.8	39.4	2.718	0.016	0.016	0.000	0.407	0.35
1024	3/13/2003	12:55:16 AM	25.482	23.034	25.43	24.222	23.829	44.113	47.681	9.454	35.557	-1.286	-6.295	47.895	0.108	0.001	0	1003.75	16.7292	46.2	11.7	39.8	2.746	0.016	0.016	0.000	0.399	0.34
1025	3/13/2003	12:56:16 AM	25.505	23.057	25.488	24.245	23.857	43.655	47.563	9.47	34.851	-1.286	-6.252	48.05	0.108	0.001	0	1004.75	16.7458	46.1	11.8	39.3	2.706	0.016	0.016	0.000	0.405	0.34
1026	3/13/2003	12:57:16 AM	25.503	23.06	25.486	24.223	23.88	43.923	47.679	9.585	35.166	-1.289	-6.295	48.067	0.109	0.001	0	1005.75	16.7625	46.2	11.8	39.5	2.726	0.016	0.016	0.000	0.405	0.34
1027	3/13/2003	12:58:16 AM	25.5	23.056	25.453	24.24	23.897	44.179	47.913	9.729	35.212	-1.292	-6.324	48.39	0.108	0.001	0	1006.75	16.7792	46.4	11.9	39.7	2.737	0.016	0.016	0.000	0.401	0.34
1028	3/13/2003	12:59:16 AM	25.507	23.079	25.5	24.247	23.919	43.914	47.772	9.794	34.904	-1.289	-6.252	48.348	0.109	0.001	0	1007.75	16.7958	46.3	11.8	39.4	2.717	0.016	0.016	0.000	0.407	0.35
1029	3/13/2003	1:00:16 AM	25.52	23.077	25.508	24.215	23.932	43.921	47.704	9.651	35.109	-1.286	-6.316	48.464	0.108	0.001	0	1008.75	16.8125	46.2	11.9	39.5	2.724	0.016	0.016	0.000	0.402	0.34
1030	3/13/2003	1:00:52 AM	25.526	23.097	25.528	24.26	23.928	44.045	47.865	9.756	35.068	-1.284	-6.319	48.64	0.108	0.001	0	1009.35	16.8225	46.4	11.9	39.6	2.727	0.016	0.016	0.000	0.401	0.34
1031	3/13/2003	1:01:52 AM	25.539	23.106	25.552	24.299	23.956	44.074	47.917	9.77	35.013	-1.286	-6.29	48.457	0.109	0.001	0	1010.35	16.8392	46.4	11.9	39.5	2.726	0.016	0.016	0.000	0.405	0.34
1032	3/13/2003	1:02:52 AM	25.552	23.119	25.555	24.297	23.984	43.699	47.47	9.887	34.442	-1.286	-6.333	49.162	0.107	0.001	0	1011.35	16.8558	46.0	12.0	39.1	2.694	0.016	0.016	0.000	0.402	0.34
1033	3/13/2003	1:03:52 AM	25.563	23.135	25.571	24.338	23.975	44.032	47.853	9.812	35.013	-1.286	-6.339	48.483	0.108	0.001	0	1012.35	16.8725	46.4	11.9	39.5	2.725	0.016	0.016	0.000	0.401	0.34
1034	3/13/2003	1:04:52 AM	25.571	23.143	25.609	24.396	23.998	43.896	47.6	9.759	34.958	-1.286	-6.324	48.439	0.109	0.001	0	1013.35	16.8892	46.1	11.9	39.4	2.718	0.016	0.016	0.000	0.405	0.34
1035	3/13/2003	1:05:52 AM	25.584	23.141	25.602	24.389	24.036	44.337	48.219	9.738	35.461	-1.286	-6.316	48.535	0.109	0.001	0	1014.35	16.9058	46.7	11.9	39.9	2.751	0.016	0.016	0.000	0.400	0.34
1036	3/13/2003	1:06:52 AM	25.601	23.158	25.624	24.432	24.044	43.852	47.747	9.746	34.984	-1.281	-6.307	48.118	0.109	0.001	0	1015.35	16.9225	46.3	11.8	39.4	2.718	0.016	0.016	0.000	0.405	0.34
1037	3/13/2003	1:07:52 AM	25.596	23.138	25.614	24.381	23.998	44.109	47.973	9.722	35.191	-1.289	-6.29	48.401	0.11	0.001	0	1016.35	16.9392	46.5	11.9	39.7	2.734	0.016	0.016	0.000	0.407	0.35
1038	3/13/2003	1:08:52 AM	25.604	23.141	25.632	24.274	23.926	44.192	48.095	9.758	35.185	-1.286	-6.278	48.378	0.109	0.001	0	1017.35	16.9558	46.6	11.9	39.7	2.736	0.016	0.016	0.000	0.402	0.34
1039	3/13/2003	1:09:52 AM	25.627	23.139	25.625	24.177	23.889	44.134	48.02	9.728	35.146	-1.284	-6.307	48.306	0.109	0.001	0	1018.35	16.9725	46.5	11.8	39.6	2.733	0.016	0.016	0.000	0.403	0.34
1040	3/13/2003	1:10:52 AM	25.639	23.141	25.622	24.053	23.801	44.001	48.037	9.756	35.027	-1.286	-6.255	48.455	0.109	0.001	0	1019.35	16.9892	46.6	11.9	39.5	2.724	0.016	0.016	0.000	0.404	0.34

Figure D8-8: Dewatering of the AN-102R2, batch 4A, insoluble solids concentrations from 1.5 to 81 wt% - Raw & Calculated Data

1041	3/13/2003	1:11:52 AM	25.645	23.137	25.633	23.939	23.726	43.904	47.869	9.761	34.798	-1.286	-6.278	48.409	0.108	0.001	0	1020.35	17.0058	46.4	11.9	39.4	2.713	0.016	0.016	0.000	0.402	0.34
1042	3/13/2003	1:12:52 AM	25.656	23.133	25.654	23.814	23.657	44.109	47.952	9.679	35.25	-1.289	-6.316	48.285	0.109	0.001	0	1021.35	17.0225	46.5	11.8	39.7	2.736	0.016	0.016	0.000	0.402	0.34
1043	3/13/2003	1:13:52 AM	25.67	23.117	25.633	23.703	23.591	43.825	47.752	9.779	34.841	-1.284	-6.287	48.317	0.11	0.001	0	1022.35	17.0392	46.3	11.8	39.3	2.712	0.016	0.016	0.000	0.410	0.35
1044	3/13/2003	1:14:52 AM	25.681	23.113	25.654	23.644	23.541	43.995	47.952	9.765	35.037	-1.284	-6.307	48.503	0.108	0.001	0	1023.35	17.0558	46.5	11.9	39.5	2.724	0.016	0.016	0.000	0.400	0.34
1045	3/13/2003	1:15:52 AM	25.676	23.088	25.669	23.528	23.496	44.132	48.049	9.801	35.142	-1.284	-6.264	48.185	0.11	0.001	0	1024.35	17.0725	46.6	11.8	39.6	2.733	0.016	0.016	0.000	0.406	0.35
1046	3/13/2003	1:16:52 AM	25.676	23.068	25.654	23.468	23.457	44.21	48.12	9.625	35.371	-1.284	-6.301	47.948	0.109	0.001	0	1025.35	17.0892	46.6	11.8	39.8	2.743	0.016	0.016	0.000	0.401	0.34
1047	3/13/2003	1:17:52 AM	25.703	23.074	25.67	23.475	23.483	43.966	48.047	9.658	35.015	-1.286	-6.258	48.088	0.111	0.001	0	1026.35	17.1058	46.6	11.8	39.5	2.723	0.017	0.016	0.000	0.411	0.35
1048	3/13/2003	1:18:52 AM	25.674	23.025	25.636	23.446	23.489	44.285	48.333	9.677	35.254	-1.289	-6.272	48.021	0.11	0.001	0	1027.35	17.1225	46.9	11.8	39.8	2.742	0.016	0.016	0.000	0.405	0.34
1049	3/13/2003	1:19:52 AM	25.687	23.028	25.68	23.529	23.512	44.275	48.283	9.588	35.453	-1.286	-6.272	47.815	0.108	0.001	0	1028.35	17.1392	46.8	11.7	39.9	2.748	0.016	0.016	0.000	0.396	0.34
1050	3/13/2003	1:20:52 AM	25.691	23.027	25.698	23.628	23.541	44.248	48.292	9.608	35.388	-1.286	-6.281	47.86	0.108	0.001	0	1029.35	17.1558	46.8	11.7	39.8	2.745	0.016	0.016	0.000	0.397	0.34
1051	3/13/2003	1:21:52 AM	25.696	23.017	25.713	23.698	23.571	44.217	48.25	9.676	35.277	-1.284	-6.258	47.656	0.111	0.001	0	1030.35	17.1725	46.8	11.7	39.7	2.740	0.017	0.016	0.000	0.408	0.35
1052	3/13/2003	1:22:52 AM	25.701	23.002	25.713	23.734	23.581	43.999	47.838	9.578	35.355	-1.289	-6.278	48.082	0.109	0.001	0	1031.35	17.1892	46.4	11.8	39.7	2.736	0.016	0.016	0.000	0.401	0.34
1053	3/13/2003	1:23:52 AM	25.711	23.007	25.758	23.859	23.601	43.929	47.872	9.624	35.156	-1.286	-6.272	47.969	0.109	0.001	0	1032.35	17.2058	46.4	11.8	39.5	2.726	0.016	0.016	0.000	0.402	0.34
1054	3/13/2003	1:24:52 AM	25.701	22.997	25.758	23.904	23.621	45.376	49.369	9.725	36.559	-1.286	-6.261	48.602	0.109	0.001	0	1033.35	17.2225	47.9	11.9	41.0	2.825	0.016	0.016	0.000	0.388	0.33
1055	3/13/2003	1:25:52 AM	25.707	22.999	25.77	23.976	23.638	45.145	49.251	9.775	36.143	-1.286	-6.182	48.552	0.113	0.001	0	1034.35	17.2392	47.8	11.9	40.6	2.802	0.017	0.016	0.000	0.406	0.35
1056	3/13/2003	1:26:52 AM	25.714	23.005	25.812	24.008	23.65	45.074	49.105	9.816	36.167	-1.289	-6.229	48.648	0.112	0.001	0	1035.35	17.2558	47.6	11.9	40.6	2.801	0.017	0.016	0.000	0.402	0.34
1057	3/13/2003	1:27:52 AM	25.74	23.006	25.858	23.994	23.681	45.41	49.537	9.899	36.344	-1.286	-6.165	48.489	0.113	0.001	0	1036.35	17.2725	48.1	11.9	40.9	2.818	0.017	0.016	0.000	0.402	0.34
1058	3/13/2003	1:28:52 AM	25.743	23.004	25.825	24.047	23.699	45.161	49.287	9.868	36.159	-1.289	-6.226	48.715	0.113	0.001	0	1037.35	17.2892	47.8	11.9	40.7	2.803	0.017	0.016	0.000	0.405	0.34
1059	3/13/2003	1:29:52 AM	25.76	23.022	25.818	24.139	23.741	45.602	49.735	9.888	36.452	-1.286	-6.214	48.292	0.112	0.001	0	1038.35	17.3058	48.3	11.8	41.0	2.829	0.017	0.016	0.000	0.398	0.34
1060	3/13/2003	1:30:52 AM	25.768	23.019	25.8	24.197	23.759	45.124	49.204	9.782	36.157	-1.286	-6.194	48.562	0.114	0.001	0	1039.35	17.3225	47.7	11.9	40.6	2.802	0.017	0.017	0.000	0.409	0.35
1061	3/13/2003	1:31:52 AM	25.775	23.027	25.813	24.21	23.782	44.969	49.2	9.861	35.883	-1.286	-6.203	48.388	0.113	0.001	0	1040.35	17.3392	47.7	11.9	40.4	2.787	0.017	0.016	0.000	0.407	0.35
1062	3/13/2003	1:32:52 AM	25.783	23.03	25.806	24.213	23.81	45.072	49.123	9.829	36.092	-1.286	-6.174	48.508	0.111	0.001	0	1041.35	17.3558	47.7	11.9	40.6	2.798	0.017	0.016	0.000	0.399	0.34
1063	3/13/2003	1:33:52 AM	25.776	23.033	25.774	24.241	23.827	45.435	49.545	9.851	36.438	-1.289	-6.177	48.627	0.109	0.001	0	1042.35	17.3725	48.1	11.9	40.9	2.822	0.016	0.016	0.000	0.388	0.33
1064	3/13/2003	1:34:52 AM	25.783	23.044	25.776	24.298	23.844	45.376	49.518	9.886	36.321	-1.286	-6.211	48.657	0.111	0.001	0	1043.35	17.3892	48.0	11.9	40.8	2.816	0.017	0.016	0.000	0.396	0.34
1065	3/13/2003	1:35:52 AM	25.796	23.063	25.799	24.276	23.868	45.283	49.527	9.944	36.041	-1.286	-6.174	48.52	0.113	0.001	0	1044.35	17.4058	48.1	11.9	40.7	2.804	0.017	0.016	0.000	0.405	0.34
1066	3/13/2003	1:36:52 AM	25.793	23.065	25.801	24.303	23.875	45.24	49.489	9.978	36.032	-1.284	-6.154	48.176	0.112	0.001	0	1045.35	17.4225	48.0	11.8	40.6	2.802	0.017	0.016	0.000	0.402	0.34
1067	3/13/2003	1:37:52 AM	25.795	23.072	25.778	24.39	23.912	45.449	49.657	9.932	36.296	-1.286	-6.151	48.29	0.112	0.001	0	1046.35	17.4392	48.2	11.8	40.9	2.818	0.017	0.016	0.000	0.400	0.34
1068	3/13/2003	1:38:52 AM	25.787	23.074	25.74	24.427	23.934	45.362	49.624	9.895	36.264	-1.286	-6.168	48.407	0.112	0.001	0	1047.35	17.4558	48.2	11.9	40.8	2.814	0.017	0.016	0.000	0.401	0.34
1069	3/13/2003	1:39:52 AM	25.809	23.096	25.732	24.444	23.946	45.368	49.568	9.828	36.294	-1.286	-6.174	48.493	0.112	0.001	0	1048.35	17.4725	48.1	11.9	40.8	2.815	0.017	0.016	0.000	0.401	0.34
1070	3/13/2003	1:40:52 AM	25.796	23.088	25.684	24.411	23.968	45.434	49.812	9.963	36.227	-1.289	-6.165	48.371	0.112	0.001	0	1049.35	17.4892	48.3	11.9	40.8	2.815	0.017	0.016	0.000	0.401	0.34
1071	3/13/2003	1:41:52 AM	25.787	23.099	25.66	24.422	23.984	45.211	49.433	9.863	36.206	-1.284	-6.174	48.336	0.112	0.001	0	1050.35	17.5058	48.0	11.8	40.7	2.807	0.017	0.016	0.000	0.403	0.34
1072	3/13/2003	1:42:52 AM	25.775	23.112	25.628	24.435	24.002	45.128	49.315	9.862	36.053	-1.289	-6.162	48.56	0.112	0.001	0	1051.35	17.5225	47.8	11.9	40.6	2.799	0.017	0.016	0.000	0.404	0.34
1073	3/13/2003	1:43:52 AM	25.762	23.119	25.595	24.457	24.014	45.397	49.647	9.853	36.378	-1.286	-6.171	48.032	0.112	0.001	0	1052.35	17.5392	48.2	11.8	40.9	2.819	0.017	0.016	0.000	0.402	0.34
1074	3/13/2003	1:44:52 AM	25.759	23.126	25.597	24.474	24.016	45.772	49.988	9.969	36.62	-1.286	-6.182	48.233	0.112	0.001	0	1053.35	17.5558	48.5	11.8	41.2	2.840	0.017	0.016	0.000	0.399	0.34
1075	3/13/2003	1:45:52 AM	25.741	23.138	25.589	24.421	24.043	45.157	49.369	9.839	36.127	-1.286	-6.191	47.929	0.112	0.001	0	1054.35	17.5725	47.9	11.7	40.6	2.802	0.017	0.016	0.000	0.404	0.34
1076	3/13/2003	1:46:52 AM	25.723	23.14	25.561	24.448	24.07	45.412	49.684	9.842	36.413	-1.286	-6.18	48.493	0.112	0.001	0	1055.35	17.5892	48.2	11.9	40.9	2.821	0.017	0.016	0.000	0.402	0.34
1077	3/13/2003	1:47:52 AM	25.715	23.157	25.542	24.465	24.082	45.3	49.481	9.89	36.272	-1.289	-6.177	48.275	0.111	0.001	0	1056.35	17.6058	48.0	11.8	40.8	2.812	0.017	0.016	0.000	0.400	0.34
1078	3/13/2003	1:48:52 AM	25.716	23.163	25.549	24.481	24.063	45.31	49.644	9.953	36.077	-1.289	-6.185	48.264	0.111	0.001	0	1057.35	17.6225	48.2	11.8	40.7	2.806	0.017	0.016	0.000	0.400	0.34
1079	3/13/2003	1:49:52 AM	25.695	23.162	25.533	24.425	24.027	45.345	49.591	9.999	36.143	-1.286	-6.162	48.246	0.11	0.001	0	1058.35	17.6392	48.1	11.8	40.7	2.809	0.016	0.016	0.000	0.397	0.34
1080	3/13/2003	1:50:52 AM	25.694	23.166	25.502	24.339	23.981	45.47	49.764	9.83	36.479	-1.286	-6.171	48.344	0.111	0.001	0	1059.35	17.6558	48.3	11.8	41.0	2.825	0.017	0.016	0.000	0.398	0.34
1081	3/13/2003	1:51:52 AM	25.696	23.178	25.499	24.266	23.913	45.36	49.626	9.945	36.202	-1.284	-6.151	48.206	0.109	0.001	0	1060.35	17.6725	48.2	11.8	40.8	2.812	0.016	0.016	0.000	0.393	0.33
1082	3/13/2003	1:52:52 AM	25.678	23.17	25.471	24.122	23.855	45.186	49.433	9.949	36.049	-1.286	-6.165	48.323	0.111	0.001	0	1061.35	17.6892	48.0	11.8	40.6	2.800	0.017	0.016	0.000	0.402	0.34
1083	3/13/2003	1:53:52 AM	25.679	23.166	25.487	24.023	23.791	45.522	49.969	9.92	36.202	-1.286	-6.145	48.271	0.111	0.001	0	1062.35	17.7058	48.5	11.8	40.9	2.817	0.017	0.016	0.000	0.399	0.34
1084	3/13/2003	1:54:52 AM	25.659	23.151	25.452	23.908	23.685	45.348	49.624	9.957	36.221	-1.289	-6.185	47.954	0.111	0.001	0	1063.35	17.7225	48.2	11.8	40.8	2.812	0.017	0.016	0.000	0.401	0.34
1085	3/13/2003	1:55:52 AM	25.649	23.136	25.426	23.787	23.64	45.457	49.767	9.873	36.352	-1.286	-6.18	49.059	0.111	0.001	0	1064.35	17.7392	48.3	12.0	40.9	2.820	0.017	0.016	0.000	0.400	0.34
1086	3/13/2003	1:56:52 AM	25.654	23.136	25.431	23.722	23.594	44.873	49.224	10.147	35.494	-1.286	-6.174	48.759	0.111	0.001	0	1065.35	17.7558	47.8	11.9	40.2	2.771	0.017	0.016	0.000	0.407	0.35
1087	3/13/2003	1:57:52 AM	25.638	23.115	25.451	23.631	23.529	45.06	49.446	10.063	35.862	-1.286	-6.182	48.332	0.108	0.001	0	1066.35	17.7725	48.0	11.8	40.5	2.790	0.016	0.016	0.000	0.393	0.33
1088	3/13/2003	1:58:52 AM	25.623	23.1	25.446	23.556	23.494	45.095	49.551	10.112	35.666	-1.286	-6.168	48.329	0.11	0.001	0	1067.35	17.7892	48.1	11.8	40.4	2.784	0.016	0.016	0.000	0.401	0.34
1089	3/13/2003	1:59:52 AM	25.624	23.091	25.447	23.527	23.51	46.77	51.165	10.337	37.224	-1.286	-6.13	49.307	0.113	0.001	0	1068.35	17.8058	49.7	12.1	42.0	2.896	0.017	0.017	0.000	0.396	0.34
1090	3/13/2003	2:00:52 AM	25.62	23.087	25.508	23.577	23.52	46.224	50.64	10.348	36.61	-1.284	-6.067	49.332	0.113	0.001	0	1069.35	17.8225	49.2	12.1	41.4	2.856	0.017	0.017	0.000	0.401	0.34
1091	3/13/2003	2:01:52 AM	25.612	23.069	25.545	23.59	23.518	46.302	50.64	10.36	36.818	-1.286	-6.119	48.98	0.112	0.001	0	1070.35	17.8392	49.2	12.0	41.6	2.865	0.017	0.016	0.000	0.396	0.34
1092	3/13/2003	2:02:52 AM	25.615	23.057	25.573	23.678	23.551	46.46	50.954	10.384	36.843	-1.284	-6.101	49.414	0.111	0.001	0	1071.35	17.8558	49.5	12.1	41.7	2.872	0.017	0.016	0.000	0.391	0.33
1093	3/13/2003	2:03:52 AM	25.626	23.052	25.588	23.789	23.576	45.526	50.013	10.419	35.862	-1.286	-6.177	49.426	0.109	0.001	0	1072.35	17.8725	48.5	12.1	40.7	2.806	0.016	0.016	0.000	0.393	0.33
1094	3/13/2003	2:04:52 AM	25.621	23.048	25.609	23.819	23.602	45.642	50.029	10.213	36.241	-1.286	-6.174	49.189	0.113	0.001	0	1073.35	17.8892	48.6	12.1	40.9	2.823	0.017	0.017	0.000	0.405	0.34
1095	3/13/2003	2:05:52 AM	25.627	23.038	25.625	23.875	23.633	45.72	50.137	10.227	36.282	-1.289	-6.171	49.024	0.111	0.001	0	1074.35	17.9058	48.7	12.0	41.0	2.827	0.017	0.016	0.000	0.397	0.34
1096	3/13/2003	2:06:52 AM	25.643	23.045	25.641	23.982	23.664	45.785	50.199	10.145	36.292	-1.289	-6.154	48.682	0.111	0.001	0	1075.35	17.9225	48.7	11.9	41.0	2.829	0.017	0.016	0.000	0.396	0.34
1097	3/13/2003	2:07:52 AM	25.649	23.031	25.612	24.003	23.695	45.693	50.247	10.212	36.221	-1.289	-6.162	48.525	0.113	0.001	0	1076.35	17.9392	48.8	11.9	41.0	2.824	0.017	0.017	0.000	0.404	0.34
1098	3/13/2003	2:08:52 AM	25.671	23.053	25.669	24.09	23.727	45.755	50.329	10.284	36.204	-1.286	-6.165	48.743	0.113	0.001	0	1077.35	17.9558	48.9	11.9	41.0	2.825	0.017	0.017	0.000	0.403	0.34
1099	3/13/2003	2:09:52 AM	25.683	23.06	25.646	24.163	23.749	45.938	50.437	10.161	36.536	-1.281	-6.154	48.717	0.113	0.001	0	1078.35	17.9725	49.0	11.9	41.2	2.843	0.017	0.017	0.000	0.401	0.34
1100	3/13/2003	2:10:52 AM	25.69	23.062	25.593	24.215	23.781	45.557	50.085	10.081	36.307	-1.286	-6.116	48.837	0.113	0.001	0	1079.35	17.9892	48.6	12.0	40.9	2.822	0.017	0.017	0.000	0.405	0.34
1101	3/13/2003	2:11:52 AM	25.693	23.064	25.565	24.207	23.809	45.836	50.484	10.205	36.397	-1.286	-6.125	48.56	0.111	0.001	0	1080.35	18.0058	49.0	11.9	41.1	2.835	0.017	0.016	0.000	0.396	0.34
1102	3/13/2003	2:12:52 AM	25.696	23.078	25.569	24.281	23.857	45.88	50.464	10.35	36.256	-1.286	-6.11	48.732	0.112	0.001	0	1081.35	18.0225	49.0	11.9	41.1	2.831	0.017	0.016	0.000	0.400	0.34
1103	3/13/2003	2:13:52 AM	25.669	23.061	25.522	24.309	23.876	45.946	50.557	10.153	36.497	-1.286	-6.154	48.386	0.112	0.001	0	1082.35	18.0392	49.1	11.9	41.2	2.842	0.017	0.016	0.000	0.399	0.34
1104	3/13/2003	2:14:52 AM	25.668	23.085	25.506	24.408	23.89	46.031	50.656	10.083	36.63	-1.286	-6.148	48.111	0.11	0.001	0	1083.35	18.0558	49.2	11.8	41.3	2.850	0.016	0.016	0.000	0.391	0.33
1105	3/13/2003	2:15:52 AM	25.657	23.084	25.485	24.387	23.894	46.288	50.84	10.135	36.958	-1.289	-6.156	48.116	0.113	0.001	0	1084.35	18.0725	49.4	11.8	41.6	2.870	0.017	0.017	0.000	0.399	0.34
1106	3/13/2003	2:16:52 AM	25.646	23.092	25.488	24.366	23.907	45.99	50.625	10.199	36.548	-1.286	-6.182	48.334	0.11	0.001	0	1085.35	18.0892	49.2	11.8	41.3	2.845	0.016	0.016	0.000	0.392	0.33
1107	3/13/2003	2:17:52 AM	25.633	23.095	25.486	24.368	23.92	46.025	50.59	10.206	36.563	-1.286	-6.182	47.417	0.113	0.001	0	1086.35	18.1058	49.1	11.6	41.3	2.847	0.017	0.017	0.000	0.402	0.34
1108	3/13/2003	2:18:52 AM	25.625	23.097	25.458	24.35	23.947	46	50.484	10.158	36.661	-1.286	-6.2	48.321	0.112	0.001	0	1087.35	18.1225	49.0	11.8	41.3	2.850	0.017	0.016	0.000	0.399	0.34
1109	3/13/2003	2:19:52 AM	25.622	23.109	25.43	24.382	23.959	46.056	50.598	10.207	36.724	-1.292	-6.185	48.227	0.113	0.001	0	1088.35	18.1392	49.1	11.8	41.4	2.854	0.017	0.017	0.000	0.402	0.34
1110	3/13/2003	2:20:52 AM	25.619	23.121	25.447	24.394	23.961	46.045	50.578	10.127	36.683	-1.289	-6.182	48.726	0.112	0.001	0	1089.35	18.1558	49.1	11.9	41.4	2.852	0.017	0.016	0.000	0.399	0.34
1111	3/13/2003	2:21:52 AM	25.616	23.128	25.469	24.451	23.978	46.228	50.743	10.071	36.988	-1.286	-6.18	48.078	0.113	0.001	0	1090.35	18.1725	49.3	11.8	41.6	2.869	0.017	0.017	0.000	0.400	0.34
1112	3/13/2003	2:22:52 AM	25.614	23.131	25.462	24.519	24.001	45.571	50.158	10.404	35.924	-1.286	-6.194	48.938	0.111	0.001	0	1091.35	18.1892	48.7	12.0	40.7	2.809	0.017	0.016	0.000	0.401	0.34
1113	3/13/2003	2:23:52 AM	25.611	23.143	25.438	24.496	24.038	45.871	50.501	10.243	36.434	-1.289	-6.159	48.3	0.112	0.001	0	1092.35	18.2058	49.0	11.8	41.2	2.837	0.017	0.016	0.000	0.401	0.34
1114	3/13/2003	2:24:52 AM	25.617	23.159	25.455	24.522	24.069	45.437	50.118	10.591	35.545	-1.286	-6.151	49.294	0.111	0.001	0	1093.35	18.2225	48.6	12.1	40.5	2.792	0.017	0.016	0.000	0.404	0.34
1115	3/13/2003	2:25:52 AM	25.623	23.165	25.42	24.498	24.075	45.644	50.234	10.523	35.893	-1.286	-6.162	49.248	0.11	0.001	0	1094.35	18.2392	48.8	12.1	40.8	2.811	0.016	0.016	0.000	0.398	0.34
1116	3/13/2003	2:26:52 AM	25.624	23.176	25.387	24.509	24.136	45.608	50.24	10.456	35.865	-1.286	-6.168	49.007	0.111	0.001	0	1095.35	18.2558	48.8	12.0	40.7	2.809	0.017	0.016	0.000	0.402	0.34
1117	3/13/2003	2:27:52 AM	25.61	23.172	25.348	24.566	24.138	45.511	50.158	10.454	35.766	-1.289	-6.211	49.055	0.109	0.001	0	1096.35	18.2725	48.7	12.0	40.6	2.802	0.016	0.016	0.000	0.396	0.34
1118	3/13/2003	2:28:52 AM	25.601	23.189	25.339	24.562	24.149	45.768	50.47	10.457	36.047	-1.286	-6.206	48.881	0.111	0.001	0	1097.35	18.2892	49.0	12.0	40.9	2.820	0.017	0.016	0.000	0.401	0.34
1119	3/13/2003	2:29:52 AM	25.598	23.211	25.316	24.584	24.186	45.793	50.466	10.466	36.122	-1.286	-6.223	48.741	0.111	0.001	0	1098.35	18.3058	49.0	11.9	41.0	2.824	0.017	0.016	0.000	0.400	0.34
1120	3/13/2003	2:30:52 AM	25.59	23.223	25.283	24.601	24.193	45.542	50.11	10.395	35.942	-1.289	-6.255	49.034	0.109	0.001	0	1099.35	18.3225	48.6	12.0	40.7	2.809	0.016	0.016	0.000	0.396	0.34
1121	3/13/2003	2:31:52 AM	25.587	23.245	25.26	24.638	24.175	45.845	50.383	10.451	36.223	-1.286	-6.194	48.978	0.108	0.001	0	1100.35	18.3392	48.9	12.0	41.0	2.829	0.016	0.016	0.000	0.390	0.33
1122	3/13/2003	2:32:52 AM	25.559	23.236	25.232	24.544	24.136	45.855	50.592	10.521	36.11	-1.286	-6.255	48.604	0.11	0.001	0	1101.35	18.3558	49.1	11.9	41.0	2.826	0.016	0.016	0.000	0.398	0.34
1123	3/13/2003	2:33:52 AM	25.542	23.225	25.215	24.458	24.1	45.774	50.453	10.41	36.122	-1.286	-6.258	48.594	0.11	0.001	0	1102.35	18.3725	49.0	11.9	40.9	2.823	0.016	0.016	0.000	0.398	0.34
1124	3/13/2003	2:34:52 AM	25.53	23.228	25.193	24.371	24.063	45.967	50.65	10.528	36.208	-1.289	-6.188	48.696	0.109	0.001	0	1103.35	18.3892	49.2	11.9	41.1	2.833	0.016	0.016	0.000	0.393	0.33
1125	3/13/2003	2:35:52 AM	25.524	23.232	25.172	24.284	23.971	46.025	50.615	10.428	36.454	-1.286	-6.258	48.707	0.109	0.001	0	1104.35	18.4058	49.1	11.9	41.2	2.843	0.016	0.016	0.000	0.392	0.33
1126	3/13/2003	2:36:52 AM	25.498	23.215	25.135	24.157	23.9	46.041	50.77	10.546	36.223	-1.286	-6.232	48.451	0.11	0.001	0	1105.35	18.4225	49.3	11.9	41.1	2.836	0.016	0.016	0.000	0.397	0.34
1127	3/13/2003	2:37:52 AM	25.481	23.199	25.144	24.021	23.828	45.913	50.542	10.52	36.127	-1.289	-6.211	48.678	0.107	0.001	0	1106.35	18.4392	49.1	11.9	41.0	2.828	0.016	0.016	0.000	0.387	0.33
1128	3/13/2003	2:38:52 AM	25.47	23.203	25.168	23.954	23.792	46.012	50.784	10.524	36.225	-1.286	-6.237	48.785	0.108	0.001	0	1107.35	18.4558	49.3	12.0	41.1	2.835	0.016	0.016	0.000	0.390	0.33
1129	3/13/2003	2:39:52 AM	25.459	23.181	25.162	23.862	23.725	45.809	50.633	10.456	36.08	-1.286	-6.232	48.384	0.109	0.001	0	1108.35	18.4725	49.2	11.9	40.9	2.823	0.016	0.016	0.000	0.395	0.34
1130	3/13/2003	2:40:52 AM	25.447	23.159	25.15	23.8	23.648	46.19	50.975	10.508	36.53	-1.286	-6.211	48.451	0.106	0.001	0	1109.35	18.4892	49.5	11.9	41.4	2.852	0.016	0.016	0.000	0.380	0.32
1131	3/13/2003	2:41:52 AM	25.425	23.137	25.123	23.723	23.651	46.019	50.673	10.528	36.299	-1.286	-6.22	48.59	0.108	0.001	0	1110.35	18.5058	49.2	11.9	41.2	2.838	0.016	0.016	0.000	0.390	0.33
1132	3/13/2003	2:42:52 AM	25.423	23.125	25.161	23.701	23.664	45.859	50.627	10.487	36.129	-1.289	-6.223	48.443	0.108	0.001	0	1111.35	18.5225	49.2	11.9	41.0	2.826	0.016	0.016	0.000	0.391	0.33
1133	3/13/2003	2:43:52 AM	25.412	23.114	25.175	23.705	23.683	46.054	50.83	10.537	36.196	-1.286	-6.194	48.413	0.109	0.001	0	1112.35	18.5392	49.4	11.9	41.1	2.835	0.016	0.016	0.000	0.393	0.33
1134	3/13/2003	2:44:52 AM	25.407	23.109	25.18	23.781	23.698	45.915	50.729	10.491	36.122	-1.284	-6.188	48.329	0.107	0.001	0	1113.35	18.5558	49.3	11.8	41.0	2.828	0.016	0.016	0.000	0.387	0.33
1135	3/13/2003	2:45:52 AM	25.406	23.094	25.184	23.82	23.683	45.876	50.621	10.457	36.198	-1.286	-6.177	47.979	0.109	0.001	0	1114.35	18.5725	49.1	11.8	41.0	2.829	0.016	0.016	0.000	0.394	0.34
1136	3/13/2003	2:46:52 AM	25.39	23.078	25.184	23.88	23.717	46.153	50.855	10.484	36.434	-1.289	-6.206	48.439	0.108	0.001	0	1115.35	18.5892	49.4	11.9	41.3	2.850	0.016	0.016	0.000	0.388	0.33
1137	3/13/2003	2:47:52 AM	25.376	23.063	25.194	23.905	23.697	46.188	51.07	10.528	36.421	-1.289	-6.22	48.296	0.109	0.001	0	1116.35	18.6058	49.6	11.8	41.3	2.848	0.016	0.016	0.000	0.391	0.33
1138	3/13/2003	2:48:52 AM	25.382	23.064	25.225	23.976	23.729	46.017	50.89	10.536	36.188	-1.286	-6.188	48.323	0.105	0.001	0	1117.35	18.6225	49.4	11.8	41.1	2.834	0.016	0.016	0.000	0.378	0.32
1139	3/13/2003	2:49:52 AM	25.403	23.08	25.246	24.068	23.77	46.064	50.89	10.492	36.219	-1.286	-6.261	48.292	0.108	0.001	0	1118.35	18.6392	49.4	11.8	41.1	2.837	0.016	0.016	0.000	0.389	0.33
1140	3/13/2003	2:50:52 AM	25.378	23.055	25.201	24.048	23.76	46.077	50.853	10.399	36.47	-1.286	-6.226	48.05	0.105	0.001	0	1119.35	18.6558	49.4	11.8	41.3	2.846	0.016	0.016	0.000	0.377	0.32
1141	3/13/2003	2:51:52 AM	25.395	23.067	25.238	24.114	23.812	46.126	50.824	10.499	36.444	-1.286	-6.264	47.973	0.106	0.001	0	1120.35	18.6725	49.4	11.8	41.3	2.846	0.016	0.016	0.000	0.380	0.32
1142	3/13/2003	2:52:52 AM	25.4	23.072	25.273	24.15	23.817	46.466	51.2	10.617	36.601	-1.284	-6.237	48.81	0.106	0.001	0	1121.35	18.6892	49.7	12.0	41.5	2.864	0.016	0.016	0.000	0.378	0.32
1143	3/13/2003	2:53:52 AM	25.407	23.069	25.275	24.202	23.844	46.25	51.101	10.549	36.391	-1.286	-6.272	48.193	0.105	0.001	0	1122.35	18.7058	49.6	11.8	41.3	2.849	0.016	0.016	0.000	0.376	0.32
1144	3/13/2003	2:54:52 AM	25.393	23.055	25.266	24.208	23.895	46.029	50.861	10.485	36.296	-1.286	-6.249	48.338	0.104	0.001	0	1123.35	18.7225	49.4	11.8	41.2	2.838	0.016	0.016	0.000	0.374	0.32
1145	3/13/2003	2:55:52 AM	25.42	23.082	25.293	24.245	23.917	46.398	51.169	10.424	36.778	-1.286	-6.269	48.3	0.105	0.001	0	1124.35	18.7392	49.7	11.8	41.6	2.867	0.016	0.016	0.000	0.373	0.32
1146	3/13/2003	2:56:52 AM	25.421	23.083	25.304	24.266	23.918	45.604	50.433	10.952	35.359	-1.286	-6.29	49.185	0.103	0.001	0	1125.35	18.7558	49.0	12.1	40.5	2.791	0.015	0.015	0.000	0.376	0.32
1147	3/13/2003	2:57:52 AM	25.431	23.088	25.349	24.276	23.933	45.836	50.64	10.807	35.699	-1.286	-6.269	49.116	0.1	0.001	0	1126.35	18.7725	49.2	12.0	40.8	2.811	0.015	0.015	0.000	0.362	0.31
1148	3/13/2003	2:58:52 AM	25.428	23.095	25.361	24.223	23.945	45.954	50.693	10.648	36.178	-1.286	-6.316	48.48	0.102	0.001	0	1127.35	18.7892	49.2	11.9	41.1	2.831	0.015	0.015	0.000	0.367	0.31
1149	3/13/2003	2:59:52 AM	25.444	23.106	25.372	24.304	23.971	45.996	50.776	10.8	35.948	-1.289	-6.313	48.648	0.102	0.001	0	1128.35	18.8058	49.3	11.9	41.0	2.825	0.015	0.015	0.000	0.367	0.31
1150	3/13/2003	3:00:33 AM	25.45	23.107	25.398	24.28	23.978	46.041	50.977	10.81	35.963	-1.286	-6.287	48.673	0.103	0.001	0	1129.03	18.8172	49.5	11.9	41.0	2.827	0.015	0.015	0.000	0.370	0.32
1151	3/13/2003	3:01:33 AM	25.467	23.119	25.4	24.352	23.98	46.072	50.704	10.785	36.157	-1.284	-6.301	48.728	0.102	0.001	0	1130.03	18.8339	49.2	11.9	41.1	2.835	0.015	0.015	0.000	0.366	0.31
1152	3/13/2003	3:02:33 AM	25.479	23.131	25.407	24.384	24.011	45.936	50.913	10.788	35.791	-1.286	-6.287	49.538	0.102	0.001	0	1131.03	18.8506	49.4	12.1	40.9	2.817	0.015	0.015	0.000	0.368	0.31
1153	3/13/2003	3:03:33 AM	25.499	23.136	25.442	24.37	24.017	46.085	51.053	10.877	35.897	-1.286	-6.324	48.745	0.101	0.001	0	1132.03	18.8672	49.6	11.9	41.0	2.826	0.015	0.015	0.000	0.363	0.31
1154	3/13/2003	3:04:33 AM	25.501	23.138	25.459	24.361	24.028	46.101	50.906	10.801	36.08	-1.286	-6.33	48.524	0.1	0.001	0	1133.03	18.8839	49.4	11.9	41.1	2.833	0.015	0.015	0.000	0.358	0.30
1155	3/13/2003	3:05:33 AM	25.496	23.133	25.449	24.346	24.029	45.872	50.809	10.834	35.715	-1.286	-6.33	48.583	0.1	0.001	0	1134.03	18.9006	49.3	11.9	40.8	2.813	0.015	0.015	0.000	0.361	0.31
1156	3/13/2003	3:06:33 AM	25.518	23.155	25.451	24.413	24.045	45.842	50.639	10.754	35.885	-1.286	-6.307	48.365	0.1	0.001	0	1135.03	18.9172	49.2	11.9	40.9	2.817	0.015	0.015	0.000	0.360	0.31
1157	3/13/2003	3:07:33 AM	25.524	23.151	25.467	24.449	24.056	45.892	50.729	10.688	35.969	-1.284	-6.292	48.107	0.099	0.001	0	1136.03	18.9339	49.3	11.8	40.9	2.822	0.015	0.015	0.000	0.356	0.30
1158	3/13/2003	3:08:33 AM	25.545	23.158	25.508	24.441	24.068	46.201	50.985	10.509	36.524	-1.286	-6.353	47.889	0.098	0.001	0	1137.03	18.9506	49.5	11.7	41.4	2.852	0.015	0.014	0.000	0.348	0.30
1159	3/13/2003	3:09:33 AM	25.552	23.175	25.525	24.423	24.085	46.451	51.285	10.708	36.532	-1.286	-6.379	48.149	0.096	0.001	0	1138.03	18.9672	49.8	11.8	41.5	2.861	0.014	0.014	0.000	0.340	0.29
1160	3/13/2003	3:10:33 AM	25.548	23.16	25.441	24.448	24.091	46.329	51.13	10.528	36.554	-1.286	-6.388	47.943	0.096	0.001	0	1139.03	18.9839	49.7	11.7	41.4	2.857	0.014	0.014	0.000	0.341	0.29
1161	3/13/2003	3:11:33 AM	25.57	23.187	25.428	24.495	24.108	46.694	51.424	10.639	36.911	-1.286	-6.397	47.837	0.094	0.001	0	1140.03	19.0006	50.0	11.7	41.8	2.882	0.014	0.014	0.000	0.331	0.28
1162	3/13/2003	3:12:33 AM	25.572	23.194	25.39	24.487	24.125	46.516	51.353	10.569	36.671	-1.286	-6.411	47.618	0.093	0.001	0	1141.03	19.0172	49.9	11.7	41.6	2.868	0.014	0.014	0.000	0.330	0.28
1163	3/13/2003	3:13:33 AM	25.548	23.18	25.336	24.473	24.133	45.898	50.712	11.08	35.596	-1.289	-6.403	49.068	0.093	0.001	0	1142.03	19.0339	49.2	12.0	40.7	2.809	0.014	0.014	0.000	0.337	0.29
1164	3/13/2003	3:14:33 AM	25.555	23.207	25.333	24.495	24.137	46.06	50.946	10.751	36.045	-1.289	-6.46	48.193	0.09	0.001	0	1143.03	19.0506	49.5	11.8	41.1	2.830	0.013	0.013	0.000	0.324	0.28
1165	3/13/2003	3:15:33 AM	25.536	23.213	25.304	24.436	24.129	46.356	51.148	10.758	36.382	-1.286	-6.463	47.985	0.09	0.001	0	1144.03	19.0672	49.7	11.8	41.4	2.852	0.013	0.013	0.000	0.322	0.27
1166	3/13/2003	3:16:33 AM	25.532	23.219	25.285	24.487	24.124	46.451	51.208	10.723	36.522	-1.289	-6.431	47.809	0.086	0.001	0	1145.03	19.0839	49.7	11.7	41.5	2.860	0.013	0.013	0.000	0.307	0.26
1167	3/13/2003	3:17:33 AM	25.537	23.219	25.28	24.532	24.104	45.604	50.486	11.149	35.136	-1.286	-6.504	48.839	0.087	0.001	0	1146.03	19.1006	49.0	12.0	40.4	2.783	0.013	0.013	0.000	0.319	0.27
1168	3/13/2003	3:18:33 AM	25.52	23.223	25.253	24.471	24.093	46.18	50.956	11.047	35.815	-1.289	-6.484	48.491	0.087	0.001	0	1147.03	19.1172	49.5	11.9	41.0	2.827	0.013	0.013	0.000	0.314	0.27
1169	3/13/2003	3:19:33 AM	25.513	23.231	25.251	24.384	24.026	45.956	50.749	10.762	35.908	-1.289	-6.547	47.79	0.088	0.001	0	1148.03	19.1339	49.5	11.7	40.9	2.822	0.013	0.013	0.000	0.318	0.27
1170	3/13/2003	3:20:33 AM	25.494	23.211	25.242	24.253	23.961	46.101	50.799	10.774	36.09	-1.289	-6.515	47.805	0.083	0.001	0	1149.03	19.1506	49.3	11.7	41.1	2.833	0.012	0.012	0.000	0.299	0.25

Figure D8-9: Dewatering of the AN-102R2, batch 4A, insoluble solids concentrations from 1.5 to 81 wt% - Raw & Calculated Data

1171	3/13/2003	3:21:33 AM	25.494	23.211	25.247	24.133	23.916	46.118	50.848	10.688	36.237	-1.286	-6.565	47.841	0.084	0.001	0	1150.03	19.1672	49.4	11.7	41.2	2.839	0.013	0.012	0.000	0.302	0.26
1172	3/13/2003	3:22:33 AM	25.488	23.2	25.236	24.022	23.845	46.489	51.361	10.8	36.352	-1.286	-6.556	47.57	0.084	0.001	0	1151.03	19.1839	49.9	11.7	41.4	2.856	0.013	0.012	0.000	0.300	0.26
1173	3/13/2003	3:23:33 AM	25.486	23.194	25.209	23.925	23.768	46.309	51.117	10.665	36.419	-1.286	-6.536	47.526	0.081	0.001	0	1152.03	19.2006	49.6	11.6	41.4	2.862	0.012	0.012	0.000	0.290	0.25
1174	3/13/2003	3:24:33 AM	25.49	23.193	25.223	23.834	23.727	45.316	50.11	11.491	34.546	-1.289	-6.602	49.802	0.08	0.001	0	1153.03	19.2172	48.6	12.2	39.9	2.753	0.012	0.012	0.000	0.297	0.25
1175	3/13/2003	3:25:33 AM	25.47	23.167	25.217	23.713	23.696	45.822	50.451	11.472	35.132	-1.286	-6.626	49.621	0.079	0.001	0	1154.03	19.2339	49.0	12.2	40.5	2.791	0.012	0.012	0.000	0.289	0.25
1176	3/13/2003	3:26:33 AM	25.463	23.155	25.281	23.661	23.629	45.395	50.215	11.41	34.722	-1.286	-6.625	49.399	0.079	0.001	0	1155.03	19.2506	48.7	12.1	40.1	2.762	0.012	0.012	0.000	0.292	0.25
1177	3/13/2003	3:27:33 AM	25.458	23.145	25.321	23.596	23.584	45.559	50.257	11.352	35.001	-1.289	-6.602	49.326	0.078	0.001	0	1156.03	19.2672	48.8	12.1	40.3	2.777	0.012	0.012	0.000	0.286	0.24
1178	3/13/2003	3:28:33 AM	25.473	23.136	25.351	23.61	23.609	45.626	50.325	11.22	35.277	-1.284	-6.623	48.905	0.079	0.001	0	1157.03	19.2839	48.9	12.0	40.6	2.789	0.012	0.012	0.000	0.288	0.24
1179	3/13/2003	3:29:33 AM	25.485	23.137	25.377	23.672	23.62	45.256	49.988	11.381	34.646	-1.284	-6.617	49.296	0.079	0.001	0	1158.03	19.3006	48.5	12.1	40.0	2.754	0.012	0.012	0.000	0.292	0.25
1180	3/13/2003	3:30:33 AM	25.478	23.115	25.375	23.66	23.644	45.524	50.373	11.285	35.037	-1.286	-6.634	49.141	0.078	0.001	0	1159.03	19.3172	48.9	12.0	40.3	2.777	0.012	0.012	0.000	0.286	0.24
1181	3/13/2003	3:31:33 AM	25.481	23.108	25.399	23.724	23.672	45.505	50.288	11.303	34.99	-1.284	-6.614	48.87	0.075	0.001	0	1160.03	19.3339	48.8	12.0	40.2	2.775	0.011	0.011	0.000	0.275	0.23
1182	3/13/2003	3:32:33 AM	25.47	23.087	25.403	23.788	23.671	45.704	50.546	11.255	35.134	-1.286	-6.64	48.772	0.077	0.001	0	1161.03	19.3506	49.1	12.0	40.4	2.787	0.011	0.011	0.000	0.281	0.24
1183	3/13/2003	3:33:33 AM	25.481	23.088	25.444	23.859	23.692	45.457	50.335	11.198	34.972	-1.289	-6.654	48.678	0.076	0.001	0	1162.03	19.3672	48.9	11.9	40.2	2.773	0.011	0.011	0.000	0.278	0.24
1184	3/13/2003	3:34:33 AM	25.491	23.078	25.489	23.904	23.707	45.472	50.288	11.312	34.89	-1.284	-6.663	48.829	0.075	0.001	0	1163.03	19.3839	48.8	12.0	40.2	2.770	0.011	0.011	0.000	0.274	0.23
1185	3/13/2003	3:35:33 AM	25.517	23.084	25.53	23.946	23.726	45.522	50.439	11.207	35.003	-1.286	-6.666	48.382	0.075	0.001	0	1164.03	19.4006	49.0	11.9	40.3	2.776	0.011	0.011	0.000	0.274	0.23
1186	3/13/2003	3:36:33 AM	25.513	23.08	25.526	24.002	23.764	45.48	50.429	11.211	34.956	-1.246	-6.631	48.139	0.072	0.001	0	1165.03	19.4172	49.0	11.8	40.2	2.773	0.011	0.011	0.000	0.263	0.22
1187	3/13/2003	3:37:33 AM	25.523	23.075	25.526	24.073	23.77	45.664	50.555	11.135	35.3	-1.217	-6.652	48.201	0.073	0.001	0	1166.03	19.4339	49.1	11.8	40.5	2.791	0.011	0.011	0.000	0.265	0.23
1188	3/13/2003	3:38:33 AM	25.535	23.076	25.517	24.144	23.781	45.71	50.573	11.077	35.443	-1.229	-6.695	47.839	0.072	0.001	0	1167.03	19.4506	49.1	11.7	40.6	2.798	0.011	0.011	0.000	0.261	0.22
1189	3/13/2003	3:39:33 AM	25.537	23.083	25.544	24.091	23.823	45.393	50.251	11.515	34.583	-1.284	-6.727	48.954	0.071	0.001	0	1168.03	19.4672	48.8	12.0	40.0	2.757	0.011	0.010	0.000	0.261	0.22
1190	3/13/2003	3:40:33 AM	25.553	23.08	25.591	24.163	23.845	44.971	49.8	11.483	34.19	-1.229	-6.683	49.279	0.07	0.001	0	1169.03	19.4839	48.3	12.1	39.6	2.729	0.010	0.010	0.000	0.259	0.22
1191	3/13/2003	3:41:33 AM	25.555	23.077	25.633	24.224	23.867	45.097	49.953	11.544	34.274	-1.286	-6.759	48.891	0.069	0.001	0	1170.03	19.5006	48.5	12.0	39.7	2.736	0.010	0.010	0.000	0.255	0.22
1192	3/13/2003	3:42:33 AM	25.577	23.094	25.675	24.262	23.889	44.954	49.837	11.441	34.256	-1.286	-6.744	49.856	0.069	0.001	0	1171.03	19.5172	48.4	12.2	39.6	2.731	0.010	0.010	0.000	0.255	0.22
1193	3/13/2003	3:43:33 AM	25.6	23.107	25.693	24.285	23.922	44.848	49.68	11.373	34.221	-1.22	-6.767	46.735	0.068	0.001	0	1172.03	19.5339	48.2	11.5	39.5	2.726	0.010	0.010	0.000	0.251	0.21
1194	3/13/2003	3:44:33 AM	25.601	23.098	25.684	24.261	23.923	45.306	50.319	11.485	34.438	-1.223	-6.77	44.865	0.068	0.001	0	1173.03	19.5506	48.8	11.0	39.9	2.749	0.010	0.010	0.000	0.249	0.21
1195	3/13/2003	3:45:33 AM	25.618	23.105	25.691	24.308	23.93	44.877	49.791	11.389	34.233	-1.229	-6.779	48.776	0.067	0.001	0	1174.03	19.5672	48.3	12.0	39.6	2.727	0.010	0.010	0.000	0.248	0.21
1196	3/13/2003	3:46:33 AM	25.636	23.113	25.714	24.341	23.943	45.014	49.963	11.413	34.279	-1.223	-6.747	48.273	0.066	0.001	0	1175.03	19.5839	48.5	11.8	39.6	2.733	0.010	0.010	0.000	0.243	0.21
1197	3/13/2003	3:47:33 AM	25.649	23.126	25.747	24.374	23.971	44.973	49.789	11.346	34.448	-1.223	-6.854	48.289	0.067	0.001	0	1176.03	19.6006	48.3	11.8	39.7	2.738	0.010	0.010	0.000	0.246	0.21
1198	3/13/2003	3:48:33 AM	25.667	23.139	25.81	24.427	23.974	44.946	49.775	11.448	34.331	-1.217	-6.837	48.571	0.065	0.001	0	1177.03	19.6172	48.3	11.9	39.6	2.733	0.010	0.009	0.000	0.239	0.20
1199	3/13/2003	3:49:33 AM	25.658	23.12	25.796	24.388	23.965	44.913	49.858	11.476	34.118	-1.223	-6.872	48.443	0.064	0.001	0	1178.03	19.6339	48.4	11.9	39.5	2.724	0.010	0.009	0.000	0.236	0.20
1200	3/13/2003	3:50:33 AM	25.696	23.143	25.759	24.416	23.993	44.674	49.659	11.315	34.157	-1.223	-6.828	48.606	0.063	0.001	0	1179.03	19.6506	48.2	11.9	39.4	2.718	0.009	0.009	0.000	0.233	0.20
1201																																			
1202		Averages	25.6	23.2	25.4	24.6	23.9	44.0	46.9	9.3	35.5	-1.0	-5.5	48.4	0.1	0.0	0.0	601.0	10.0	45.4	11.9	39.7	2.7	0.0	0.0	0.0	0.5	0.4
1203		Maximum	26.1	24.0	25.9	26.6	24.7	46.8	51.4	11.5	37.8	35.5	87.1	50.0	0.4	0.0	0.0	1179.0	19.7	50.0	12.2	42.0	2.9	0.1	0.1	0.0	1.7	1.4
1204		Median	25.6	23.2	25.3	24.5	24.0	44.3	46.8	9.3	36.0	-1.3	-6.2	48.5	0.1	0.0	0.0	600.5	10.0	45.3	11.9	40.1	2.8	0.0	0.0	0.0	0.5	0.4
1205		Minimum	24.7	19.6	24.8	21.6	20.8	-3.5	-1.5	1.1	-3.6	-1.3	-8.0	-0.2	0.0	0.0	0.0	23.0	0.4	-3.0	-0.1	-3.5	-0.2	0.0	0.0	0.0	-0.3	-0.3
1206		2 x Std Dev	0.610	1.560	0.407	1.894	1.102	8.184	5.652	1.388	7.631	6.097	10.238	4.430	0.065	0.000	0.000	667.621	11.127	5.652	1.086	7.879	0.543	0.010	0.010	0.000	0.248	0.211
1207	Number of Points Used*		1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161	1161
1208		* Backpulse points in box are not included																																	

Figure D8-10: Dewatering of the AN-102R2, batch 4A, insoluble solids concentrations from 1.5 to 81 wt% - Raw & Calculated Data

Appendix E: Steady-state Filtering, Test Runs 1.17 – 1.29 – AN-102R2

After each dewatering test run (run 1.16 of Batches 3 and 4) the filter was to be operated under steady state insoluble solids concentrations. During dewatering the insoluble solids concentration of the test slurry is increased to above 20 wt%, then while maintaining the high concentration constant 13 test runs were carried out. Those thirteen test runs were to vary the slurry axial velocity, V, and transmembrane pressure, TMP, in order to determine the combination that would give the best filtrate flux.

Initially there were to be just two tests using an organic based slurry: Batch 3 and Batch 4. However, problems with filtering Batch 3 led to reformulating the slurry; therefore it was followed with a Batch 3B and a Batch 3A. The first batch was named Batch 3C. Instead of having two batch it turned out to be four: Batches 3C, 3B, 3A, and 4). The Batch 3C dewatering test was not completed because of poor filterability, therefore no steady-state runs were made. The next batch, Batch 3B, went as planned, therefore all the high solids concentration steady-state runs were completed. Batch 3A did not filter as well, therefore the RPP customer did not required steady-state test, but gave permission to carry out some to quantify the filtate flux. The customer also did not require the steady-state runs for Batch 4.

This Appendix includes the following test runs:

Steady-state test runs with simulant slurry AN-102R2 Batch 3B at insoluble solids of 22 wt%:

1.17, 1.18, 1.19, 1.20	done on 24 October 2002
1.21, 1.22, 1.23, 1.24	done on 28 October 2002
1.25, 1.26, 1.27, 1.28, 1.29	done on 29 October 2002

Steady-state test runs with simulant slurry AN-102R2 Batch 3A* at insoluble solids of 25 wt%:

1.17, 1.20	done on 11 November 2002
1.23, 1.25, 1.28, 1.29	done on 12 November 2002

*Because the dewatering of Batch 3A did not filter as good as Batch 3B steady state runs were not going to be done for this last Batch 3 slurry, except for a few to establish filtrate fluxes. Eight runs were eventually done due to available time and slurry.

Each dewatering test in this Appendix contains a graph of the filtrate flux with time and tables of the data taken and calculated. To better understand the presented information important aspects of the graphs and tables are explained below:

Graphs – Each graph contains time averages of some of the imporant parameters taken during the run at the top of the figures, i.e. Slurry velocity in the filter tube, V; transmembrane pressure, TMP; slurry pressure at the entrance of the filter tube, Filter Pres; and the slurry temperature, T.

Tables – Each table is divided into raw data (the first 17 columns) and calculations (the last 10 columns) which are based on the raw data. The raw data section is divided into three parts:

Individual Entries – Raw Data

Temperature	Filtrate – from the filtrate loop at the exit of the filter bundle
	Cleaning – from the cleaning loop (this loop was not used, except for tests Clean 1 & 2)
	Slurry – from the slurry loop in the slurry reservoir
	Hi Amb. – outside ambient temperature at the top of the test rig
	Lo Amb. – inside ambient temperature at the bottom of the test rig
Pressure	BotTMP – differential pressure across the filter tube at the bottom of the vertical tube
	Filter – gauge pressureof the slurry at the entrance of the filter tube bundle
	Filter dP – differential pressure of the slurry along the height of the vertical 90-inch tube
	TopTMP – differential pressure across the filter tube at the top the vertical 90-inch tube
	Filtrate – gauge pressure of the filtrate at the exit of the filter tube housing
	Pulsepot – gauge pressure of the filtrate at the bottom of the pulsepot
Flow	Slurry – rate of slurry just before entering the seven-filter-tube bundle
	Filtrate – rate of slurry filtrate under normal flow (max. is 1.2 gpm)
	Hi Filtrate – rate of any liquid with has a high flowrate (water, acid, etc.) (max. 5 gpm)
	Backpulse – rate of filtrate in opposite direction from normal flow, i.e., backpulse

Individual Entries – Calculated Data

Time – Minutes after start of test, including the backpulse (based on raw data TIME column)
Press. – Internal filter pressure of slurry at the filter bundle entrance (based on raw data P1 column and corrected for a 40.9-inch water column that exists from the transducer to the point where P1 is measured.)
Vel. – Slurry velocity in filter tube (based on raw data Q1 column and i.d. of the tubes of 0.488 inches)
TMP – Filter transmembrane pressure (based on average of raw data columns dP2 and dP3) in psi.
TMP – Filter transmembrane pressure (based on average of raw data columns dP2 and dP3) in bar.
Filtrate Flux – Filtrate flow rate (raw data columns Q2/Q3) divided by inside filter surface area (6.87 ft2)
Filtrate Flux @ 25°C – Same as Filtrate flux, but correct for temperature with the following multiplier:

$T(\text{corrected}) = T \times \text{Exp}[2500/((1/273+T))-(1/298)]$ as per Test Spec 24590-WTP-TSP-RT-01-029, Rev. 0

Permiability – Filterate flow rate per TMP (based on calculated columns Filtrate Flux @ 25°C and TMP)
Permiability x 1000 – Same as the above Permiability, but increase by 1000 to facilitate graphing
Permiability – Same as Permiability but in metric units, meter/day/bar

Statistics

At the bottom of the last individual entry there are six rows with some data statistics to better understand the data and their fluctuations. The columns are self explained with titles of Averages, Maximum, Median, and Minimum. The next row 2 x Std Dev, is two times the population standard deviation based on the number of data points used, which is the last row. The Number of Points used generally do not included the points taken during the backpulse sequence of each test. This is explained below.

Raw Data Table Layout

The raw data is generally made up of three sections:

Zeros – These eight rows include approximately 15 to 20 seconds of data taken with the pressure transducers placed in the "zero" mode to determine if any zero drift occurred from one test to the next.

Data-Per Minute – On most of the tables the first six rows of these data are contained in a box which indicate data taken during the backpulse. This is were the filtrate flow is reversed temporarily to knock the filtrate cake of the filter surface. During these first few minutes the filtrate flow is stopped, then reversed, then stopped again, then it is finally returned to normal operation. The data during the backpulse operation were taken with a separate log, therefore those data are marked with a box to note this fact. Most or all of those data points are not counted in the statistics at the bottom of the table. The tables of some of the later tests do not show the boxed data because separate logs of data were not taken, however since a backpulse for each run still occurred only those data were not included in the statistics at the bottom of the page.

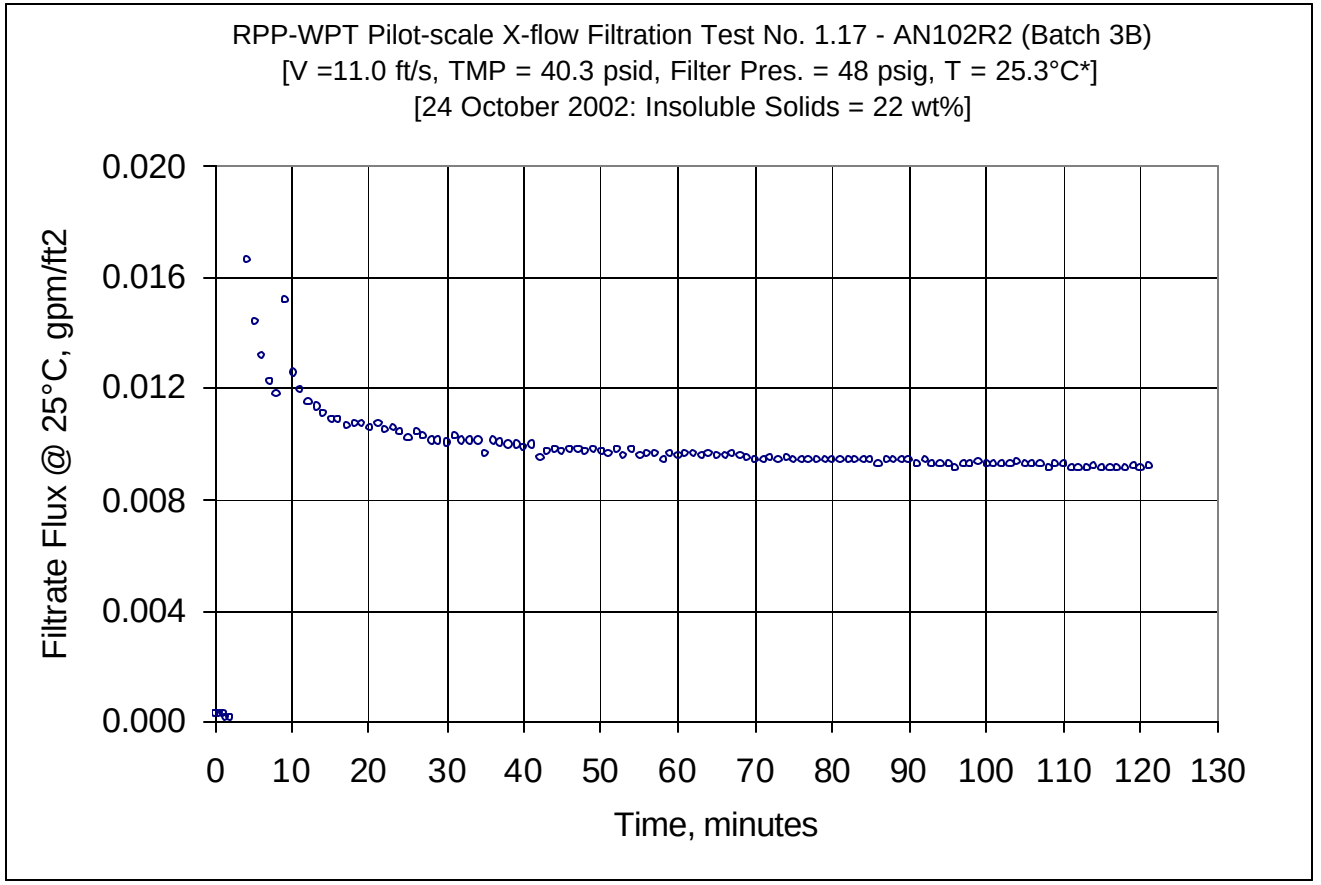


Figure E1: Steady state test run 1.17 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt%

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>											
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse												
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm												
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp												
Zeros																												
10/24/2002	8:15:17 AM	21.617	21.671	19.741	21.01	20.847	-0.133	0.046	-0.053	0.058	-0.35	0.39	-0.214	0.002	0.001	0												
10/24/2002	8:15:33 AM	21.617	21.671	19.741	21.01	20.847	-0.133	0.046	-0.053	0.058	-0.35	0.39	-0.214	0.002	0.001	0												
10/24/2002	8:15:34 AM	21.616	21.666	19.741	20.999	20.847	-0.131	0.046	-0.053	0.058	-0.307	0.39	-0.214	0.002	0.001	0												
10/24/2002	8:15:35 AM	21.622	21.666	19.741	21.01	20.847	-0.131	0.046	-0.053	0.06	-0.307	0.39	-0.212	0.002	0.001	0												
10/24/2002	8:15:36 AM	21.622	21.671	19.741	21.015	20.852	-0.129	0.046	-0.052	0.058	-0.304	0.393	-0.216	0.001	0.001	0												
10/24/2002	8:15:37 AM	21.622	21.671	19.746	21.01	20.857	-0.131	0.044	-0.053	0.058	-0.304	0.393	-0.212	0.002	0.001	0												
10/24/2002	8:15:38 AM	21.622	21.671	19.746	21.02	20.847	-0.131	0.046	-0.052	0.058	-0.341	0.39	-0.214	0.002	0.001	0												
10/24/2002	8:15:39 AM	21.627	21.666	19.746	21.02	20.852	-0.131	0.046	-0.053	0.06	-0.307	0.393	-0.212	0.002	0.001	0												
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter	
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	ft2	ft2	ft2/psi	ft2/psi	day/bar	
10/24/2002	8:35:23 AM	24.004	21.812	24.854	22.726	21.441	15.084	49.926	17.815	-1.772	29.245	90.209	45.315	0.002	0.001	0	0	0	48.5	11.1	6.7	0.459	0.000	0.000	0.0000	0.045	0.04	
10/24/2002	8:35:53 AM	23.971	21.814	24.786	22.758	21.463	14.765	49.961	17.504	-1.797	29.407	89.102	45.848	0.002	0.001	0	0.50	0.00833	48.5	11.2	6.5	0.447	0.000	0.000	0.0000	0.046	0.04	
10/24/2002	8:36:23 AM	23.26	21.816	24.883	22.725	21.486	8.015	48.428	11.86	-3.058	34.474	52.318	48.944	0.002	0.001	0.001	1.00	0.01667	47.0	12.0	2.5	0.171	0.000	0.000	0.0001	0.121	0.10	
10/24/2002	8:36:53 AM	23.367	21.807	24.794	22.716	21.492	8.129	48.039	11.94	-2.837	34.274	0.535	48.975	0.002	0.001	0.002	1.50	0.025	46.6	12.0	2.6	0.182	0.000	0.000	0.0001	0.057	0.05	
10/24/2002	8:37:23 AM	24.233	21.831	24.697	22.77	21.52	17.304	48.558	12.442	5.786	25.458	0.544	49.258	0.192	0.001	0	2.00	0.03333	47.1	12.1	11.5	0.796	0.000	0.000	0.0000	0.013	0.01	
10/24/2002	8:37:53 AM	24.716	21.827	24.804	22.676	21.552	41.251	49.045	14.15	27.961	1.731	0.61	48.386	0.303	0.001	0	2.50	0.04167	47.6	11.9	34.6	2.386	0.045	0.045	0.0013	1.313	1.12	
10/24/2002	8:38:30 AM	25.041	21.851	24.778	22.72	21.602	43.096	49.665	15.429	28.558	0.526	0.645	47.027	0.149	0.001	0	3.12	0.05194	48.2	11.5	35.8	2.470	0.022	0.022	0.0006	0.624	0.53	
10/24/2002	8:39:30 AM	25.041	21.852	24.813	22.816	21.647	43.27	49.816	16.543	27.488	0.407	0.691	45.943	0.111	0.001	0	4.12	0.06861	48.3	11.3	35.4	2.439	0.017	0.017	0.0005	0.470	0.40	
10/24/2002	8:40:30 AM	25.112	21.883	24.734	22.927	21.709	43.413	49.806	17.022	27.262	0.39	0.729	46.079	0.096	0.001	0	5.12	0.08528	48.3	11.3	35.3	2.436	0.014	0.014	0.0004	0.408	0.35	
10/24/2002	8:41:30 AM	25.123	21.883	24.87	22.923	21.759	43.693	50.158	17.401	27.07	0.352	0.761	45.609	0.088	0.001	0	6.12	0.10194	48.7	11.2	35.4	2.439	0.013	0.013	0.0004	0.372	0.32	
10/24/2002	8:42:30 AM	25.169	21.905	24.851	23	21.816	43.715	50.201	17.656	26.904	0.41	0.793	45.164	0.082	0.001	0	7.12	0.11861	48.7	11.1	35.3	2.434	0.012	0.012	0.0003	0.348	0.30	
10/24/2002	8:43:30 AM	25.2	21.921	24.887	23.071	21.872	43.941	50.383	17.8	26.943	0.413	0.825	44.892	0.079	0.001	0	8.12	0.13528	48.9	11.0	35.4	2.444	0.012	0.012	0.0003	0.333	0.28	
10/24/2002	8:44:30 AM	24.985	21.946	25.033	23.106	21.913	49.308	50.037	17.988	32.317	-1.281	-5.693	44.932	0.102	0.001	0	9.12	0.15194	48.6	11.0	40.8	2.814	0.015	0.015	0.0004	0.372	0.32	
10/24/2002	8:45:30 AM	24.791	21.957	24.909	23.132	21.964	49.517	50.373	18.121	32.227	-1.286	-6.249	44.814	0.084	0.001	0	10.12	0.16861	48.9	11.0	40.9	2.818	0.013	0.013	0.0003	0.307	0.26	
10/24/2002	8:46:30 AM	24.741	21.973	25.014	23.108	22.005	49.929	50.594	18.458	32.188	-1.284	-6.313	44.953	0.08	0.001	0	11.12	0.18528	49.1	11.0	41.1	2.831	0.012	0.012	0.0003	0.290	0.25	
10/24/2002	8:47:30 AM	24.726	21.978	25.065	23.093	22.061	50.047	50.668	18.422	32.562	-1.286	-6.347	45.083	0.077	0.001	0	12.12	0.20194	49.2	11.0	41.3	2.848	0.011	0.011	0.0003	0.277	0.24	
10/24/2002	8:48:30 AM	24.717	21.999	24.96	23.219	22.112	49.747	50.296	18.403	32.264	-1.286	-6.35	45.078	0.076	0.001	0	13.12	0.21861	48.8	11.0	41.0	2.827	0.011	0.011	0.0003	0.277	0.24	
10/24/2002	8:49:30 AM	24.727	22.019	25.11	23.239	22.162	49.608	50.447	18.34	31.989	-1.284	-6.345	44.644	0.075	0.001	0	14.12	0.23528	49.0	10.9	40.8	2.813	0.011	0.011	0.0003	0.273	0.23	
10/24/2002	8:50:30 AM	24.752	22.045	25.076	23.285	22.213	49.888	50.536	18.43	32.227	-1.284	-6.353	44.986	0.073	0.001	0	15.12	0.25194	49.1	11.0	41.1	2.831	0.011	0.011	0.0003	0.265	0.23	
10/24/2002	8:51:30 AM	24.737	22.04	25.046	23.27	22.258	49.612	50.218	18.478	31.934	-1.284	-6.359	44.734	0.073	0.001	0	16.12	0.26861	48.7	11.0	40.8	2.811	0.011	0.011	0.0003	0.267	0.23	
10/24/2002	8:52:30 AM	24.758	22.066	25.167	23.321	22.314	49.784	50.36	18.128	32.694	-1.284	-6.362	44.359	0.072	0.001	0	17.12	0.28528	48.9	10.9	41.2	2.843	0.011	0.011	0.0003	0.259	0.22	
10/24/2002	8:53:30 AM	24.775	22.077	25.013	23.358	22.366	49.869	50.495	18.485	32.247	-1.289	-6.371	44.787	0.072	0.001	0	18.12	0.30194	49.0	11.0	41.1	2.831	0.011	0.011	0.0003	0.261	0.22	
10/24/2002	8:54:30 AM	24.781	22.089	25.115	23.329	22.407	49.89	50.509	18.255	32.55	-1.289	-6.371	44.942	0.072	0.001	0	19.12	0.31861	49.0	11.0	41.2	2.842	0.011	0.011	0.0003	0.260	0.22	
10/24/2002	8:55:30 AM	24.813	22.116	25.146	23.411	22.47	49.654	50.037	18.15	32.575	-1.286	-6.371	44.26	0.071	0.001	0	20.12	0.33528	48.6	10.8	41.1	2.835	0.011	0.011	0.0003	0.256	0.22	
10/24/2002	8:56:30 AM	24.824	22.131	25.062	23.472	22.516	49.902	50.368	18.285	32.397	-1.284	-6.368	44.586	0.072	0.001	0	21.12	0.35194	48.9	10.9	41.1	2.837	0.011	0.011	0.0003	0.260	0.22	
10/24/2002	8:57:30 AM	24.846	22.158	25.199	23.449	22.578	49.871	50.395	18.288	32.454	-1.284	-6.376	44.636	0.071	0.001	0	22.12	0.36861	48.9	10.9	41.2	2.838	0.011	0.011	0.0003	0.256	0.22	
10/24/2002	8:58:30 AM	24.846	22.169	25.079	23.574	22.628	50.099	50.76	18.387	32.413	-1.284	-6.379	44.305	0.071	0.001	0	23.12	0.38528	49.3	10.9	41.3	2.844	0.011	0.011	0.0003	0.256	0.22	
10/24/2002	8:59:30 AM	24.861	22.179	25.129	23.539	22.658	49.985	50.538	18.254	32.489	-1.284	-6.376	44.974	0.07	0.001	0	24.12	0.40194	49.1	11.0	41.2	2.843	0.010	0.010	0.0003	0.252	0.21	
10/24/2002	9:00:30 AM	24.872	22.2	25.205	23.585	22.725	49.865	50.491	18.29	32.427	-1.286	-6.382	44.147	0.069	0.001	0	25.12	0.41861	49.0	10.8	41.1	2.837	0.010	0.010	0.0002	0.249	0.21	
10/24/2002	9:01:30 AM	24.892	22.215	25.07	23.61	22.765	49.637	50.296	18.207	32.366	-1.286	-6.35	44.644	0.07	0.001	0	26.12	0.43528	48.8	10.9	41.0	2.827	0.010	0.010	0.0003	0.254	0.22	
10/24/2002	9:02:30 AM	24.892	22.231	25.186	23.511	22.806	49.821	50.497	18.228	32.399	-1.289	-6.391	44.651	0.069	0.001	0	27.12	0.45194	49.0	10.9	41.1	2.834	0.010	0.010	0.0002	0.249	0.21	
10/24/2002	9:03:30 AM	24.923	22.262	25.137	23.617	22.887	50.091	50.774	18.432	32.421	-1.281	-6.385	44.648	0.068	0.001	0	28.12	0.46861	49.3	10.9	41.3	2.844	0.010	0.010	0.0002	0.245	0.21	
10/24/2002	9:04:30 AM	24.949	22.278	25.148	23.623	22.923	49.535	50.108	18.015	32.47	-1.286	-6.347	44.772	0.068	0.001	0	29.12	0.48528	48.6	11.0	41.0	2.827	0.010	0.010	0.0002	0.246	0.21	
10/24/2002	9:05:30 AM	24.971	22.294	25.249	23.649	22.955	50.146	51.113	18.435	32.374	-1.284	-6.385	44.56	0.068	0.001	0	30.12	0.50194	49.6	10.9	41.3	2.845	0.010	0.010	0.0002	0.244	0.21	
10/24/2002	9:06:30 AM	24.976	22.315	25.094	23.645	23.015	49.697	50.249	18.174	32.427	-1.289	-6.394	44.558	0.069	0.001	0	31.12	0.51861	48.8	10.9	41.1	2.831	0.010	0.010	0.0002	0.250	0.21	
10/24/2002	9:07:30 AM	24.997	22.331	25.211	23.61	23.016	49.566	50.187	18.049	32.393	-1.286	-6.359	44.605	0.068	0.001	0	32.12	0.53528	48.7	10.9	41.0	2.825	0.010	0.010	0.0002	0.246	0.21	
10/24/2002	9:08:30 AM	25.013	22.352	25.176	23.667	23.047	49.91	50.59	18.305	32.403	-1.286	-6.394	44.638	0.068	0.001	0	33.12	0.55194	49.1	10.9	41.2	2.838	0.010	0.010	0.0002	0.245	0.21	
10/24/2002	9:09:30 AM	25.023	22.361	25.156	23.696	23.087	49.564	50.224	18.141	32.372	-1.286	-6.397	44.453	0.068	0.001	0	34.12	0.56861	48.8	10.9	41.0	2.825	0.010	0.010	0.0002	0.246	0.21	
10/24/2002	9:10:30 AM	25.038	22.387	25.262	23.656	23.092	49.946	50.747	18.258	32.536	-1.284	-6.362	44.491	0.065	0.001	0	35.12	0.58528	49.3	10.9	41.2	2.843	0.010	0.010	0.0002	0.233	0.20	
10/24/2002	9:11:30 AM	25.042	22.396	25.1	23.54	23.142	49.738	50.681	18.163	32.337	-1.289	-6.394	44.489	0.068	0.001	0	36.12	0.60194	49.2	10.9	41.0	2.829	0.010	0.010	0.0002	0.246	0.21	
10/24/2002	9:12:30 AM	25.05	22.429	25.238	23.452	23.19	49.685	50.217	18.191	32.38	-1.281	-6.391	44.63	0.068	0.001	0	37.12	0.61861	48.7	10.9	41.0	2.829	0.010	0.010	0.0002	0.245	0.21	
10/24/2002	9:13:30 AM	25.042	22.431	25.211	23.495	23.207	49.525	50.18	18.152	32.182	-1.286	-6.365	44.766	0.067	0.001	0	38.12	0.63528	48.7	11.0	40.9	2.817	0.010	0.010	0.0002	0.243	0.21	
10/24/2002	9:14:30 AM	25.051	22.44	25.124	23.544	23.231	49.834	50.524	18.258	32.475	-1.289	-6.403	44.605	0.067	0.001	0	39.12	0.65194	49.1	10.9	41.2	2.837	0.010	0.010	0.0002	0.242	0.21	
10/24/2002	9:15:30 AM	25.095	22.479	25.268	23.618	23.275	49.815	50.762	18.25	32.323	-1.286	-6.403	44.688	0.067	0.001	0	40.12	0.66861	49.3	11.0	41.1	2.832	0.010	0.010	0.0002	0.241	0.21	
10/24/2002	9:16:30 AM	25.099	22.488	25.147	23.727	23.319	49.716	50.462	18.218	32.309	-1.286	-6.405	44.741	0.067	0.001	0	41.12	0.68528	49.0	11.0	41.0	2.828	0.010	0.010	0.0002	0.243	0.21	
10/24/2002	9:17:30 AM	25.103	22.502	25.206	23.747	23.363	49.401	50.263	18.059	32.174	-1.289	-6.376	44.651	0.064	0.001	0	42.12	0.70194	48.8	10.9	40.8	2.812	0.010	0.009	0.0002	0.233	0.20	
10/24/2002	9:18:30 AM	25.128	22.527	25.256	23.771	23.358	49.566	50.267	18.093	32.479	-1.286	-6.397	44.391	0.066	0.001	0	43.12	0.71861	48.8	10.9	41.0	2.828	0.010	0.010	0.0002	0.238	0.20	
10/24/2002	9:19:30 AM	25.142	22.551	25.165	23.806	23.397	49.436	50.083	18.178	32.184	-1.286	-6.397	44.81	0.066	0.001	0	44.12	0.73528	48.6	11.0	40.8	2.814	0.010	0.010	0.0002	0.240	0.20	
10/24/2002	9:20:30 AM	25.146	22.56	25.274	23.775	23.432	49.434	50.186	18.067	32.296	-1.286	-6.4	44.619	0.066	0.001	0	45.12	0.75194	48.7	10.9	40.9	2.817	0.010	0.010	0.0002	0.239	0.20	
10/24/2002	9:21:30 AM	25.154	22.584	25.168	23.883	23.48	49.8	50.571	18.329	32.231	-1.284	-6.405	44.732	0.066	0.001	0	46.12	0.76861	49.1	11.0	41.0	2.828	0.010	0.010	0.0002	0.239	0.20	
10/24/2002	9:22:30 AM	25.163	22.597	25.221	23.872	23.484	49.376	50.304	18.06	32.079	-1.289	-6.408	44.961	0.066	0.001	0	47.12	0.78528	48.8	11.0	40.7	2.808	0.010	0.010	0.0002	0.240	0.20	
10/24/2002	9:23:30 AM	25.172	22.607	25.28	23.886	23.523	49.742	50.379	18.174	32.464	-1.286	-6.368	44.563	0.066	0.001	0	48.12	0.80194	48.9	10.9	41.1	2.834	0.010	0.010	0.0002	0.238	0.20	
10/24/2002	9:24:30 AM	25.182	22.627	25.14	23.896	23.578	49.544	50.414	18.12	32.19	-1.292	-6.394	44.909	0.066	0.001	0	49.12	0.81861	48.9	11.0	40.9	2.818	0.010	0.010	0.0002	0.240	0.20	
10/24/2002	9:25:30 AM	25.196	22.656	25.304	23.905	23.537	49.254	50.081	18.216	31.909	-1.286	-6.408	44.841	0.066	0.001	0	50.12	0.83528	48.6	11.0	40.6	2.798	0.010	0.010	0.0002	0.240	0.20	
10/24/2002	9:26:30 AM	25.21	22.68	25.224	23.969	23.581	49.19	50.234	18.18	31.809	-1.286	-6.408	45.131	0.065	0.001	0	51.12	0.85194	48.8	11.1	40.5	2.792	0.010	0.010	0.0002	0.238	0.20	
10/24/2002	9:27:30 AM	25.204	22.684	25.243	23.979	23.626	49.467	50.232	18.317	32.049	-1.284	-6.405	44.827	0.066	0.001	0	52.12	0.86861	48.8	11.0	40.8	2.810	0.010	0.010	0.0002	0.240	0.20	
10/24/2002	9:28:30 AM	25.219	22.704	25.338	24.004	23.646	49.279	50.081	18.223	31.965	-1.286	-6.405	45.202	0.065	0.001	0	53.12	0.88528	48.6	11.1	40.6	2.801	0.010	0.010	0.0002	0.236	0.20	
10/24/2002	9:29:30 AM	25.23	22.73	25.193	24.009	23.691	48.786	49.818	18.093	31.586	-1.286	-6.376	44.837	0.066	0.001	0	54.12	0.90194	48.3	11.0	40.2	2.771	0.010	0.010	0.0002	0.244	0.21	
10/24/2002	9:30:30 AM	25.228	22.739	25.327	24.023	23.71	49.374	50.259	18.338	31.891	-1.284	-6.408	44.026	0.065	0.001	0	55.12	0.91861	48.8	10.8	40.6	2.801	0.010	0.010	0.0002	0.236	0.20	
10/24/2002	9:31:30 AM	25.233	22.749	25.237	24.128	23.78	49.221	50.06	18.274	31.959	-1.289	-6.411	44.923	0.065	0.001	0	56.12	0.93528	48.6	11.0	40.6	2.799	0.010	0.010	0.0002	0.237	0.20	

Filter Surface 6.707 FT2
Conversion 851 m3/m2/day/barg / gpm/ft2/barg

Note: Gauge Pressure P1 is approximately 1.4 psig

Pressure P1is corrected for 40.88 inches of water tubing

VVVV < Filtrate Flux << PERMIABILITY >>
at 25C x 1000

Figure E2-1: Steady state test run 1.17 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

10/24/2002	9:32:30 AM	25.248	22.774	25.262	24.153	23.8	49.363	50.232	18.188	32.014	-1.286	-6.411	44.424	0.065	0.001	0	57.12	0.95194	48.8	10.9	40.7	2.805	0.010	0.010	0.0002	0.236	0.20
10/24/2002	9:33:30 AM	25.257	22.792	25.365	24.126	23.799	49.231	50.135	18.326	31.754	-1.284	-6.394	44.969	0.064	0.001	0	58.12	0.96861	48.7	11.0	40.5	2.792	0.010	0.009	0.0002	0.233	0.20
10/24/2002	9:34:30 AM	25.26	22.801	25.194	24.16	23.837	48.893	49.68	18.204	31.713	-1.289	-6.405	44.8	0.065	0.001	0	59.12	0.98528	48.2	11.0	40.3	2.779	0.010	0.010	0.0002	0.239	0.20
10/24/2002	9:35:30 AM	25.279	22.819	25.332	24.139	23.821	49.318	50.298	18.315	31.877	-1.286	-6.408	43.537	0.065	0.001	0	60.12	1.00194	48.8	10.7	40.6	2.799	0.010	0.010	0.0002	0.236	0.20
10/24/2002	9:36:30 AM	25.288	22.834	25.267	24.208	23.88	49.219	50.137	18.273	31.877	-1.286	-6.411	45.146	0.065	0.001	0	61.12	1.01861	48.7	11.1	40.5	2.796	0.010	0.010	0.0002	0.237	0.20
10/24/2002	9:37:30 AM	25.302	22.873	25.271	24.247	23.955	49.392	50.3	18.223	32.145	-1.286	-6.408	45.257	0.065	0.001	0	62.12	1.03528	48.8	11.1	40.8	2.811	0.010	0.010	0.0002	0.236	0.20
10/24/2002	9:38:30 AM	25.311	22.882	25.37	24.256	23.954	48.993	49.889	18.267	31.553	-1.286	-6.408	44.762	0.065	0.001	0	63.12	1.05194	48.4	11.0	40.3	2.777	0.010	0.010	0.0002	0.238	0.20
10/24/2002	9:39:30 AM	25.315	22.901	25.209	24.316	23.973	49.022	50.083	18.165	31.721	-1.289	-6.388	44.907	0.065	0.001	0	64.12	1.06861	48.6	11.0	40.4	2.783	0.010	0.010	0.0002	0.239	0.20
10/24/2002	9:40:30 AM	25.319	22.9	25.318	24.249	24.007	48.949	50.083	18.204	31.549	-1.292	-6.411	44.8	0.065	0.001	0	65.12	1.08528	48.6	11.0	40.2	2.775	0.010	0.010	0.0002	0.239	0.20
10/24/2002	9:41:30 AM	25.343	22.934	25.282	24.318	24.021	49.09	49.928	18.208	31.897	-1.286	-6.408	45.167	0.065	0.001	0	66.12	1.10194	48.5	11.1	40.5	2.792	0.010	0.010	0.0002	0.237	0.20
10/24/2002	9:42:30 AM	25.336	22.947	25.27	24.321	24.064	49.16	50.29	18.257	31.803	-1.286	-6.371	44.938	0.065	0.001	0	67.12	1.11861	48.8	11.0	40.5	2.791	0.010	0.010	0.0002	0.238	0.20
10/24/2002	9:43:30 AM	25.345	22.966	25.348	24.315	24.073	48.991	49.884	18.242	31.752	-1.289	-6.423	45.114	0.065	0.001	0	68.12	1.13528	48.4	11.1	40.4	2.783	0.010	0.010	0.0002	0.238	0.20
10/24/2002	9:44:30 AM	25.358	22.985	25.207	24.359	24.137	49.059	50.164	18.326	31.463	-1.286	-6.417	44.951	0.064	0.001	0	69.12	1.15194	48.7	11.0	40.3	2.776	0.010	0.009	0.0002	0.236	0.20
10/24/2002	9:45:30 AM	25.371	23.003	25.345	24.332	24.104	49.005	50.209	18.176	31.695	-1.289	-6.417	44.888	0.064	0.001	0	70.12	1.16861	48.7	11.0	40.4	2.782	0.010	0.009	0.0002	0.234	0.20
10/24/2002	9:46:30 AM	25.379	23.026	25.313	24.395	24.127	49.076	50.1	18.33	31.566	-1.286	-6.417	44.854	0.064	0.001	0	71.12	1.18528	48.6	11.0	40.3	2.780	0.010	0.009	0.0002	0.235	0.20
10/24/2002	9:47:30 AM	25.373	23.035	25.287	24.383	24.191	48.926	50.011	18.244	31.557	-1.286	-6.417	44.839	0.064	0.001	0	72.12	1.20194	48.5	11.0	40.2	2.775	0.010	0.009	0.0002	0.235	0.20
10/24/2002	9:48:30 AM	25.397	23.053	25.43	24.382	24.195	49.198	50.36	18.257	31.783	-1.289	-6.417	45.19	0.064	0.001	0	73.12	1.21861	48.9	11.1	40.5	2.792	0.010	0.009	0.0002	0.233	0.20
10/24/2002	9:49:30 AM	25.415	23.086	25.288	24.47	24.218	49.014	50.104	18.245	31.654	-1.289	-6.397	45.85	0.064	0.001	0	74.12	1.23528	48.6	11.2	40.3	2.781	0.010	0.009	0.0002	0.235	0.20
10/24/2002	9:50:30 AM	25.417	23.094	25.401	24.483	24.251	48.846	49.994	18.198	31.379	-1.286	-6.403	45.043	0.064	0.001	0	75.12	1.25194	48.5	11.0	40.1	2.766	0.010	0.009	0.0002	0.235	0.20
10/24/2002	9:51:30 AM	25.441	23.128	25.425	24.517	24.3	49.208	50.462	18.367	31.662	-1.286	-6.405	45.699	0.064	0.001	0	76.12	1.26861	49.0	11.2	40.4	2.788	0.010	0.009	0.0002	0.233	0.20
10/24/2002	9:52:30 AM	25.429	23.126	25.338	24.47	24.363	48.842	49.812	18.104	31.725	-1.286	-6.405	45.028	0.064	0.001	0	77.12	1.28528	48.3	11.0	40.3	2.777	0.010	0.009	0.0002	0.235	0.20
10/24/2002	9:53:30 AM	25.458	23.155	25.482	24.544	24.332	48.96	50.236	18.158	31.625	-1.286	-6.42	45.2	0.064	0.001	0	78.12	1.30194	48.8	11.1	40.3	2.778	0.010	0.009	0.0002	0.234	0.20
10/24/2002	9:54:30 AM	25.47	23.177	25.349	24.601	24.344	49.04	50.176	18.2	31.787	-1.286	-6.42	44.793	0.064	0.001	0	79.12	1.31861	48.7	11.0	40.4	2.786	0.010	0.009	0.0002	0.234	0.20
10/24/2002	9:55:30 AM	25.484	23.196	25.453	24.545	24.343	49.15	50.373	18.372	31.594	-1.284	-6.385	44.948	0.064	0.001	0	80.12	1.33528	48.9	11.0	40.4	2.784	0.010	0.009	0.0002	0.233	0.20
10/24/2002	9:56:30 AM	25.471	23.198	25.42	24.547	24.4	48.935	50.251	18.162	31.578	-1.289	-6.417	45.347	0.064	0.001	0	81.12	1.35194	48.8	11.1	40.3	2.776	0.010	0.009	0.0002	0.234	0.20
10/24/2002	9:57:30 AM	25.489	23.221	25.358	24.59	24.398	48.949	50.205	18.263	31.561	-1.289	-6.417	44.99	0.064	0.001	0	82.12	1.36861	48.7	11.0	40.3	2.775	0.010	0.009	0.0002	0.235	0.20
10/24/2002	9:58:30 AM	25.493	23.235	25.482	24.569	24.427	48.529	49.646	18.112	31.25	-1.289	-6.42	45.047	0.064	0.001	0	83.12	1.38528	48.2	11.0	39.9	2.750	0.010	0.009	0.0002	0.236	0.20
10/24/2002	9:59:30 AM	25.525	23.268	25.369	24.606	24.504	49.08	50.346	18.248	31.654	-1.284	-6.414	45.062	0.064	0.001	0	84.12	1.40194	48.9	11.0	40.4	2.783	0.010	0.009	0.0002	0.234	0.20
10/24/2002	10:00:30 AM	25.532	23.285	25.461	24.628	24.486	48.871	50.023	18.064	31.744	-1.284	-6.417	44.695	0.064	0.001	0	85.12	1.41861	48.6	11.0	40.3	2.779	0.010	0.009	0.0002	0.234	0.20
10/24/2002	10:01:30 AM	25.524	23.276	25.428	24.595	24.488	48.995	50.23	18.072	31.821	-1.292	-6.394	44.965	0.063	0.001	0	86.12	1.43528	48.8	11.0	40.4	2.786	0.009	0.009	0.0002	0.230	0.20
10/24/2002	10:02:30 AM	25.537	23.3	25.351	24.653	24.516	48.891	50.218	18.032	31.68	-1.289	-6.423	44.586	0.064	0.001	0	87.12	1.45194	48.7	10.9	40.3	2.778	0.010	0.009	0.0002	0.235	0.20
10/24/2002	10:03:30 AM	25.554	23.322	25.488	24.635	24.508	48.81	50.052	17.974	31.686	-1.286	-6.426	44.516	0.064	0.001	0	88.12	1.46861	48.6	10.9	40.2	2.775	0.010	0.009	0.0002	0.234	0.20
10/24/2002	10:04:30 AM	25.551	23.334	25.33	24.672	24.566	48.939	50.246	17.963	31.883	-1.289	-6.429	43.843	0.064	0.001	0	89.12	1.48528	48.8	10.7	40.4	2.786	0.010	0.009	0.0002	0.234	0.20
10/24/2002	10:05:30 AM	25.559	23.357	25.423	24.655	24.574	48.889	50.106	18.025	31.67	-1.286	-6.426	44.669	0.064	0.001	0	90.12	1.50194	48.6	10.9	40.3	2.777	0.010	0.009	0.0002	0.234	0.20
10/24/2002	10:06:30 AM	25.571	23.379	25.42	24.677	24.605	48.96	50.375	18.041	31.68	-1.289	-6.429	44.69	0.063	0.001	0	91.12	1.51861	48.9	11.0	40.3	2.780	0.009	0.009	0.0002	0.230	0.20
10/24/2002	10:07:30 AM	25.578	23.396	25.347	24.694	24.663	48.734	50.091	17.975	31.613	-1.286	-6.391	44.793	0.064	0.001	0	92.12	1.53528	48.6	11.0	40.2	2.770	0.010	0.009	0.0002	0.235	0.20
10/24/2002	10:08:30 AM	25.586	23.404	25.464	24.686	24.66	48.577	49.758	18.003	31.428	-1.289	-6.411	44.869	0.063	0.001	0	93.12	1.55194	48.3	11.0	40.0	2.758	0.009	0.009	0.0002	0.232	0.20
10/24/2002	10:09:30 AM	25.593	23.431	25.332	24.734	24.697	49.016	50.379	18.064	31.74	-1.286	-6.426	44.925	0.063	0.001	0	94.12	1.56861	48.9	11.0	40.4	2.784	0.009	0.009	0.0002	0.230	0.20
10/24/2002	10:10:30 AM	25.584	23.438	25.413	24.705	24.689	48.939	50.085	18.024	31.807	-1.289	-6.423	44.657	0.063	0.001	0	95.12	1.58528	48.6	10.9	40.4	2.784	0.009	0.009	0.0002	0.230	0.20
10/24/2002	10:11:30 AM	25.596	23.454	25.405	24.707	24.65	49.026	50.368	18.135	31.805	-1.289	-6.426	44.831	0.062	0.001	0	96.12	1.60194	48.9	11.0	40.4	2.787	0.009	0.009	0.0002	0.226	0.19
10/24/2002	10:12:30 AM	25.604	23.472	25.338	24.73	24.718	48.984	50.397	18.027	31.789	-1.289	-6.426	44.682	0.063	0.001	0	97.12	1.61861	48.9	11.0	40.4	2.785	0.009	0.009	0.0002	0.230	0.20
10/24/2002	10:13:30 AM	25.6	23.488	25.464	24.701	24.684	49.152	50.608	18.201	31.727	-1.289	-6.417	44.76	0.063	0.001	0	98.12	1.63528	49.1	11.0	40.4	2.788	0.009	0.009	0.0002	0.229	0.20
10/24/2002	10:14:30 AM	25.596	23.495	25.29	24.712	24.736	48.937	50.16	18.1	31.793	-1.292	-6.44	44.76	0.063	0.001	0	99.12	1.65194	48.7	11.0	40.4	2.783	0.009	0.009	0.0002	0.231	0.20
10/24/2002	10:15:30 AM	25.603	23.516	25.407	24.719	24.732	48.724	50.327	17.967	31.49	-1.289	-6.431	44.634	0.063	0.001	0	100.12	1.66861	48.9	10.9	40.1	2.765	0.009	0.009	0.0002	0.232	0.20
10/24/2002	10:16:30 AM	25.619	23.543	25.418	24.75	24.784	48.871	50.18	18.145	31.535	-1.286	-6.437	45.036	0.063	0.001	0	101.12	1.68528	48.7	11.0	40.2	2.772	0.009	0.009	0.0002	0.231	0.20
10/24/2002	10:17:30 AM	25.61	23.534	25.324	24.726	24.725	49.03	50.482	18.086	31.662	-1.289	-6.437	44.755	0.063	0.001	0	102.12	1.70194	49.0	11.0	40.3	2.782	0.009	0.009	0.0002	0.231	0.20
10/24/2002	10:18:30 AM	25.617	23.565	25.46	24.738	24.771	48.906	50.522	18.046	31.523	-1.292	-6.437	44.734	0.063	0.001	0	103.12	1.71861	49.0	11.0	40.2	2.773	0.009	0.009	0.0002	0.231	0.20
10/24/2002	10:19:30 AM	25.629	23.578	25.313	24.815	24.794	48.45	49.947	17.972	31.369	-1.286	-6.437	44.584	0.063	0.001	0	104.12	1.73528	48.5	10.9	39.9	2.752	0.009	0.009	0.0002	0.233	0.20
10/24/2002	10:20:30 AM	25.63	23.593	25.408	24.821	24.814	48.723	50.226	17.994	31.566	-1.286	-6.408	44.99	0.063	0.001	0	105.12	1.75194	48.8	11.0	40.1	2.768	0.009	0.009	0.0002	0.231	0.20
10/24/2002	10:21:30 AM	25.646	23.615	25.42	24.888	24.781	48.533	50.04	18.004	31.346	-1.286	-6.423	44.892	0.063	0.001	0	106.12	1.76861	48.6	11.0	39.9	2.754	0.009	0.009	0.0002	0.232	0.20
10/24/2002	10:22:30 AM	25.628	23.627	25.332	24.899	24.878	48.827	50.205	18.03	31.584	-1.292	-6.437	44.81	0.063	0.001	-0.001	107.12	1.78528	48.7	11.0	40.2	2.772	0.009	0.009	0.0002	0.231	0.20
10/24/2002	10:23:30 AM	25.655	23.654	25.499	24.931	24.885	48.976	50.501	18.169	31.59	-1.286	-6.431	44.774	0.062	0.001	0	108.12	1.80194	49.0	11.0	40.3	2.777	0.009	0.009	0.0002	0.226	0.19
10/24/2002	10:24:30 AM	25.642	23.656	25.326	24.984	24.902	48.678	50.141	18.035	31.463	-1.289	-6.434	44.814	0.063	0.001	0	109.12	1.81861	48.7	11.0	40.1	2.763	0.009	0.009	0.0002	0.232	0.20
10/24/2002	10:25:30 AM	25.64	23.664	25.419	24.951	24.92	48.699	50.259	18.016	31.549	-1.289	-6.414	45.102	0.063	0.001	0	110.12	1.83528	48.8	11.1	40.1	2.766	0.009	0.009	0.0002	0.231	0.20
10/24/2002	10:26:30 AM	25.649	23.688	25.407	25.02	24.969	48.502	50.133	18.015	31.314	-1.289	-6.431	44.678	0.062	0.001	0	111.12	1.85194	48.7	10.9	39.9	2.752	0.009	0.009	0.0002	0.229	0.19
10/24/2002	10:27:30 AM	25.657	23.706	25.366	24.988	25.002	48.527	49.777	17.982	31.604	-1.289	-6.431	45.714	0.062	0.001	0	112.12	1.86861	48.3	11.2	40.1	2.762	0.009	0.009	0.0002	0.228	0.19
10/24/2002	10:28:30 AM	25.665	23.719	25.464	24.996	24.975	48.775	50.489	18.066	31.516	-1.289	-6.431	44.818	0.062	0.001	0	113.12	1.88528	49.0	11.0	40.1	2.768	0.009	0.009	0.0002	0.227	0.19
10/24/2002	10:29:30 AM	25.668	23.742	25.317	25.075	24.953	48.585	50.011	18.048	31.488	-1.289	-6.429	44.793	0.062	0.001	0	114.12	1.90194	48.5	11.0	40.0	2.760	0.009	0.009	0.0002	0.229	0.19
10/24/2002	10:30:30 AM	25.661	23.74	25.43	25.033	24.971	48.827	50.431	18.103	31.484	-1.289	-6.431	44.944	0.062	0.001	0	115.12	1.91861	49.0	11.0	40.2	2.769	0.009	0.009	0.0002	0.227	0.19
10/24/2002	10:31:30 AM	25.664	23.764	25.368	25.066	24.989	48.334	49.822	18.038	31.197	-1.289	-6.4	45.058	0.062	0.001	0	116.12	1.93528	48.3	11.0	39.8	2.742	0.009	0.009	0.0002	0.230	0.20
10/24/2002	10:32:30 AM	25.672	23.787	25.381	25.094	25.027	48.471	50.019	18.024	31.271	-1.286	-6.414	45.041	0.062	0.001	0	117.12	1.95194	48.5	11.0	39.9	2.749	0.009	0.009	0.0002	0.229	0.20
10/24/2002	10:33:30 AM	25.69	23.809	25.489	25.126	25.02	48.81	50.443	18.262	31.256	-1.284	-6.423	44.988	0.062	0.001	0	118.12	1.96861	49.0	11.0	40.0	2.760	0.009	0.009	0.0002	0.228	0.19
10/24/2002	10:34:30 AM	25.697	23.817	25.316	25.139	25.012	48.249	49.922	17.996	31.08	-1.289	-6.426	44.839	0.062	0.001	0	119.12	1.98528	48.4	11.0	39.7	2.735	0.009	0.009	0.0002	0.231	0.20
10/24/2002	10:35:30 AM	25.683	23.822	25.437	25.11	25.018	48.541	50.335	18.027	31.275	-1.289	-6.426	44.346	0.062	0.001	0	120.12	2.00194	48.9	10.9	39.9	2.752	0.009	0.009	0.0002	0.229	0.19
10/24/2002	10:36:30 AM	25.681	23.831	25.325	25.163	25.111	48.403	49.978	18.019	31.301	-1.292	-6.44	44.873	0.062	0.001	0	121.12	2.01861	48.5	11.0	39.9	2.748	0.009	0.009	0.0002	0.230	0.20
	Averages	25.3	22.9	25.3	24.1	23.7	48.9	50.2	18.1	31.7	-1.2	-6.0	44.9	0.1	0.0	0.0			48.8	11.0	40.3	2.778	0.010	0.010	0.0003	0.251	0.213
	Maximum	25.7	23.8	25.5	25.2	25.1	50.1	51.1	18.5	32.7	0.5	0.8	47.0	0.1	0.0	0.0			49.6	11.5	41.3	2.848	0.022	0.022	0.0006	0.624	0.531
	Median	25.3	22.9	25.3	24.2	24.0	49.1	50.2	18.2	31.8	-1.3	-6.4	44.8	0.1	0.0	0.0			48.8	11.0	40.4	2.786	0.010	0.010	0.0002	0.236	0.201
	Minimum	24.7	21.9	24.7	22.7	21.6	43.1	49.6	15.4	26.9	-1.3	-6.4	43.5	0.1	0.0	0.0			48.2	10.7	35.3	2.434	0.009	0.009	0.0002	0.226	0.192
	2 x Std Dev	0.593	1.190	0.327	1.274	1.975	2.652	0.511	0.688	2.138	0.746	3.126	0.813	0.021	0.000	0.000			0.511	0.199	2.382	0.164	0.003	0.003	0.0001	0.099	0.084
Number of Points Used*		119	119	119	119	119	119	119	119	119	119	119	119	119	119	119			119	119	119	119	119	119	119	119	119
	* Backpulse points in box are not included																													

Figure E2-2: Steady state test run 1.17 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

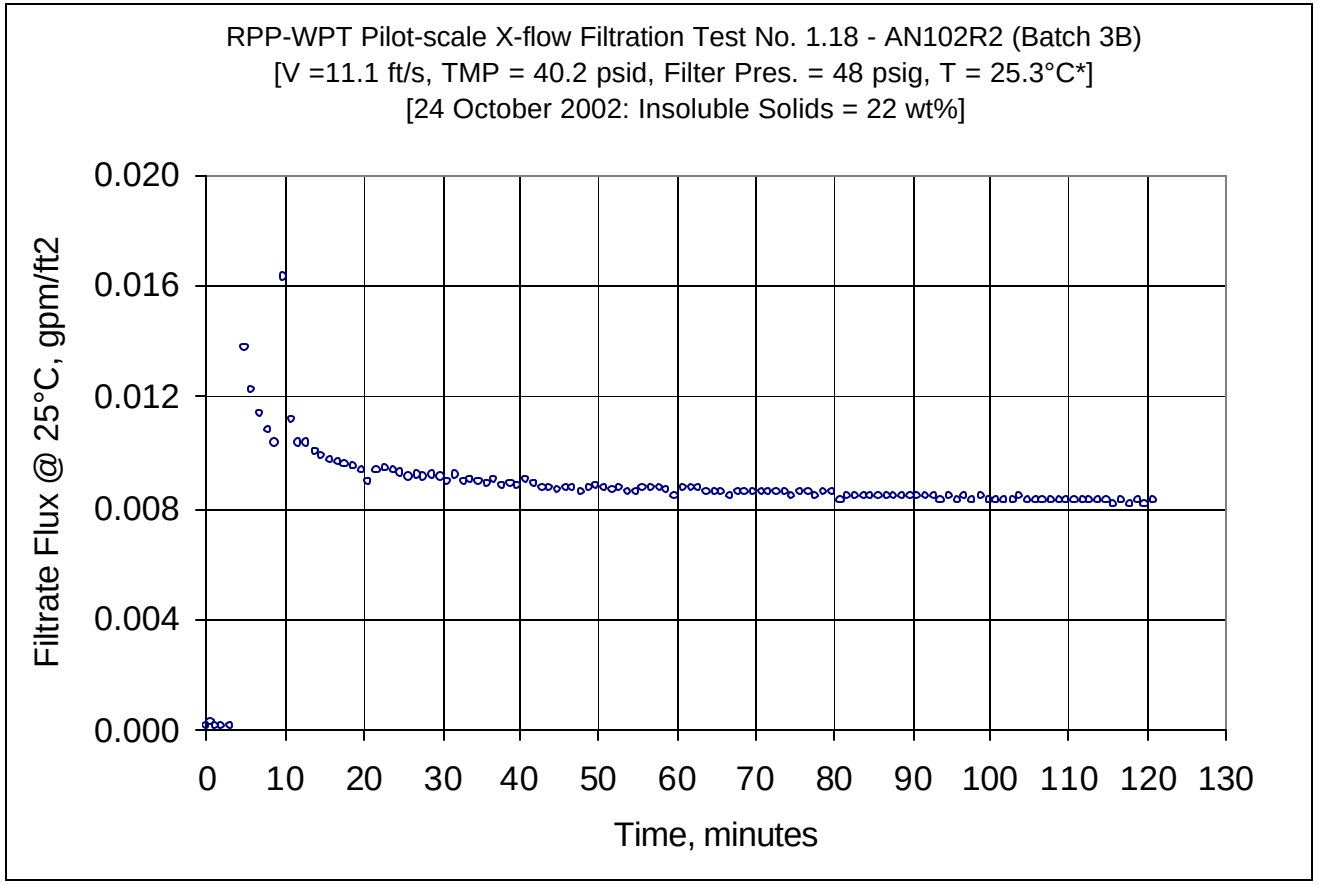


Figure E3: Steady state test run 1.18 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt%

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
10/24/2002	8:15:17 AM	21.617	21.671	19.741	21.01	20.847	-0.133	0.046	-0.053	0.058	-0.35	0.39	-0.214	0.002	0.001	0			Filter Surface	6.707	FT2						
10/24/2002	8:15:33 AM	21.617	21.671	19.741	21.01	20.847	-0.133	0.046	-0.053	0.058	-0.35	0.39	-0.214	0.002	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
10/24/2002	8:15:34 AM	21.616	21.666	19.741	20.999	20.847	-0.131	0.046	-0.053	0.058	-0.307	0.39	-0.214	0.002	0.001	0											
10/24/2002	8:15:35 AM	21.622	21.666	19.741	21.01	20.847	-0.131	0.046	-0.053	0.06	-0.307	0.39	-0.212	0.002	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
10/24/2002	8:15:36 AM	21.622	21.671	19.741	21.015	20.852	-0.129	0.046	-0.052	0.058	-0.304	0.393	-0.216	0.001	0.001	0											
10/24/2002	8:15:37 AM	21.622	21.671	19.746	21.01	20.857	-0.131	0.044	-0.053	0.058	-0.304	0.393	-0.212	0.002	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
10/24/2002	8:15:38 AM	21.622	21.671	19.746	21.02	20.847	-0.131	0.046	-0.052	0.058	-0.341	0.39	-0.214	0.002	0.001	0			VVVV				< Filtrate Flux << PERMIABILITY >>				
10/24/2002	8:15:39 AM	21.627	21.666	19.746	21.02	20.852	-0.131	0.046	-0.053	0.06	-0.307	0.393	-0.212	0.002	0.001	0							at 25C		x 1000		
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
10/24/2002	10:39:47 AM	25.764	23.899	25.273	25.186	25.119	20.74	49.626	18.04	3.571	23.085	90.284	45.016	0.001	0.001	0	0	0	48.2	11.0	12.2	0.838	0.000	0.000	0.0000	0.012	0.01
10/24/2002	10:40:17 AM	25.474	23.92	25.419	25.166	25.155	-7.455	49.233	9.613	-18.556	57.496	59.592	46.003	0.002	0.001	0.977	0.50	0.00833	47.8	11.3	-13.0	-0.897	0.000	0.000	0.0000	-0.023	-0.02
10/24/2002	10:40:47 AM	25.386	23.921	25.49	25.213	25.182	7.385	48.714	11.075	-2.888	35.474	51.716	47.279	0.001	0.001	0	1.00	0.01667	47.2	11.6	2.2	0.155	0.000	0.000	0.0001	0.065	0.06
10/24/2002	10:41:47 AM	25.423	23.948	25.487	25.24	25.188	15.243	48.498	11.848	4.31	27.609	0.518	48.013	0.167	0.001	0	2.00	0.03333	47.0	11.8	9.8	0.674	0.000	0.000	0.0000	0.015	0.01
10/24/2002	10:42:47 AM	25.905	23.955	25.294	25.297	25.211	42.475	49.198	14.17	29.062	0.523	0.619	47.585	0.145	0.001	0	3.00	0.05	47.7	11.7	35.8	2.466	0.000	0.000	0.0000	0.004	0.00
10/24/2002	10:44:32 AM	25.91	23.99	25.229	25.307	25.21	43.024	49.458	15.639	28.165	0.315	0.677	46.708	0.093	0.001	0	4.75	0.07917	48.0	11.4	35.6	2.454	0.014	0.014	0.0004	0.387	0.33
10/24/2002	10:45:32 AM	25.903	24.008	25.331	25.234	25.223	43.258	49.694	16.169	27.866	0.286	0.703	45.727	0.083	0.001	-0.001	5.75	0.09583	48.2	11.2	35.6	2.452	0.012	0.012	0.0003	0.345	0.29
10/24/2002	10:46:32 AM	25.896	24.026	25.204	25.358	25.251	43.286	49.63	16.259	27.92	0.297	0.735	45.632	0.077	0.001	0	6.75	0.1125	48.2	11.2	35.6	2.455	0.011	0.011	0.0003	0.321	0.27
10/24/2002	10:47:32 AM	25.893	24.053	25.302	25.36	25.278	43.477	49.882	16.523	27.694	0.318	0.767	45.691	0.073	0.001	0	7.75	0.12917	48.4	11.2	35.6	2.453	0.011	0.011	0.0003	0.303	0.26
10/24/2002	10:48:32 AM	25.89	24.065	25.299	25.382	25.29	43.332	49.851	16.571	27.533	0.355	0.79	45.949	0.07	0.001	0	8.75	0.14583	48.4	11.3	35.4	2.443	0.010	0.010	0.0003	0.292	0.25
10/24/2002	10:49:32 AM	25.882	24.083	25.221	25.349	25.307	48.69	49.928	16.754	32.765	-1.289	-5.557	45.467	0.11	0.001	0	9.75	0.1625	48.5	11.1	40.7	2.808	0.016	0.016	0.0004	0.400	0.34
10/24/2002	10:50:32 AM	25.794	24.1	25.368	25.371	25.31	49.306	50.104	17.023	33.097	-1.289	-6.29	45.158	0.076	0.001	0	10.75	0.17917	48.6	11.1	41.2	2.841	0.011	0.011	0.0003	0.272	0.23
10/24/2002	10:51:32 AM	25.757	24.122	25.226	25.449	25.342	48.713	49.316	16.873	32.859	-1.284	-6.376	45.135	0.07	0.001	0	11.75	0.19583	47.8	11.1	40.8	2.812	0.010	0.010	0.0003	0.254	0.22
10/24/2002	10:52:32 AM	25.744	24.135	25.343	25.381	25.33	49.154	49.975	17.082	32.906	-1.289	-6.4	45.051	0.07	0.001	0	12.75	0.2125	48.5	11.0	41.0	2.829	0.010	0.010	0.0003	0.252	0.21
10/24/2002	10:53:32 AM	25.741	24.162	25.295	25.473	25.341	49.32	50.195	17.173	32.997	-1.289	-6.411	45.315	0.068	0.001	0	13.75	0.22917	48.7	11.1	41.2	2.838	0.010	0.010	0.0002	0.244	0.21
10/24/2002	10:54:32 AM	25.733	24.183	25.286	25.53	25.373	49.022	49.798	17.068	32.779	-1.284	-6.42	45.206	0.067	0.001	0	14.75	0.24583	48.3	11.1	40.9	2.820	0.010	0.010	0.0002	0.242	0.21
10/24/2002	10:55:32 AM	25.739	24.2	25.403	25.471	25.38	49.192	49.887	17.145	32.964	-1.289	-6.429	45.2	0.066	0.001	0	15.75	0.2625	48.4	11.1	41.1	2.832	0.010	0.010	0.0002	0.237	0.20
10/24/2002	10:56:32 AM	25.736	24.207	25.23	25.553	25.396	49.218	50.116	17.093	32.953	-1.289	-6.431	45.267	0.065	0.001	0	16.75	0.27917	48.6	11.1	41.1	2.833	0.010	0.010	0.0002	0.234	0.20
10/24/2002	10:57:32 AM	25.736	24.217	25.355	25.538	25.416	49.281	50.058	17.103	32.997	-1.289	-6.388	45.133	0.065	0.001	0	17.75	0.29583	48.6	11.1	41.1	2.836	0.010	0.010	0.0002	0.233	0.20
10/24/2002	10:58:32 AM	25.747	24.243	25.281	25.764	25.442	49.065	49.963	17.062	32.865	-1.286	-6.414	45.076	0.064	0.001	0	18.75	0.3125	48.5	11.0	41.0	2.824	0.010	0.009	0.0002	0.231	0.20
10/24/2002	10:59:32 AM	25.762	24.268	25.306	25.76	25.508	49.022	49.893	17.024	32.831	-1.289	-6.431	45.039	0.063	0.001	0	19.75	0.32917	48.4	11.0	40.9	2.822	0.009	0.009	0.0002	0.228	0.19
10/24/2002	11:00:32 AM	25.758	24.274	25.367	25.661	25.534	48.893	49.762	16.98	32.763	-1.289	-6.426	45.137	0.061	0.001	0	20.75	0.34583	48.3	11.1	40.8	2.815	0.009	0.009	0.0002	0.220	0.19
10/24/2002	11:01:32 AM	25.786	24.323	25.265	25.714	25.552	49.113	49.886	17.089	32.925	-1.289	-6.414	44.46	0.063	0.001	0	21.75	0.3625	48.4	10.9	41.0	2.828	0.009	0.009	0.0002	0.227	0.19
10/24/2002	11:02:32 AM	25.783	24.329	25.397	25.64	25.589	49.142	50.203	17.107	32.798	-1.289	-6.446	45.297	0.064	0.001	0	22.75	0.37917	48.7	11.1	41.0	2.825	0.010	0.009	0.0002	0.230	0.20
10/24/2002	11:03:32 AM	25.796	24.357	25.274	25.723	25.601	49.161	50.06	17.11	33.05	-1.292	-6.414	45.085	0.063	0.001	0	23.75	0.39583	48.6	11.0	41.1	2.834	0.009	0.009	0.0002	0.227	0.19
10/24/2002	11:04:32 AM	25.792	24.368	25.341	25.77	25.633	49.187	50.137	17.077	33.035	-1.286	-6.443	45.156	0.063	0.001	0	24.75	0.4125	48.7	11.1	41.1	2.834	0.009	0.009	0.0002	0.226	0.19
10/24/2002	11:05:32 AM	25.8	24.386	25.379	25.727	25.675	49.069	49.907	17.047	32.8	-1.289	-6.449	44.762	0.062	0.001	0	25.75	0.42917	48.4	11.0	40.9	2.822	0.009	0.009	0.0002	0.223	0.19
10/24/2002	11:06:32 AM	25.812	24.403	25.271	25.744	25.723	48.866	49.698	16.937	32.868	-1.289	-6.426	45.259	0.062	0.001	0	26.75	0.44583	48.2	11.1	40.9	2.818	0.009	0.009	0.0002	0.224	0.19
10/24/2002	11:07:32 AM	25.805	24.416	25.404	25.707	25.69	48.694	49.584	17.004	32.526	-1.289	-6.446	45.083	0.062	0.001	0	27.75	0.4625	48.1	11.0	40.6	2.800	0.009	0.009	0.0002	0.225	0.19
10/24/2002	11:08:32 AM	25.818	24.444	25.262	25.79	25.714	49.065	49.926	17.106	32.851	-1.289	-6.455	45.148	0.062	0.001	0	28.75	0.47917	48.5	11.1	41.0	2.824	0.009	0.009	0.0002	0.224	0.19
10/24/2002	11:09:32 AM	25.825	24.462	25.374	25.753	25.781	48.879	49.899	17.023	32.722	-1.289	-6.42	45.135	0.062	0.001	0	29.75	0.49583	48.4	11.1	40.8	2.813	0.009	0.009	0.0002	0.224	0.19
10/24/2002	11:10:32 AM	25.839	24.485	25.358	25.781	25.764	48.916	49.92	17.128	32.644	-1.289	-6.434	45.123	0.061	0.001	0	30.75	0.5125	48.4	11.1	40.8	2.812	0.009	0.009	0.0002	0.221	0.19
10/24/2002	11:11:32 AM	25.841	24.498	25.315	25.813	25.812	48.864	49.936	16.965	32.816	-1.289	-6.458	45.196	0.062	0.001	0	31.75	0.52917	48.5	11.1	40.8	2.816	0.009	0.009	0.0002	0.224	0.19
10/24/2002	11:12:32 AM	25.838	24.505	25.413	25.811	25.864	49.231	50.255	17.047	33.058	-1.289	-6.458	45.391	0.061	0.001	0	32.75	0.54583	48.8	11.1	41.1	2.837	0.009	0.009	0.0002	0.218	0.19
10/24/2002	11:13:32 AM	25.862	24.549	25.286	25.904	25.943	48.736	50.027	16.987	32.475	-1.289	-6.452	44.126	0.061	0.001	0	33.75	0.5625	48.6	10.8	40.6	2.800	0.009	0.009	0.0002	0.222	0.19
10/24/2002	11:14:32 AM	25.853	24.555	25.413	25.871	25.899	48.705	49.682	17.013	32.565	-1.284	-6.411	45.188	0.061	0.001	0	34.75	0.57917	48.2	11.1	40.6	2.802	0.009	0.009	0.0002	0.221	0.19
10/24/2002	11:15:32 AM	25.852	24.569	25.311	25.874	25.958	48.788	49.916	17.043	32.663	-1.286	-6.46	45.221	0.06	0.001	0	35.75	0.59583	48.4	11.1	40.7	2.808	0.009	0.009	0.0002	0.218	0.19
10/24/2002	11:16:32 AM	25.859	24.576	25.338	25.807	25.935	48.972	50.011	17.043	32.696	-1.292	-6.463	45.395	0.061	0.001	0	36.75	0.6125	48.5	11.1	40.8	2.815	0.009	0.009	0.0002	0.221	0.19
10/24/2002	11:17:32 AM	25.861	24.583	25.4	25.808	25.917	48.55	49.711	16.885	32.634	-1.289	-6.463	45.295	0.06	0.001	0	37.75	0.62917	48.2	11.1	40.6	2.799	0.009	0.009	0.0002	0.218	0.19
10/24/2002	11:18:32 AM	25.868	24.615	25.287	25.891	25.974	48.817	49.791	17.07	32.644	-1.286	-6.463	44.997	0.06	0.001	0	38.75	0.64583	48.3	11.0	40.7	2.808	0.009	0.009	0.0002	0.218	0.19
10/24/2002	11:19:32 AM	25.88	24.632	25.439	25.918	25.936	49.026	50.176	17.132	32.659	-1.286	-6.46	45.135	0.06	0.001	0	39.75	0.6625	48.7	11.1	40.8	2.816	0.009	0.009	0.0002	0.216	0.18
10/24/2002	11:20:32 AM	25.872	24.634	25.261	25.959	25.978	48.837	49.831	17.141	32.624	-1.289	-6.463	45.234	0.061	0.001	0	40.75	0.67917	48.4	11.1	40.7	2.808	0.009	0.009	0.0002	0.222	0.19
10/24/2002	11:21:32 AM	25.885	24.657	25.369	25.953	25.951	48.891	50.11	17.035	32.724	-1.289	-6.431	45.85	0.06	0.001	0	41.75	0.69583	48.6	11.2	40.8	2.814	0.009	0.009	0.0002	0.217	0.18
10/24/2002	11:22:32 AM	25.897	24.674	25.366	25.964	25.923	48.626	49.758	16.95	32.587	-1.286	-6.472	45.271	0.059	0.001	0	42.75	0.7125	48.3	11.1	40.6	2.800	0.009	0.009	0.0002	0.214	0.18
10/24/2002	11:23:32 AM	25.898	24.686	25.308	25.981	25.944	48.701	49.868	17.102	32.36	-1.289	-6.469	45.204	0.059	0.001	0	43.75	0.72917	48.4	11.1	40.5	2.794	0.009	0.009	0.0002	0.215	0.18
10/24/2002	11:24:32 AM	25.902	24.709	25.421	26.034	25.958	48.612	49.818	16.959	32.434	-1.289	-6.472	45.217	0.059	0.001	0	44.75	0.74583	48.3	11.1	40.5	2.794	0.009	0.009	0.0002	0.215	0.18
10/24/2002	11:25:32 AM	25.909	24.721	25.253	26.116	25.939	48.684	49.826	17.073	32.464	-1.289	-6.469	45.269	0.059	0.001	0	45.75	0.7625	48.4	11.1	40.6	2.797	0.009	0.009	0.0002	0.215	0.18
10/24/2002	11:26:32 AM	25.92	24.737	25.394	26.138	25.966	48.794	50.139	17.03	32.589	-1.289	-6.472	45.165	0.059	0.001	0	46.75	0.77917	48.7	11.1	40.7	2.806	0.009	0.009	0.0002	0.214	0.18
10/24/2002	11:27:32 AM	25.922	24.749	25.281	26.199	25.973	48.782	50.013	17.032	32.55	-1.289	-6.472	44.98	0.058	0.001	0	47.75	0.79583	48.5	11.0	40.7	2.804	0.009	0.009	0.0002	0.211	0.18
10/24/2002	11:28:32 AM	25.914	24.757	25.314	26.127	25.995	48.663	49.975	17.012	32.434	-1.292	-6.475	45.555	0.059	0.001	0	48.75	0.8125	48.5	11.2	40.5	2.796	0.009	0.009	0.0002	0.215	0.18
10/24/2002	11:29:32 AM	25.937	24.784	25.381	26.144	26.033	48.784	49.926	17.068	32.745	-1.289	-6.472	45.374	0.06	0.001	0	49.75	0.82917	48.5	11.1	40.8	2.811	0.009	0.009	0.0002	0.217	0.18
10/24/2002	11:30:32 AM	25.935	24.798	25.254	26.148	26.056	48.512	49.889	16.924	32.477	-1.289	-6.472	45.127	0.059	0.001	0	50.75	0.84583	48.4	11.1	40.5	2.792	0.009	0.009	0.0002	0.216	0.18
10/24/2002	11:31:32 AM	25.953	24.83	25.412	26.175	26.074	48.643	49.843	16.936	32.667	-1.289	-6.469	45.406	0.059	0.001	0	51.75	0.8625	48.4	11.1	40.7	2.803	0.009	0.009	0.0002	0.214	0.18
10/24/2002	11:32:32 AM	25.951	24.849	25.24	26.244	26.097	48.369	49.599	17.015	32.186	-1.289	-6.458	45.399	0.059	0.001	0	52.75	0.87917	48.1	11.1	40.3	2.777	0.009	0.009	0.0002	0.217	0.18
10/24/2002	11:33:32 AM	25.97	24.867	25.384	26.182	26.156	48.409	49.649	16.986	32.28	-1.289	-6.466	45.322	0.058	0.001	0	53.75	0.89583	48.2	11.1	40.3	2.782	0.009	0.009	0.0002	0.212	0.18
10/24/2002	11:34:32 AM	25.967	24.88	25.316	26.23	26.143	48.531	49.835	17.038	32.294	-1.289	-6.466	45.307	0.058	0.001	0	54.75	0.9125	48.4	11.1	40.4	2.786	0.009	0.009	0.0002	0.212	0.18
10/24/2002	11:35:32 AM	25.97	24.902	25.329	26.227	26.156	48.548	49.837	16.992	32.352	-1.289	-6.469	45.339	0.059	0.001	0	55.75	0.92917	48.4	11.1	40.5	2.789	0.009	0.009	0.0002	0.215	0.18
10/24/2002	11:36:32 AM	25.972	24.915	25.402	26.19	26.158	48.767	50.215	17.079	32.421	-1.289	-6.469	45.502	0.059	0.001	0	56.75	0.94583	48.7	11.2	40.6	2.799	0.009	0.009	0.0002	0.214	0.18
10/24/2002	11:37:32 AM	25.974	24.927	25.268	26.281	26.185	48.595	49.978	17.058	32.327	-1.289	-6.466	45.359	0.059	0.001	0	57.75	0.9625	48.5	11.1	40.5	2.790	0.009	0.009	0.0002	0.216	0.18
10/24/2002	11:38:32 AM	25.987	24.954	25.421	26.209	26.182	48.489	49.698	17.041	32.497	-1.286	-6.463	45.693	0.059	0.001	0	58.75	0.97917	48.2	11.2	40.5	2.792	0.009	0.009	0.0002	0.215	0.18

Figure E4-1: Steady state test run 1.18 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

10/24/2002	11:39:32 AM	25.989	24.967	25.258	26.307	26.2	48.581	50.06	17.055	32.305	-1.289	-6.458	45.164	0.057	0.001	0	59.75	0.99583	48.6	11.1	40.4	2.788	0.008	0.008	0.0002	0.209	0.18
10/24/2002	11:40:32 AM	26.001	24.989	25.365	26.343	26.227	48.365	49.814	16.909	32.384	-1.289	-6.44	45.46	0.059	0.001	0	60.75	1.0125	48.3	11.1	40.4	2.784	0.009	0.009	0.0002	0.216	0.18
10/24/2002	11:41:32 AM	25.998	25	25.332	26.38	26.243	48.492	49.86	17.055	32.331	-1.289	-6.458	45.383	0.059	0.001	0	61.75	1.02917	48.4	11.1	40.4	2.786	0.009	0.009	0.0002	0.216	0.18
10/24/2002	11:42:32 AM	25.999	25.012	25.294	26.362	26.26	48.626	49.932	17.024	32.456	-1.292	-6.486	45.395	0.059	0.001	-0.001	62.75	1.04583	48.5	11.1	40.5	2.795	0.009	0.009	0.0002	0.215	0.18
10/24/2002	11:43:32 AM	25.998	25.025	25.387	26.355	26.334	48.272	49.773	16.867	32.315	-1.292	-6.484	45.494	0.058	0.001	0	63.75	1.0625	48.3	11.1	40.3	2.778	0.009	0.009	0.0002	0.212	0.18
10/24/2002	11:44:32 AM	26.026	25.059	25.26	26.399	26.347	48.063	49.51	16.847	32.198	-1.289	-6.484	45.441	0.058	0.001	0	64.75	1.07917	48.0	11.1	40.1	2.767	0.009	0.009	0.0002	0.214	0.18
10/24/2002	11:45:32 AM	26.024	25.067	25.408	26.376	26.35	48.4	49.862	17.075	32.215	-1.289	-6.484	45.307	0.058	0.001	0	65.75	1.09583	48.4	11.1	40.3	2.779	0.009	0.009	0.0002	0.212	0.18
10/24/2002	11:46:32 AM	26.027	25.09	25.266	26.425	26.363	48.218	49.607	16.968	32.225	-1.289	-6.484	45.282	0.057	0.001	0	66.75	1.1125	48.1	11.1	40.2	2.773	0.008	0.008	0.0002	0.210	0.18
10/24/2002	11:47:32 AM	26.041	25.119	25.375	26.433	26.362	48.519	50.029	16.998	32.376	-1.289	-6.484	45.387	0.058	0.001	0	67.75	1.12917	48.6	11.1	40.4	2.789	0.009	0.009	0.0002	0.212	0.18
10/24/2002	11:48:32 AM	26.037	25.13	25.342	26.455	26.383	48.226	49.816	16.995	32.055	-1.289	-6.489	45.393	0.058	0.001	0	68.75	1.14583	48.3	11.1	40.1	2.768	0.009	0.009	0.0002	0.213	0.18
10/24/2002	11:49:32 AM	26.045	25.148	25.324	26.472	26.401	48.446	49.992	16.963	32.329	-1.286	-6.484	45.494	0.058	0.001	0	69.75	1.1625	48.5	11.1	40.4	2.785	0.009	0.009	0.0002	0.212	0.18
10/24/2002	11:50:32 AM	26.047	25.155	25.421	26.439	26.468	48.344	49.793	17.024	32.266	-1.286	-6.458	44.11	0.058	0.001	0	70.75	1.17917	48.3	10.8	40.3	2.779	0.009	0.009	0.0002	0.212	0.18
10/24/2002	11:51:32 AM	26.059	25.182	25.269	26.522	26.47	48.26	49.893	16.869	32.278	-1.292	-6.469	45.36	0.058	0.001	0	71.75	1.19583	48.4	11.1	40.3	2.776	0.009	0.009	0.0002	0.213	0.18
10/24/2002	11:52:32 AM	26.057	25.19	25.406	26.524	26.448	48.222	49.721	17.009	32.086	-1.292	-6.472	45.603	0.058	0.001	0	72.75	1.2125	48.2	11.2	40.2	2.768	0.009	0.009	0.0002	0.213	0.18
10/24/2002	11:53:32 AM	26.054	25.202	25.268	26.546	26.475	48.411	49.88	16.998	32.327	-1.292	-6.472	45.278	0.058	0.001	0	73.75	1.22917	48.4	11.1	40.4	2.783	0.009	0.009	0.0002	0.213	0.18
10/24/2002	11:54:32 AM	26.071	25.224	25.361	26.589	26.492	48.146	49.845	17.025	31.914	-1.289	-6.469	45.23	0.057	0.001	0	74.75	1.24583	48.4	11.1	40.0	2.760	0.008	0.008	0.0002	0.210	0.18
10/24/2002	11:55:32 AM	26.074	25.242	25.373	26.626	26.525	48.22	49.891	17.011	31.991	-1.289	-6.475	44.38	0.058	0.001	0	75.75	1.2625	48.4	10.9	40.1	2.765	0.009	0.009	0.0002	0.213	0.18
10/24/2002	11:56:32 AM	26.087	25.26	25.306	26.614	26.512	48.45	50.091	17.011	32.325	-1.289	-6.472	45.366	0.058	0.001	0	76.75	1.27917	48.6	11.1	40.4	2.785	0.009	0.009	0.0002	0.212	0.18
10/24/2002	11:57:32 AM	26.083	25.272	25.408	26.561	26.544	47.947	49.483	16.936	31.905	-1.292	-6.475	45.341	0.057	0.001	0	77.75	1.29583	48.0	11.1	39.9	2.753	0.008	0.008	0.0002	0.210	0.18
10/24/2002	11:58:32 AM	26.105	25.298	25.269	26.642	26.556	48.193	49.74	16.975	32.129	-1.289	-6.475	45.343	0.058	0.001	0	78.75	1.3125	48.3	11.1	40.2	2.769	0.009	0.009	0.0002	0.214	0.18
10/24/2002	11:59:32 AM	26.111	25.309	25.4	26.633	26.562	48.057	49.415	16.97	32.075	-1.289	-6.472	45.599	0.058	0.001	0	79.75	1.32917	47.9	11.2	40.1	2.762	0.009	0.009	0.0002	0.213	0.18
10/24/2002	12:00:32 PM	26.113	25.331	25.312	26.73	26.624	48.048	49.556	16.964	32.092	-1.286	-6.472	45.339	0.056	0.001	0	80.75	1.34583	48.1	11.1	40.1	2.763	0.008	0.008	0.0002	0.207	0.18
10/24/2002	12:01:32 PM	26.125	25.348	25.349	26.677	26.595	48.38	50.149	17.091	32.059	-1.289	-6.472	45.383	0.057	0.001	0	81.75	1.3625	48.7	11.1	40.2	2.773	0.008	0.008	0.0002	0.209	0.18
10/24/2002	12:02:32 PM	26.126	25.365	25.396	26.654	26.632	48.293	49.957	17.06	32.043	-1.289	-6.475	45.446	0.057	0.001	0	82.75	1.37917	48.5	11.1	40.2	2.769	0.008	0.008	0.0002	0.209	0.18
10/24/2002	12:03:32 PM	26.138	25.381	25.292	26.64	26.629	48.03	49.7	16.867	32.104	-1.289	-6.472	45.097	0.057	0.001	0	83.75	1.39583	48.2	11.1	40.1	2.762	0.008	0.008	0.0002	0.210	0.18
10/24/2002	12:04:32 PM	26.134	25.387	25.423	26.636	26.635	48.189	49.907	17.089	31.938	-1.289	-6.478	45.991	0.057	0.001	0	84.75	1.4125	48.4	11.3	40.1	2.762	0.008	0.008	0.0002	0.210	0.18
10/24/2002	12:05:32 PM	26.141	25.409	25.26	26.633	26.646	48.094	50.037	16.983	31.85	-1.289	-6.478	45.473	0.057	0.001	0	85.75	1.42917	48.6	11.1	40.0	2.756	0.008	0.008	0.0002	0.211	0.18
10/24/2002	12:06:32 PM	26.137	25.425	25.396	26.659	26.667	48.038	49.731	16.974	31.862	-1.289	-6.478	44.55	0.057	0.001	0	86.75	1.44583	48.3	10.9	40.0	2.754	0.008	0.008	0.0002	0.210	0.18
10/24/2002	12:07:32 PM	26.139	25.443	25.299	26.737	26.67	47.926	49.951	16.944	31.83	-1.289	-6.446	45.913	0.057	0.001	0	87.75	1.4625	48.5	11.3	39.9	2.749	0.008	0.008	0.0002	0.211	0.18
10/24/2002	12:08:32 PM	26.152	25.465	25.341	26.774	26.708	48.262	50.071	17.044	31.961	-1.292	-6.486	45.439	0.057	0.001	0	88.75	1.47917	48.6	11.1	40.1	2.766	0.008	0.008	0.0002	0.210	0.18
10/24/2002	12:09:32 PM	26.16	25.478	25.384	26.802	26.735	48.218	50.164	16.995	32.022	-1.292	-6.486	45.309	0.057	0.001	0	89.75	1.49583	48.7	11.1	40.1	2.766	0.008	0.008	0.0002	0.210	0.18
10/24/2002	12:10:32 PM	26.161	25.5	25.306	26.829	26.717	47.711	49.541	16.82	31.772	-1.292	-6.486	45.295	0.057	0.001	0	90.75	1.5125	48.1	11.1	39.7	2.740	0.008	0.008	0.0002	0.212	0.18
10/24/2002	12:11:32 PM	26.163	25.507	25.423	26.785	26.719	47.994	49.75	16.965	31.93	-1.289	-6.486	45.599	0.057	0.001	0	91.75	1.52917	48.3	11.2	40.0	2.755	0.008	0.008	0.0002	0.210	0.18
10/24/2002	12:12:32 PM	26.177	25.54	25.271	26.889	26.772	48.125	49.953	17.072	31.836	-1.289	-6.489	46.371	0.057	0.001	0	92.75	1.54583	48.5	11.4	40.0	2.757	0.008	0.008	0.0002	0.211	0.18
10/24/2002	12:13:32 PM	26.194	25.557	25.423	26.881	26.764	47.937	49.87	16.939	31.869	-1.292	-6.486	45.513	0.056	0.001	0	93.75	1.5625	48.4	11.2	39.9	2.751	0.008	0.008	0.0002	0.207	0.18
10/24/2002	12:14:32 PM	26.185	25.559	25.275	26.842	26.776	48.04	49.899	17.018	31.823	-1.292	-6.492	45.607	0.057	0.001	0	94.75	1.57917	48.4	11.2	39.9	2.753	0.008	0.008	0.0002	0.211	0.18
10/24/2002	12:15:32 PM	26.193	25.582	25.358	26.88	26.794	48.357	50.16	17.074	32.092	-1.289	-6.489	45.303	0.056	0.001	0	95.75	1.59583	48.7	11.1	40.2	2.773	0.008	0.008	0.0002	0.205	0.17
10/24/2002	12:16:32 PM	26.204	25.597	25.358	26.896	26.829	48.009	49.835	17.019	31.92	-1.289	-6.489	45.381	0.057	0.001	0	96.75	1.6125	48.4	11.1	40.0	2.755	0.008	0.008	0.0002	0.211	0.18
10/24/2002	12:17:32 PM	26.206	25.614	25.32	26.863	26.841	47.562	49.405	16.845	31.637	-1.289	-6.489	46.779	0.056	0.001	0	97.75	1.62917	47.9	11.5	39.6	2.730	0.008	0.008	0.0002	0.209	0.18
10/24/2002	12:18:32 PM	26.216	25.639	25.43	26.968	26.851	47.949	50.015	16.941	31.758	-1.289	-6.486	45.504	0.057	0.001	0	98.75	1.64583	48.5	11.2	39.9	2.748	0.008	0.008	0.0002	0.211	0.18
10/24/2002	12:19:32 PM	26.202	25.64	25.236	27.158	26.877	47.719	49.644	16.948	31.65	-1.295	-6.492	45.355	0.056	0.001	0	99.75	1.6825	48.2	11.1	39.7	2.736	0.008	0.008	0.0002	0.209	0.18
10/24/2002	12:20:32 PM	26.217	25.67	25.416	27.203	26.907	48.17	50.106	17.123	31.866	-1.289	-6.489	45.492	0.056	0.001	0	100.75	1.67917	48.6	11.1	40.0	2.759	0.008	0.008	0.0002	0.206	0.18
10/24/2002	12:21:32 PM	26.206	25.679	25.25	27.257	26.921	47.972	50.002	17.049	31.713	-1.292	-6.489	45.395	0.056	0.001	0	101.75	1.69583	48.5	11.1	39.8	2.747	0.008	0.008	0.0002	0.208	0.18
10/24/2002	12:22:32 PM	26.217	25.705	25.371	27.243	26.947	47.835	49.884	16.923	31.738	-1.289	-6.46	45.479	0.056	0.001	0	102.75	1.7125	48.4	11.1	39.8	2.743	0.008	0.008	0.0002	0.208	0.18
10/24/2002	12:23:32 PM	26.238	25.731	25.362	27.259	26.963	47.704	49.692	16.916	31.615	-1.286	-6.469	45.261	0.057	0.001	0	103.75	1.72917	48.2	11.1	39.7	2.734	0.008	0.008	0.0002	0.212	0.18
10/24/2002	12:24:32 PM	26.234	25.733	25.319	27.226	26.985	48.005	50.104	16.993	31.764	-1.292	-6.472	45.383	0.056	0.001	0	104.75	1.74583	48.6	11.1	39.9	2.750	0.008	0.008	0.0002	0.207	0.18
10/24/2002	12:25:32 PM	26.235	25.754	25.42	27.192	26.996	47.854	50.066	16.942	31.629	-1.289	-6.475	45.51	0.056	0.001	0	105.75	1.7625	48.6	11.2	39.7	2.740	0.008	0.008	0.0002	0.208	0.18
10/24/2002	12:26:32 PM	26.236	25.765	25.281	27.203	27.006	47.715	49.616	16.98	31.68	-1.289	-6.481	45.427	0.056	0.001	0	106.75	1.77917	48.1	11.1	39.7	2.737	0.008	0.008	0.0002	0.209	0.18
10/24/2002	12:27:32 PM	26.254	25.782	25.418	27.081	27.024	48.309	50.476	17.14	31.877	-1.295	-6.492	45.766	0.056	0.001	0	107.75	1.79583	49.0	11.2	40.1	2.764	0.008	0.008	0.0002	0.206	0.18
10/24/2002	12:28:32 PM	26.261	25.809	25.26	27.137	27.036	47.684	49.783	17.019	31.492	-1.289	-6.501	45.701	0.056	0.001	0	108.75	1.8125	48.3	11.2	39.6	2.729	0.008	0.008	0.0002	0.209	0.18
10/24/2002	12:29:32 PM	26.272	25.815	25.381	27.198	27.042	47.905	50.129	16.948	31.738	-1.289	-6.504	45.5	0.056	0.001	0	109.75	1.82917	48.7	11.2	39.8	2.746	0.008	0.008	0.0002	0.207	0.18
10/24/2002	12:30:32 PM	26.283	25.837	25.303	27.26	27.079	47.477	49.514	16.826	31.482	-1.292	-6.504	45.284	0.056	0.001	0	110.75	1.84583	48.0	11.1	39.5	2.722	0.008	0.008	0.0002	0.210	0.18
10/24/2002	12:31:32 PM	26.279	25.848	25.344	27.271	27.089	47.415	49.555	16.769	31.629	-1.289	-6.504	45.416	0.056	0.001	0	111.75	1.8625	48.1	11.1	39.5	2.725	0.008	0.008	0.0002	0.209	0.18
10/24/2002	12:32:32 PM	26.296	25.875	25.381	27.427	27.111	47.762	49.963	16.934	31.549	-1.289	-6.504	45.368	0.056	0.001	0	112.75	1.87917	48.5	11.1	39.7	2.734	0.008	0.008	0.0002	0.208	0.18
10/24/2002	12:33:32 PM	26.313	25.897	25.307	27.429	27.153	47.87	50.052	16.993	31.692	-1.289	-6.501	45.58	0.056	0.001	0	113.75	1.89583	48.6	11.2	39.8	2.743	0.008	0.008	0.0002	0.208	0.18
10/24/2002	12:34:32 PM	26.31	25.903	25.404	27.271	27.175	47.719	49.766	17.036	31.564	-1.295	-6.507	45.309	0.056	0.001	0	114.75	1.9125	48.3	11.1	39.6	2.733	0.008	0.008	0.0002	0.208	0.18
10/24/2002	12:35:32 PM	26.321	25.919	25.265	27.382	27.211	47.7	49.967	17.015	31.557	-1.289	-6.507	45.852	0.055	0.001	0	115.75	1.92917	48.5	11.2	39.6	2.732	0.008	0.008	0.0002	0.205	0.17
10/24/2002	12:36:32 PM	26.327	25.936	25.402	27.369	27.232	47.715	49.864	17.014	31.478	-1.292	-6.469	45.508	0.056	0.001	0	116.75	1.94583	48.4	11.2	39.6	2.730	0.008	0.008	0.0002	0.208	0.18
10/24/2002	12:37:32 PM	26.33	25.959	25.265	27.426	27.27	47.632	49.746	17.01	31.443	-1.289	-6.484	45.626	0.055	0.001	0	117.75	1.9625	48.3	11.2	39.5	2.726	0.008	0.008	0.0002	0.206	0.18
10/24/2002	12:38:32 PM	26.33	25.969	25.38	27.461	27.265	47.841	49.961	17.063	31.678	-1.289	-6.489	45.389	0.056	0.001	0	118.75	1.97917	48.5	11.1	39.8	2.741	0.008	0.008	0.0002	0.208	0.18
10/24/2002	12:39:32 PM	26.332	26.006	25.326	27.518	27.302	47.754	50.04	17.037	31.48	-1.286	-6.489	45.573	0.055	0.001	0	119.75	1.99583	48.6	11.2	39.6	2.731	0.008	0.008	0.0002	0.205	0.17
10/24/2002	12:40:32 PM	26.334	26.022	25.338	27.689	27.334	47.783	50.135	16.977	31.553	-1.289	-6.489	45.555	0.056	0.001	0	120.75	2.0125	48.7	11.2	39.7	2.735	0.008	0.008	0.0002	0.208	0.18
	Averages	26.0	25.0	25.3	26.4	26.3	48.2	49.9	17.0	32.1	-1.2	-6.2	45.3	0.1	0.0	0.0			48.4	11.1	40.2	2.770	0.009	0.009	0.0002	0.221	0.188
	Maximum	26.3	26.0	25.4	27.7	27.3	49.3	50.5	17.2	33.1	0.4	0.8	46.8	0.1	0.0	0.0			49.0	11.5	41.2	2.841	0.016	0.016	0.0004	0.400	0.341
	Median	26.0	25.0	25.3	26.4	26.3	48.4	49.9	17.0	32.3	-1.3	-6.5	45.4	0.1	0.0	0.0			48.4	11.1	40.3	2.779	0.009	0.009	0.0002	0.213	0.182
	Minimum	25.7	24.0	25.2	25.2	25.2	43.3	49.3	16.2	27.5	-1.3	-6.5	44.1	0.1	0.0	0.0			47.8	10.8	35.4	2.443	0.008	0.008	0.0002	0.205	0.175
	2 x Std Dev	0.355	1.155	0.119	1.235	1.159	2.081	0.398	0.284	1.877	0.585	2.635	0.683	0.013	0.000	0.000			0.398	0.167	1.975	0.136	0.002	0.002	0.0001	0.054	0.046
Number of Points Used*		116	116	116	116	116	116	116	116	116	116	116	116	116	116	116			116	116	116	116	116	116	116	116	116
	* Backpulse points in box are not included																											

Figure E4-2: Steady state test run 1.18 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

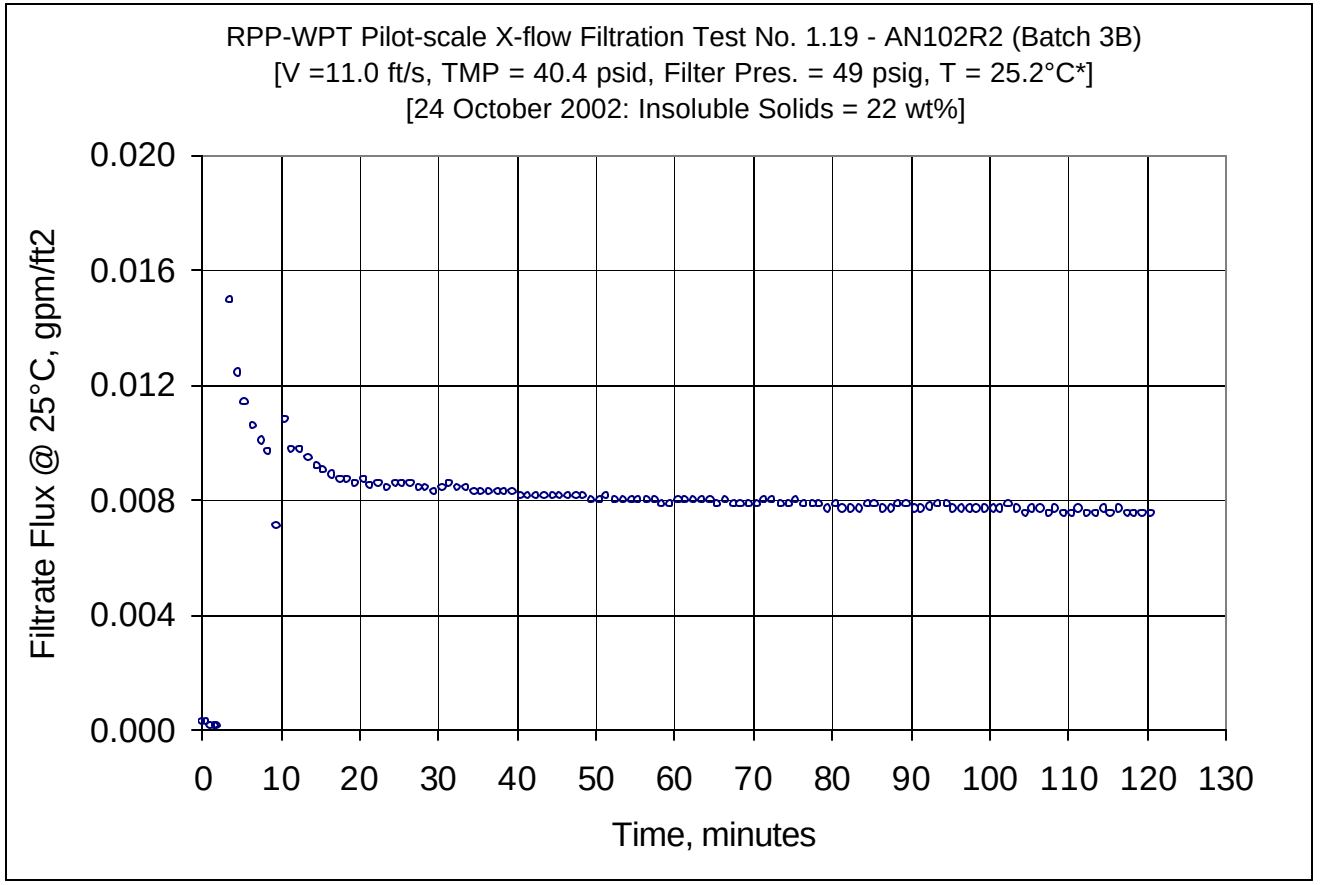


Figure E5: Steady state test run 1.19 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt%

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
10/24/2002	8:15:17 AM	21.617	21.671	19.741	21.01	20.847	-0.133	0.046	-0.053	0.058	-0.35	0.39	-0.214	0.002	0.001	0			Filter Surface	6.707	FT2						
10/24/2002	8:15:33 AM	21.617	21.671	19.741	21.01	20.847	-0.133	0.046	-0.053	0.058	-0.35	0.39	-0.214	0.002	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
10/24/2002	8:15:34 AM	21.616	21.666	19.741	20.999	20.847	-0.131	0.046	-0.053	0.058	-0.307	0.39	-0.214	0.002	0.001	0											
10/24/2002	8:15:35 AM	21.622	21.666	19.741	21.01	20.847	-0.131	0.046	-0.053	0.06	-0.307	0.39	-0.212	0.002	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
10/24/2002	8:15:36 AM	21.622	21.671	19.741	21.015	20.852	-0.129	0.046	-0.052	0.058	-0.304	0.393	-0.216	0.001	0.001	0											
10/24/2002	8:15:37 AM	21.622	21.671	19.746	21.01	20.857	-0.131	0.044	-0.053	0.058	-0.304	0.393	-0.212	0.002	0.001	0			Pressure P1 is corrected for 40.88 inches of water tubing								
10/24/2002	8:15:38 AM	21.622	21.671	19.746	21.02	20.847	-0.131	0.046	-0.052	0.058	-0.341	0.39	-0.214	0.002	0.001	0			VVVV				< Filtrate Flux	<< PERMIABILITY >>			
10/24/2002	8:15:39 AM	21.627	21.666	19.746	21.02	20.852	-0.131	0.046	-0.053	0.06	-0.307	0.393	-0.212	0.002	0.001	0							at 25C		x 1000		
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
10/24/2002	12:45:12 PM	26.336	26.135	25.366	27.747	27.461	19.611	50.081	16.414	4.044	24.493	90.324	44.793	0.002	0.001	0	0	0	48.6	11.0	11.8	0.815	0.000	0.000	0.0000	0.025	0.02
10/24/2002	12:45:43 PM	26.403	26.142	25.282	27.724	27.472	-7.43	50.218	9.315	-18.528	64.918	68.044	44.29	0.002	0.001	1.285	0.52	0.00861	48.7	10.9	-13.0	-0.895	0.000	0.000	0.0000	-0.023	-0.02
10/24/2002	12:46:12 PM	26.353	26.132	25.192	27.709	27.487	7.691	49.278	10.937	-2.382	35.61	51.835	47.23	0.001	0.001	0.001	1.00	0.01667	47.8	11.6	2.7	0.183	0.000	0.000	0.0001	0.056	0.05
10/24/2002	12:46:43 PM	26.374	26.158	25.293	27.729	27.458	10.55	48.418	11.219	0.33	32.231	0.492	47.545	0.085	0.001	0	1.52	0.02528	46.9	11.7	5.4	0.375	0.000	0.000	0.0000	0.027	0.02
10/24/2002	12:47:12 PM	26.3	26.158	25.299	27.71	27.464	38.962	49.123	12.515	27.121	4.231	0.561	47.528	0.366	0.001	0	2.00	0.03333	47.7	11.6	33.0	2.278	0.000	0.000	0.0000	0.004	0.00
10/24/2002	12:47:43 PM	26.192	26.17	25.196	27.727	27.476	42.744	49.315	13.505	30.043	0.5	0.579	46.559	0.145	0.001	0	2.52	0.04194	47.8	11.4	36.4	2.509	0.022	0.021	0.0006	0.591	0.50
10/24/2002	12:48:40 PM	26.163	26.192	25.233	27.724	27.488	42.968	49.429	14.381	29.375	0.289	0.622	45.708	0.101	0.001	0	3.47	0.05778	48.0	11.2	36.2	2.494	0.015	0.015	0.0004	0.414	0.35
10/24/2002	12:49:40 PM	26.156	26.21	25.126	27.742	27.506	43.546	50.006	15.049	29.24	0.283	0.651	45.406	0.084	0.001	0	4.47	0.07444	48.5	11.1	36.4	2.509	0.013	0.012	0.0003	0.343	0.29
10/24/2002	12:50:40 PM	26.144	26.228	25.233	27.759	27.538	43.689	50.112	15.384	29.08	0.286	0.683	45.175	0.077	0.001	0	5.47	0.09111	48.6	11.1	36.4	2.509	0.011	0.011	0.0003	0.313	0.27
10/24/2002	12:51:40 PM	26.146	26.235	25.08	27.562	27.61	43.995	50.588	15.604	29.115	0.289	0.709	45.211	0.071	0.001	0	6.47	0.10778	49.1	11.1	36.6	2.520	0.011	0.011	0.0003	0.289	0.25
10/24/2002	12:52:40 PM	26.14	26.264	25.245	27.437	27.779	43.637	50.097	15.7	28.743	0.303	0.735	44.906	0.068	0.001	0	7.47	0.12444	48.6	11.0	36.2	2.495	0.010	0.010	0.0003	0.278	0.24
10/24/2002	12:53:40 PM	26.129	26.283	25.083	27.375	27.803	43.728	50.176	15.829	28.61	0.332	0.755	44.873	0.065	0.001	0	8.47	0.14111	48.7	11.0	36.2	2.494	0.010	0.010	0.0003	0.267	0.23
10/24/2002	12:54:40 PM	26.121	26.29	25.24	27.357	27.74	43.631	50.286	15.861	28.601	0.52	0.868	44.625	0.048	0.001	0	9.47	0.15778	48.8	10.9	36.1	2.490	0.007	0.007	0.0002	0.197	0.17
10/24/2002	12:55:40 PM	26.278	26.302	25.137	27.459	27.687	49.266	50.257	16.52	33.525	-1.289	-6.22	45.141	0.073	0.001	0	10.47	0.17444	48.8	11.1	41.4	2.854	0.011	0.011	0.0003	0.262	0.22
10/24/2002	12:56:40 PM	26.223	26.312	25.227	27.539	27.652	49.146	49.922	16.416	33.572	-1.289	-6.353	44.837	0.066	0.001	0	11.47	0.19111	48.4	11.0	41.4	2.852	0.010	0.010	0.0002	0.236	0.20
10/24/2002	12:57:40 PM	26.203	26.322	25.227	27.574	27.627	49.361	50.186	16.469	33.744	-1.289	-6.408	44.755	0.066	0.001	0	12.47	0.20778	48.7	11.0	41.6	2.865	0.010	0.010	0.0002	0.235	0.20
10/24/2002	12:58:40 PM	26.204	26.347	25.198	27.56	27.643	49.674	50.549	16.186	34.282	-1.289	-6.431	44.533	0.064	0.001	0	13.47	0.22444	49.1	10.9	42.0	2.894	0.010	0.009	0.0002	0.226	0.19
10/24/2002	12:59:40 PM	26.209	26.362	25.318	27.535	27.643	49.546	50.373	16.249	34.255	-1.292	-6.475	44.468	0.062	0.001	0	14.47	0.24111	48.9	10.9	41.9	2.889	0.009	0.009	0.0002	0.219	0.19
10/24/2002	1:00:40 PM	26.196	26.37	25.155	27.557	27.66	49.243	50.151	16.849	33.101	-1.289	-6.443	45.318	0.061	0.001	0	15.47	0.25778	48.7	11.1	41.2	2.839	0.009	0.009	0.0002	0.220	0.19
10/24/2002	1:01:40 PM	26.195	26.384	25.325	27.476	27.689	48.817	49.723	16.935	32.601	-1.292	-6.484	45.374	0.06	0.001	0	16.47	0.27444	48.3	11.1	40.7	2.807	0.009	0.009	0.0002	0.218	0.19
10/24/2002	1:02:40 PM	26.208	26.407	25.218	27.469	27.677	48.924	49.615	16.992	32.831	-1.289	-6.486	45.458	0.059	0.001	0	17.47	0.29111	48.1	11.1	40.9	2.818	0.009	0.009	0.0002	0.214	0.18
10/24/2002	1:03:40 PM	26.211	26.435	25.316	27.477	27.715	48.862	49.812	16.754	32.909	-1.292	-6.484	45.068	0.059	0.001	0	18.47	0.30778	48.3	11.0	40.9	2.819	0.009	0.009	0.0002	0.213	0.18
10/24/2002	1:04:40 PM	26.204	26.438	25.319	27.476	27.773	48.937	49.936	16.789	32.935	-1.292	-6.486	45.164	0.058	0.001	0	19.47	0.32444	48.5	11.1	40.9	2.822	0.009	0.009	0.0002	0.209	0.18
10/24/2002	1:05:40 PM	26.218	26.462	25.273	27.415	27.742	48.97	50.102	16.72	32.87	-1.289	-6.486	45.043	0.059	0.001	0	20.47	0.34111	48.6	11.0	40.9	2.821	0.009	0.009	0.0002	0.213	0.18
10/24/2002	1:06:40 PM	26.228	26.477	25.403	27.35	27.683	48.947	49.971	16.727	33.035	-1.289	-6.489	45.269	0.058	0.001	0	21.47	0.35778	48.5	11.1	41.0	2.826	0.009	0.009	0.0002	0.209	0.18
10/24/2002	1:07:40 PM	26.233	26.486	25.222	27.404	27.647	49.02	50.253	16.762	32.988	-1.292	-6.492	45.101	0.058	0.001	0	22.47	0.37444	48.8	11.1	41.0	2.827	0.009	0.009	0.0002	0.210	0.18
10/24/2002	1:08:40 PM	26.237	26.495	25.371	27.338	27.636	48.724	49.719	16.655	32.98	-1.292	-6.492	45.273	0.057	0.001	0	23.47	0.39111	48.2	11.1	40.9	2.817	0.008	0.008	0.0002	0.206	0.18
10/24/2002	1:09:40 PM	26.25	26.514	25.269	27.506	27.634	48.651	49.667	16.462	33.068	-1.289	-6.489	45.087	0.058	0.001	0	24.47	0.40778	48.2	11.0	40.9	2.817	0.009	0.009	0.0002	0.210	0.18
10/24/2002	1:10:40 PM	26.248	26.522	25.298	27.394	27.637	48.821	49.856	16.466	33.207	-1.289	-6.495	44.825	0.058	0.001	0	25.47	0.42444	48.4	11.0	41.0	2.828	0.009	0.009	0.0002	0.209	0.18
10/24/2002	1:11:40 PM	26.246	26.535	25.336	27.372	27.665	48.752	50.122	16.399	33.009	-1.292	-6.466	44.835	0.058	0.001	0	26.47	0.44111	48.6	11.0	40.9	2.819	0.009	0.009	0.0002	0.210	0.18
10/24/2002	1:12:40 PM	26.25	26.554	25.225	27.367	27.659	49.119	50.133	16.562	33.416	-1.292	-6.466	44.114	0.057	0.001	0	27.47	0.45778	48.7	10.8	41.3	2.845	0.008	0.008	0.0002	0.205	0.17
10/24/2002	1:13:40 PM	26.239	26.553	25.359	27.336	27.688	48.941	49.982	16.557	33.17	-1.292	-6.466	44.858	0.057	0.001	0	28.47	0.47444	48.5	11.0	41.1	2.831	0.008	0.008	0.0002	0.205	0.17
10/24/2002	1:14:40 PM	26.247	26.556	25.187	27.319	27.696	48.91	49.988	16.501	33.271	-1.295	-6.475	44.724	0.056	0.001	0	29.47	0.49111	48.5	11.0	41.1	2.833	0.008	0.008	0.0002	0.202	0.17
10/24/2002	1:15:40 PM	26.257	26.571	25.332	27.279	27.781	48.637	49.891	16.352	33.021	-1.289	-6.466	44.928	0.057	0.001	0	30.47	0.50778	48.4	11.0	40.8	2.815	0.008	0.008	0.0002	0.206	0.18
10/24/2002	1:16:40 PM	26.252	26.56	25.231	27.233	27.815	49.051	50.015	16.441	33.51	-1.289	-6.466	44.764	0.058	0.001	0	31.47	0.52444	48.5	11.0	41.3	2.846	0.009	0.009	0.0002	0.208	0.18
10/24/2002	1:17:40 PM	26.252	26.57	25.266	27.233	27.676	49.279	50.513	16.451	33.639	-1.286	-6.44	44.282	0.057	0.001	0	32.47	0.54111	49.0	10.9	41.5	2.858	0.008	0.008	0.0002	0.204	0.17
10/24/2002	1:18:40 PM	26.244	26.573	25.334	27.271	27.693	49.063	50.143	16.342	33.631	-1.289	-6.455	44.418	0.057	0.001	0	33.47	0.55778	48.7	10.9	41.3	2.851	0.008	0.008	0.0002	0.204	0.17
10/24/2002	1:19:40 PM	26.255	26.579	25.225	27.277	27.729	49.036	50.462	16.444	33.244	-1.286	-6.501	44.77	0.056	0.001	0	34.47	0.57444	49.0	11.0	41.1	2.836	0.008	0.008	0.0002	0.202	0.17
10/24/2002	1:20:40 PM	26.247	26.576	25.357	27.269	27.731	48.974	50.149	16.297	33.543	-1.289	-6.504	44.8	0.056	0.001	0	35.47	0.59111	48.7	11.0	41.3	2.845	0.008	0.008	0.0002	0.200	0.17
10/24/2002	1:21:40 PM	26.243	26.567	25.172	27.314	27.697	48.605	49.86	16.158	33.338	-1.289	-6.507	44.764	0.056	0.001	0	36.47	0.60778	48.4	11.0	41.0	2.825	0.008	0.008	0.0002	0.203	0.17
10/24/2002	1:22:40 PM	26.244	26.558	25.298	27.235	27.673	48.897	50.087	16.265	33.457	-1.292	-6.478	44.454	0.056	0.001	0	37.47	0.62444	48.6	10.9	41.2	2.839	0.008	0.008	0.0002	0.201	0.17
10/24/2002	1:23:40 PM	26.245	26.559	25.214	27.226	27.649	49.121	50.42	16.425	33.404	-1.289	-6.492	44.537	0.056	0.001	0	38.47	0.64111	48.9	10.9	41.3	2.845	0.008	0.008	0.0002	0.201	0.17
10/24/2002	1:24:40 PM	26.248	26.551	25.257	27.144	27.637	48.765	50.116	16.294	33.164	-1.295	-6.504	44.638	0.056	0.001	-0.001	39.47	0.65778	48.6	10.9	41.0	2.824	0.008	0.008	0.0002	0.202	0.17
10/24/2002	1:25:40 PM	26.248	26.547	25.283	27.17	27.623	48.935	50.126	16.334	33.508	-1.289	-6.501	44.542	0.055	0.001	0	40.47	0.67444	48.7	10.9	41.2	2.842	0.008	0.008	0.0002	0.197	0.17
10/24/2002	1:26:40 PM	26.244	26.538	25.204	27.176	27.659	48.721	49.897	16.365	33.101	-1.289	-6.501	44.562	0.055	0.001	0	41.47	0.69111	48.4	10.9	40.9	2.821	0.008	0.008	0.0002	0.199	0.17
10/24/2002	1:27:40 PM	26.246	26.535	25.331	27.158	27.521	48.643	50.023	16.639	32.7	-1.286	-6.501	44.781	0.055	0.001	0	42.47	0.70778	48.6	11.0	40.7	2.804	0.008	0.008	0.0002	0.200	0.17
10/24/2002	1:28:40 PM	26.236	26.53	25.161	27.218	27.551	48.626	49.887	16.519	32.97	-1.292	-6.507	44.711	0.055	0.001	0	43.47	0.72444	48.4	11.0	40.8	2.813	0.008	0.008	0.0002	0.200	0.17
10/24/2002	1:29:40 PM	26.237	26.526	25.317	27.139	27.512	48.289	49.545	16.387	32.814	-1.289	-6.504	44.875	0.055	0.001	0	44.47	0.74111	48.1	11.0	40.6	2.796	0.008	0.008	0.0002	0.200	0.17
10/24/2002	1:30:40 PM	26.228	26.507	25.153	27.15	27.528	48.676	50.129	16.514	32.818	-1.295	-6.51	44.678	0.055	0.001	0	45.47	0.75778	48.7	10.9	40.7	2.809	0.008	0.008	0.0002	0.200	0.17
10/24/2002	1:31:40 PM	26.234	26.518	25.299	27.096	27.499	48.672	49.766	16.442	33.111	-1.284	-6.501	44.913	0.055	0.001	0	46.47	0.77444	48.3	11.0	40.8	2.816	0.008	0.008	0.0002	0.199	0.17
10/24/2002	1:32:40 PM	26.225	26.504	25.235	27.072	27.504	48.355	49.87	16.406	32.599	-1.292	-6.492	44.883	0.055	0.001	0	47.47	0.79111	48.4	11.0	40.5	2.791	0.008	0.008	0.0002	0.201	0.17
10/24/2002	1:33:40 PM	26.211	26.495	25.21	27.088	27.495	48.665	49.955	16.389	33.22	-1.289	-6.521	44.856	0.055	0.001	0	48.47	0.80778	48.5	11.0	40.9	2.823	0.008	0.008	0.0002	0.199	0.17
10/24/2002	1:34:40 PM	26.212	26.491	25.291	27.044	27.521	48.548	49.798	16.525	32.757	-1.295	-6.524	44.907	0.054	0.001	0	49.47	0.82444	48.3	11.0	40.7	2.803	0.008	0.008	0.0002	0.196	0.17
10/24/2002	1:35:40 PM	26.228	26.501	25.197	27.149	27.482	48.543	49.984	16.449	32.779	-1.289	-6.518	44.728	0.054	0.001	0	50.47	0.84111	48.5	11.0	40.7	2.803	0.008	0.008	0.0002	0.197	0.17
10/24/2002	1:36:40 PM	26.203	26.481	25.312	27.035	27.502	48.471	50.009	16.472	32.702	-1.292	-6.521	45.005	0.055	0.001	0	51.47	0.85778	48.5	11.0	40.6	2.798	0.008	0.008	0.0002	0.200	0.17
10/24/2002	1:37:40 PM	26.194	26.467	25.143	27.041	27.473	48.748	50.127	16.547	33.04	-1.289	-6.524	44.829	0.054	0.001	0	52.47	0.87444	48.7	11.0	40.9	2.819	0.008	0.008	0.0002	0.196	0.17
10/24/2002	1:38:40 PM	26.205	26.478	25.294	27.021	27.444	48.38	49.711	16.396	32.732	-1.289	-6.521	44.911	0.054	0.001	0	53.47	0.89111	48.2	11.0	40.6	2.796	0.008	0.008	0.0002	0.197	0.17
10/24/2002	1:39:40 PM	26.195	26.463	25.174	27.031	27.379	48.717	50.157	16.503	32.931	-1.295	-6.524	44.799	0.054	0.001	0	54.47	0.90778	48.7	11.0	40.8	2.815	0.008	0.008	0.0002	0.196	0.17
10/24/2002	1:40:40 PM	26.206	26.475	25.251	27.053	27.376	48.473	49.949	16.384	32.847	-1.286	-6.518	44.73	0.054	0.001	0	55.47	0.92444	48.5	11.0	40.7	2.803	0.008	0.008	0.0002	0.197	0.17
10/24/2002	1:41:40 PM	26.192	26.471	25.262	26.919	27.397	48.407	49.944	16.394	32.722	-1.289	-6.524	44.812	0.054	0.001	0	56.47	0.94111	48.5	11.0	40.6	2.797	0.008	0.008	0.0002	0.197	0.17

Figure E6-1: Steady state test run 1.18 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

10/24/2002	1:42:40 PM	26.187	26.461	25.182	27.004	27.352	48.587	50.029	16.409	32.794	-1.292	-6.524	45.867	0.054	0.001	0	57.47	0.95778	48.6	11.2	40.7	2.805	0.008	0.008	0.0002	0.197	0.17
10/24/2002	1:43:40 PM	26.177	26.451	25.292	26.959	27.362	48.581	50.05	16.378	33.021	-1.295	-6.527	44.747	0.053	0.001	-0.001	58.47	0.97444	48.6	11.0	40.8	2.813	0.008	0.008	0.0002	0.192	0.16
10/24/2002	1:44:40 PM	26.183	26.452	25.143	27.02	27.328	48.489	50.052	16.334	32.962	-1.292	-6.524	44.382	0.053	0.001	0	59.47	0.99111	48.6	10.9	40.7	2.808	0.008	0.008	0.0002	0.193	0.16
10/24/2002	1:45:40 PM	26.174	26.448	25.284	26.981	27.304	48.374	49.878	16.319	32.839	-1.289	-6.501	44.693	0.054	0.001	0	60.47	1.00778	48.4	11.0	40.6	2.800	0.008	0.008	0.0002	0.197	0.17
10/24/2002	1:46:40 PM	26.175	26.454	25.125	27.022	27.34	48.106	49.537	16.312	32.61	-1.289	-6.501	44.766	0.054	0.001	0	61.47	1.02444	48.1	11.0	40.4	2.783	0.008	0.008	0.0002	0.199	0.17
10/24/2002	1:47:40 PM	26.171	26.435	25.221	26.928	27.326	48.651	50.253	16.404	32.97	-1.292	-6.504	44.663	0.054	0.001	0	62.47	1.04111	48.8	10.9	40.8	2.814	0.008	0.008	0.0002	0.196	0.17
10/24/2002	1:48:40 PM	26.176	26.445	25.171	26.938	27.301	48.498	50.166	16.425	32.761	-1.295	-6.507	44.921	0.054	0.001	-0.001	63.47	1.05778	48.7	11.0	40.6	2.801	0.008	0.008	0.0002	0.197	0.17
10/24/2002	1:49:40 PM	26.183	26.452	25.213	26.95	27.313	48.21	49.638	16.236	32.898	-1.289	-6.495	44.732	0.054	0.001	0	64.47	1.07444	48.2	11.0	40.6	2.796	0.008	0.008	0.0002	0.197	0.17
10/24/2002	1:50:40 PM	26.172	26.426	25.237	26.914	27.297	48.295	49.822	16.331	32.737	-1.295	-6.507	44.355	0.053	0.001	0	65.47	1.09111	48.3	10.9	40.5	2.793	0.008	0.008	0.0002	0.194	0.16
10/24/2002	1:51:40 PM	26.198	26.452	25.162	26.935	27.238	48.643	50.317	16.421	32.98	-1.286	-6.501	45.146	0.054	0.001	0	66.47	1.10778	48.8	11.1	40.8	2.814	0.008	0.008	0.0002	0.196	0.17
10/24/2002	1:52:40 PM	26.2	26.449	25.279	26.927	27.28	48.431	50.025	16.214	32.915	-1.289	-6.501	44.596	0.053	0.001	0	67.47	1.12444	48.6	10.9	40.7	2.804	0.008	0.008	0.0002	0.193	0.16
10/24/2002	1:53:40 PM	26.195	26.439	25.099	26.947	27.27	48.601	50.296	16.333	33.013	-1.295	-6.507	44.667	0.053	0.001	0	68.47	1.14111	48.8	10.9	40.8	2.813	0.008	0.008	0.0002	0.193	0.16
10/24/2002	1:54:40 PM	26.199	26.453	25.254	26.896	27.274	48.409	50.066	16.284	32.925	-1.289	-6.501	44.728	0.053	0.001	0	69.47	1.15778	48.6	11.0	40.7	2.804	0.008	0.008	0.0002	0.193	0.16
10/24/2002	1:55:40 PM	26.189	26.438	25.138	26.986	27.219	48.425	50.158	16.229	33.033	-1.289	-6.501	44.787	0.053	0.001	0	70.47	1.17444	48.7	11.0	40.7	2.808	0.008	0.008	0.0002	0.193	0.16
10/24/2002	1:56:40 PM	26.198	26.457	25.213	26.935	27.213	48.612	50.379	16.3	33.035	-1.286	-6.501	44.47	0.054	0.001	0	71.47	1.19111	48.9	10.9	40.8	2.815	0.008	0.008	0.0002	0.196	0.17
10/24/2002	1:57:40 PM	26.181	26.45	25.226	26.963	27.211	48.396	50.031	16.209	32.931	-1.289	-6.504	44.655	0.054	0.001	0	72.47	1.20778	48.6	10.9	40.7	2.804	0.008	0.008	0.0002	0.197	0.17
10/24/2002	1:58:40 PM	26.167	26.441	25.102	26.994	27.163	48.643	50.29	16.316	33.019	-1.289	-6.501	44.422	0.053	0.001	0	73.47	1.22444	48.8	10.9	40.8	2.815	0.008	0.008	0.0002	0.193	0.16
10/24/2002	1:59:40 PM	26.164	26.437	25.243	26.946	27.124	48.634	50.489	16.276	33.007	-1.289	-6.504	44.258	0.053	0.001	0	74.47	1.24111	49.0	10.8	40.8	2.814	0.008	0.008	0.0002	0.192	0.16
10/24/2002	2:00:40 PM	26.154	26.433	25.083	27.001	27.109	48.164	49.88	16.17	32.927	-1.292	-6.501	44.541	0.054	0.001	0	75.47	1.25778	48.4	10.9	40.5	2.795	0.008	0.008	0.0002	0.198	0.17
10/24/2002	2:01:40 PM	26.154	26.448	25.184	26.951	27.08	48.239	49.94	16.163	32.81	-1.289	-6.504	44.523	0.053	0.001	0	76.47	1.27444	48.5	10.9	40.5	2.794	0.008	0.008	0.0002	0.194	0.17
10/24/2002	2:02:40 PM	26.148	26.442	25.172	26.94	27.038	48.388	50.222	16.324	32.812	-1.289	-6.501	44.405	0.053	0.001	0	77.47	1.29111	48.7	10.9	40.6	2.799	0.008	0.008	0.0002	0.194	0.16
10/24/2002	2:03:40 PM	26.141	26.434	25.09	26.908	27.031	48.547	50.412	16.298	32.911	-1.289	-6.501	44.428	0.053	0.001	0	78.47	1.30778	48.9	10.9	40.7	2.808	0.008	0.008	0.0002	0.194	0.16
10/24/2002	2:04:40 PM	26.139	26.438	25.219	26.851	27.035	48.519	50.327	16.312	32.982	-1.289	-6.501	44.172	0.052	0.001	0	79.47	1.32444	48.9	10.8	40.8	2.810	0.008	0.008	0.0002	0.189	0.16
10/24/2002	2:05:40 PM	26.147	26.451	25.066	26.849	26.992	48.498	50.197	16.324	32.945	-1.289	-6.501	44.737	0.053	0.001	0	80.47	1.34111	48.7	11.0	40.7	2.808	0.008	0.008	0.0002	0.194	0.16
10/24/2002	2:06:40 PM	26.138	26.452	25.172	26.78	26.983	48.251	49.965	16.224	32.941	-1.292	-6.507	44.581	0.052	0.001	0	81.47	1.35778	48.5	10.9	40.6	2.799	0.008	0.008	0.0002	0.190	0.16
10/24/2002	2:07:40 PM	26.159	26.463	25.178	26.801	26.939	48.21	50.038	16.236	32.777	-1.286	-6.501	44.625	0.052	0.001	0	82.47	1.37444	48.6	10.9	40.5	2.792	0.008	0.008	0.0002	0.191	0.16
10/24/2002	2:08:40 PM	26.162	26.47	25.126	26.809	26.897	48.411	50.371	16.242	32.953	-1.289	-6.501	44.974	0.052	0.001	0	83.47	1.39111	48.9	11.0	40.7	2.805	0.008	0.008	0.0002	0.190	0.16
10/24/2002	2:09:40 PM	26.164	26.457	25.233	26.726	26.839	48.218	50.095	16.228	32.796	-1.292	-6.507	44.659	0.053	0.001	0	84.47	1.40778	48.6	10.9	40.5	2.793	0.008	0.008	0.0002	0.194	0.16
10/24/2002	2:10:40 PM	26.153	26.442	25.062	26.65	26.768	48.245	50.002	16.186	32.923	-1.289	-6.501	44.898	0.053	0.001	0	85.47	1.42444	48.5	11.0	40.6	2.798	0.008	0.008	0.0002	0.194	0.17
10/24/2002	2:11:40 PM	26.146	26.44	25.2	26.588	26.711	48.334	50.178	16.251	32.866	-1.292	-6.507	45.89	0.052	0.001	0	86.47	1.44111	48.7	11.2	40.6	2.799	0.008	0.008	0.0002	0.190	0.16
10/24/2002	2:12:40 PM	26.148	26.422	25.077	26.525	26.639	48.11	50.112	16.159	32.64	-1.292	-6.51	44.722	0.052	0.001	0	87.47	1.45778	48.6	11.0	40.4	2.784	0.008	0.008	0.0002	0.192	0.16
10/24/2002	2:13:40 PM	26.114	26.393	25.138	26.446	26.575	48.055	50.002	16.228	32.56	-1.289	-6.504	44.651	0.053	0.001	0	88.47	1.47444	48.5	10.9	40.3	2.779	0.008	0.008	0.0002	0.195	0.17
10/24/2002	2:14:40 PM	26.127	26.391	25.176	26.444	26.548	48.295	50.015	16.308	32.818	-1.289	-6.501	44.636	0.053	0.001	0	89.47	1.49111	48.5	10.9	40.6	2.796	0.008	0.008	0.0002	0.194	0.16
10/24/2002	2:15:40 PM	26.11	26.364	25.089	26.412	26.471	48.429	50.468	16.263	32.806	-1.289	-6.504	44.539	0.052	0.001	0	90.47	1.50778	49.0	10.9	40.6	2.800	0.008	0.008	0.0002	0.190	0.16
10/24/2002	2:16:40 PM	26.109	26.348	25.228	26.351	26.45	47.943	49.946	16.156	32.497	-1.289	-6.484	45.081	0.052	0.001	0	91.47	1.52444	48.5	11.0	40.2	2.773	0.008	0.008	0.0002	0.192	0.16
10/24/2002	2:17:40 PM	26.093	26.322	25.042	26.31	26.414	48.305	50.271	16.297	32.706	-1.289	-6.489	44.705	0.052	0.001	0	92.47	1.54111	48.8	11.0	40.5	2.793	0.008	0.008	0.0002	0.191	0.16
10/24/2002	2:18:40 PM	26.09	26.313	25.199	26.307	26.395	48.278	50.246	16.309	32.597	-1.289	-6.486	44.686	0.053	0.001	0	93.47	1.55778	48.8	11.0	40.4	2.788	0.008	0.008	0.0002	0.194	0.17
10/24/2002	2:19:40 PM	26.076	26.29	25.105	26.348	26.427	48.456	50.468	16.419	32.79	-1.289	-6.486	44.667	0.053	0.001	0	94.47	1.57444	49.0	10.9	40.6	2.801	0.008	0.008	0.0002	0.194	0.17
10/24/2002	2:20:40 PM	26.083	26.287	25.157	26.4	26.403	48.202	50.319	16.279	32.475	-1.286	-6.481	44.405	0.052	0.001	0	95.47	1.59111	48.8	10.9	40.3	2.781	0.008	0.008	0.0002	0.191	0.16
10/24/2002	2:21:40 PM	26.08	26.259	25.239	26.412	26.391	47.997	49.86	16.17	32.567	-1.284	-6.486	44.2	0.052	0.001	0	96.47	1.60778	48.4	10.8	40.3	2.777	0.008	0.008	0.0002	0.191	0.16
10/24/2002	2:22:40 PM	26.074	26.238	25.088	26.437	26.455	48.038	49.992	16.171	32.747	-1.286	-6.486	44.607	0.052	0.002	0	97.47	1.62444	48.5	10.9	40.4	2.785	0.008	0.008	0.0002	0.191	0.16
10/24/2002	2:23:40 PM	26.073	26.232	25.237	26.466	26.459	47.99	49.934	16.18	32.626	-1.289	-6.486	44.707	0.052	0.001	0	98.47	1.64111	48.5	11.0	40.3	2.779	0.008	0.008	0.0002	0.191	0.16
10/24/2002	2:24:40 PM	26.067	26.206	25.086	26.545	26.453	48.057	50.069	16.333	32.442	-1.289	-6.489	45.164	0.052	0.001	0	99.47	1.65778	48.6	11.1	40.2	2.775	0.008	0.008	0.0002	0.192	0.16
10/24/2002	2:25:40 PM	26.072	26.201	25.197	26.56	26.478	48.407	50.315	16.4	32.692	-1.289	-6.486	44.768	0.052	0.001	0	100.47	1.67444	48.8	11.0	40.5	2.796	0.008	0.008	0.0002	0.190	0.16
10/24/2002	2:26:40 PM	26.067	26.186	25.177	26.58	26.483	48.073	50.176	16.262	32.575	-1.292	-6.489	45.014	0.052	0.001	0	101.47	1.69111	48.7	11.0	40.3	2.780	0.008	0.008	0.0002	0.191	0.16
10/24/2002	2:27:40 PM	26.053	26.167	25.107	26.581	26.529	47.951	49.855	16.174	32.675	-1.292	-6.489	44.604	0.053	0.001	0	102.47	1.70778	48.4	10.9	40.3	2.779	0.008	0.008	0.0002	0.195	0.17
10/24/2002	2:28:40 PM	26.079	26.183	25.258	26.631	26.485	47.957	49.926	16.199	32.517	-1.289	-6.484	44.867	0.052	0.001	0	103.47	1.72444	48.5	11.0	40.2	2.774	0.008	0.008	0.0002	0.191	0.16
10/24/2002	2:29:40 PM	26.074	26.168	25.078	26.676	26.465	47.939	49.764	16.227	32.691	-1.289	-6.486	45.357	0.051	0.001	0	104.47	1.74111	48.3	11.1	40.3	2.780	0.008	0.008	0.0002	0.188	0.16
10/24/2002	2:30:40 PM	26.071	26.155	25.205	26.663	26.532	48.222	50.408	16.341	32.571	-1.292	-6.492	44.741	0.052	0.001	0	105.47	1.75778	48.9	11.0	40.4	2.785	0.008	0.008	0.0002	0.191	0.16
10/24/2002	2:31:40 PM	26.083	26.167	25.127	26.665	26.528	48.142	50.414	16.282	32.562	-1.289	-6.489	44.705	0.052	0.001	0	106.47	1.77444	48.9	11.0	40.4	2.782	0.008	0.008	0.0002	0.191	0.16
10/24/2002	2:32:40 PM	26.068	26.162	25.137	26.69	26.518	48.173	50.362	16.433	32.325	-1.292	-6.489	44.514	0.051	0.001	0	107.47	1.79111	48.9	10.9	40.2	2.775	0.008	0.008	0.0002	0.188	0.16
10/24/2002	2:33:40 PM	26.083	26.182	25.242	26.745	26.523	48.32	50.321	16.435	32.595	-1.286	-6.486	44.743	0.052	0.001	0	108.47	1.80778	48.8	11.0	40.5	2.789	0.008	0.008	0.0002	0.190	0.16
10/24/2002	2:34:40 PM	26.072	26.181	25.086	26.714	26.562	48.156	50.586	16.314	32.352	-1.289	-6.486	44.907	0.051	0.001	0	109.47	1.82444	49.1	11.0	40.3	2.775	0.008	0.008	0.0002	0.188	0.16
10/24/2002	2:35:40 PM	26.067	26.196	25.231	26.714	26.592	47.932	50.226	16.287	32.315	-1.289	-6.489	44.829	0.051	0.001	0	110.47	1.84111	48.8	11.0	40.1	2.766	0.008	0.008	0.0002	0.188	0.16
10/24/2002	2:36:40 PM	26.071	26.205	25.1	26.803	26.597	48.135	50.335	16.281	32.622	-1.286	-6.489	44.739	0.052	0.001	0	111.47	1.85778	48.9	11.0	40.4	2.784	0.008	0.008	0.0002	0.191	0.16
10/24/2002	2:37:40 PM	26.072	26.211	25.181	26.729	26.712	47.918	50.064	16.318	32.438	-1.289	-6.489	44.653	0.051	0.001	0	112.47	1.87444	48.6	10.9	40.2	2.770	0.008	0.008	0.0002	0.188	0.16
10/24/2002	2:38:40 PM	26.073	26.217	25.213	26.741	26.734	48.342	50.596	16.443	32.524	-1.289	-6.489	44.556	0.051	0.001	0	113.47	1.89111	49.1	10.9	40.4	2.788	0.008	0.008	0.0002	0.187	0.16
10/24/2002	2:39:40 PM	26.073	26.232	25.117	26.761	26.714	47.893	50.255	16.105	32.614	-1.289	-6.492	44.707	0.052	0.001	0	114.47	1.90778	48.8	11.0	40.3	2.775	0.008	0.008	0.0002	0.192	0.16
10/24/2002	2:40:40 PM	26.073	26.232	25.257	26.745	26.758	48.083	50.184	16.403	32.427	-1.289	-6.489	44.755	0.051	0.001	0	115.47	1.92444	48.7	11.0	40.3	2.775	0.008	0.008	0.0002	0.188	0.16
10/24/2002	2:41:40 PM	26.068	26.242	25.092	26.725	26.748	47.93	49.975	16.256	32.499	-1.292	-6.489	44.779	0.052	0.001	0	116.47	1.94111	48.5	11.0	40.2	2.773	0.008	0.008	0.0002	0.192	0.16
10/24/2002	2:42:40 PM	26.084	26.263	25.223	26.727	26.84	48.307	50.646	16.463	32.395	-1.292	-6.489	45.171	0.051	0.001	0	117.47	1.95778	49.2	11.1	40.4	2.782	0.008	0.008	0.0002	0.187	0.16
10/24/2002	2:43:40 PM	26.085	26.264	25.199	26.742	26.891	48.297	50.567	16.492	32.546	-1.286	-6.486	45.055	0.051	0.001	0	118.47	1.97444	49.1	11.0	40.4	2.787	0.008	0.008	0.0002	0.187	0.16
10/24/2002	2:44:40 PM	26.087	26.271	25.171	26.729	26.892	47.796	50.019	16.187	32.366	-1.289	-6.492	44.688	0.051	0.001	0	119.47	1.99111	48.5	11.0	40.1	2.763	0.008	0.008	0.0002	0.189	0.16
10/24/2002	2:45:40 PM	26.089	26.263	25.258	26.671	26.924	48.112	50.393	16.449	32.348	-1.289	-6.489	44.797	0.051	0.001	0	120.47	2.00778	48.9	11.0	40.2	2.774	0.008	0.008	0.0002	0.188	0.16
	Averages	26.2	26.4	25.2	27.0	27.2	48.2	50.1	16.3	32.7	-1.2	-6.1	44.8	0.1	0.0	0.0			48.6	11.0	40.4	2.788	0.008	0.008	0.0002	0.205	0.174
	Maximum	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0			9.0	9.0	9.0	9.000	9.000	9.000	9.000	9.000	9.000
	Median	26.2	26.4	25.2	27.0	27.3	48.4	50.1	16.3	32.8	-1.3	-6.5	44.8	0.1	0.0	0.0			48.6	11.0	40.6	2.802	0.008	0.008	0.000	0.196	0.167
	Minimum	26.1	26.2	25.0	26.3	26.4	43.0	49.4	14.4	28.6	-1.3	-6.5	44.1	0.0	0.0	0.0			48.0	10.8	36.1	2.490	0.007	0.007	0.000	0.187	0.159
	2 x Std Dev	0.126	0.250	0.157	0.702	0.924	2.444	0.492	0.613	1.994	0.766	3.406	0.621	0.013	0.000	0.000			0.492	0.152	2.206	0.152	0.002	0.002	0.000	0.061	0.052
Number of Points Used*		118	118	118	118	118	118	118	118	118	118	118	118	118	118	118			118	118	118	118	118	118	118	118	118
	* Backpulse points in box are not included																										

Figure E6-2: Steady state test run 1.18 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

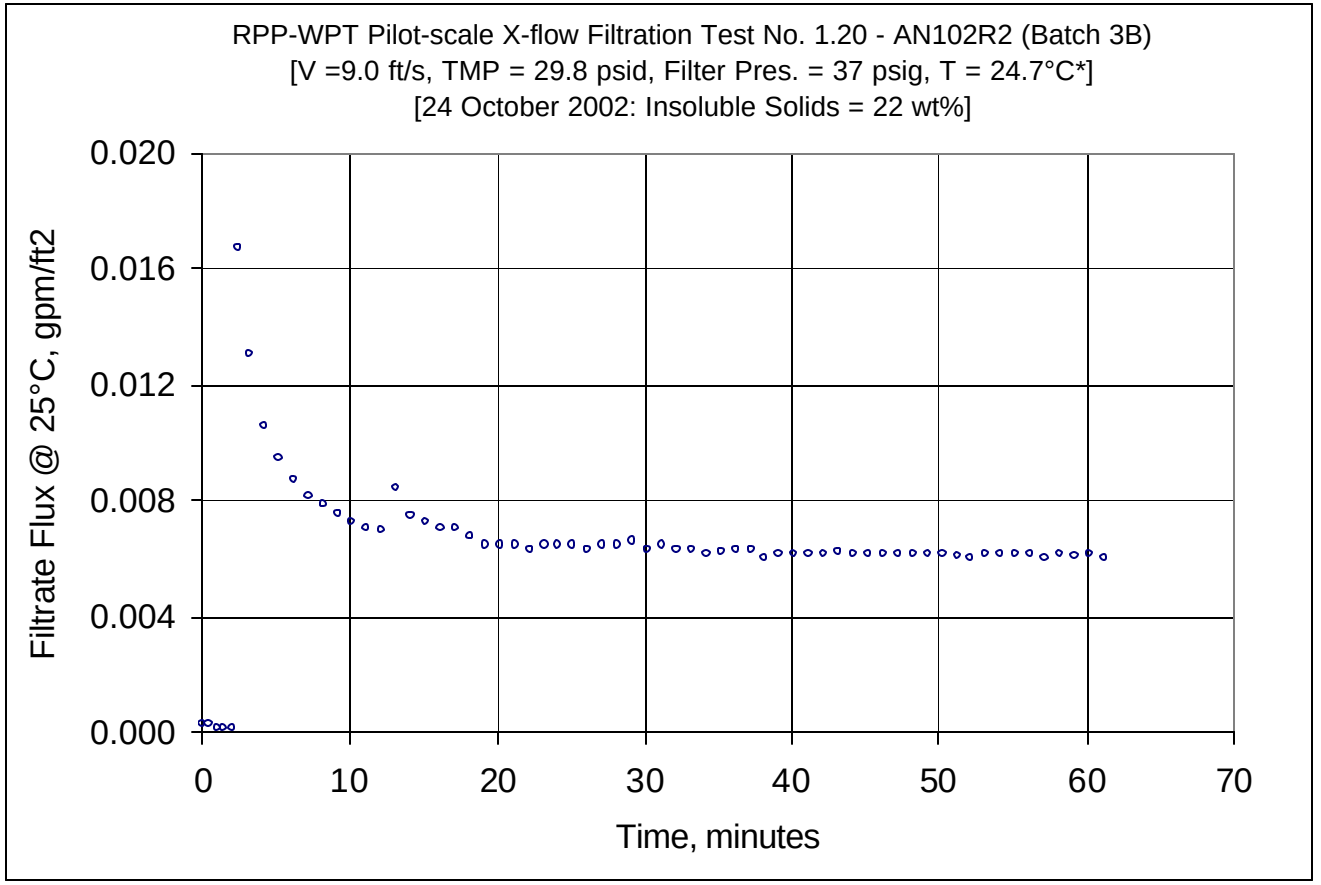
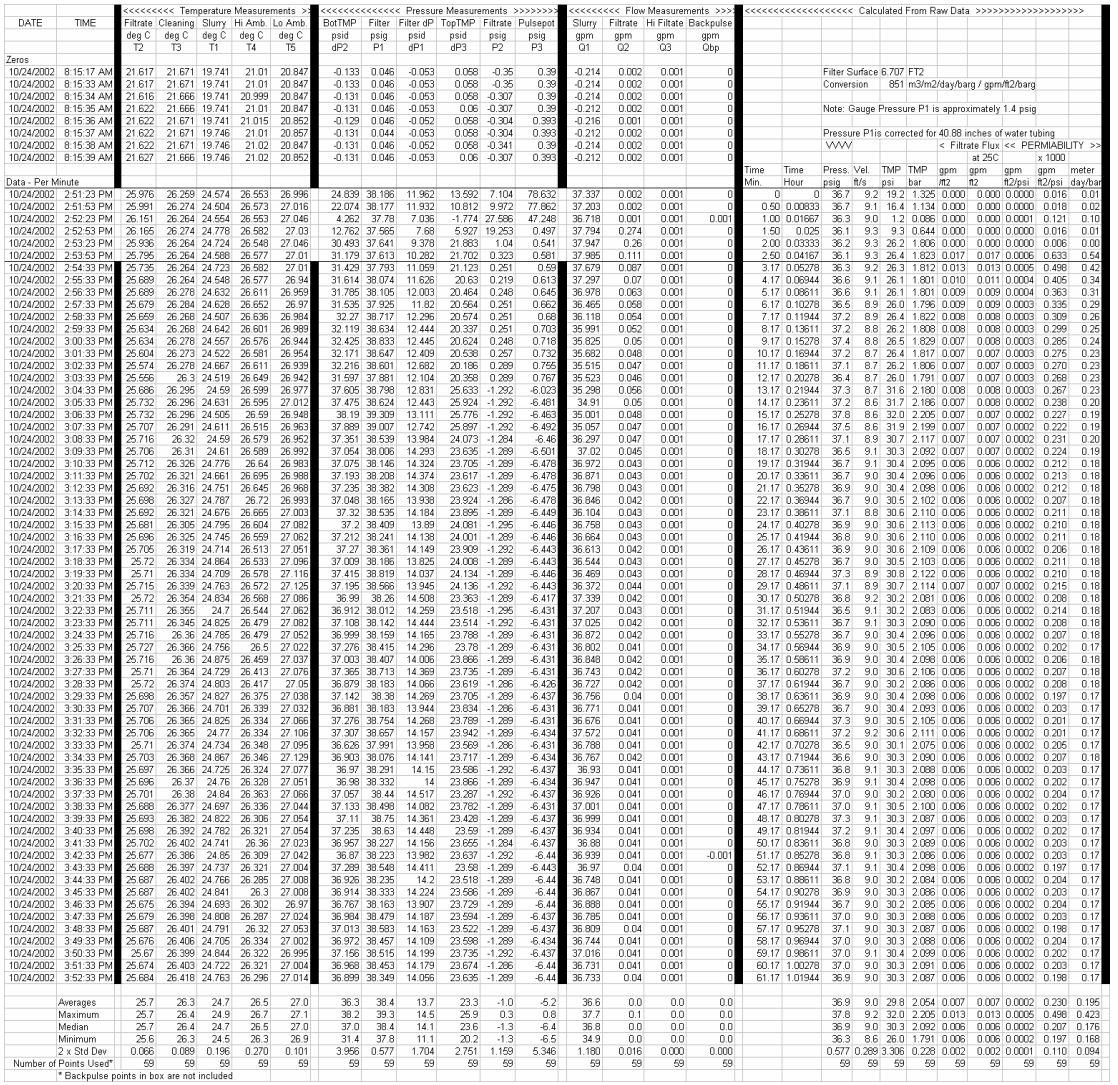


Figure E7: Steady state test run 1.20 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt%



DATE	TIME	Filtrate deg C T2	Cleaning deg C T3	Slurry deg C T1	Hi Amb. deg C T4	Lo Amb. deg C T5	BotTMP psid dP2	Filter psig P1	Filter dP psid dP1	TopTMP psid dP3	Filtrate psig P2	Pulsepot psig P3	Slurry gpm Q1	Filtrate gpm Q2	Hi Filtate gpm Q3	Backpulse gpm Qbp
Zeros																
10/24/2002	8:15:17 AM	21.617	21.671	19.741	21.01	20.847	-0.133	0.046	-0.053	0.058	-0.35	0.39	-0.214	0.002	0.001	0
10/24/2002	8:15:33 AM	21.617	21.671	19.741	21.01	20.847	-0.133	0.046	-0.053	0.058	-0.35	0.39	-0.214	0.002	0.001	0
10/24/2002	8:15:34 AM	21.616	21.666	19.741	20.999	20.847	-0.131	0.046	-0.053	0.058	-0.307	0.39	-0.214	0.002	0.001	0
10/24/2002	8:15:35 AM	21.622	21.666	19.741	21.01	20.847	-0.131	0.046	-0.053	0.06	-0.307	0.39	-0.212	0.002	0.001	0
10/24/2002	8:15:36 AM	21.622	21.671	19.741	21.015	20.852	-0.129	0.046	-0.052	0.058	-0.304	0.393	-0.216	0.001	0.001	0
10/24/2002	8:15:37 AM	21.622	21.671	19.746	21.01	20.857	-0.131	0.044	-0.053	0.058	-0.304	0.393	-0.212	0.002	0.001	0
10/24/2002	8:15:38 AM	21.622	21.671	19.746	21.02	20.847	-0.131	0.046	-0.052	0.058	-0.341	0.39	-0.214	0.002	0.001	0
10/24/2002	8:15:39 AM	21.627	21.666	19.746	21.02	20.852	-0.131	0.046	-0.053	0.06	-0.307	0.393	-0.212	0.002	0.001	0
Data - Per Minute																
10/24/2002	2:51:23 PM	25.976	26.259	24.574	26.553	26.996	24.839	38.186	11.962	13.592	7.104	78.632	37.337	0.002	0.001	0
10/24/2002	2:51:53 PM	25.991	26.274	24.504	26.573	27.016	22.074	38.177	11.932	10.812	9.972	77.862	37.203	0.002	0.001	0
10/24/2002	2:52:23 PM	26.151	26.264	24.554	26.553	27.046	4.262	37.78	7.036	-1.774	27.586	47.248	36.718	0.001	0.001	0.001
10/24/2002	2:52:53 PM	26.165	26.274	24.778	26.582	27.03	12.762	37.565	7.68	5.927	19.253	0.497	37.794	0.274	0.001	0
10/24/2002	2:53:23 PM	25.936	26.264	24.724	26.548	27.046	30.493	37.641	9.378	21.883	1.04	0.541	37.947	0.26	0.001	0
10/24/2002	2:53:53 PM	25.795	26.264	24.588	26.577	27.01	31.179	37.613	10.282	21.702	0.323	0.581	37.985	0.111	0.001	0
10/24/2002	2:54:33 PM	25.735	26.264	24.723	26.582	27.01	31.429	37.793	11.059	21.123	0.251	0.63	37.679	0.087	0.001	0
10/24/2002	2:55:33 PM	25.689	26.264	24.548	26.577	26.94	31.614	38.074	11.626	20.63	0.219	0.613	37.297	0.07	0.001	0
10/24/2002	2:56:33 PM	25.689	26.278	24.632	26.611	26.959	31.785	38.105	12.003	20.464	0.248	0.645	36.978	0.063	0.001	0
10/24/2002	2:57:33 PM	25.679	26.284	24.628	26.652	26.97	31.535	37.925	11.82	20.564	0.251	0.662	36.465	0.058	0.001	0
10/24/2002	2:58:33 PM	25.659	26.268	24.607	26.636	26.984	32.27	38.717	12.296	20.574	0.251	0.68	36.118	0.054	0.001	0
10/24/2002	2:59:33 PM	25.634	26.268	24.642	26.601	26.989	32.119	38.634	12.444	20.337	0.251	0.703	35.991	0.052	0.001	0
10/24/2002	3:00:33 PM	25.634	26.278	24.557	26.576	26.944	32.425	38.833	12.445	20.624	0.248	0.718	35.825	0.05	0.001	0
10/24/2002	3:01:33 PM	25.604	26.273	24.522	26.581	26.954	32.171	38.647	12.409	20.538	0.257	0.732	35.682	0.048	0.001	0
10/24/2002	3:02:33 PM	25.574	26.278	24.667	26.611	26.939	32.216	38.601	12.682	20.186	0.289	0.756	35.515	0.047	0.001	0
10/24/2002	3:03:33 PM	25.566	26.3	24.519	26.649	26.942	31.597	37.881	12.104	20.388	0.289	0.767	35.523	0.046	0.001	0
10/24/2002	3:04:33 PM	25.686	26.295	24.59	26.599	26.977	37.605	38.798	12.831	25.633	-1.292	-6.023	35.298	0.056	0.001	0
10/24/2002	3:05:33 PM	25.732	26.296	24.631	26.595	27.012	37.475	38.624	12.443	25.924	-1.292	-6.481	34.91	0.05	0.001	0
10/24/2002	3:06:33 PM	25.732	26.296	24.505	26.59	26.948	38.19	39.309	13.111	25.776	-1.292	-6.463	35.001	0.048	0.001	0
10/24/2002	3:07:33 PM	25.707	26.291	24.611	26.515	26.963	37.889	39.007	12.742	25.897	-1.292	-6.492	35.057	0.047	0.001	0
10/24/2002	3:08:33 PM	25.716	26.32	24.59	26.579	26.952	37.351	38.539	13.984	24.073	-1.284	-6.46	36.297	0.047	0.001	0
10/24/2002	3:09:33 PM	25.706	26.31	24.61	26.589	26.992	37.054	38.006	14.293	23.635	-1.289	-6.501	37.02	0.045	0.001	0
10/24/2002	3:10:33 PM	25.712	26.326	24.776	26.64	26.983	37.075	38.146	14.324	23.705	-1.289	-6.478	36.972	0.043	0.001	0
10/24/2002	3:11:33 PM	25.702	26.321	24.661	26.695	26.988	37.193	38.208	14.374	23.617	-1.289	-6.478	36.871	0.043	0.001	0
10/24/2002	3:12:33 PM	25.692	26.316	24.751	26.645	26.968	37.235	38.382	14.308	23.623	-1.289	-6.475	36.798	0.043	0.001	0
10/24/2002	3:13:33 PM	25.698	26.327	24.787	26.72	26.993	37.048	38.165	13.938	23.924	-1.286	-6.478	36.846	0.042	0.001	0
10/24/2002	3:14:33 PM	25.692	26.321	24.676	26.665	27.003	37.32	38.535	14.184	23.895	-1.289	-6.449	36.104	0.043	0.001	0
10/24/2002	3:15:33 PM	25.681	26.305	24.795	26.604	27.082	37.2	38.409	13.89	24.081	-1.295	-6.446	36.758	0.043	0.001	0
10/24/2002	3:16:33 PM	25.696	26.325	24.745	26.559	27.062	37.212	38.241	14.138	24.001	-1.289	-6.446	36.664	0.043	0.001	0
10/24/2002	3:17:33 PM	25.705	26.319	24.714	26.513	27.051	37.27	38.361	14.149	23.909	-1.292	-6.443	36.613	0.042	0.001	0
10/24/2002	3:18:33 PM	25.72	26.334	24.864	26.633	27.096	37.009	38.186	13.825	24.008	-1.289	-6.443	36.544	0.043	0.001	0
10/24/2002	3:19:33 PM	25.71	26.334	24.709	26.578	27.116	37.415	38.819	14.037	24.134	-1.289	-6.446	36.469	0.043	0.001	0
10/24/2002	3:20:33 PM	25.715	26.339	24.763	26.572	27.125	37.195	38.566	13.945	24.136	-1.292	-6.443	36.372	0.044	0.001	0
10/24/2002	3:21:33 PM	25.72	26.354	24.834	26.568	27.086	36.99	38.26	14.508	23.363	-1.289	-6.417	37.339	0.042	0.001	0
10/24/2002	3:22:33 PM	25.711	26.365	24.7	26.544	27.062	36.912	38.012	14.259	23.518	-1.295	-6.431	37.207	0.043	0.001	0
10/24/2002	3:23:33 PM	25.711	26.345	24.825	26.479	27.082	37.108	38.142	14.444	23.514	-1.292	-6.431	37.025	0.042	0.001	0
10/24/2002	3:24:33 PM	25.716	26.36	24.785	26.479	27.052	36.999	38.159	14.165	23.788	-1.289	-6.431	36.872	0.042	0.001	0
10/24/2002	3:25:33 PM	25.727	26.366	24.756	26.5	27.022	37.276	38.415	14.296	23.78	-1.289	-6.431	36.802	0.041	0.001	0
10/24/2002	3:26:33 PM	25.716	26.36	24.875	26.469	27.037	37.003	38.407	14.006	23.866	-1.289	-6.431	36.848	0.042	0.001	0
10/24/2002	3:27:33 PM	25.71	26.364	24.729	26.413	27.076	37.365	38.713	14.369	23.735	-1.289	-6.431	36.743	0.042	0.001	0
10/24/2002	3:28:33 PM	25.72	26.374	24.803	26.417	27.05	36.879	38.183	14.066	23.619	-1.286	-6.426	36.727	0.042	0.001	0
10/24/2002	3:29:33 PM	25.698	26.357	24.827	26.375	27.038	37.142	38.38	14.269	23.705	-1.289	-6.437	36.756	0.04	0.001	0
10/24/2002	3:30:33 PM	25.707	26.366	24.701	26.339	27.032	36.881	38.183	13.944	23.834	-1.286	-6.431	36.771	0.041	0.001	0
10/24/2002	3:31:33 PM	25.706	26.365	24.825	26.334	27.066	37.276	38.754	14.268	23.789	-1.289	-6.431	36.676	0.041	0.001	0
10/24/2002	3:32:33 PM	25.706	26.365	24.77	26.334	27.106	37.307	38.657	14.157	23.942	-1.289	-6.434	37.572	0.041	0.001	0
10/24/2002	3:33:33 PM	25.71	26.374	24.734	26.348	27.095	36.626	37.991	13.958	23.569	-1.286	-6.431	36.788	0.041	0.001	0
10/24/2002	3:34:33 PM	25.703	26.368	24.867	26.346	27.129	36.903	38.076	14.141	23.717	-1.289	-6.434	36.767	0.042	0.001	0
10/24/2002	3:35:33 PM	25.697	26.366	24.725	26.324	27.077	36.97	38.291	14.15	23.686	-1.292	-6.437	36.93	0.041	0.001	0
10/24/2002	3:36:33 PM	25.696	26.37	24.76	26.328	27.051	36.98	38.332	14	23.866	-1.289	-6.434	36.947	0.041	0.001	0
10/24/2002	3:37:33 PM	25.701	26.38	24.84	26.363	27.066	37.057	38.44	14.517	23.287	-1.292	-6.437	36.926	0.041	0.001	0
10/24/2002	3:38:33 PM	25.688	26.377	24.697	26.336	27.044	37.133	38.498	14.082	23.782	-1.289	-6.431	37.001	0.041	0.001	0
10/24/2002	3:39:33 PM	25.693	26.382	24.822	26.306	27.054	37.11	38.75	14.361	23.428	-1.289	-6.437	36.999	0.041	0.001	0
10/24/2002	3:40:33 PM	25.698	26.392	24.782	26.321	27.054	37.235	38.63	14.448	23.69	-1.289	-6.437	36.934	0.041	0.001	0
10/24/2002	3:41:33 PM	25.702	26.402	24.741	26.36	27.023	36.957	38.227	14.156	23.665	-1.284	-6.437	36.88	0.041	0.001	0
10/24/2002	3:42:33 PM	25.677	26.386	24.86	26.309	27.042	36.87	38.223	13.982	23.637	-1.292	-6.44	36.939	0.041	0.001	-0.001
10/24/2002	3:43:33 PM	25.688	26.397	24.737	26.321	27.004	37.289	38.548	14.411	23.68	-1.289	-6.443	36.97	0.04	0.001	0
10/24/2002	3:44:33 PM	25.687	26.402	24.766	26.285	27.008	36.926	38.235	14.2	23.518	-1.289	-6.44	36.748	0.041	0.001	0
10/24/2002	3:45:33 PM	25.687	26.402	24.841	26.3	27.008	36.914	38.333	14.224	23.586	-1.289	-6.44	36.867	0.041	0.001	0
10/24/2002	3:46:33 PM	25.675	26.394	24.693	26.302	26.97	36.767	38.163	13.907	23.729	-1.289	-6.44	36.888	0.041	0.001	0
10/24/2002	3:47:33 PM	25.679	26.398	24.808	26.287	27.024	36.984	38.479	14.187	23.594	-1.289	-6.437	36.785	0.041	0.001	0
10/24/2002	3:48:33 PM	25.687	26.401	24.791	26.32	27.053	37.013	38.583	14.163	23.522	-1.289	-6.437	36.809	0.04	0.001	0
10/24/2002	3:49:33 PM	25.676	26.406	24.705	26.334	27.002	36.972	38.457	14.109	23.598	-1.289	-6.434	36.744	0.041	0.001	0
10/24/2002	3:50:33 PM	25.67	26.399	24.844	26.322	26.995	37.156	38.516	14.199	23.736	-1.292	-6.437	37.016	0.041	0.001	0
10/24/2002	3:51:33 PM	25.674	26.403	24.722	26.321	27.004	36.968	38.453	14.179	23.674	-1.286	-6.44	36.731	0.041	0.001	0
10/24/2002	3:52:33 PM	25.684	26.418	24.763	26.296	27.014	36.899	38.349	14.056	23.635	-1.289	-6.44	36.733	0.04	0.001	0
	Averages	25.7	26.3	24.7	26.5	27.0	36.3	38.4	13.7	23.3	-1.0	-5.2	36.6	0.0	0.0	0.0
	Maximum	25.7	26.4	24.9	26.7	27.1	38.2	39.3	14.5	25.9	0.3	0.8	37.7	0.1	0.0	0.0
	Median	25.7	26.4	24.7	26.5	27.0	37.0	38.4	14.1	23.6	-1.3	-6.4	36.8	0.0	0.0	0.0
	Minimum	25.6	26.3	24.5	26.3	26.9	31.4	37.8	11.1	20.2	-1.3	-6.5	34.9	0.0	0.0	0.0
	2 x Std Dev	0.066	0.089	0.196	0.270	0.101	3.956	0.577	1.704	2.751	1.159	5.346	1.180	0.016	0.000	0.000
Number of Points Used*		59	59	59	59	59	59	59	59	59	59	59	59	59	59	59

* Backpulse points in box are not included

Filter Surface 6.707 FT2
Conversion 861 m3/m2/day/barg / gpm/ft2/barg

Note: Gauge Pressure P1 is approximately 1.4 psig

Pressure P1 is corrected for 40.88 inches of water tubing

Time Min.	Time Hour	Press. psig	Vel. ft/s	TMP psi	TMP bar	gpm ft2	gpm ft2	gpm ft2/psi	gpm ft2/psi	meter day/bar
0	0	36.7	9.2	19.2	1.325	0.000	0.000	0.0000	0.016	0.01
0.50	0.00833	36.7	9.1	16.4	1.134	0.000	0.000	0.0000	0.018	0.02
1.00	0.01667	36.3	9.0	1.2	0.086	0.000	0.000	0.0001	0.121	0.10
1.50	0.025	36.1	9.3	9.3	0.644	0.000	0.000	0.0000	0.016	0.01
2.00	0.03333	36.2	9.3	26.2	1.806	0.000	0.000	0.0000	0.006	0.00
2.50	0.04167	36.1	9.3	26.4	1.823	0.017	0.017	0.0006	0.633	0.54
3.17	0.05278	36.3	9.2	26.3	1.812	0.013	0.013	0.0005	0.498	0.42
4.17	0.06944	36.6	9.1	26.1	1.801	0.010	0.011	0.0004	0.405	0.34
5.17	0.08611	36.6	9.1	26.1	1.801	0.009	0.009	0.0004	0.363	0.31
6.17	0.10278	36.5	8.9	26.0	1.796	0.009	0.009	0.0003	0.335	0.29
7.17	0.11944	37.2	8.9	26.4	1.822	0.008	0.008	0.0003	0.309	0.26
8.17	0.13611	37.2	8.8	26.2	1.808	0.008	0.008	0.0003	0.299	0.25
9.17	0.15278	37.4	8.8	26.5	1.829	0.007	0.008	0.0003	0.285	0.24
10.17	0.16944	37.2	8.7	26.4	1.817	0.007	0.007	0.0003	0.275	0.23
11.17	0.18611	37.1	8.7	26.2	1.806	0.007	0.007	0.0003	0.270	0.23
12.17	0.20278	36.4	8.7	26.0	1.791	0.007	0.007	0.0003	0.268	0.23
13.17	0.21944	37.3	8.7	31.6	2.180	0.008	0.008	0.0003	0.267	0.23
14.17	0.23611	37.2	8.6	31.7	2.186	0.007	0.008	0.0002	0.238	0.20
15.17	0.25278	37.8	8.6	32.0	2.205	0.007	0.007	0.0002	0.227	0.19
16.17	0.26944	37.5	8.6	31.9	2.199	0.007	0.007	0.0002	0.222	0.19
17.17	0.28611	37.1	8.9	30.7	2.117	0.007	0.007	0.0002	0.231	0.20
18.17	0.30278	36.5	9.1	30.3	2.092	0.007	0.007	0.0002	0.224	0.19
19.17	0.31944	36.7	9.1	30.4	2.095	0.006	0.006	0.0002	0.212	0.18
20.17	0.33611	36.7	9.0	30.4	2.096	0.006	0.006	0.0002	0.213	0.18
21.17	0.35278	36.9	9.0	30.4	2.098	0.006	0.006	0.0002	0.212	0.18
22.17	0.36944	36.7	9.0	30.5	2.102	0.006	0.006	0.0002	0.207	0.18
23.17	0.38611	37.1	8.8	30.6	2.110	0.006	0.006	0.0002	0.211	0.18
24.17	0.40278	36.9	9.0	30.6	2.113	0.006	0.006	0.0002	0.210	0.18
25.17	0.41944	36.8	9.0	30.6	2.110	0.006	0.006	0.0002	0.211	0.18
26.17	0.43611	36.9	9.0	30.6	2.109	0.006	0.006	0.0002	0.206	0.18
27.17	0.45278	36.7	9.0	30.5	2.103	0.006	0.006	0.0002	0.211	0.18
28.17	0.46944	37.3	8.9	30.8	2.122	0.006	0.006	0.0002	0.210	0.18
29.17	0.48611	37.1	8.9	30.7	2.114	0.007	0.007	0.0002	0.215	0.18
30.17	0.50278	36.8	9.2	30.2	2.081	0.006	0.006	0.0002	0.208	0.18
31.17	0.51944	36.5	9.1	30.2	2.083	0.006	0.006	0.0002	0.214	0.18
32.17	0.53611	36.7	9.1	30.3	2.090	0.006	0.006	0.0002	0.208	0.18
33.17	0.55278	36.7	9.0	30.4	2.096	0.006	0.006	0.0002	0.207	0.18
34.17	0.56944	36.9	9.0	30.5	2.105	0.006	0.006	0.0002	0.202	0.17
35.17	0.58611	36.9	9.0	30.4	2.098	0.006	0.006	0.0002	0.206	0.18
36.17	0.60278	37.2	9.0	30.6	2.106	0.006	0.006	0.0002	0.207	0.18
37.17	0.61944	36.7	9.0	30.2	2.086	0.006	0.006	0.0002	0.208	0.18
38.17	0.63611	36.9	9.0	30.4	2.098	0.006	0.006	0.0002	0.197	0.17
39.17	0.65278	36.7	9.0	30.4	2.093	0.006	0.006	0.0002	0.203	0.17
40.17	0.66944	37.3	9.0	30.5	2.105	0.006	0.006	0.0002	0.201	0.17
41.17	0.68611	37.2	9.2	30.6	2.111	0.006	0.006	0.0002	0.201	0.17
42.17	0.70278	36.5	9.0	30.1	2.075	0.006	0.006	0.0002	0.205	0.17
43.17	0.71944	36.6	9.0	30.3	2.090	0.006	0.006	0.0002	0.207	0.18
44.17	0.73611	36.8	9.1	30.3	2.088	0.006	0.006	0.0002	0.203	0.17
45.17	0.75278	36.9	9.1	30.4	2.098	0.006	0.006	0.0002	0.202	0.17
46.17	0.76944	37.0	9.0	30.2	2.080	0.006	0.006	0.0002	0.204	0.17
47.17	0.78611	37.0	9.1	30.5	2.100	0.006	0.006	0.0002	0.202	0.17
48.17	0.80278	37.3	9.1	30.3	2.087	0.006	0.006	0.0002	0.203	0.17
49.17	0.81944	37.2	9.1	30.4	2.097	0.006	0.006	0.0002	0.202	0.17
50.17	0.83611	36.8	9.0	30.3	2.089	0.006	0.006	0.0002	0.203	0.17
51.17	0.85278	36.8	9.1	30.3	2.086	0.006	0.006	0.0002	0.203	0.17
52.17	0.86944	37.1	9.1	30.4	2.098	0.006	0.006	0.0002	0.197	0.17
53.17	0.88611	36.8	9.0	30.2	2.084	0.006	0.006	0.0002	0.204	0.17
54.17	0.90278	36.9	9.0	30.3	2.086	0.006	0.006	0.0002	0.203	0.17
55.17	0.91944	36.7	9.0	30.2	2.085	0.006	0.006	0.0002	0.204	0.17
56.17	0.93611	37.0	9.0	30.3	2.088	0.006	0.006	0.0002	0.203	0.17
57.17	0.95278	37.1	9.0	30.3	2.087	0.006	0.006	0.0002	0.198	0.17
58.17	0.96944	37.0	9.0	30.3	2.088	0.006	0.006	0.0002	0.204	0.17
59.17	0.98611	37.0	9.1	30.4	2.099	0.006	0.006	0.0002	0.202	0.17
60.17	1.00278	37.0	9.0	30.3	2.091	0.006	0.006	0.0002	0.203	0.17
61.17	1.01944	36.9	9.0	30.3	2.087	0.006	0.006	0.0002	0.198	0.17
		36.9	9.0	29.8	2.054	0.007	0.007	0.0002	0.230	0.195
		37.8	9.2	32.0	2.205	0.013	0.013	0.0005	0.498	0.423
		36.9	9.0	30.3	2.092	0.006	0.006	0.0002	0.207	0.176
		36.3	8.6	26.0	1.791	0.006	0.006	0.0002	0.197	0.168
		0.577	0.289	3.306	0.228	0.002	0.002	0.0001	0.110	0.094
		59	59	59	59	59	59	59	59	59

Figure E8: Steady state test run 1.20 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

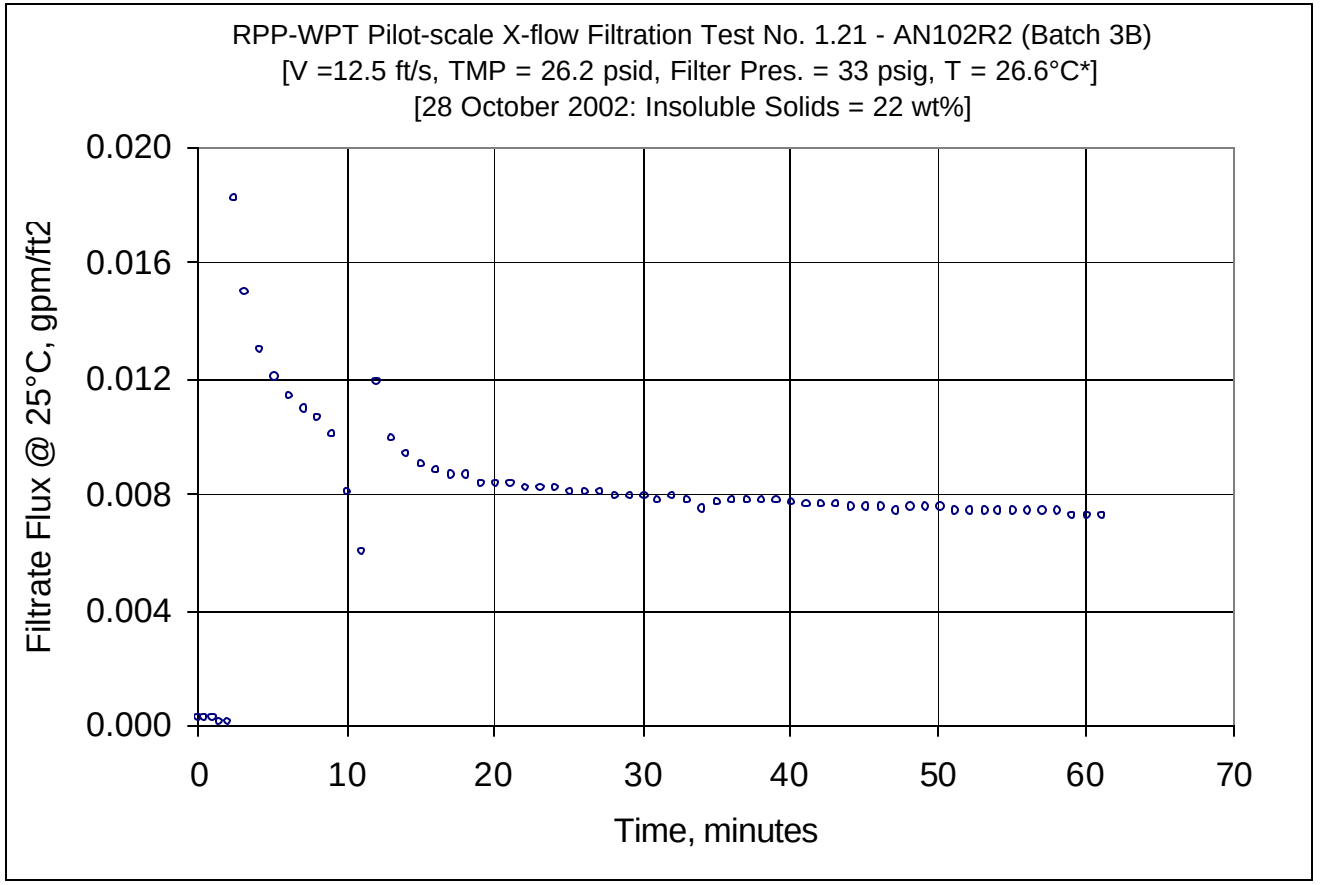
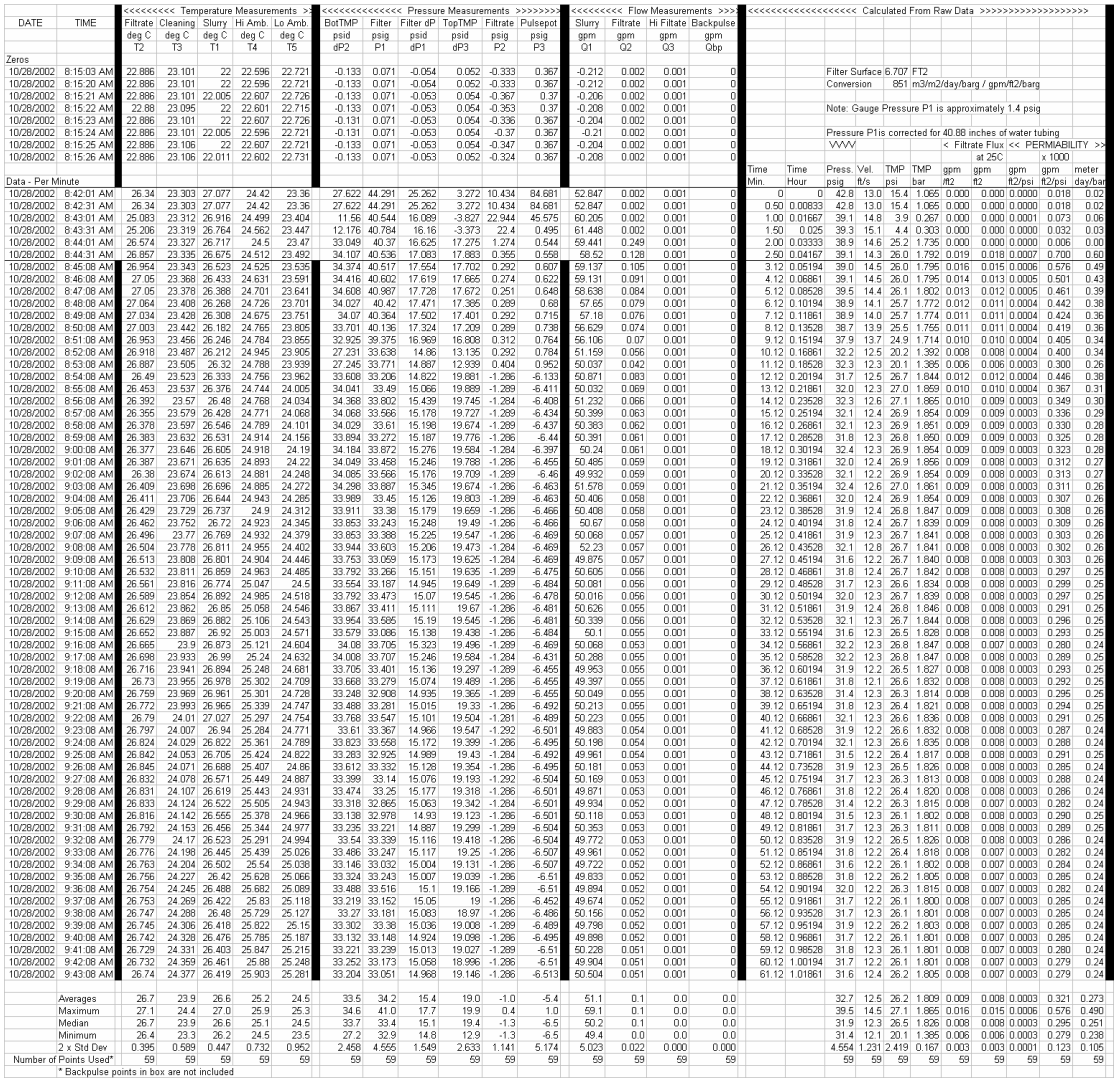


Figure E9: Steady state test run 1.21 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt%



		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
10/28/2002	8:15:03 AM	22.886	23.101	22	22.596	22.721	-0.133	0.071	-0.054	0.052	-0.333	0.367	-0.212	0.002	0.001	0			Filter Surface	6.707	FT2						
10/28/2002	8:15:20 AM	22.886	23.101	22	22.596	22.721	-0.133	0.071	-0.054	0.052	-0.333	0.367	-0.212	0.002	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
10/28/2002	8:15:21 AM	22.886	23.101	22.005	22.607	22.726	-0.133	0.071	-0.053	0.054	-0.367	0.37	-0.206	0.002	0.001	0											
10/28/2002	8:15:22 AM	22.88	23.095	22	22.601	22.715	-0.133	0.071	-0.053	0.054	-0.353	0.37	-0.208	0.002	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
10/28/2002	8:15:23 AM	22.886	23.101	22	22.607	22.726	-0.131	0.071	-0.053	0.054	-0.336	0.367	-0.204	0.002	0.001	0											
10/28/2002	8:15:24 AM	22.886	23.101	22.005	22.596	22.721	-0.131	0.071	-0.053	0.054	-0.37	0.367	-0.21	0.002	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
10/28/2002	8:15:25 AM	22.886	23.106	22	22.607	22.721	-0.133	0.071	-0.053	0.054	-0.347	0.367	-0.204	0.002	0.001	0			VVVV				< Filtrate Flux		<< PERMIABILITY >>		
10/28/2002	8:15:26 AM	22.886	23.106	22.011	22.602	22.731	-0.133	0.071	-0.053	0.052	-0.324	0.367	-0.208	0.002	0.001	0								at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
10/28/2002	8:42:01 AM	26.34	23.303	27.077	24.42	23.36	27.622	44.291	25.262	3.272	10.434	84.681	52.847	0.002	0.001	0	0	0	42.8	13.0	15.4	1.065	0.000	0.000	0.0000	0.018	0.02
10/28/2002	8:42:31 AM	26.34	23.303	27.077	24.42	23.36	27.622	44.291	25.262	3.272	10.434	84.681	52.847	0.002	0.001	0	0.50	0.00833	42.8	13.0	15.4	1.065	0.000	0.000	0.0000	0.018	0.02
10/28/2002	8:43:01 AM	25.083	23.312	26.916	24.499	23.404	11.56	40.544	16.089	-3.827	22.944	45.575	60.205	0.002	0.001	0	1.00	0.01667	39.1	14.8	3.9	0.267	0.000	0.000	0.0001	0.073	0.06
10/28/2002	8:43:31 AM	25.206	23.319	26.764	24.562	23.447	12.176	40.784	16.16	-3.373	22.4	0.495	61.448	0.002	0.001	0	1.50	0.025	39.3	15.1	4.4	0.303	0.000	0.000	0.0000	0.032	0.03
10/28/2002	8:44:01 AM	26.574	23.327	26.717	24.5	23.47	33.049	40.37	16.625	17.275	1.274	0.544	59.441	0.249	0.001	0	2.00	0.03333	38.9	14.6	25.2	1.735	0.000	0.000	0.0000	0.006	0.00
10/28/2002	8:44:31 AM	26.857	23.335	26.675	24.512	23.492	34.107	40.536	17.083	17.883	0.355	0.558	58.52	0.128	0.001	0	2.50	0.04167	39.1	14.3	26.0	1.792	0.019	0.018	0.0007	0.700	0.60
10/28/2002	8:45:08 AM	26.954	23.343	26.523	24.525	23.535	34.374	40.517	17.554	17.702	0.292	0.607	59.137	0.105	0.001	0	3.12	0.05194	39.0	14.5	26.0	1.795	0.016	0.015	0.0006	0.576	0.49
10/28/2002	8:46:08 AM	27.05	23.368	26.433	24.631	23.591	34.416	40.602	17.619	17.665	0.274	0.622	59.131	0.091	0.001	0	4.12	0.06861	39.1	14.5	26.0	1.795	0.014	0.013	0.0005	0.501	0.43
10/28/2002	8:47:08 AM	27.05	23.378	26.388	24.701	23.641	34.608	40.987	17.728	17.672	0.251	0.648	58.638	0.084	0.001	0	5.12	0.08528	39.5	14.4	26.1	1.802	0.013	0.012	0.0005	0.461	0.39
10/28/2002	8:48:08 AM	27.064	23.408	26.268	24.726	23.701	34.027	40.42	17.471	17.385	0.289	0.68	57.65	0.079	0.001	0	6.12	0.10194	38.9	14.1	25.7	1.772	0.012	0.011	0.0004	0.442	0.38
10/28/2002	8:49:08 AM	27.034	23.428	26.308	24.675	23.751	34.07	40.364	17.502	17.401	0.292	0.715	57.18	0.076	0.001	0	7.12	0.11861	38.9	14.0	25.7	1.774	0.011	0.011	0.0004	0.424	0.36
10/28/2002	8:50:08 AM	27.003	23.442	26.182	24.765	23.805	33.701	40.136	17.324	17.209	0.289	0.738	56.629	0.074	0.001	0	8.12	0.13528	38.7	13.9	25.5	1.755	0.011	0.011	0.0004	0.419	0.36
10/28/2002	8:51:08 AM	26.953	23.456	26.246	24.784	23.855	32.925	39.375	16.969	16.808	0.312	0.764	56.106	0.07	0.001	0	9.12	0.15194	37.9	13.7	24.9	1.714	0.010	0.010	0.0004	0.405	0.34
10/28/2002	8:52:08 AM	26.918	23.487	26.212	24.945	23.905	27.231	33.638	14.86	13.135	0.292	0.784	51.159	0.056	0.001	0	10.12	0.16861	32.2	12.5	20.2	1.392	0.008	0.008	0.0004	0.400	0.34
10/28/2002	8:53:08 AM	26.887	23.505	26.32	24.788	23.939	27.245	33.771	14.887	12.939	0.404	0.952	50.037	0.042	0.001	0	11.12	0.18528	32.3	12.3	20.1	1.385	0.006	0.006	0.0003	0.300	0.26
10/28/2002	8:54:08 AM	26.49	23.523	26.333	24.756	23.962	33.608	33.206	14.822	19.881	-1.286	-6.133	50.871	0.083	0.001	0	12.12	0.20194	31.7	12.5	26.7	1.844	0.012	0.012	0.0004	0.446	0.38
10/28/2002	8:55:08 AM	26.453	23.537	26.376	24.744	24.005	34.041	33.49	15.066	19.889	-1.289	-6.411	50.032	0.069	0.001	0	13.12	0.21861	32.0	12.3	27.0	1.859	0.010	0.010	0.0004	0.367	0.31
10/28/2002	8:56:08 AM	26.392	23.57	26.48	24.768	24.034	34.368	33.802	15.439	19.745	-1.284	-6.408	51.232	0.066	0.001	0	14.12	0.23528	32.3	12.6	27.1	1.865	0.010	0.009	0.0003	0.349	0.30
10/28/2002	8:57:08 AM	26.355	23.579	26.428	24.771	24.068	34.068	33.566	15.178	19.727	-1.289	-6.434	50.399	0.063	0.001	0	15.12	0.25194	32.1	12.4	26.9	1.854	0.009	0.009	0.0003	0.336	0.29
10/28/2002	8:58:08 AM	26.378	23.597	26.546	24.789	24.101	34.029	33.61	15.198	19.674	-1.289	-6.437	50.383	0.062	0.001	0	16.12	0.26861	32.1	12.3	26.9	1.851	0.009	0.009	0.0003	0.330	0.28
10/28/2002	8:59:08 AM	26.383	23.632	26.531	24.914	24.156	33.894	33.272	15.187	19.776	-1.286	-6.44	50.391	0.061	0.001	0	17.12	0.28528	31.8	12.3	26.8	1.850	0.009	0.009	0.0003	0.325	0.28
10/28/2002	9:00:08 AM	26.377	23.646	26.605	24.918	24.19	34.184	33.872	15.276	19.584	-1.284	-6.397	50.24	0.061	0.001	0	18.12	0.30194	32.4	12.3	26.9	1.854	0.009	0.009	0.0003	0.323	0.28
10/28/2002	9:01:08 AM	26.387	23.671	26.635	24.893	24.22	34.049	33.458	15.246	19.788	-1.286	-6.455	50.485	0.059	0.001	0	19.12	0.31861	32.0	12.4	26.9	1.856	0.009	0.008	0.0003	0.312	0.27
10/28/2002	9:02:08 AM	26.38	23.674	26.613	24.881	24.248	34.085	33.566	15.176	19.709	-1.289	-6.46	49.932	0.059	0.001	0	20.12	0.33528	32.1	12.2	26.9	1.854	0.009	0.008	0.0003	0.313	0.27
10/28/2002	9:03:08 AM	26.409	23.698	26.696	24.885	24.272	34.298	33.887	15.345	19.674	-1.286	-6.463	51.578	0.059	0.001	0	21.12	0.35194	32.4	12.6	27.0	1.861	0.009	0.008	0.0003	0.311	0.26
10/28/2002	9:04:08 AM	26.411	23.706	26.644	24.943	24.285	33.989	33.45	15.126	19.803	-1.289	-6.463	50.406	0.058	0.001	0	22.12	0.36861	32.0	12.4	26.9	1.854	0.009	0.008	0.0003	0.307	0.26
10/28/2002	9:05:08 AM	26.429	23.729	26.737	24.9	24.312	33.911	33.38	15.179	19.659	-1.286	-6.466	50.408	0.058	0.001	0	23.12	0.38528	31.9	12.4	26.8	1.847	0.009	0.008	0.0003	0.308	0.26
10/28/2002	9:06:08 AM	26.462	23.752	26.72	24.923	24.345	33.853	33.243	15.248	19.49	-1.286	-6.466	50.67	0.058	0.001	0	24.12	0.40194	31.8	12.4	26.7	1.839	0.009	0.008	0.0003	0.309	0.26
10/28/2002	9:07:08 AM	26.496	23.77	26.769	24.932	24.379	33.853	33.388	15.225	19.547	-1.286	-6.469	50.068	0.057	0.001	0	25.12	0.41861	31.9	12.3	26.7	1.841	0.008	0.008	0.0003	0.303	0.26
10/28/2002	9:08:08 AM	26.504	23.778	26.811	24.955	24.402	33.944	33.603	15.206	19.473	-1.284	-6.469	52.23	0.057	0.001	0	26.12	0.43528	32.1	12.8	26.7	1.841	0.008	0.008	0.0003	0.302	0.26
10/28/2002	9:09:08 AM	26.513	23.808	26.801	24.904	24.446	33.753	33.059	15.173	19.625	-1.284	-6.469	49.875	0.057	0.001	0	27.12	0.45194	31.6	12.2	26.7	1.840	0.008	0.008	0.0003	0.303	0.26
10/28/2002	9:10:08 AM	26.532	23.811	26.859	24.963	24.485	33.792	33.266	15.151	19.635	-1.289	-6.475	50.605	0.056	0.001	0	28.12	0.46861	31.8	12.4	26.7	1.842	0.008	0.008	0.0003	0.297	0.25
10/28/2002	9:11:08 AM	26.561	23.816	26.774	25.047	24.5	33.554	33.187	14.945	19.649	-1.289	-6.484	50.081	0.056	0.001	0	29.12	0.48528	31.7	12.3	26.6	1.834	0.008	0.008	0.0003	0.299	0.25
10/28/2002	9:12:08 AM	26.589	23.854	26.892	24.985	24.518	33.792	33.473	15.07	19.545	-1.286	-6.478	50.016	0.056	0.001	0	30.12	0.50194	32.0	12.3	26.7	1.839	0.008	0.008	0.0003	0.297	0.25
10/28/2002	9:13:08 AM	26.612	23.862	26.85	25.058	24.546	33.867	33.411	15.111	19.67	-1.286	-6.481	50.626	0.055	0.001	0	31.12	0.51861	31.9	12.4	26.8	1.846	0.008	0.008	0.0003	0.291	0.25
10/28/2002	9:14:08 AM	26.629	23.869	26.882	25.106	24.543	33.954	33.585	15.19	19.545	-1.286	-6.481	50.339	0.056	0.001	0	32.12	0.53528	32.1	12.3	26.7	1.844	0.008	0.008	0.0003	0.296	0.25
10/28/2002	9:15:08 AM	26.652	23.887	26.92	25.003	24.571	33.579	33.086	15.138	19.438	-1.286	-6.484	50.1	0.055	0.001	0	33.12	0.55194	31.6	12.3	26.5	1.828	0.008	0.008	0.0003	0.293	0.25
10/28/2002	9:16:08 AM	26.665	23.9	26.873	25.121	24.604	34.08	33.705	15.323	19.496	-1.289	-6.469	50.068	0.053	0.001	0	34.12	0.56861	32.2	12.3	26.8	1.847	0.008	0.007	0.0003	0.280	0.24
10/28/2002	9:17:08 AM	26.698	23.933	26.99	25.24	24.632	34.008	33.707	15.246	19.584	-1.284	-6.431	50.288	0.055	0.001	0	35.12	0.58528	32.2	12.3	26.8	1.847	0.008	0.008	0.0003	0.289	0.25
10/28/2002	9:18:08 AM	26.716	23.941	26.894	25.248	24.681	33.705	33.401	15.136	19.297	-1.289	-6.455	49.953	0.055	0.001	0	36.12	0.60194	31.9	12.2	26.5	1.827	0.008	0.008	0.0003	0.293	0.25
10/28/2002	9:19:08 AM	26.73	23.955	26.978	25.302	24.709	33.668	33.279	15.074	19.489	-1.286	-6.455	49.397	0.055	0.001	0	37.12	0.61861	31.8	12.1	26.6	1.832	0.008	0.008	0.0003	0.292	0.25
10/28/2002	9:20:08 AM	26.759	23.969	26.961	25.301	24.728	33.248	32.908	14.935	19.365	-1.289	-6.455	50.049	0.055	0.001	0	38.12	0.63528	31.4	12.3	26.3	1.814	0.008	0.008	0.0003	0.295	0.25
10/28/2002	9:21:08 AM	26.772	23.993	26.965	25.339	24.747	33.488	33.281	15.015	19.33	-1.286	-6.492	50.213	0.055	0.001	0	39.12	0.65194	31.8	12.3	26.4	1.821	0.008	0.008	0.0003	0.294	0.25
10/28/2002	9:22:08 AM	26.79	24.01	27.027	25.297	24.754	33.768	33.547	15.101	19.504	-1.281	-6.489	50.223	0.055	0.001	0	40.12	0.66861	32.1	12.3	26.6	1.836	0.008	0.008	0.0003	0.291	0.25
10/28/2002	9:23:08 AM	26.797	24.007	26.94	25.284	24.771	33.61	33.367	14.966	19.547	-1.292	-6.501	49.883	0.054	0.001	0	41.12	0.68528	31.9	12.2	26.6	1.832	0.008	0.008	0.0003	0.287	0.24
10/28/2002	9:24:08 AM	26.824	24.029	26.822	25.361	24.789	33.823	33.558	15.172	19.399	-1.286	-6.495	50.198	0.054	0.001	0	42.12	0.70194	32.1	12.3	26.6	1.835	0.008	0.008	0.0003	0.288	0.24
10/28/2002	9:25:08 AM	26.842	24.053	26.705	25.424	24.822	33.283	32.925	14.989	19.43	-1.284	-6.492	49.961	0.054	0.001	0	43.12	0.71861	31.5	12.2	26.4	1.817	0.008	0.008	0.0003	0.291	0.25
10/28/2002	9:26:08 AM	26.845	24.071	26.688	25.407	24.86	33.612	33.332	15.128	19.354	-1.286	-6.495	50.181	0.053	0.001	0	44.12	0.73528	31.9	12.3	26.5	1.826	0.008	0.008	0.0003	0.285	0.24
10/28/2002	9:27:08 AM	26.832	24.078	26.571	25.449	24.887	33.399	33.14	15.076	19.193	-1.292	-6.504	50.169	0.053	0.001	0	45.12	0.75194	31.7	12.3	26.3	1.813	0.008	0.008	0.0003	0.288	0.24
10/28/2002	9:28:08 AM	26.831	24.107	26.619	25.443	24.931	33.474	33.25	15.177	19.318	-1.286	-6.501	49.871	0.053	0.001	0	46.12	0.76861	31.8	12.2	26.4	1.820	0.008	0.008	0.0003	0.286	0.24
10/28/2002	9:29:08 AM	26.833	24.124	26.522	25.505	24.943	33.318	32.865	15.063	19.342	-1.284	-6.501	49.934	0.052	0.001	0	47.12	0.78528	31.4	12.2	26.3	1.815	0.008	0.007	0.0003	0.282	0.24
10/28/2002	9:30:08 AM	26.816	24.142	26.555	25.378	24.966	33.138	32.978	14.93	19.123	-1.286	-6.501	50.118	0.053	0.001	0	48.12	0.80194	31.5	12.3	26.1	1.802	0.008	0.008	0.0003	0.290	0.25
10/28/2002	9:31:08 AM	26.792	24.153	26.456	25.344	24.977	33.235	33.221	14.887	19.299	-1.289	-6.504	50.353	0.053	0.001	0	49.12	0.81861	31.7	12.3	26.3	1.811	0.008	0.008	0.0003	0.289	0.25
10/28/2002	9:32:08 AM	26.779	24.17	26.523	25.291	24.994	33.54	33.339	15.116	19.418	-1.286	-6.504	49.772	0.053	0.001	0	50.12	0.83528	31.9	12.2	26.5	1.826	0.008	0.008	0.0003	0.286	0.24
10/28/2002	9:33:08 AM	26.776	24.198	26.445	25.439	25.026	33.486	33.247	15.117	19.25	-1.286	-6.507	49.961	0.052	0.001	0	51.12	0.85194	31.8	12.2	26.4	1.818	0.008	0.007	0.0003	0.282	0.24
10/28/2002	9:34:08 AM	26.763	24.204	26.502	25.54	25.038	33.146	33.032	15.004	19.131	-1.286	-6.507	49.722	0.052	0.001	0	52.12	0.86861	31.6	12.2	26.1	1.802	0.008	0.007	0.0003	0.284	0.24
10/28/2002	9:35:08 AM	26.756	24.227	26.42	25.628	25.066	33.324	33.243	15.007	19.039	-1.286	-6.51	49.833	0.052	0.001	0	53.12	0.88528	31.8	12.2	26.2	1.805	0.008	0.007	0.0003	0.285	0.24
10/28/2002	9:36:08 AM	26.754	24.245	26.488	25.682	25.089	33.488	33.516	15.1	19.166	-1.289	-6.51	49.894	0.052	0.001	0	54.12	0.90194	32.0	12.2	26.3	1.815	0.008	0.007	0.0003	0.282	0.24
10/28/2002	9:37:08 AM	26.753	24.269	26.422	25.83	25.118	33.219	33.152	15.05	19	-1.286	-6.452	49.674	0.052	0.001	0	55.12	0.91861	31.7	12.2	26.1	1.800	0.008	0.007	0.0003	0.285	0.24
10/28/2002	9:38:08 AM	26.747	24.288	26.48	25.729	25.127	33.27	33.181	15.083	18.97	-1.286	-6.486	50.156	0.052	0.001	0	56.12	0.93528	31.7	12.3	26.1	1.801	0.008	0.007	0.0003	0.285	0.24
10/28/2002	9:39:08 AM	26.745	24.306	26.418	25.822	25.15	33.302	33.38	15.036	19.008	-1.289	-6.489	49.798	0.052	0.001	0	57.12	0.95194	31.9	12.2	26.2	1.803	0.008	0.007	0.0003	0.285	0.24
10/28/2002	9:40:08 AM	26.742	24.328	26.476	25.785	25.187	33.132	33.148	14.924	19.098	-1.286	-6.495	49.898	0.052	0.001	0	58.12	0.96861	31.7	12.2	26.1	1.801	0.008	0.007	0.0003	0.285	0.24
10/28/2002	9:41:08 AM	26.729	24.331	26.403	25.847	25.215	33.221	33.239	15.013	19.027	-1.289	-6.51	50.228	0.051	0.001	0	59.12	0.98528	31.8	12.3	26.1	1.801	0.008	0.007	0.0003	0.280	0.24
10/28/2002	9:42:08 AM	26.732	24.359	26.461	25.88	25.248	33.252	33.173	15.058	18.996	-1.286	-6.51	49.904	0.051	0.001	0	60.12	1.00194	31.7	12.2	26.1	1.801	0.008	0.007	0.0003	0.279	0.24
10/28/2002	9:43:08 AM	26.74	24.377	26.419	25.903	25.281	33.204	33.051	14.968	19.146	-1.286	-6.513	50.504	0.051	0.001	0	61.12	1.01861	31.6	12.4	26.2	1.805	0.008	0.007	0.0003	0.279	0.24
	Averages	26.7	23.9	26.6	25.2	24.5	33.5	34.2	15.4	19.0	-1.0	-5.4	51.1	0.1	0.0	0.0			32.7	12.5	26.2	1.809	0.009	0.008	0.0003	0.321	0.273
	Maximum	27.1	24.4	27.0	25.9	25.3	34.6	41.0	17.7	19.9	0.4	1.0	59.1	0.1	0.0	0.0			39.5	14.5	27.1	1.865	0.016	0.015	0.0006	0.576	0.490
	Median	26.7	23.9	26.6	25.1	24.5	33.7	33.4	15.1	19.4	-1.3	-6.5	50.2	0.1	0.0	0.0			31.9	12.3	26.5	1.826	0.008	0.008	0.0003	0.295	0.251
	Minimum	26.4	23.3	26.2	24.5	23.5	27.2	32.9	14.8	12.9	-1.3	-6.5	49.4	0.0	0.0	0.0			31.4	12.1	20.1	1.385	0.006	0.006	0.0003	0.279	0.238
	2 x Std Dev	0.395	0.589	0.447	0.732	0.952	2.458	4.555	1.549	2.633	1.141	5.174	5.023	0.022	0.000	0.000			4.554	1.231	2.419	0.167	0.003	0.003	0.0001	0.123	0.105
Number of Points Used*		59	59	59	59	59	59	59	59	59	59	59	59	59	59	59			59	59	59	59	59	59	59	59	59
	* Backpulse points in box are not included																										

Figure E10: Steady state test run 1.21 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

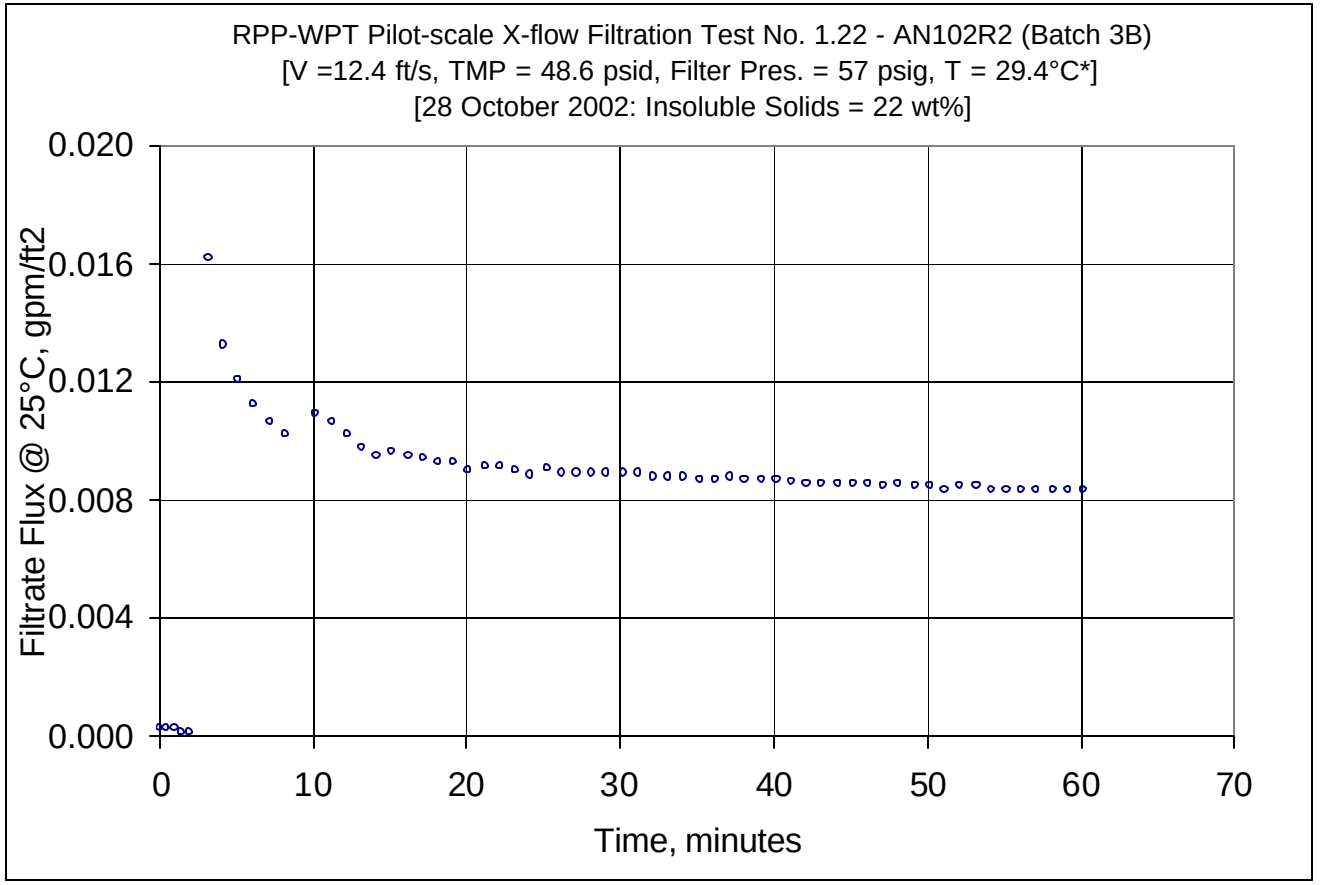


Figure E11: Steady state test run 1.22 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt%

DATE	TIME	<<<<<<<<< Temperature Measurements >>>>>>>>>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>>>>>>						<<<<<<<<< Flow Measurements >>>>>>>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>														
		Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse															
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm															
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp															
Zeros																															
10/28/2002	8:15:03 AM	22.886	23.101	22	22.596	22.721	-0.133	0.071	-0.054	0.052	-0.333	0.367	-0.212	0.002	0.001	0															
10/28/2002	8:15:20 AM	22.886	23.101	22	22.596	22.721	-0.133	0.071	-0.054	0.052	-0.333	0.367	-0.212	0.002	0.001	0															
10/28/2002	8:15:21 AM	22.886	23.101	22.005	22.607	22.726	-0.133	0.071	-0.053	0.054	-0.367	0.37	-0.206	0.002	0.001	0															
10/28/2002	8:15:22 AM	22.88	23.095	22	22.601	22.715	-0.133	0.071	-0.053	0.054	-0.353	0.37	-0.208	0.002	0.001	0															
10/28/2002	8:15:23 AM	22.886	23.101	22	22.607	22.726	-0.131	0.071	-0.053	0.054	-0.336	0.367	-0.204	0.002	0.001	0															
10/28/2002	8:15:24 AM	22.886	23.101	22.005	22.596	22.721	-0.131	0.071	-0.053	0.054	-0.37	0.367	-0.21	0.002	0.001	0															
10/28/2002	8:15:25 AM	22.886	23.106	22	22.607	22.721	-0.133	0.071	-0.053	0.054	-0.347	0.367	-0.204	0.002	0.001	0															
10/28/2002	8:15:26 AM	22.886	23.106	22.011	22.602	22.731	-0.133	0.071	-0.053	0.052	-0.324	0.367	-0.208	0.002	0.001	0															
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter				
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	ft2	ft2	ft2/psi	ft2/psi	day/bar				
10/28/2002	9:52:36 AM	26.893	24.595	27.191	26.126	25.459	14.319	59.169	16.946	-1.784	39.015	99.955	53.252	0.002	0.001	0	0	0	57.7	13.1	6.3	0.432	0.000	0.000	0.0000	0.045	0.04				
10/28/2002	9:52:58 AM	26.893	24.595	27.191	26.126	25.459	14.319	59.169	16.946	-1.784	39.015	99.955	53.252	0.002	0.001	0	0.37	0.00611	57.7	13.1	6.3	0.432	0.000	0.000	0.0000	0.045	0.04				
10/28/2002	9:53:36 AM	26.936	24.623	27.343	26.183	25.456	10.135	59.194	13.982	-3.121	43.087	57.767	55.343	0.002	0.001	0	1.00	0.01667	57.7	13.6	3.5	0.242	0.000	0.000	0.0001	0.080	0.07				
10/28/2002	9:53:56 AM	26.08	24.617	27.377	26.203	25.476	9.727	58.544	13.821	-3.052	43.214	0.495	55.905	0.002	0.001	0	1.33	0.02222	57.1	13.7	3.3	0.230	0.000	0.000	0.0000	0.042	0.04				
10/28/2002	9:54:36 AM	27.455	24.643	27.478	26.278	25.476	49.939	58.859	14.785	36.323	3.419	0.558	54.714	0.495	0.001	0	2.00	0.03333	57.4	13.4	43.1	2.974	0.000	0.000	0.0000	0.003	0.00				
10/28/2002	9:54:56 AM	27.855	24.644	27.519	26.294	25.487	52.601	59.136	15.409	38.11	0.586	0.573	54.126	0.168	0.001	0	2.33	0.03889	57.7	13.3	45.4	3.127	0.025	0.023	0.0005	0.515	0.44				
10/28/2002	9:55:46 AM	28.09	24.665	27.654	26.31	25.528	52.365	58.908	16.125	37.078	0.315	0.613	52.669	0.117	0.001	0	3.17	0.05278	57.4	12.9	44.7	3.083	0.017	0.016	0.0004	0.362	0.31				
10/28/2002	9:56:46 AM	28.255	24.68	27.784	26.306	25.509	52.566	58.761	16.702	36.775	0.289	0.645	52.719	0.096	0.001	0	4.17	0.06944	57.3	12.9	44.7	3.080	0.014	0.013	0.0003	0.296	0.25				
10/28/2002	9:57:46 AM	28.398	24.719	27.957	26.339	25.497	52.468	59.068	16.99	36.037	0.289	0.683	51.851	0.088	0.001	0	5.17	0.08611	57.6	12.7	44.3	3.051	0.013	0.012	0.0003	0.273	0.23				
10/28/2002	9:58:46 AM	28.539	24.735	28.088	26.315	25.548	52.843	59.241	17.097	36.526	0.289	0.709	52.214	0.082	0.001	0	6.17	0.10278	57.8	12.8	44.7	3.081	0.012	0.011	0.0003	0.251	0.21				
10/28/2002	9:59:46 AM	28.667	24.758	28.206	26.349	25.557	52.305	58.873	17.079	36.032	0.297	0.738	51.369	0.078	0.001	0	7.17	0.11944	57.4	12.6	44.2	3.045	0.012	0.011	0.0002	0.241	0.20				
10/28/2002	10:00:46 AM	28.769	24.772	28.319	26.467	25.595	52.242	58.722	16.996	36.133	0.349	0.77	52.002	0.075	0.001	0	8.17	0.13611	57.3	12.7	44.2	3.047	0.011	0.010	0.0002	0.231	0.20				
10/28/2002	10:01:46 AM	28.882	24.785	28.421	26.455	25.588	52.437	58.234	17.011	36.123	-0.295	-0.785	50.827	0.201	0.001	0	9.17	0.15278	56.8	12.5	44.3	3.053	0.030	0.027	0.0006	0.615	0.52				
10/28/2002	10:02:46 AM	28.322	24.813	28.519	26.503	25.621	57.961	58.362	17.132	41.813	-1.286	-6.156	50.821	0.081	0.001	0	10.17	0.16944	56.9	12.5	49.9	3.440	0.012	0.011	0.0002	0.219	0.19				
10/28/2002	10:03:46 AM	28.284	24.825	28.596	26.48	25.633	57.883	57.907	17.178	41.465	-1.286	-6.33	50.966	0.079	0.001	0	11.17	0.18611	56.4	12.5	49.6	3.418	0.012	0.011	0.0002	0.215	0.18				
10/28/2002	10:04:46 AM	28.285	24.825	28.651	26.455	25.629	57.932	58.445	17.302	41.637	-1.289	-6.35	50.748	0.076	0.001	0	12.17	0.20278	57.0	12.4	49.8	3.432	0.011	0.010	0.0002	0.206	0.17				
10/28/2002	10:05:46 AM	28.346	24.852	28.742	26.492	25.68	57.735	58.251	17.225	41.361	-1.286	-6.405	50.889	0.073	0.001	0	13.17	0.21944	56.8	12.4	49.5	3.416	0.011	0.010	0.0002	0.198	0.17				
10/28/2002	10:06:46 AM	28.389	24.895	28.85	26.47	25.733	57.735	58.19	17.047	41.605	-1.284	-6.386	47.866	0.071	0.001	0	14.17	0.23611	56.7	11.7	49.7	3.425	0.011	0.010	0.0002	0.191	0.16				
10/28/2002	10:07:46 AM	28.433	24.899	28.909	26.534	25.802	57.804	58.16	17.123	41.67	-1.289	-6.414	50.58	0.072	0.001	0	15.17	0.25278	56.7	12.4	49.7	3.429	0.011	0.010	0.0002	0.194	0.16				
10/28/2002	10:08:46 AM	28.508	24.934	28.998	26.594	25.837	58.118	58.656	17.147	41.897	-1.286	-6.42	50.36	0.071	0.001	0	16.17	0.26944	57.2	12.3	50.0	3.448	0.011	0.009	0.0002	0.189	0.16				
10/28/2002	10:09:46 AM	28.568	24.94	29.054	26.669	25.878	57.81	58.387	17.104	41.611	-1.289	-6.429	50.345	0.071	0.001	0	17.17	0.28611	56.9	12.3	49.7	3.427	0.011	0.009	0.0002	0.190	0.16				
10/28/2002	10:10:46 AM	28.643	24.955	29.124	26.675	25.899	57.729	58.575	17.139	41.265	-1.289	-6.44	50.5	0.07	0.001	0	18.17	0.30278	57.1	12.4	49.5	3.413	0.010	0.009	0.0002	0.188	0.16				
10/28/2002	10:11:46 AM	28.713	24.96	29.173	26.755	25.933	58.108	58.79	17.196	41.779	-1.289	-6.443	50.169	0.07	0.001	0	19.17	0.31944	57.3	12.3	49.9	3.443	0.010	0.009	0.0002	0.186	0.16				
10/28/2002	10:12:46 AM	28.787	24.975	29.248	26.725	25.948	57.53	58.433	17.053	41.437	-1.286	-6.353	50.536	0.068	0.001	0	20.17	0.33611	57.0	12.4	49.5	3.412	0.010	0.009	0.0002	0.182	0.15				
10/28/2002	10:13:46 AM	28.852	24.99	29.298	26.71	25.968	57.543	58.325	17.135	41.191	-1.289	-6.431	50.788	0.069	0.001	0	21.17	0.35278	56.9	12.4	49.4	3.404	0.010	0.009	0.0002	0.185	0.16				
10/28/2002	10:14:46 AM	28.911	24.999	29.341	26.679	25.992	57.812	58.449	16.979	42.006	-1.286	-6.446	50.838	0.069	0.001	0	22.17	0.36944	57.0	12.5	49.9	3.441	0.010	0.009	0.0002	0.183	0.16				
10/28/2002	10:15:46 AM	28.946	25.015	29.392	26.664	26.023	57.561	58.551	16.976	41.433	-1.286	-6.379	50.349	0.068	0.001	0	23.17	0.38611	57.1	12.3	49.5	3.413	0.010	0.009	0.0002	0.181	0.15				
10/28/2002	10:16:46 AM	28.996	25.03	29.442	26.749	26.048	57.545	58.273	17.022	41.506	-1.292	-6.382	50.792	0.067	0.001	0	24.17	0.40278	56.8	12.4	49.5	3.415	0.010	0.009	0.0002	0.178	0.15				
10/28/2002	10:17:46 AM	29.057	25.051	29.497	26.76	26.079	57.238	58.191	16.934	41.134	-1.289	-6.426	50.137	0.069	0.001	0	25.17	0.41944	56.7	12.3	49.2	3.391	0.010	0.009	0.0002	0.185	0.16				
10/28/2002	10:18:46 AM	29.097	25.061	29.538	26.681	26.099	57.391	58.267	17.063	41.208	-1.289	-6.371	50.412	0.068	0.001	0	26.17	0.43611	56.8	12.4	49.3	3.399	0.010	0.009	0.0002	0.181	0.15				
10/28/2002	10:19:46 AM	29.141	25.066	29.567	26.835	26.119	56.925	57.806	16.806	41.07	-1.289	-6.429	50.433	0.068	0.001	0	27.17	0.45278	56.3	12.4	49.0	3.378	0.010	0.009	0.0002	0.182	0.16				
10/28/2002	10:20:46 AM	29.189	25.079	29.605	26.828	26.142	57.449	58.544	17.093	41.113	-1.286	-6.431	51.331	0.068	0.001	0	28.17	0.46944	57.1	12.6	49.3	3.398	0.010	0.009	0.0002	0.181	0.15				
10/28/2002	10:21:46 AM	29.234	25.099	29.649	26.803	26.172	57.673	58.747	17.047	41.511	-1.292	-6.46	50.647	0.068	0.001	0	29.17	0.48611	57.3	12.4	49.6	3.419	0.010	0.009	0.0002	0.180	0.15				
10/28/2002	10:22:46 AM	29.31	25.135	29.725	26.914	26.208	57.793	58.784	17.117	41.539	-1.286	-6.391	50.066	0.068	0.001	0	30.17	0.50278	57.3	12.3	49.7	3.424	0.010	0.009	0.0002	0.179	0.15				
10/28/2002	10:23:46 AM	29.349	25.14	29.74	26.934	26.228	57.435	58.672	17.028	41.117	-1.286	-6.449	50.735	0.068	0.001	0	31.17	0.51944	57.2	12.4	49.3	3.397	0.010	0.009	0.0002	0.180	0.15				
10/28/2002	10:24:46 AM	29.39	25.151	29.77	26.93	26.234	57.756	58.803	17.178	41.461	-1.289	-6.414	51.282	0.067	0.001	0	32.17	0.53611	57.3	12.6	49.6	3.420	0.010	0.009	0.0002	0.176	0.15				
10/28/2002	10:25:46 AM	29.409	25.16	29.79	26.799	26.153	57.567	58.875	17.096	41.283	-1.289	-6.434	50.899	0.067	0.001	0	33.17	0.55278	57.4	12.5	49.4	3.408	0.010	0.009	0.0002	0.177	0.15				
10/28/2002	10:26:46 AM	29.442	25.183	29.813	26.648	26.116	57.089	58.302	17.016	40.886	-1.289	-6.463	50.204	0.067	0.001	0	34.17	0.56944	56.8	12.3	49.0	3.378	0.010	0.009	0.0002	0.178	0.15				
10/28/2002	10:27:46 AM	29.492	25.198	29.833	26.468	26.036	57.091	58.366	16.917	41.031	-1.289	-6.463	50.886	0.067	0.001	0	35.17	0.58611	56.9	12.5	49.1	3.383	0.010	0.009	0.0002	0.178	0.15				
10/28/2002	10:28:46 AM	29.495	25.192	29.826	26.196	25.934	57.367	58.507	17.008	41.283	-1.289	-6.463	51.415	0.067	0.001	0	36.17	0.60278	57.0	12.6	49.3	3.401	0.010	0.009	0.0002	0.177	0.15				
10/28/2002	10:29:46 AM	29.497	25.173	29.803	26.063	25.846	57.174	58.586	16.95	40.954	-1.292	-6.466	50.764	0.067	0.001	0	37.17	0.61944	57.1	12.4	49.1	3.393	0.010	0.009	0.0002	0.178	0.15				
10/28/2002	10:30:46 AM	29.519	25.201	29.845	25.995	25.784	57.404	58.799	17.124	41.161	-1.289	-6.466	50.299	0.067	0.001	0	38.17	0.63611	57.3	12.3	49.3	3.398	0.010	0.009	0.0002	0.177	0.15				
10/28/2002	10:31:46 AM	29.517	25.203	29.848	25.908	25.736	57.101	58.524	16.988	40.87	-1.286	-6.463	48.839	0.067	0.001	0	39.17	0.65278	57.1	12.0	49.0	3.377	0.010	0.009	0.0002	0.178	0.15				
10/28/2002	10:32:46 AM	29.513	25.194	29.858	25.873	25.677	57.594	58.944	16.978	41.554	-1.289	-6.463	50.746	0.067	0.001	0	40.17	0.66944	57.5	12.4	49.6	3.418	0.010	0.009	0.0002	0.176	0.15				
10/28/2002	10:33:46 AM	29.526	25.197	29.871	25.832	25.625	57.338	58.952	17.138	41.011	-1.289	-6.431	50.672	0.066	0.001	0	41.17	0.68611	57.5	12.4	49.2	3.390	0.010	0.009	0.0002	0.175	0.15				
10/28/2002	10:34:46 AM	29.544	25.211	29.9	25.84	25.573	56.787	58.228	16.87	40.8	-1.286	-6.449	50.699	0.066	0.001	0	42.17	0.70278	56.8	12.4	48.8	3.364	0.010	0.009	0.0002	0.176	0.15				
10/28/2002	10:35:46 AM	29.543	25.21	29.919	25.754	25.527	56.882	58.611	16.942	40.622	-1.286	-6.449	50.576	0.066	0.001	0	43.17	0.71944	57.1	12.4	48.8	3.361	0.010	0.009	0.0002	0.176	0.15				
10/28/2002	10:36:46 AM	29.522	25.188	29.907	25.662	25.476	56.789	58.368	16.807	40.857	-1.286	-6.452	50.658	0.066	0.001	0	44.17	0.73611	56.9	12.4	48.8	3.366	0.010	0.009	0.0002	0.176	0.15				
10/28/2002	10:37:46 AM	29.557	25.183	29.907	25.647	25.416	57.116	58.869	17.085	40.718	-1.289	-6.452	50.846	0.066	0.001	0	45.17	0.75278	57.4	12.5	48.9	3.373	0.010	0.009	0.0002	0.176	0.15				
10/28/2002	10:38:46 AM	29.558	25.155	29.894	25.629	25.372	56.874	58.381	16.954	40.675	-1.289	-6.449	51.515	0.066	0.001	0	46.17	0.76944	56.9	12.6	48.8	3.363	0.010	0.009	0.0002	0.176	0.15				
10/28/2002	10:39:46 AM	29.591	25.153	29.897	25.662	25.331	56.954	58.459	16.989	40.847	-1.289	-6.469	50.035	0.065	0.001	0	47.17	0.78611	57.0	12.3	48.9	3.372	0.010	0.008	0.0002	0.173	0.15				
10/28/2002	10:40:46 AM	29.579	25.136	29.885	25.595	25.293	57.023	58.551	16.979	40.95	-1.289	-6.463	50.938	0.066	0.001	0	48.17	0.80278	57.1	12.5	49.0	3.377	0.010	0.009	0.0002	0.176	0.15				
10/28/2002	10:41:46 AM	29.601	25.118	29.882	25.557	25.246	57.228	58.917	17.271	40.753	-1.286	-6.469	50.75	0.065	0.001	0	49.17	0.81944	57.4	12.4	49.0	3.378	0.010	0.008	0.0002	0.173	0.15				
10/28/2002	10:42:46 AM	29.584	25.111	29.87	25.495	25.208	56.791	58.406	16.932	40.731	-1.289	-6.472	51.469	0.065	0.001	0	50.17	0.83611	56.9	12.6	48.8	3.362	0.010	0.008	0.0002	0.174	0.15				
10/28/2002	10:43:46 AM	29.558	25.1	29.869	25.529	25.177	56.84	58.764	16.899	40.522	-1.292	-6.475	50.706	0.064	0.001	0	51.17	0.85278	57.3	12.4	48.7	3.356	0.010	0.008	0.0002	0.171	0.15				
10/28/2002	10:44:46 AM	29.568	25.1	29.879	25.534	25.152	56.613	58.493	16.907	40.483	-1.289	-6.472	50.735	0.065	0.001	0	52.17	0.86944	57.0	12.4	48.5	3.347	0.010	0.008	0.0002	0.174	0.15				
10/28/2002	10:45:46 AM	29.569	25.091	29.875	25.53	25.158	56.503	58.147	16.946	40.29	-1.286	-6.472	50.108	0.065	0.001	0	53.17	0.88611	56.7	12.3	48.4	3.337	0.010	0.008	0.0002	0.175	0.15				
10/28/2002	10:46:46 AM	29.574	25.071	29.865	25.565	25.158	56.056	57.729	16.718	40.303	-1.289	-6.472	50.85	0.064	0.001	0	54.17	0.90278	56.3	12.5	48.2	3.322	0.010	0.008	0.0002	0.173	0.15				
10/28/2002	10:47:46 AM	29.58	25.061	29.851	25.546	25.134	56.447	58.242	16.807	40.393	-1.289	-6.475	50.026	0.064	0.001	0	55.17	0.91944	56.8	12.3	48.4	3.338	0.010	0.008	0.0002	0.172	0.15				
10/28/2002	10:48:46 AM	29.591	25.067	29.876	25.546	25.126	56.521	58.201	16.894	40.495	-1.281	-6.472	50.758	0.064	0.001	0	56.17	0.93611	56.7	12.4	48.5	3.344	0.010	0.008	0.0002	0.172	0.15				
10/28/2002	10:49:46 AM	29.577	25.048	29.862	25.602	25.135	56.163	57.948	16.684	40.442	-1.289	-6.475	50.809	0.064	0.001	0	57.17	0.95278	56.5	12.5	48.3	3.330	0.010	0.008	0.0002	0.173	0.15				
10/28/2002	10:50:46 AM	29.567	25.039	29.848	25.603	25.121	56.492	58.449	16.917	40.2	-1.289	-6.481	51.129	0.064	0.001	0	58.17	0.96944	57.0	12.5	48.3	3.333	0.010	0.008	0.0002	0.173	0.15				
10/28/2002	10:51:46 AM	29.606	25.017	29.832	25.592	25.089	56.468	58.515	16.918	40.276	-1.289	-6.478	52.977	0.064	0.001	0	59.17	0.98611	57.0	13.0	48.4	3.335	0.010	0.008	0.0002	0.173	0.15				
10/28/2002	10:52:46 AM	29.578	25	29.814	25.534	25.082	56.397	58.294	16.986	40.149	-1.292	-6.484	51.142	0.064	0.001	0	60.17	1.00278	56.8	12.5	48.3	3.328	0.010	0.008	0.0002	0.173	0.15				
	Averages	29.1	25.0	29.4	26.2	25.7	56.7	58.5	17.0	40.5	-1.1	-5.6	50.8	0.1	0.0	0.0			57.0	12.4	48.6	3.349	0.011	0.010	0.0002	0.198	0.169				
	Maximum	29.6	25.2	29.9	26.9	26.2	58.1	59.2	17.3	42.0	0.3	0.8	53.0	0.2	0.0	0.0			57.8	13.0	50.0	3.448	0.030	0.027	0.0006	0.615	0.524				
	Median	29.4	25.1	29.8	26.3	25.6	57.1	58.5	17.0	41.0	-1.3	-6.4	50.7	0.1	0.0	0.0			57.0	12.4	49.0	3.380	0.010	0.009	0.0002	0.178	0.152				
	Minimum	28.1	24.7	27.7	25.5	25.1	52.2	57.7	16.1	36.0	-1.3	-6.5	47.9	0.1	0.0	0.0			56.3	11.7	44.2	3.045	0.010	0.008	0.0002	0.171	0.146				
	2 x Std Dev	0.959	0.304	1.268	0.988	0.708	3.262	0.619	0.348	3.190	0.993	4.521	1.582	0.038	0.000	0.000			0.619	0.388	3.220	0.222	0.006	0.005	0.0001	0.129	0.110				
Number of Points Used*		58	58	58	58	58	58	58	58	58	58	58	58	58	58	58			58	58	58	58	58	58	58	58	58				
	* Backpulse points in box are not included																														

Figure E12: Steady state test run 1.22 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

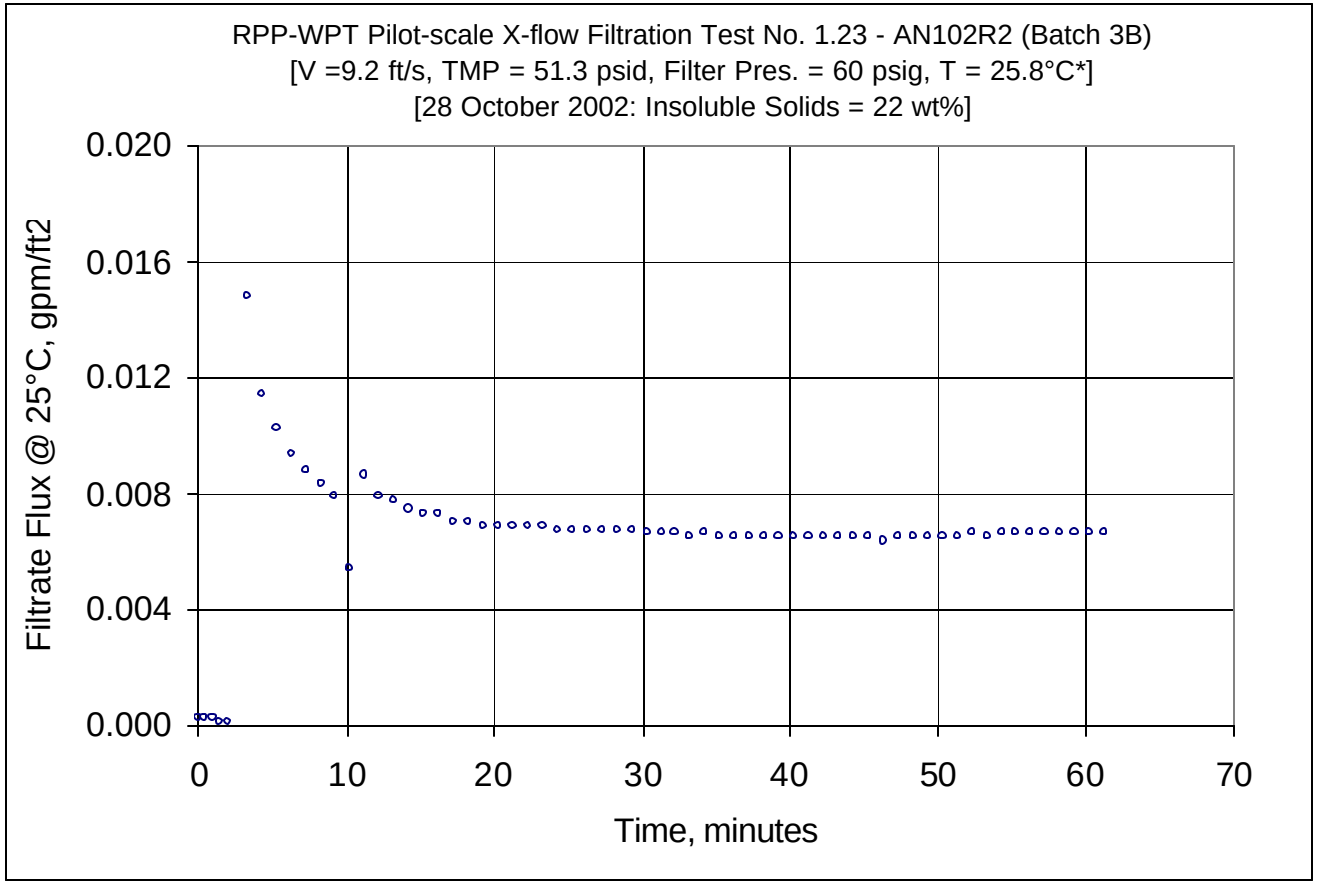


Figure E13: Steady state test run 1.23 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt%

		<<<<<<<<< Temperature Measurements >>>>>>>>>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>>>>>>>						<<<<<<<<< Flow Measurements >>>>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>														
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse															
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm															
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp															
Zeros																															
10/28/2002	8:15:03 AM	22.886	23.101	22	22.696	22.721	-0.133	0.071	-0.054	0.052	-0.333	0.367	-0.212	0.002	0.001	0															
10/28/2002	8:15:20 AM	22.886	23.101	22	22.696	22.721	-0.133	0.071	-0.054	0.052	-0.333	0.367	-0.212	0.002	0.001	0															
10/28/2002	8:15:21 AM	22.886	23.101	22.005	22.607	22.726	-0.133	0.071	-0.053	0.054	-0.367	0.37	-0.206	0.002	0.001	0															
10/28/2002	8:15:22 AM	22.88	23.095	22	22.601	22.715	-0.133	0.071	-0.053	0.054	-0.363	0.37	-0.208	0.002	0.001	0															
10/28/2002	8:15:23 AM	22.886	23.101	22	22.607	22.726	-0.131	0.071	-0.053	0.054	-0.336	0.367	-0.204	0.002	0.001	0															
10/28/2002	8:15:24 AM	22.886	23.101	22.005	22.696	22.721	-0.131	0.071	-0.053	0.054	-0.37	0.367	-0.21	0.002	0.001	0															
10/28/2002	8:15:25 AM	22.886	23.106	22	22.607	22.721	-0.133	0.071	-0.053	0.054	-0.347	0.367	-0.204	0.002	0.001	0															
10/28/2002	8:15:26 AM	22.886	23.106	22.011	22.602	22.731	-0.133	0.071	-0.053	0.052	-0.324	0.367	-0.208	0.002	0.001	0															
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	gpm	meter			
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	/ft2	day/bar			
10/28/2002	1:12:22 PM	26.835	25.288	25.429	25.722	25.315	37.249	61.016	16.251	21.892	17.738	100.056	37.176	0.002	0.001	0	0	0	59.5	9.1	29.5	2.032	0.000	0.000	0.0000	0.010	0.01			
10/28/2002	1:12:52 PM	26.828	25.301	25.447	25.785	25.333	29.014	60.857	16.034	14.071	26.013	99.06	37.119	0.002	0.001	0	0.50	0.00833	59.4	9.1	21.5	1.485	0.000	0.000	0.0000	0.014	0.01			
10/28/2002	1:13:22 PM	26.492	25.32	25.516	25.814	25.347	5.334	59.27	8.212	-1.885	48.194	61.479	40.565	0.002	0.001	0	1.00	0.01667	57.8	9.9	1.7	0.119	0.000	0.000	0.0002	0.170	0.15			
10/28/2002	1:13:52 PM	26.529	25.318	25.513	25.867	25.339	5.685	59.353	8.371	-1.651	47.955	0.506	40.565	0.002	0.001	0	1.50	0.025	57.9	9.9	2.0	0.139	0.000	0.000	0.0001	0.073	0.06			
10/28/2002	1:14:22 PM	26.639	25.332	25.522	25.886	25.354	41.416	59.541	9.311	32.915	12.426	0.564	40.338	0.469	0.001	0	2.00	0.03333	58.1	9.9	37.2	2.562	0.000	0.000	0.0000	0.004	0.00			
10/28/2002	1:14:52 PM	26.716	25.319	25.525	25.913	25.356	52.783	59.409	10.613	42.808	0.526	0.59	39.577	0.149	0.001	0	2.50	0.04167	57.9	9.7	47.8	3.295	0.022	0.022	0.0005	0.458	0.39			
10/28/2002	1:15:38 PM	26.729	25.323	25.538	25.942	25.354	53.305	59.815	11.799	41.965	0.289	0.622	39.072	0.101	0.001	0	3.27	0.05444	58.3	9.6	47.6	3.284	0.015	0.015	0.0003	0.311	0.27			
10/28/2002	1:16:38 PM	26.739	25.343	25.538	25.997	25.38	53.108	59.483	12.339	41.613	0.286	0.671	38.451	0.078	0.001	0	4.27	0.07111	58.0	9.4	47.4	3.265	0.012	0.011	0.0002	0.242	0.21			
10/28/2002	1:17:38 PM	26.745	25.359	25.559	26.083	25.406	53.52	59.835	12.961	41.31	0.292	0.703	38.086	0.07	0.001	0	5.27	0.08778	58.4	9.3	47.4	3.269	0.010	0.010	0.0002	0.217	0.18			
10/28/2002	1:18:38 PM	26.741	25.365	25.555	26.094	25.421	53.663	60.199	13.295	41.011	0.254	0.703	37.868	0.064	0.001	0	6.27	0.10444	58.7	9.3	47.3	3.264	0.010	0.009	0.0002	0.198	0.17			
10/28/2002	1:19:38 PM	26.777	25.391	25.576	26.125	25.453	53.866	60.276	13.639	40.772	0.254	0.726	37.312	0.06	0.001	0	7.27	0.12111	58.8	9.1	47.3	3.262	0.009	0.009	0.0002	0.186	0.16			
10/28/2002	1:20:38 PM	26.787	25.395	25.576	26.099	25.462	53.846	60.232	13.643	40.956	0.28	0.746	37.31	0.057	0.001	0	8.27	0.13778	58.8	9.1	47.4	3.268	0.008	0.008	0.0002	0.176	0.15			
10/28/2002	1:21:38 PM	26.782	25.396	25.566	26.085	25.468	53.524	59.988	13.673	40.475	0.269	0.764	36.966	0.054	0.001	0	9.27	0.15444	58.5	9.1	47.0	3.240	0.008	0.008	0.0002	0.169	0.14			
10/28/2002	1:22:38 PM	26.798	25.411	25.587	26.135	25.468	53.001	59.728	13.685	40.018	0.407	0.885	36.83	0.037	0.001	0	10.27	0.17111	58.3	9.0	46.5	3.207	0.006	0.006	0.0001	0.117	0.10			
10/28/2002	1:23:38 PM	26.673	25.422	25.602	26.166	25.479	57.934	59.685	14.068	44.749	-1.289	-6.22	36.939	0.059	0.001	0	11.27	0.18778	58.1	9.1	51.3	3.540	0.009	0.009	0.0002	0.168	0.14			
10/28/2002	1:24:38 PM	26.659	25.438	25.603	26.161	25.509	58.069	59.792	14.158	44.765	-1.292	-6.504	36.584	0.054	0.001	0	12.27	0.20444	58.3	9.0	51.4	3.545	0.008	0.008	0.0002	0.154	0.13			
10/28/2002	1:25:38 PM	26.655	25.449	25.619	26.168	25.531	57.638	59.26	13.94	44.544	-1.289	-6.484	36.578	0.053	0.001	0	13.27	0.22111	57.8	9.0	51.1	3.523	0.008	0.008	0.0002	0.152	0.13			
10/28/2002	1:26:38 PM	26.656	25.469	25.62	26.203	25.551	58.325	59.963	14.28	44.944	-1.289	-6.498	36.722	0.051	0.001	0	14.27	0.23778	58.5	9.0	51.6	3.560	0.008	0.007	0.0001	0.145	0.12			
10/28/2002	1:27:38 PM	26.655	25.468	25.624	26.227	25.575	58.713	60.712	14.718	44.565	-1.289	-6.504	36.794	0.05	0.001	0	15.27	0.25444	59.2	9.0	51.6	3.560	0.007	0.007	0.0001	0.142	0.12			
10/28/2002	1:28:38 PM	26.658	25.487	25.617	26.196	25.579	58.924	60.812	14.214	45.541	-1.289	-6.51	36.014	0.05	0.001	0	16.27	0.27111	59.3	8.8	52.2	3.601	0.007	0.007	0.0001	0.140	0.12			
10/28/2002	1:29:38 PM	26.656	25.505	25.655	26.199	25.602	57.752	59.643	14.932	43.582	-1.286	-6.518	37.073	0.048	0.001	0	17.27	0.28778	58.2	9.1	50.7	3.493	0.007	0.007	0.0001	0.139	0.12			
10/28/2002	1:30:38 PM	26.655	25.514	25.674	26.163	25.616	58.746	60.886	15.29	44.033	-1.289	-6.469	37.421	0.048	0.001	0	18.27	0.30444	59.4	9.2	51.4	3.543	0.007	0.007	0.0001	0.137	0.12			
10/28/2002	1:31:38 PM	26.675	25.539	25.704	26.228	25.651	58.274	60.222	14.919	44.184	-1.289	-6.475	37.276	0.047	0.001	0	19.27	0.32111	58.7	9.1	51.2	3.532	0.007	0.007	0.0001	0.134	0.11			
10/28/2002	1:32:38 PM	26.674	25.543	25.713	26.327	25.68	58.439	60.305	14.761	44.659	-1.289	-6.478	37.217	0.047	0.001	0	20.27	0.33778	58.8	9.1	51.5	3.554	0.007	0.007	0.0001	0.133	0.11			
10/28/2002	1:33:38 PM	26.688	25.572	25.717	26.341	25.714	58.483	60.553	14.948	44.114	-1.289	-6.475	37.062	0.047	0.001	0	21.27	0.35444	59.1	9.1	51.3	3.537	0.007	0.007	0.0001	0.134	0.11			
10/28/2002	1:34:38 PM	26.696	25.584	25.73	26.488	25.731	57.862	59.754	14.536	44.202	-1.289	-6.437	37.066	0.047	0.001	0	22.27	0.37111	58.3	9.1	51.0	3.518	0.007	0.007	0.0001	0.135	0.11			
10/28/2002	1:35:38 PM	26.715	25.609	25.745	26.523	25.776	58.586	60.748	14.886	44.471	-1.289	-6.434	37.178	0.047	0.001	0	23.27	0.38778	59.3	9.1	51.5	3.553	0.007	0.007	0.0001	0.133	0.11			
10/28/2002	1:36:38 PM	26.721	25.62	25.75	26.464	25.807	58.444	60.476	14.851	44.27	-1.292	-6.443	37.079	0.046	0.001	0	24.27	0.40444	59.0	9.1	51.4	3.541	0.007	0.007	0.0001	0.131	0.11			
10/28/2002	1:37:38 PM	26.726	25.635	25.76	26.419	25.817	58.466	60.539	14.809	44.35	-1.289	-6.44	37.121	0.046	0.001	0	25.27	0.42111	59.1	9.1	51.4	3.544	0.007	0.007	0.0001	0.131	0.11			
10/28/2002	1:38:38 PM	26.754	25.663	25.789	26.522	25.86	58.392	60.501	14.813	44.34	-1.292	-6.446	37.222	0.046	0.001	0	26.27	0.43778	59.0	9.1	51.4	3.542	0.007	0.007	0.0001	0.131	0.11			
10/28/2002	1:39:38 PM	26.763	25.692	25.793	26.596	25.894	58.321	60.224	15.023	43.967	-1.292	-6.446	37.205	0.046	0.001	0	27.27	0.45444	58.8	9.1	51.1	3.526	0.007	0.007	0.0001	0.131	0.11			
10/28/2002	1:40:38 PM	26.78	25.704	25.804	26.692	25.921	57.719	59.943	14.716	43.84	-1.292	-6.449	37.079	0.046	0.001	0	28.27	0.47111	58.5	9.1	50.8	3.501	0.007	0.007	0.0001	0.132	0.11			
10/28/2002	1:41:38 PM	26.792	25.721	25.807	26.74	25.943	58.274	60.69	14.852	43.975	-1.289	-6.449	37.249	0.046	0.001	0	29.27	0.48778	59.2	9.1	51.1	3.525	0.007	0.007	0.0001	0.131	0.11			
10/28/2002	1:42:38 PM	26.83	25.749	25.854	26.872	25.976	58.64	60.942	14.846	44.419	-1.286	-6.408	37.312	0.046	0.001	0	30.27	0.50444	59.5	9.1	51.5	3.553	0.007	0.007	0.0001	0.130	0.11			
10/28/2002	1:43:38 PM	26.825	25.759	25.85	26.752	25.981	58.166	60.319	14.842	44.147	-1.289	-6.414	37.241	0.046	0.001	0	31.27	0.52111	58.8	9.1	51.2	3.527	0.007	0.007	0.0001	0.131	0.11			
10/28/2002	1:44:38 PM	26.838	25.762	25.853	26.771	25.974	58.564	60.981	14.94	44.229	-1.286	-6.417	37.234	0.046	0.001	0	32.27	0.53778	59.5	9.1	51.4	3.544	0.007	0.007	0.0001	0.130	0.11			
10/28/2002	1:45:38 PM	26.858	25.777	25.857	26.8	25.984	58.067	60.268	14.845	44.065	-1.289	-6.417	37.159	0.045	0.001	0	33.27	0.55444	58.8	9.1	51.1	3.521	0.007	0.007	0.0001	0.128	0.11			
10/28/2002	1:46:38 PM	26.888	25.818	25.888	26.816	26.005	58.61	60.834	15.036	44.303	-1.286	-6.42	37.31	0.046	0.001	0	34.27	0.57111	59.4	9.1	51.4	3.544	0.007	0.007	0.0001	0.130	0.11			
10/28/2002	1:47:38 PM	26.888	25.817	25.872	26.76	26.029	58.711	60.934	15.061	44.485	-1.289	-6.42	37.473	0.045	0.001	0	35.27	0.58778	59.5	9.2	51.6	3.558	0.007	0.007	0.0001	0.127	0.11			
10/28/2002	1:48:38 PM	26.898	25.837	25.897	26.86	26.059	58.533	60.886	14.977	44.245	-1.289	-6.42	37.432	0.045	0.001	0	36.27	0.60444	59.4	9.2	51.4	3.543	0.007	0.007	0.0001	0.127	0.11			
10/28/2002	1:49:38 PM	26.918	25.857	25.918	26.925	26.104	58.456	60.654	14.965	44.293	-1.289	-6.42	37.522	0.045	0.001	0	37.27	0.62111	59.2	9.2	51.4	3.542	0.007	0.007	0.0001	0.127	0.11			
10/28/2002	1:50:38 PM	26.947	25.881	25.947	26.949	26.108	58.547	60.646	14.877	44.604	-1.286	-6.42	37.438	0.045	0.001	0	38.27	0.63778	59.2	9.2	51.6	3.556	0.007	0.007	0.0001	0.127	0.11			
10/28/2002	1:51:38 PM	26.953	25.887	25.943	26.876	26.134	58.543	60.95	14.936	44.321	-1.289	-6.429	37.48	0.045	0.001	0	39.27	0.65444	59.5	9.2	51.4	3.546	0.007	0.007	0.0001	0.127	0.11			
10/28/2002	1:52:38 PM	26.967	25.926	25.987	26.869	26.163	58.551	60.998	14.98	44.274	-1.289	-6.423	37.387	0.045	0.001	0	40.27	0.67111	59.5	9.2	51.4	3.545	0.007	0.007	0.0001	0.127	0.11			
10/28/2002	1:53:38 PM	26.974	25.918	25.954	26.832	26.166	59.096	61.376	15.075	44.825	-1.289	-6.423	37.561	0.045	0.001	0	41.27	0.68778	59.9	9.2	52.0	3.582	0.007	0.007	0.0001	0.126	0.11			
10/28/2002	1:54:38 PM	26.991	25.945	25.981	26.759	26.179	58.92	61.236	15.091	44.661	-1.289	-6.423	37.534	0.045	0.001	0	42.27	0.70444	59.8	9.2	51.8	3.571	0.007	0.007	0.0001	0.126	0.11			
10/28/2002	1:55:38 PM	26.98	25.934	25.955	26.697	26.186	58.367	60.698	14.98	44.252	-1.289	-6.426	37.788	0.045	0.001	0	43.27	0.72111	59.2	9.3	51.3	3.538	0.007	0.007	0.0001	0.127	0.11			
10/28/2002	1:56:38 PM	27.015	25.969	25.995	26.772	26.221	59.206	61.645	15.115	44.733	-1.286	-6.446	36.154	0.045	0.001	0	44.27	0.73778	60.2	8.9	52.0	3.583	0.007	0.007	0.0001	0.126	0.11			
10/28/2002	1:57:38 PM	27.019	25.973	25.989	26.817	26.226	59.485	62.123	15.388	44.593	-1.289	-6.411	37.534	0.045	0.001	0	45.27	0.75444	60.7	9.2	52.0	3.588	0.007	0.007	0.0001	0.125	0.11			
10/28/2002	1:58:38 PM	27.029	25.993	26.009	26.841	26.235	58.887	61.49	15.138	44.374	-1.286	-6.423	37.578	0.044	0.001	0	46.27	0.77111	60.0	9.2	51.6	3.560	0.007	0.006	0.0001	0.124	0.11			
10/28/2002	1:59:38 PM	27.043	26.002	26.023	26.731	26.219	58.653	61.019	15.025	44.473	-1.292	-6.429	37.599	0.045	0.001	0	47.27	0.78778	59.5	9.2	51.6	3.555	0.007	0.007	0.0001	0.126	0.11			
10/28/2002	2:00:38 PM	27.042	26.007	26.022	26.715	26.204	59.448	61.831	15.36	44.808	-1.289	-6.429	37.738	0.045	0.001	0	48.27	0.80444	60.4	9.2	52.1	3.594	0.007	0.007	0.0001	0.125	0.11			
10/28/2002	2:01:38 PM	27.051	26.01	26.036	26.799	26.207	59.657	61.312	14.754	44.675	-1.289	-6.426	37.736	0.045	0.001	0	49.27	0.82111	59.8	9.2	51.7	3.562	0.007	0.007	0.0001	0.126	0.11			
10/28/2002	2:02:38 PM	27.061	26.02	26.036	26.709	26.248	58.41	60.944	14.908	44.168	-1.295	-6.431	37.754	0.045	0.001	0	50.27	0.83778	59.5	9.3	51.3	3.536	0.007	0.007	0.0001	0.127	0.11			
10/28/2002	2:03:38 PM	27.085	26.044	26.085	26.782	26.246	59.485	62.154	15.456	44.679	-1.286	-6.426	37.637	0.045	0.001	0	51.27	0.85444	60.7	9.2	52.1	3.591	0.007	0.007	0.0001	0.125	0.11			
10/28/2002	2:04:38 PM	27.083	26.033	26.083	26.846	26.25	60.098	62.882	15.599	45.152	-1.289	-6.426	38.48	0.046	0.001	0	52.27	0.87111	61.4	9.4	52.6	3.628	0.007	0.007	0.0001	0.126	0.11			
10/28/2002	2:05:38 PM	27.097	26.061	26.102	26.824	26.258	61.122	63.929	15.777	45.955	-1.289	-6.423	38.688	0.045	0.001	0	53.27	0.88778	62.5	9.5	53.5	3.691	0.007	0.007	0.0001	0.121	0.10			
10/28/2002	2:06:38 PM	27.089	26.049	26.095	26.752	26.256	60.537	63.112	15.691	45.531	-1.292	-6.423	38.497	0.046	0.001	0	54.27	0.90444	61.6	9.4	53.0	3.657	0.007	0.007	0.0001	0.125	0.11			
10/28/2002	2:07:38 PM	27.103	26.052	26.108	26.716	26.205	62.076	64.72	16.008	46.849	-1.292	-6.42	38.862	0.046	0.001	0	55.27	0.92111	63.2	9.5	54.5	3.755	0.007	0.007	0.0001	0.122	0.10			
10/28/2002	2:08:38 PM	27.112	26.056	26.122	26.679	26.198	61.643	64.147	15.745	46.774	-1.289	-6.42	38.843	0.046	0.001	0	56.27	0.93778	62.7	9.5	54.2	3.737	0.007	0.007	0.0001	0.123	0.10			
10/28/2002	2:09:38 PM	27.13	26.07	26.14	26.693	26.202	61.78	64.38	16.013	46.646	-1.289	-6.42	38.608	0.046	0.001	0	57.27	0.95444	62.9	9.5	54.2	3.734	0.007	0.007	0.0001	0.123	0.10			
10/28/2002	2:10:38 PM	27.138	26.072	26.148	26.771	26.209	61.714	64.401	15.911	46.577	-1.292	-6.42	39.017	0.046	0.001	0	58.27	0.97111	62.9	9.6	54.1	3.733	0.007	0.007	0.0001	0.123	0.10			
10/28/2002	2:11:38 PM	27.139	26.078	26.164	26.722	26.215	62.292	65.005	16.137	46.991	-1.292	-6.42	38.403	0.046	0.001	0	59.27	0.98778	63.5	9.4	54.6	3.767	0.007	0.007	0.0001	0.121	0.10			
10/28/2002	2:12:38 PM	27.139	26.058	26.154	26.737	26.205	61.318	64.004	15.7	46.368	-1.289	-6.417	39.105	0.046	0.001	0	60.27	1.00444	62.5	9.6	53.8	3.712	0.007	0.007	0.0001	0.123	0.10			
10/28/2002	2:13:38 PM	27.166	26.081	26.192	26.749	26.213	60.583	63.302	15.644	45.693	-1.292	-6.423	38.522	0.046	0.001	0	61.27	1.02111	61.8	9.4	53.1	3.664	0.007	0.007	0.0001	0.125	0.11			
	Averages	26.9	25.7	25.8	26.6	25.9	58.3	61.2	14.8	44.3	-1.1	-5.5	37.5	0.0	0.0	0.0			59.7	9.2	51.3	3.536	0.007	0.007	0.0001	0.140	0.119			
	Maximum	27.2	26.1	26.2	26.9	26.3	62.3	65.0	16.1	47.0	0.4	0.9	39.1	0.1	0.0	0.0			63.5	9.6	54.6	3.767	0.015	0.015	0.0003	0.311	0.266			
	Median	26.8	25.8	25.9	26.7	26.0	58.5	60.7	14.9	44.4	-1.3	-6.4	37.4	0.0	0.0	0.0			59.3	9.2	51.4	3.545	0.007	0.007	0.0001	0.130	0.111			
	Minimum	26.7	25.3	25.5	25.9	25.4	53.0	59.3	11.8	40.0	-1.3	-6.5	36.0	0.0	0.0	0.0			57.8	8.8	46.5	3.207	0.006	0.005	0.0001	0.117	0.099			
	2 x Std Dev	0.334	0.499	0.396	0.592	0.604	4.449	2.879	1.672	3.031	1.095	4.905	1.398	0.019	0.000	0.000			2.880	0.343	3.715	0.256	0.003	0.003	0.0001	0.065	0.055			
Number of Points Used*		59	59	59	59	59	59	59	59	59	59	59	59	59	59	59			59	59	59	59	59	59	59	59	59				
	* Backpulse points in box are not included																														

Figure E14: Steady state test run 1.23 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

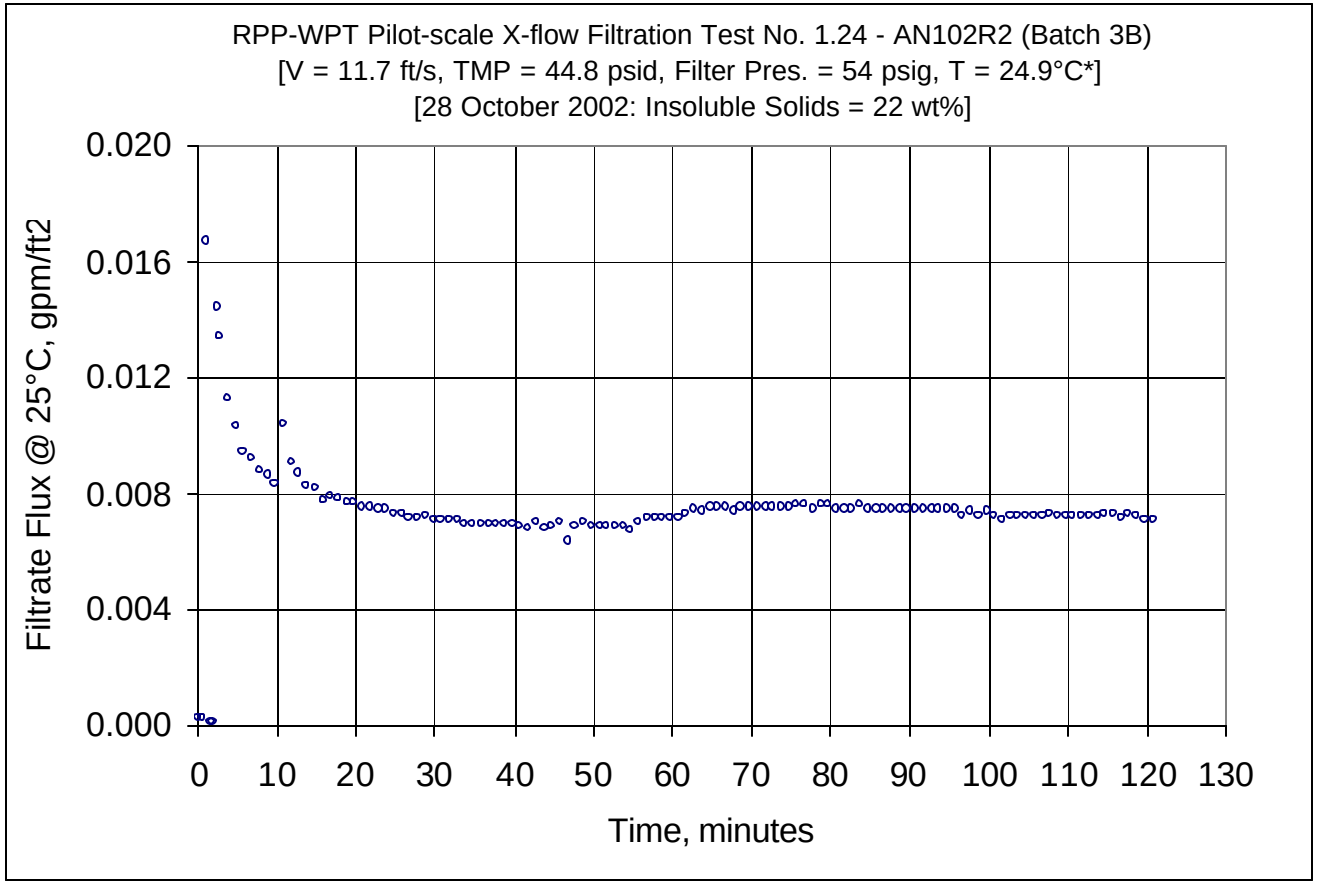


Figure E15: Steady state test run 1.24 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt%

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
10/28/2002	8:15:03 AM	22.886	23.101	22	22.596	22.721	-0.133	0.071	-0.054	0.052	-0.333	0.367	-0.212	0.002	0.001	0			Filter Surface	6.707	FT2						
10/28/2002	8:15:20 AM	22.886	23.101	22	22.596	22.721	-0.133	0.071	-0.054	0.052	-0.333	0.367	-0.212	0.002	0.001	0			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
10/28/2002	8:15:21 AM	22.886	23.101	22.005	22.607	22.726	-0.133	0.071	-0.053	0.054	-0.367	0.37	-0.206	0.002	0.001	0											
10/28/2002	8:15:22 AM	22.88	23.095	22	22.601	22.715	-0.133	0.071	-0.053	0.054	-0.353	0.37	-0.208	0.002	0.001	0			Note: Gauge Pressure P1 is approximately 1.4 psig								
10/28/2002	8:15:23 AM	22.886	23.101	22	22.607	22.726	-0.131	0.071	-0.053	0.054	-0.336	0.367	-0.204	0.002	0.001	0											
10/28/2002	8:15:24 AM	22.886	23.101	22.005	22.596	22.721	-0.131	0.071	-0.053	0.054	-0.37	0.367	-0.21	0.002	0.001	0			Pressure P1is corrected for 40.88 inches of water tubing								
10/28/2002	8:15:25 AM	22.886	23.106	22	22.607	22.721	-0.133	0.071	-0.053	0.054	-0.347	0.367	-0.204	0.002	0.001	0			VVVV					< Filtrate Flux <<	PERMIABILITY		>>
10/28/2002	8:15:26 AM	22.886	23.106	22.011	22.602	22.731	-0.133	0.071	-0.053	0.052	-0.324	0.367	-0.208	0.002	0.001	0								at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
10/28/2002	2:20:08 PM	27.264	26.124	26.445	26.707	26.246	40.952	56.238	22.396	19.393	9.264	95.95	47.256	0.002	0.001	0	0	0	54.8	11.6	30.2	2.080	0.000	0.000	0.0000	0.009	0.01
10/28/2002	2:20:38 PM	26.709	26.108	26.414	26.761	26.24	-7.426	54.467	7.243	-18.522	69.347	71.46	38.757	0.002	0.001	1.021	0.50	0.00833	53.0	9.5	-13.0	-0.895	0.000	0.000	0.0000	-0.022	-0.02
10/28/2002	2:21:08 PM	26.819	26.103	26.554	26.756	26.23	14.452	51.024	11.853	3.577	30.838	0.497	50.299	0.117	0.001	0	1.00	0.01667	49.6	12.3	9.0	0.622	0.017	0.017	0.0019	1.853	1.58
10/28/2002	2:21:38 PM	27.252	26.097	26.558	26.726	26.224	43.709	51.508	13.091	31.275	1.65	0.564	49.896	0.353	0.001	-0.001	1.50	0.025	50.0	12.2	37.5	2.585	0.000	0.000	0.0000	0.004	0.00
10/28/2002	2:22:08 PM	27.322	26.102	26.558	26.741	26.214	44.923	51.314	13.725	32.122	0.332	0.573	50.163	0.121	0.001	0	2.00	0.03333	49.8	12.3	38.5	2.656	0.000	0.000	0.0000	0.004	0.00
10/28/2002	2:22:38 PM	27.346	26.096	26.532	26.75	26.208	45.08	51.496	14.165	31.742	0.283	0.593	49.359	0.101	0.001	0	2.50	0.04167	50.0	12.1	38.4	2.648	0.015	0.014	0.0004	0.376	0.32
10/28/2002	2:22:53 PM	27.377	26.107	26.533	26.751	26.214	45.173	51.664	14.519	31.297	0.257	0.602	49.433	0.094	0.001	0	2.75	0.04583	50.2	12.1	38.2	2.636	0.014	0.013	0.0004	0.351	0.30
10/28/2002	2:23:53 PM	27.415	26.11	26.491	26.809	26.233	44.724	51.107	14.787	30.712	0.248	0.634	49.164	0.079	0.001	0	3.75	0.0625	49.6	12.0	37.7	2.601	0.012	0.011	0.0003	0.299	0.25
10/28/2002	2:24:53 PM	27.428	26.118	26.483	26.836	26.195	45.236	51.591	15.327	30.591	0.248	0.66	48.791	0.072	0.001	0	4.75	0.07917	50.1	12.0	37.9	2.614	0.011	0.010	0.0003	0.272	0.23
10/28/2002	2:25:53 PM	27.406	26.096	26.317	26.685	26.184	44.794	51.13	15.451	30.139	0.257	0.683	48.743	0.066	0.001	-0.001	5.75	0.09583	49.7	11.9	37.5	2.583	0.010	0.009	0.0003	0.253	0.22
10/28/2002	2:26:53 PM	27.401	26.115	26.256	26.744	26.208	44.977	51.511	15.71	29.948	0.286	0.726	48.592	0.064	0.001	0	6.75	0.1125	50.0	11.9	37.5	2.583	0.010	0.009	0.0002	0.246	0.21
10/28/2002	2:27:53 PM	27.35	26.105	26.2	26.753	26.222	44.633	51.08	15.598	29.772	0.289	0.732	48.353	0.061	0.001	0	7.75	0.12917	49.6	11.8	37.2	2.565	0.009	0.009	0.0002	0.236	0.20
10/28/2002	2:28:53 PM	27.319	26.104	26.165	26.683	26.186	44.273	50.865	15.555	29.287	0.292	0.755	48.311	0.06	0.001	0	8.75	0.14583	49.4	11.8	36.8	2.536	0.009	0.009	0.0002	0.235	0.20
10/28/2002	2:29:53 PM	27.286	26.101	26.121	26.669	26.173	44.488	50.882	15.637	29.557	0.286	0.773	48.562	0.058	0.001	0	9.75	0.1625	49.4	11.9	37.0	2.553	0.009	0.008	0.0002	0.226	0.19
10/28/2002	2:30:53 PM	27.22	26.115	26.105	26.743	26.187	48.887	51.144	15.732	33.791	-1.292	-6.133	48.151	0.072	0.001	0	10.75	0.17917	49.7	11.8	41.3	2.850	0.011	0.010	0.0003	0.252	0.21
10/28/2002	2:31:53 PM	27.182	26.116	26.057	26.804	26.178	49.204	51.391	15.659	34.161	-1.289	-6.264	47.438	0.063	0.001	0	11.75	0.19583	49.9	11.6	41.7	2.874	0.009	0.009	0.0002	0.219	0.19
10/28/2002	2:32:53 PM	27.137	26.131	26.002	26.75	26.163	48.094	49.955	15.413	33.523	-1.289	-6.368	46.419	0.06	0.001	0	12.75	0.2125	48.5	11.4	40.8	2.814	0.009	0.009	0.0002	0.213	0.18
10/28/2002	2:33:53 PM	27.073	26.108	25.858	26.766	26.16	47.21	49.402	14.668	33.224	-1.289	-6.342	45.473	0.057	0.001	0	13.75	0.22917	47.9	11.1	40.2	2.773	0.008	0.008	0.0002	0.206	0.18
10/28/2002	2:34:53 PM	27.045	26.104	25.705	26.772	26.166	47.245	49.113	14.565	33.562	-1.292	-6.431	45.422	0.056	0.001	0	14.75	0.24583	47.6	11.1	40.4	2.786	0.008	0.008	0.0002	0.203	0.17
10/28/2002	2:35:53 PM	27.035	26.119	25.605	26.792	26.186	47.441	49.479	14.743	33.443	-1.292	-6.478	45.269	0.053	0.001	0	15.75	0.2625	48.0	11.1	40.4	2.788	0.008	0.008	0.0002	0.192	0.16
10/28/2002	2:36:53 PM	26.982	26.121	25.512	26.894	26.188	47.162	49.177	14.598	33.476	-1.289	-6.495	44.693	0.054	0.001	0	16.75	0.27917	47.7	11.0	40.3	2.780	0.008	0.008	0.0002	0.197	0.17
10/28/2002	2:37:53 PM	26.968	26.133	25.438	27.046	26.19	47.307	49.467	14.892	33.128	-1.289	-6.515	45.315	0.053	0.001	0	17.75	0.29583	48.0	11.1	40.2	2.773	0.008	0.008	0.0002	0.194	0.17
10/28/2002	2:38:53 PM	26.935	26.134	25.36	27.122	26.192	47.495	49.582	14.904	33.183	-1.289	-6.527	45.196	0.052	0.001	0	18.75	0.3125	48.1	11.1	40.3	2.781	0.008	0.008	0.0002	0.190	0.16
10/28/2002	2:39:53 PM	26.896	26.135	25.271	27.003	26.177	47.843	49.92	14.858	33.752	-1.292	-6.527	45.2	0.052	0.001	0	19.75	0.32917	48.4	11.1	40.8	2.813	0.008	0.008	0.0002	0.189	0.16
10/28/2002	2:40:53 PM	26.832	26.136	25.182	26.919	26.163	47.891	49.911	14.707	33.832	-1.289	-6.527	44.772	0.051	0.001	0	20.75	0.34583	48.4	11.0	40.9	2.817	0.008	0.008	0.0002	0.185	0.16
10/28/2002	2:41:53 PM	26.799	26.143	25.103	26.941	26.2	47.51	49.665	14.611	33.654	-1.292	-6.536	44.779	0.051	0.001	0	21.75	0.3625	48.2	11.0	40.6	2.798	0.008	0.008	0.0002	0.187	0.16
10/28/2002	2:42:53 PM	26.735	26.134	25.029	26.947	26.176	47.833	49.88	14.576	34.018	-1.289	-6.536	44.659	0.05	0.001	0	22.75	0.37917	48.4	10.9	40.9	2.822	0.007	0.007	0.0002	0.182	0.15
10/28/2002	2:43:53 PM	26.673	26.137	24.967	26.795	26.179	48.436	50.675	14.85	34.284	-1.289	-6.536	44.711	0.05	0.001	0	23.75	0.39583	49.2	11.0	41.4	2.852	0.007	0.007	0.0002	0.180	0.15
10/28/2002	2:44:53 PM	26.614	26.133	24.883	26.712	26.17	47.794	49.808	14.546	34.112	-1.289	-6.541	44.42	0.049	0.001	0	24.75	0.4125	48.3	10.9	41.0	2.824	0.007	0.007	0.0002	0.179	0.15
10/28/2002	2:45:53 PM	26.584	26.153	24.848	26.806	26.2	47.483	49.785	14.415	33.746	-1.286	-6.495	44.342	0.049	0.001	0	25.75	0.42917	48.3	10.9	40.6	2.800	0.007	0.007	0.0002	0.181	0.15
10/28/2002	2:46:53 PM	26.542	26.141	24.766	26.79	26.214	48.643	50.695	14.779	34.71	-1.292	-6.507	44.277	0.048	0.001	0	26.75	0.44583	49.2	10.9	41.7	2.873	0.007	0.007	0.0002	0.173	0.15
10/28/2002	2:47:53 PM	26.511	26.15	24.72	26.808	26.227	48.119	50.327	14.624	34.301	-1.292	-6.51	44.252	0.048	0.001	0	27.75	0.4625	48.9	10.8	41.2	2.841	0.007	0.007	0.0002	0.175	0.15
10/28/2002	2:48:53 PM	26.463	26.157	24.667	26.91	26.219	48.218	50.199	14.645	34.446	-1.289	-6.51	44.328	0.048	0.001	0	28.75	0.47917	48.7	10.9	41.3	2.850	0.007	0.007	0.0002	0.175	0.15
10/28/2002	2:49:53 PM	26.398	26.137	24.596	26.965	26.219	47.744	49.826	14.437	34.137	-1.289	-6.51	44.351	0.047	0.001	0	29.75	0.49583	48.4	10.9	40.9	2.823	0.007	0.007	0.0002	0.173	0.15
10/28/2002	2:50:53 PM	26.374	26.148	24.567	27.011	26.22	47.849	50.168	14.555	33.824	-1.286	-6.507	44.38	0.047	0.001	0	30.75	0.5125	48.7	10.9	40.8	2.816	0.007	0.007	0.0002	0.174	0.15
10/28/2002	2:51:53 PM	26.342	26.15	24.5	26.834	26.223	49.034	51.308	14.88	34.915	-1.292	-6.515	44.282	0.047	0.001	0	31.75	0.52917	49.8	10.9	42.0	2.894	0.007	0.007	0.0002	0.169	0.14
10/28/2002	2:52:53 PM	26.327	26.176	24.511	26.73	26.203	48.69	50.985	14.732	34.581	-1.289	-6.513	44.393	0.047	0.001	0	32.75	0.54583	49.5	10.9	41.6	2.871	0.007	0.007	0.0002	0.171	0.15
10/28/2002	2:53:53 PM	26.283	26.172	24.462	26.731	26.229	48.063	50.232	14.524	34.446	-1.289	-6.513	44.625	0.046	0.001	0	33.75	0.5625	48.8	10.9	41.3	2.845	0.007	0.007	0.0002	0.169	0.14
10/28/2002	2:54:53 PM	26.244	26.163	24.402	26.791	26.25	48.226	50.47	14.664	34.194	-1.292	-6.515	44.464	0.046	0.001	0	34.75	0.57917	49.0	10.9	41.2	2.841	0.007	0.007	0.0002	0.169	0.14
10/28/2002	2:55:53 PM	26.222	26.176	24.385	26.944	26.278	48.618	50.96	14.691	34.536	-1.289	-6.515	44.72	0.046	0.001	0	35.75	0.59583	49.5	11.0	41.6	2.867	0.007	0.007	0.0002	0.168	0.14
10/28/2002	2:56:53 PM	26.209	26.188	24.377	27.046	26.3	48.282	50.544	14.604	34.614	-1.289	-6.515	44.55	0.046	0.001	0	36.75	0.6125	49.1	10.9	41.4	2.858	0.007	0.007	0.0002	0.168	0.14
10/28/2002	2:57:53 PM	26.181	26.189	24.344	27.082	26.312	47.881	50.261	14.535	34.135	-1.289	-6.515	44.485	0.046	0.001	0	37.75	0.62917	48.8	10.9	41.0	2.827	0.007	0.007	0.0002	0.170	0.14
10/28/2002	2:58:53 PM	26.171	26.205	24.344	27.138	26.307	47.99	50.102	14.545	34.319	-1.286	-6.513	44.185	0.046	0.001	0	38.75	0.64583	48.6	10.8	41.2	2.837	0.007	0.007	0.0002	0.170	0.14
10/28/2002	2:59:53 PM	26.142	26.201	24.31	27.104	26.313	47.499	49.963	14.531	33.637	-1.289	-6.518	44.076	0.046	0.001	0	39.75	0.6625	48.5	10.8	40.6	2.797	0.007	0.007	0.0002	0.172	0.15
10/28/2002	3:00:53 PM	26.106	26.185	24.264	26.788	26.227	48.046	50.358	14.711	33.938	-1.289	-6.521	45.741	0.045	0.001	0	40.75	0.67917	48.9	11.2	41.0	2.826	0.007	0.007	0.0002	0.167	0.14
10/28/2002	3:01:53 PM	26.092	26.195	24.269	26.819	26.223	48.804	51.246	14.914	34.491	-1.289	-6.521	43.94	0.045	0.001	0	41.75	0.69583	49.8	10.8	41.6	2.871	0.007	0.007	0.0002	0.164	0.14
10/28/2002	3:02:53 PM	26.066	26.209	24.248	26.948	26.237	48.177	50.631	14.711	34.116	-1.289	-6.518	44.642	0.046	0.001	0	42.75	0.7125	49.2	10.9	41.1	2.837	0.007	0.007	0.0002	0.170	0.14
10/28/2002	3:03:53 PM	26.057	26.22	24.274	26.929	26.273	49.038	51.31	14.832	35.054	-1.286	-6.515	44.506	0.045	0.001	0	43.75	0.72917	49.6	10.9	42.0	2.899	0.007	0.007	0.0002	0.163	0.14
10/28/2002	3:04:53 PM	26.034	26.213	24.232	26.846	26.29	49.043	51.568	14.925	34.751	-1.295	-6.527	44.787	0.045	0.001	-0.001	44.75	0.74583	50.1	11.0	41.9	2.889	0.007	0.007	0.0002	0.164	0.14
10/28/2002	3:05:53 PM	26.025	26.238	24.247	26.857	26.316	50.741	53.242	15.371	36.108	-1.289	-6.518	46.104	0.046	0.001	0	45.75	0.7625	51.8	11.3	43.4	2.994	0.007	0.007	0.0002	0.161	0.14
10/28/2002	3:06:53 PM	25.983	26.232	24.231	26.78	26.334	48.558	51.053	14.763	34.446	-1.289	-6.496	44.615	0.042	0.001	0	46.75	0.77917	49.6	10.9	41.5	2.861	0.006	0.006	0.0002	0.154	0.13
10/28/2002	3:07:53 PM	25.977	26.241	24.23	26.914	26.338	48.268	50.9	14.678	34.317	-1.289	-6.486	44.342	0.045	0.001	0	47.75	0.79583	49.4	10.9	41.3	2.847	0.007	0.007	0.0002	0.166	0.14
10/28/2002	3:08:53 PM	25.958	26.237	24.206	26.98	26.339	48.895	51.062	14.799	34.907	-1.289	-6.507	44.835	0.046	0.001	0	48.75	0.8125	49.6	11.0	41.9	2.889	0.007	0.007	0.0002	0.167	0.14
10/28/2002	3:09:53 PM	25.949	26.243	24.191	26.996	26.36	48.755	51.281	14.84	34.616	-1.292	-6.568	44.833	0.045	0.001	0	49.75	0.82917	49.8	11.0	41.7	2.874	0.007	0.007	0.0002	0.165	0.14
10/28/2002	3:10:53 PM	25.936	26.245	24.174	27.148	26.378	49.227	51.784	14.878	35.056	-1.295	-6.573	45.076	0.045	0.001	0	50.75	0.84583	50.3	11.0	42.1	2.906	0.007	0.007	0.0002	0.163	0.14
10/28/2002	3:11:53 PM	25.93	26.259	24.173	27.257	26.381	49.662	52.241	15.068	35.193	-1.292	-6.568	45.364	0.045	0.001	0	51.75	0.8625	50.8	11.1	42.4	2.925	0.007	0.007	0.0002	0.162	0.14
10/28/2002	3:12:53 PM	25.923	26.267	24.161	27.329	26.399	48.813	51.289	14.749	34.951	-1.292	-6.57	44.774	0.045	0.001	0	52.75	0.87917	49.8	11.0	41.9	2.888	0.007	0.007	0.0002	0.164	0.14
10/28/2002	3:13:53 PM	25.927	26.275	24.169	27.373	26.413	50.445	53.068	15.261	35.82	-1.292	-6.57	45.236	0.045	0.001	0	53.75	0.89583	51.6	11.1	43.1	2.974	0.007	0.007	0.0002	0.159	0.14
10/28/2002	3:14:53 PM	25.925	26.274	24.168	27.362	26.436	50.072	52.524	15.237	35.637	-1.292	-6.539	45.338	0.044	0.001	0	54.75	0.9125	51.1	11.1	42.9	2.955	0.007	0.007	0.0002	0.157	0.13
10/28/2002	3:15:53 PM	25.909	26.283	24.177	27.41	26.47	51.714	54.237	15.707	36.708	-1.289	-6.521	46.163	0.046	0.001	0	55.75	0.92917	52.8	11.3	44.2	3.048	0.007	0.007	0.0002	0.159	0.14

Figure E16-1: Steady state test run 1.24 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

10/28/2002	3:16:53 PM	25.924	26.297	24.191	27.45	26.515	51.368	53.815	15.531	36.827	-1.292	-6.524	46.253	0.047	0.001	0	56.75	0.94583	52.3	11.3	44.1	3.040	0.007	0.007	0.0002	0.163	0.14
10/28/2002	3:17:53 PM	25.944	26.343	24.242	27.416	26.555	52.437	55.019	15.966	37.183	-1.289	-6.521	46.664	0.047	0.001	0	57.75	0.9625	53.5	11.4	44.8	3.089	0.007	0.007	0.0002	0.160	0.14
10/28/2002	3:18:53 PM	25.933	26.357	24.246	27.434	26.574	51.959	54.603	15.76	36.798	-1.292	-6.524	47.226	0.047	0.001	0	58.75	0.97917	53.1	11.6	44.4	3.060	0.007	0.007	0.0002	0.161	0.14
10/28/2002	3:19:53 PM	25.927	26.36	24.265	27.423	26.583	52.607	55.156	16.022	37.4	-1.292	-6.524	46.996	0.047	0.001	0	59.75	0.99583	53.7	11.5	45.0	3.103	0.007	0.007	0.0002	0.159	0.14
10/28/2002	3:20:53 PM	25.93	26.379	24.283	27.422	26.666	53.172	55.739	16.105	37.973	-1.289	-6.524	47.174	0.047	0.001	0	60.75	1.0125	54.3	11.6	45.6	3.142	0.007	0.007	0.0002	0.157	0.13
10/28/2002	3:21:53 PM	25.921	26.375	24.294	27.433	26.572	54.241	56.951	16.503	38.471	-1.292	-6.518	47.276	0.048	0.001	0	61.75	1.02917	55.5	11.6	46.4	3.196	0.007	0.007	0.0002	0.157	0.13
10/28/2002	3:22:53 PM	25.933	26.392	24.336	27.42	26.584	54.78	57.448	16.538	39.07	-1.289	-6.513	48.115	0.049	0.001	0	62.75	1.04583	56.0	11.8	46.9	3.235	0.007	0.007	0.0002	0.159	0.13
10/28/2002	3:23:53 PM	25.938	26.412	24.376	27.444	26.594	54.974	57.706	16.734	38.917	-1.289	-6.515	48.568	0.049	0.001	0	63.75	1.0625	56.2	11.9	46.9	3.237	0.007	0.007	0.0002	0.158	0.13
10/28/2002	3:24:53 PM	25.945	26.414	24.398	27.371	26.621	55.457	58.124	16.917	39.349	-1.289	-6.513	48.376	0.05	0.001	0	64.75	1.07917	56.7	11.9	47.4	3.268	0.007	0.008	0.0002	0.160	0.14
10/28/2002	3:25:53 PM	25.948	26.412	24.407	27.395	26.639	56.033	58.702	17.052	39.758	-1.292	-6.518	48.667	0.05	0.001	0	65.75	1.09583	57.2	11.9	47.9	3.302	0.007	0.008	0.0002	0.158	0.13
10/28/2002	3:26:53 PM	25.96	26.439	24.454	27.431	26.656	55.848	58.689	16.967	39.447	-1.292	-6.515	49.319	0.05	0.001	0	66.75	1.1125	57.2	12.1	47.6	3.285	0.007	0.008	0.0002	0.159	0.14
10/28/2002	3:27:53 PM	25.975	26.454	24.494	27.436	26.656	56.397	59.064	17.209	39.799	-1.286	-6.513	48.678	0.049	0.001	0	67.75	1.12917	57.6	11.9	48.1	3.316	0.007	0.007	0.0002	0.154	0.13
10/28/2002	3:28:53 PM	25.975	26.464	24.519	27.381	26.666	56.265	59.09	17.15	39.748	-1.292	-6.51	48.894	0.05	0.001	0	68.75	1.14583	57.6	12.0	48.0	3.310	0.007	0.008	0.0002	0.157	0.13
10/28/2002	3:29:53 PM	25.986	26.47	24.545	27.397	26.662	56.348	59.2	17.025	40.059	-1.289	-6.51	48.902	0.05	0.001	0	69.75	1.1625	57.7	12.0	48.2	3.323	0.007	0.008	0.0002	0.157	0.13
10/28/2002	3:30:53 PM	26.005	26.484	24.584	27.391	26.676	56.7	59.603	17.157	40.231	-1.289	-6.51	49.259	0.05	0.001	0	70.75	1.17917	58.1	12.1	48.5	3.342	0.007	0.008	0.0002	0.156	0.13
10/28/2002	3:31:53 PM	26.03	26.499	24.614	27.426	26.676	56.654	59.454	17.234	40.143	-1.292	-6.513	49.263	0.05	0.001	0	71.75	1.19583	58.0	12.1	48.4	3.337	0.007	0.008	0.0002	0.156	0.13
10/28/2002	3:32:53 PM	26.036	26.5	24.63	27.457	26.702	57.004	59.815	17.38	40.405	-1.295	-6.513	49.491	0.05	0.001	0	72.75	1.2125	58.3	12.1	48.7	3.358	0.007	0.008	0.0002	0.155	0.13
10/28/2002	3:33:53 PM	26.055	26.519	24.664	27.466	26.696	57.17	60.187	17.426	40.303	-1.292	-6.513	49.519	0.05	0.001	0	73.75	1.22917	58.7	12.1	48.7	3.360	0.007	0.008	0.0002	0.154	0.13
10/28/2002	3:34:53 PM	26.076	26.53	24.71	27.442	26.702	57.079	59.899	17.32	40.608	-1.292	-6.513	49.475	0.05	0.001	0	74.75	1.24583	58.4	12.1	48.8	3.368	0.007	0.008	0.0002	0.154	0.13
10/28/2002	3:35:53 PM	26.114	26.553	24.763	27.415	26.715	57.25	60.073	17.375	40.683	-1.289	-6.507	48.961	0.051	0.001	0	75.75	1.2625	58.6	12.0	49.0	3.376	0.008	0.008	0.0002	0.156	0.13
10/28/2002	3:36:53 PM	26.121	26.549	24.765	27.457	26.707	57.12	60.098	17.402	40.313	-1.289	-6.478	49.376	0.051	0.001	0	76.75	1.27917	58.6	12.1	48.7	3.359	0.008	0.008	0.0002	0.157	0.13
10/28/2002	3:37:53 PM	26.127	26.54	24.781	27.408	26.703	57.155	60.176	17.434	40.327	-1.289	-6.478	49.41	0.05	0.001	0	77.75	1.29583	58.7	12.1	48.7	3.361	0.007	0.008	0.0002	0.154	0.13
10/28/2002	3:38:53 PM	26.149	26.557	24.808	27.4	26.724	57.567	60.427	17.541	40.858	-1.289	-6.472	49.777	0.051	0.001	0	78.75	1.3125	59.0	12.2	49.2	3.393	0.008	0.008	0.0002	0.155	0.13
10/28/2002	3:39:53 PM	26.155	26.554	24.815	27.247	26.731	57.236	60.29	17.368	40.507	-1.298	-6.478	49.904	0.051	0.001	0	79.75	1.32917	58.8	12.2	48.9	3.370	0.008	0.008	0.0002	0.156	0.13
10/28/2002	3:40:53 PM	26.178	26.582	24.862	27.34	26.729	57.174	59.976	17.425	40.507	-1.292	-6.478	49.638	0.05	0.001	0	80.75	1.34583	58.5	12.2	48.8	3.367	0.007	0.007	0.0002	0.153	0.13
10/28/2002	3:41:53 PM	26.179	26.578	24.863	27.416	26.715	57.402	60.567	17.602	40.352	-1.292	-6.475	49.529	0.05	0.001	0	81.75	1.3625	59.1	12.1	48.9	3.370	0.007	0.007	0.0002	0.153	0.13
10/28/2002	3:42:53 PM	26.195	26.574	24.879	27.406	26.711	57.516	60.648	17.451	40.737	-1.292	-6.475	49.753	0.05	0.001	0	82.75	1.37917	59.2	12.2	49.1	3.387	0.007	0.007	0.0002	0.152	0.13
10/28/2002	3:43:53 PM	26.211	26.59	24.905	27.402	26.707	57.238	60.315	17.417	40.481	-1.289	-6.472	48.858	0.051	0.001	0	83.75	1.39583	58.8	12.0	48.9	3.369	0.008	0.008	0.0002	0.156	0.13
10/28/2002	3:44:53 PM	26.232	26.586	24.921	27.423	26.703	57.493	60.51	17.504	40.622	-1.292	-6.478	49.248	0.05	0.001	0	84.75	1.4125	59.0	12.1	49.1	3.382	0.007	0.007	0.0002	0.152	0.13
10/28/2002	3:45:53 PM	26.231	26.565	24.925	27.432	26.712	57.029	60.081	17.276	40.507	-1.292	-6.478	49.848	0.05	0.001	0	85.75	1.42917	58.6	12.2	48.8	3.362	0.007	0.007	0.0002	0.153	0.13
10/28/2002	3:46:53 PM	26.251	26.59	24.95	27.372	26.717	57.319	60.313	17.442	40.675	-1.289	-6.475	50.045	0.05	0.001	0	86.75	1.44583	58.8	12.3	49.0	3.378	0.007	0.007	0.0002	0.152	0.13
10/28/2002	3:47:53 PM	26.283	26.602	24.977	27.389	26.734	57.414	60.402	17.539	40.614	-1.292	-6.478	49.877	0.05	0.001	0	87.75	1.4625	58.9	12.2	49.0	3.379	0.007	0.007	0.0002	0.152	0.13
10/28/2002	3:48:53 PM	26.306	26.615	25.005	27.377	26.737	56.948	60.154	17.788	39.873	-1.292	-6.478	50.248	0.05	0.001	0	88.75	1.47917	58.7	12.3	48.4	3.338	0.007	0.007	0.0002	0.154	0.13
10/28/2002	3:49:53 PM	26.335	26.633	25.059	27.421	26.73	57.205	60.377	17.683	40.264	-1.286	-6.475	49.034	0.05	0.001	0	89.75	1.49583	58.9	12.0	48.7	3.360	0.007	0.007	0.0002	0.153	0.13
10/28/2002	3:50:53 PM	26.327	26.621	25.052	27.404	26.713	56.88	60.007	17.517	40.139	-1.289	-6.478	49.93	0.05	0.001	0	90.75	1.5125	58.5	12.2	48.5	3.345	0.007	0.007	0.0002	0.153	0.13
10/28/2002	3:51:53 PM	26.333	26.612	25.048	27.35	26.714	57.143	60.282	17.526	40.348	-1.292	-6.475	49.942	0.05	0.001	0	91.75	1.52917	58.8	12.2	48.7	3.361	0.007	0.007	0.0002	0.153	0.13
10/28/2002	3:52:53 PM	26.354	26.623	25.064	27.361	26.7	57.159	60.172	17.569	40.393	-1.289	-6.475	50.393	0.05	0.001	0	92.75	1.54583	58.7	12.3	48.8	3.363	0.007	0.007	0.0002	0.153	0.13
10/28/2002	3:53:53 PM	26.359	26.618	25.059	27.266	26.695	57.07	60.181	17.661	40.159	-1.292	-6.478	51.326	0.05	0.001	0	93.75	1.5625	58.7	12.6	48.6	3.352	0.007	0.007	0.0002	0.153	0.13
10/28/2002	3:54:53 PM	26.369	26.618	25.069	27.316	26.715	57.333	60.555	17.723	40.342	-1.289	-6.481	51.283	0.05	0.001	0	94.75	1.57917	59.1	12.6	48.8	3.367	0.007	0.007	0.0002	0.152	0.13
10/28/2002	3:55:53 PM	26.38	26.619	25.075	27.307	26.706	57.248	60.41	17.68	40.266	-1.295	-6.484	50.091	0.05	0.001	-0.001	95.75	1.59583	58.9	12.3	48.8	3.362	0.007	0.007	0.0002	0.153	0.13
10/28/2002	3:56:53 PM	26.386	26.62	25.091	27.313	26.707	56.969	60.228	17.533	40.11	-1.292	-6.481	50.116	0.049	0.001	0	96.75	1.6125	58.8	12.3	48.5	3.347	0.007	0.007	0.0002	0.150	0.13
10/28/2002	3:57:53 PM	26.393	26.622	25.103	27.27	26.684	57.495	60.872	17.707	40.473	-1.289	-6.475	50.091	0.05	0.001	0	97.75	1.62917	59.4	12.3	49.0	3.377	0.007	0.007	0.0002	0.152	0.13
10/28/2002	3:58:53 PM	26.389	26.613	25.079	27.191	26.67	57.145	60.404	17.585	40.231	-1.295	-6.481	50.326	0.049	0.001	0	98.75	1.64583	58.9	12.3	48.7	3.357	0.007	0.007	0.0001	0.150	0.13
10/28/2002	3:59:53 PM	26.401	26.63	25.116	27.118	26.662	57.41	60.621	17.706	40.424	-1.292	-6.478	50.293	0.05	0.001	0	99.75	1.6625	59.1	12.3	48.9	3.373	0.007	0.007	0.0002	0.152	0.13
10/28/2002	4:00:53 PM	26.397	26.621	25.127	27.034	26.633	57.395	60.83	17.76	40.129	-1.289	-6.478	49.682	0.049	0.001	0	100.75	1.67917	59.4	12.2	48.8	3.362	0.007	0.007	0.0001	0.149	0.13
10/28/2002	4:01:53 PM	26.368	26.602	25.098	26.935	26.644	57.242	60.536	17.705	40.254	-1.292	-6.452	50.351	0.048	0.001	0	101.75	1.69583	59.1	12.3	48.7	3.361	0.007	0.007	0.0001	0.146	0.12
10/28/2002	4:02:53 PM	26.36	26.599	25.12	27.037	26.646	57.292	60.495	17.716	40.333	-1.286	-6.443	50.263	0.049	0.001	0	102.75	1.7125	59.0	12.3	48.8	3.365	0.007	0.007	0.0001	0.149	0.13
10/28/2002	4:03:53 PM	26.367	26.595	25.126	27.084	26.628	56.851	60.28	17.681	39.842	-1.289	-6.446	50.483	0.049	0.001	0	103.75	1.72917	58.8	12.4	48.3	3.333	0.007	0.007	0.0002	0.151	0.13
10/28/2002	4:04:53 PM	26.357	26.58	25.111	27.104	26.603	57.257	60.657	17.739	40.266	-1.289	-6.472	50.169	0.049	0.001	0	104.75	1.74583	59.2	12.3	48.8	3.362	0.007	0.007	0.0001	0.149	0.13
10/28/2002	4:05:53 PM	26.352	26.565	25.101	27.109	26.588	56.909	60.305	17.622	40.01	-1.292	-6.559	50.332	0.049	0.001	0	105.75	1.7625	58.8	12.3	48.5	3.341	0.007	0.007	0.0002	0.150	0.13
10/28/2002	4:06:53 PM	26.352	26.56	25.106	27.054	26.578	57.532	60.828	17.844	40.36	-1.289	-6.547	50.507	0.049	0.001	0	106.75	1.77917	59.4	12.4	48.9	3.375	0.007	0.007	0.0001	0.149	0.13
10/28/2002	4:07:53 PM	26.336	26.53	25.07	26.978	26.572	57.288	60.495	17.76	40.338	-1.295	-6.556	50.095	0.049	0.001	0	107.75	1.79583	59.0	12.3	48.8	3.365	0.007	0.007	0.0001	0.149	0.13
10/28/2002	4:08:53 PM	26.351	26.54	25.095	27.018	26.572	57.021	60.477	17.719	40.012	-1.292	-6.556	50.033	0.049	0.001	0	108.75	1.8125	59.0	12.3	48.5	3.345	0.007	0.007	0.0002	0.150	0.13
10/28/2002	4:09:53 PM	26.355	26.534	25.095	27.012	26.576	56.667	59.899	17.445	40.055	-1.289	-6.553	50.091	0.049	0.001	0	109.75	1.82917	58.4	12.3	48.4	3.334	0.007	0.007	0.0002	0.151	0.13
10/28/2002	4:10:53 PM	26.354	26.533	25.119	26.926	26.53	56.882	60.135	17.617	40.075	-1.289	-6.55	48.841	0.049	0.001	0	110.75	1.84583	58.7	12.0	48.5	3.342	0.007	0.007	0.0002	0.150	0.13
10/28/2002	4:11:53 PM	26.331	26.5	25.081	26.843	26.502	56.685	60.112	17.609	39.764	-1.292	-6.518	50.28	0.049	0.001	0	111.75	1.8625	58.6	12.3	48.2	3.325	0.007	0.007	0.0002	0.151	0.13
10/28/2002	4:12:53 PM	26.325	26.489	25.095	26.787	26.486	57.014	60.51	17.891	39.832	-1.289	-6.521	50.685	0.049	0.001	0	112.75	1.87917	59.0	12.4	48.4	3.339	0.007	0.007	0.0002	0.150	0.13
10/28/2002	4:13:53 PM	26.318	26.482	25.093	26.8	26.474	56.865	60.09	17.784	40.037	-1.292	-6.524	50.844	0.049	0.001	0	113.75	1.89583	58.6	12.5	48.5	3.341	0.007	0.007	0.0002	0.150	0.13
10/28/2002	4:14:53 PM	26.302	26.451	25.077	26.65	26.449	56.789	60.282	17.743	39.772	-1.289	-6.521	50.173	0.049	0.001	0	114.75	1.9125	58.8	12.3	48.3	3.329	0.007	0.007	0.0002	0.151	0.13
10/28/2002	4:15:53 PM	26.294	26.432	25.053	26.596	26.41	56.876	60.495	17.813	39.646	-1.295	-6.524	49.869	0.049	0.001	0	115.75	1.92917	59.0	12.2	48.3	3.327	0.007	0.007	0.0002	0.151	0.13
10/28/2002	4:16:53 PM	26.29	26.424	25.064	26.697	26.341	56.474	60.044	17.733	39.375	-1.292	-6.524	51.406	0.048	0.001	0	116.75	1.94583	58.6	12.6	47.9	3.304	0.007	0.007	0.0001	0.149	0.13
10/28/2002	4:17:53 PM	26.293	26.417	25.078	26.665	26.349	57.104	60.679	17.794	40.028	-1.289	-6.521	50.341	0.049	0.001	0	117.75	1.9625	59.2	12.3	48.6	3.348	0.007	0.007	0.0002	0.150	0.13
10/28/2002	4:18:53 PM	26.3	26.419	25.079	26.952	26.421	56.637	60.145	17.648	39.603	-1.289	-6.521	50.007	0.049	0.001	0	118.75	1.97917	58.7	12.3	48.1	3.318	0.007	0.007	0.0002	0.151	0.13
10/28/2002	4:19:53 PM	26.306	26.41	25.08	27.302	26.472	56.524	60.1	17.551	39.707	-1.292	-6.521	50.335	0.048	0.001	0	119.75	1.99583	58.6	12.3	48.1	3.317	0.007	0.007	0.0001	0.148	0.13
10/28/2002	4:20:53 PM	26.329	26.417	25.088	27.625	26.505	56.66	60.125	17.609	39.744	-1.289	-6.521	50.305	0.048	0.001	0	120.75	2.0125	58.7	12.3	48.2	3.323	0.007	0.007	0.0001	0.148	0.13
	Averages	26.4	26.4	24.9	27.1	26.5	52.6	55.6	16.2	37.1	-1.2	-6.0	47.7	0.1	0.0	0.0			54.1	11.7	44.8	3.092	0.008	0.008	0.0002	0.170	0.145
	Maximum	27.4	26.6	26.5	27.6	26.7	57.6	60.9	17.9	40.9	0.3	0.8	51.4	0.1	0.0	0.0			59.4	12.6	49.2	3.393	0.014	0.013	0.0004	0.351	0.299
	Median	26.3	26.4	24.9	27.1	26.5	54.2	57.0	16.5	38.5	-1.3	-6.5	48.7	0.0	0.0	0.0			55.5	11.9	46.4	3.196	0.007	0.007	0.0002	0.158	0.135
	Minimum	25.9	26.1	24.2	26.6	26.2	44.3	49.1	14.4	29.3	-1.3	-6.6	43.9	0.0	0.0	0.0			47.6	10.8	36.8	2.536	0.006	0.006	0.0001	0.146	0.125
	2 x Std Dev	0.815	0.379	1.152	0.549	0.416	9.070	9.192	2.617	6.648	0.782	3.606	4.796	0.014	0.000	0.000			9.192	1.175	7.841	0.541	0.002	0.002	0.0001	0.064	0.054
Number of Points Used*		119	119	119	119	119	119	119	119	119	119	119	119	119	119	119			119	119	119	119	119	119	119	119	119
	* Backpulse points in box are not included																													

Figure E16-2: Steady state test run 1.24 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

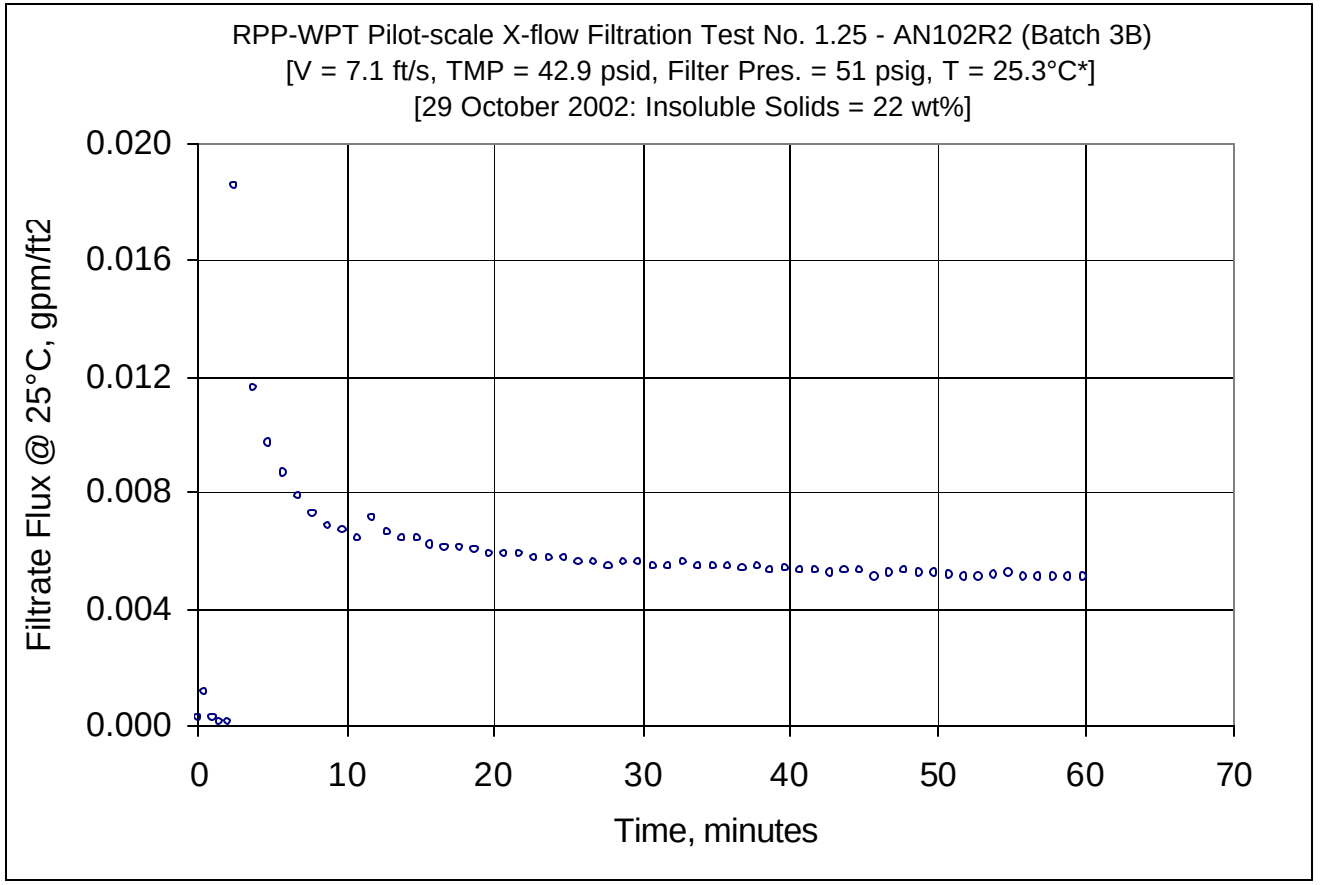


Figure E17: Steady state test run 1.25 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt%

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>											
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse												
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm												
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp												
Zeros																												
10/29/2002	7:44:20 AM	22.171	22.452	21.341	22.224	22.288	-0.129	0.071	-0.054	0.054	-0.385	0.356	-0.216	0.001	0.001	0.002			Filter Surface	6.707	FT2							
10/29/2002	7:44:33 AM	22.171	22.452	21.341	22.224	22.288	-0.129	0.071	-0.054	0.054	-0.385	0.356	-0.216	0.001	0.001	0.002			Conversion	851	m3/m2/day/barg / gpm/ft2/barg							
10/29/2002	7:44:34 AM	22.171	22.447	21.351	22.244	22.283	-0.129	0.073	-0.053	0.058	-0.364	0.364	-0.212	0.002	0.001	0.002												
10/29/2002	7:44:35 AM	22.171	22.447	21.366	22.239	22.283	-0.127	0.071	-0.053	0.058	-0.382	0.361	-0.212	0.002	0.001	0.002			Note: Gauge Pressure P1 is approximately 1.4 psig									
10/29/2002	7:44:36 AM	22.171	22.452	21.351	22.239	22.273	-0.129	0.071	-0.053	0.056	-0.344	0.361	-0.21	0.002	0.001	0.003												
10/29/2002	7:44:37 AM	22.171	22.447	21.346	22.229	22.283	-0.127	0.071	-0.053	0.056	-0.347	0.361	-0.214	0.002	0.001	0.003			Pressure P1 is corrected for 40.88 inches of water tubing									
10/29/2002	7:44:38 AM	22.176	22.452	21.346	22.239	22.283	-0.129	0.073	-0.053	0.056	-0.37	0.364	-0.212	0.002	0.001	0.003			VVVV					< Filtrate Flux	<< PERMIABILITY >>			
10/29/2002	7:44:39 AM	22.176	22.447	21.351	22.234	22.283	-0.129	0.073	-0.053	0.056	-0.382	0.361	-0.214	0.001	0.001	0.002								at 25C	x 1000			
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter	
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar	
10/29/2002	10:41:33 AM	24.845	23.475	24.608	24.276	23.717	38.583	51.62	10.22	29.121	6.971	91.239	30.477	0.002	0.001	0	0	0	50.1	7.5	33.9	2.334	0.000	0.000	0.009	0.01		
10/29/2002	10:42:03 AM	25.089	23.603	24.782	24.359	23.756	28.393	51.686	9.841	12.791	11.186	84.69	30.464	0.008	0.001	0	0.50	0.00833	50.2	7.2	20.6	1.420	0.001	0.001	0.068	0.05		
10/29/2002	10:42:33 AM	24.274	23.511	24.769	24.372	23.779	4.173	51.531	6.342	-1.318	41.425	37.571	32.19	0.002	0.001	0	1.00	0.01667	50.1	7.9	1.4	0.098	0.000	0.000	0.002	0.210	0.18	
10/29/2002	10:43:03 AM	24.684	23.534	24.662	24.406	23.807	10.073	51.322	6.44	4.494	35.306	0.535	32.026	0.101	0.001	0	1.50	0.025	49.8	7.8	7.3	0.502	0.000	0.000	0.021	0.02		
10/29/2002	10:43:33 AM	25.408	23.543	24.811	24.374	23.825	37.224	51.283	6.998	31.158	8.324	0.59	31.831	0.405	0.001	0	2.00	0.03333	49.8	7.8	34.2	2.357	0.000	0.000	0.004	0.00		
10/29/2002	10:44:03 AM	25.131	23.56	24.839	24.376	23.833	43.744	50.861	7.517	37.027	1.162	0.628	31.553	0.124	0.001	0	2.50	0.04167	49.4	7.7	40.4	2.784	0.018	0.019	0.0005	0.460	0.39	
10/29/2002	10:45:17 AM	25.068	23.613	24.986	24.294	23.86	44.279	51.361	8.36	36.696	0.864	0.666	30.714	0.078	0.001	0	3.73	0.06222	49.9	7.5	40.5	2.791	0.012	0.012	0.0003	0.287	0.24	
10/29/2002	10:46:17 AM	25.093	23.628	24.841	24.274	23.868	44.662	51.659	8.866	36.55	0.806	0.691	30.479	0.065	0.001	0	4.73	0.07889	50.2	7.5	40.6	2.800	0.010	0.010	0.0002	0.240	0.20	
10/29/2002	10:47:17 AM	25.14	23.669	24.888	24.285	23.907	44.496	51.397	9.199	36.167	0.8	0.718	30.168	0.058	0.001	0	5.73	0.09556	49.9	7.4	40.3	2.781	0.009	0.009	0.0002	0.215	0.18	
10/29/2002	10:48:17 AM	25.168	23.673	25.021	24.193	23.916	44.422	51.167	9.383	36	0.777	0.729	29.965	0.053	0.001	0	6.73	0.11222	49.7	7.3	40.2	2.772	0.008	0.008	0.0002	0.196	0.17	
10/29/2002	10:49:17 AM	25.213	23.708	24.901	24.208	23.926	43.312	50.958	9.534	34.761	0.745	0.752	29.317	0.049	0.001	0	7.73	0.12889	49.6	7.2	39.0	2.691	0.007	0.007	0.0002	0.188	0.16	
10/29/2002	10:50:17 AM	25.253	23.733	24.901	24.284	23.936	43.577	50.489	9.725	34.44	0.714	0.77	29.053	0.046	0.001	0	8.73	0.14556	49.0	7.1	39.0	2.689	0.007	0.007	0.0002	0.176	0.15	
10/29/2002	10:51:17 AM	25.273	23.743	25.076	24.308	23.951	43.165	50.102	9.787	34.219	0.725	0.781	28.933	0.045	0.001	0	9.73	0.16222	48.6	7.1	38.7	2.668	0.007	0.007	0.0002	0.173	0.15	
10/29/2002	10:52:17 AM	25.329	23.774	24.982	24.439	23.976	42.771	49.597	9.826	33.783	0.711	0.796	28.78	0.043	0.001	0	10.73	0.17889	48.1	7.1	38.3	2.639	0.006	0.006	0.0002	0.168	0.14	
10/29/2002	10:53:17 AM	25.319	23.794	24.982	24.395	23.997	45.888	49.706	9.957	36.763	-1.289	-5.684	28.671	0.048	0.001	0	11.73	0.19556	48.2	7.0	41.3	2.849	0.007	0.007	0.0002	0.173	0.15	
10/29/2002	10:54:17 AM	25.335	23.821	25.169	24.401	24.028	46.561	50.246	10.101	37.183	-1.292	-6.252	28.857	0.045	0.001	0	12.73	0.21222	48.8	7.1	41.9	2.887	0.007	0.007	0.0002	0.159	0.14	
10/29/2002	10:55:17 AM	25.371	23.841	25.044	24.426	24.044	46.841	50.493	10.503	37.089	-1.289	-6.394	28.889	0.043	0.001	0	13.73	0.22889	49.0	7.1	42.0	2.893	0.006	0.006	0.0002	0.153	0.13	
10/29/2002	10:56:17 AM	25.423	23.858	25.026	24.514	24.068	46.671	50.157	10.297	37.345	-1.289	-6.411	28.782	0.043	0.001	0	14.73	0.24556	48.7	7.1	42.0	2.896	0.006	0.006	0.0002	0.153	0.13	
10/29/2002	10:57:17 AM	25.463	23.878	25.216	24.478	24.076	47.038	50.488	10.349	37.609	-1.292	-6.507	28.807	0.042	0.001	0	15.73	0.26222	49.0	7.1	42.3	2.918	0.006	0.006	0.0001	0.147	0.13	
10/29/2002	10:58:17 AM	25.498	23.898	25.061	24.644	24.091	47.093	50.53	10.551	37.484	-1.286	-6.495	28.945	0.041	0.001	0	16.73	0.27889	49.1	7.1	42.3	2.916	0.006	0.006	0.0001	0.144	0.12	
10/29/2002	10:59:17 AM	25.544	23.924	25.067	24.7	24.117	47.675	51.271	10.938	37.6	-1.292	-6.496	29.053	0.041	0.001	0	17.73	0.29556	49.8	7.1	42.6	2.936	0.006	0.006	0.0001	0.143	0.12	
10/29/2002	11:00:17 AM	25.564	23.934	25.247	24.63	24.117	48.489	52.172	10.904	38.165	-1.289	-6.495	29.208	0.041	0.001	0	18.73	0.31222	50.7	7.2	43.3	2.987	0.006	0.006	0.0001	0.140	0.12	
10/29/2002	11:01:17 AM	25.593	23.943	25.121	24.593	24.126	48.334	51.86	10.97	38.161	-1.289	-6.46	29.032	0.04	0.001	0	19.73	0.32889	50.4	7.1	43.2	2.982	0.006	0.006	0.0001	0.137	0.12	
10/29/2002	11:02:17 AM	25.623	23.963	25.106	24.633	24.146	48.224	51.798	10.899	38.192	-1.289	-6.46	29.092	0.04	0.001	0	20.73	0.34556	50.3	7.1	43.2	2.979	0.006	0.006	0.0001	0.138	0.12	
10/29/2002	11:03:17 AM	25.647	23.977	25.315	24.633	24.17	48.295	51.684	10.816	38.264	-1.289	-6.46	29.008	0.04	0.001	0	21.73	0.36222	50.2	7.1	43.3	2.984	0.006	0.006	0.0001	0.137	0.12	
10/29/2002	11:04:17 AM	25.681	23.997	25.24	24.717	24.184	48.293	51.862	11.152	37.901	-1.286	-6.46	29.115	0.039	0.001	0	22.73	0.37889	50.4	7.1	43.1	2.971	0.006	0.006	0.0001	0.134	0.11	
10/29/2002	11:05:17 AM	25.69	24.005	25.183	24.726	24.208	48.755	52.266	11.061	38.577	-1.295	-6.466	29.075	0.039	0.001	0	23.73	0.39556	50.8	7.1	43.7	3.011	0.006	0.006	0.0001	0.132	0.11	
10/29/2002	11:06:17 AM	25.729	24.025	25.373	24.745	24.227	48.779	52.297	11.015	38.602	-1.292	-6.466	28.843	0.039	0.001	0	24.73	0.41222	50.8	7.1	43.7	3.012	0.006	0.006	0.0001	0.132	0.11	
10/29/2002	11:07:17 AM	25.764	24.05	25.263	24.865	24.262	48.937	52.564	10.882	38.847	-1.289	-6.426	28.948	0.038	0.001	0	25.73	0.42889	51.1	7.1	43.9	3.026	0.006	0.006	0.0001	0.128	0.11	
10/29/2002	11:08:17 AM	25.799	24.08	25.263	24.981	24.298	49.057	52.65	11.018	38.741	-1.289	-6.423	28.897	0.038	0.001	0	26.73	0.44556	51.2	7.1	43.9	3.027	0.006	0.006	0.0001	0.128	0.11	
10/29/2002	11:09:17 AM	25.814	24.09	25.413	24.896	24.318	48.413	52.127	10.907	38.321	-1.289	-6.426	28.929	0.037	0.001	0	27.73	0.46222	50.7	7.1	43.4	2.990	0.006	0.005	0.0001	0.126	0.11	
10/29/2002	11:10:17 AM	25.851	24.117	25.324	24.967	24.339	48.74	52.392	11.041	38.524	-1.292	-6.429	28.989	0.038	0.001	0	28.73	0.47889	50.9	7.1	43.6	3.008	0.006	0.006	0.0001	0.129	0.11	
10/29/2002	11:11:17 AM	25.876	24.137	25.269	24.902	24.36	48.504	52.057	11.192	38.297	-1.289	-6.397	28.811	0.038	0.001	0	29.73	0.49556	50.6	7.1	43.4	2.992	0.006	0.006	0.0001	0.130	0.11	
10/29/2002	11:12:17 AM	25.886	24.147	25.435	24.887	24.39	48.937	52.472	11.272	38.544	-1.292	-6.414	29.04	0.037	0.001	0	30.73	0.51222	51.0	7.1	43.7	3.016	0.006	0.005	0.0001	0.125	0.11	
10/29/2002	11:13:17 AM	25.907	24.173	25.335	24.933	24.411	48.927	52.474	11.22	38.608	-1.289	-6.411	28.966	0.037	0.001	0	31.73	0.52889	51.0	7.1	43.8	3.018	0.006	0.005	0.0001	0.125	0.11	
10/29/2002	11:14:17 AM	25.933	24.184	25.301	24.969	24.422	48.724	52.34	11.128	38.528	-1.289	-6.411	28.897	0.038	0.001	0	32.73	0.54556	50.9	7.1	43.6	3.008	0.006	0.006	0.0001	0.129	0.11	
10/29/2002	11:15:17 AM	25.943	24.194	25.477	24.934	24.447	48.858	52.572	11.091	38.624	-1.292	-6.394	29.05	0.037	0.001	0	33.73	0.56222	51.1	7.1	43.7	3.016	0.006	0.005	0.0001	0.124	0.11	
10/29/2002	11:16:17 AM	25.967	24.218	25.395	24.988	24.461	48.999	52.487	11.512	38.366	-1.292	-6.394	28.979	0.037	0.001	0	34.73	0.57889	51.0	7.1	43.7	3.012	0.006	0.005	0.0001	0.125	0.11	
10/29/2002	11:17:17 AM	25.971	24.217	25.329	25.062	24.489	49.096	52.849	11.367	38.495	-1.292	-6.397	29.042	0.037	0.001	0	35.73	0.59556	51.4	7.1	43.8	3.020	0.006	0.005	0.0001	0.125	0.11	
10/29/2002	11:18:17 AM	26.007	24.268	25.55	25.103	24.51	49.007	52.632	11.337	38.538	-1.289	-6.359	29.032	0.037	0.001	0	36.73	0.61222	51.2	7.1	43.8	3.018	0.006	0.005	0.0001	0.124	0.11	
10/29/2002	11:19:17 AM	26.026	24.277	25.44	25.088	24.53	48.96	52.835	11.411	38.213	-1.289	-6.371	29.076	0.037	0.001	0	37.73	0.62889	51.4	7.1	43.6	3.005	0.006	0.005	0.0001	0.125	0.11	
10/29/2002	11:20:17 AM	26.035	24.291	25.388	25.031	24.544	48.844	52.624	11.138	38.507	-1.289	-6.371	29.029	0.036	0.001	0	38.73	0.64556	51.2	7.1	43.7	3.011	0.005	0.005	0.0001	0.122	0.10	
10/29/2002	11:21:17 AM	26.053	24.304	25.562	24.959	24.537	49.011	52.812	11.429	38.317	-1.289	-6.339	29.101	0.037	0.001	0	39.73	0.66222	51.3	7.1	43.7	3.010	0.006	0.005	0.0001	0.124	0.11	
10/29/2002	11:22:17 AM	26.049	24.311	25.438	24.845	24.548	49.055	52.934	11.323	38.428	-1.295	-6.356	29.061	0.036	0.001	0	40.73	0.67889	51.5	7.1	43.7	3.016	0.005	0.005	0.0001	0.121	0.10	
10/29/2002	11:23:17 AM	26.067	24.338	25.39	24.968	24.541	48.844	52.772	11.45	38.077	-1.289	-6.345	29.059	0.036	0.001	0	41.73	0.69556	51.3	7.1	43.5	2.996	0.005	0.005	0.0001	0.122	0.10	
10/29/2002	11:24:17 AM	26.084	24.345	25.548	24.995	24.533	49.125	52.926	11.439	38.516	-1.289	-6.345	29.107	0.036	0.001	0	42.73	0.71222	51.5	7.1	43.8	3.021	0.005	0.005	0.0001	0.121	0.10	
10/29/2002	11:25:17 AM	26.114	24.36	25.467	25.13	24.562	48.8	52.417	11.397	38.268	-1.292	-6.347	29.082	0.036	0.001	0	43.73	0.72889	50.9	7.1	43.5	3.002	0.005	0.005	0.0001	0.122	0.10	
10/29/2002	11:26:17 AM	26.127	24.369	25.386	25.169	24.581	48.779	52.499	11.2	38.542	-1.295	-6.352	29.027	0.036	0.001	0	44.73	0.74556	51.0	7.1	43.7	3.010	0.005	0.005	0.0001	0.122	0.10	
10/29/2002	11:27:17 AM	26.153	24.399	25.562	25.174	24.612	48.877	52.441	11.321	38.493	-1.289	-6.336	29.136	0.036	0.001	0	45.73	0.76222	51.0	7.1	43.7	3.012	0.005	0.005	0.0001	0.117	0.10	
10/29/2002	11:28:17 AM	26.173	24.424	25.532	25.13	24.612	48.9	52.715	11.443	38.331	-1.286	-6.324	29.172	0.036	0.001	0	46.73	0.77889	51.2	7.1	43.6	3.007	0.005	0.005	0.0001	0.121	0.10	
10/29/2002	11:29:17 AM	26.167	24.428	25.415	25.073	24.601	48.92	52.731	11.337	38.473	-1.289	-6.327	29.174	0.036	0.001	0	47.73	0.79556	51.3	7.1	43.7	3.013	0.005	0.005	0.0001	0.121	0.10	
10/29/2002	11:30:17 AM	26.181	24.447	25.604	25.077	24.61	48.937	52.81	11.513	38.329	-1.289	-6.321	29.268	0.036	0.001	0	48.73	0.81222	51.3	7.2	43.6	3.008	0.005	0.005	0.0001	0.121	0.10	
10/29/2002	11:31:17 AM	26.184	24.46	25.562	25.05	24.633	49.009	52.828	11.487	38.642	-1.292	-6.324	29.136	0.036	0.001	0	49.73	0.82889	51.4	7.1	43.8	3.022	0.005	0.005	0.0001	0.121	0.10	
10/29/2002	11:32:17 AM	26.198	24.465	25.432	25.325	24.647	49.227	53.097	11.601	38.415	-1.292	-6.327	29.187	0.035	0.001	0	50.73	0.84556	51.6	7.2	43.8	3.021	0.005	0.005	0.0001	0.118	0.10	
10/29/2002	11:33:17 AM	26.217	24.474	25.611	25.409	24.671	48.935	52.64	11.346	38.317	-1.292	-6.324	29.245	0.035	0.001	-0.001	51.73	0.86222	51.2	7.2	43.6	3.008	0.005	0.005	0.0001	0.118	0.10	
10/29/2002	11:34:17 AM	26.226	24.483	25.595	25.523	24.695	48.5	52.29	11.006	38.493	-1.292	-6.307	29.241	0.035	0.001	0	52.73	0.87889	50.8	7.2	43.5	2.999	0.005	0.005	0.0001	0.118	0.10	
10/29/2002	11:35:17 AM	26.257	24.513	25.48	25.624	24.736	48.945	52.88	11.685	38.092	-1.289	-6.307	29.212	0.035	0.001	0	53.73	0.89556	51.4	7.2	43.5	3.000	0.005	0.005	0.0001	0.118	0.10	
10/29/2002	11:36:17 AM	26.276	24.533	25.665	25.583	24.761	49.043	52.954	11.127	38.962	-1.286	-6.304	29.271	0.036	0.001	0	54.73	0.91222	51.5	7.2	44.0	3.034	0.005	0.005	0.0001	0.120	0.10	
10/29/2002	11:37:17 AM	26.28	24.537	25.659	25.487	24.77	49.018	53.077	11.264	38.368	-1.292	-6.307	29.346	0.035	0.001	-0.001	55.73	0.92889	51.6	7.2	43.7	3.012	0.005	0.005	0.0001	0.117	0.10	
10/29/2002	11:38:17 AM	26.295	24.557	25.499	25.412	24.804	49.488	53.542	11.313	38.905	-1.292	-6.307	29.208	0.035	0.001	0	56.73	0.94556	52.1	7.2	44.2	3.047	0.005	0.005	0.0001	0.116	0.10	
10/29/2002	11:39:17 AM	26.303	24.565	25.657	25.42	24.787	49.138	53.292	11.387	38.479	-1.292	-6.313	29.312	0.035	0.001	0	57.73	0.96222	51.8	7.2	43.8	3.020	0.005	0.005	0.0001	0.117	0.10	
10/29/2002	11:40:17 AM	26.326	24.578	25.69	25.438	24.788	49.318	53.165	11.551	38.675	-1.289	-6.31	29.308	0.035	0.001	0	58.73	0.97889	51.7	7.2	44.0	3.033	0.005	0.005	0.0001	0.116	0.10	
10/29/2002	11:41:17 AM	26.313	24.585	25.512	25.39	24.752	49.02	53.025	11.42	38.403	-1.289	-6.307	29.287	0.035	0.001	0	59.73	0.99556	51.6	7.2	43.7	3.014	0.005	0.005	0.0001	0.118	0.10	
	Averages	25.8	24.1	25.3	24.9	24.4	47.9	52.1	10.9	37.9	-1.0	-5.4	29.1	0.0	0.0	0.0			50.6	7.1	42.9	2.957	0.006	0.006	0.0001	0.139	0.119	
	Maximum	26.3	24.6	25.7	25.6	24.8	49.5	53.5	11.7	39.0	0.9	0.8	30.7	0.1	0.0	0.0			52.1	7.5	44.2	3.047	0.012	0.012	0.0003	0.287	0.245	
	Median	25.9	24.2	25.4	24.9	24.4	48.8	52.4	11.1	38.3	-1.3	-6.3	29.1	0.0	0.0	0.0			51.0	7.1	43.6	3.009	0.006	0.006	0.0001	0.125	0.106	
	Minimum	25.1	23.6	24.8	24.2	23.9	42.8	49.6	8.4	33.8	-1.3	-6.5	28.7	0.0	0.0	0.0			48.1	7.0	38.3	2.639	0.005	0.005	0.0001	0.116	0.099	
	2 x Std Dev	0.744	0.572	0.460	0.765	0.571	3.627	2.007	1.472	2.364	1.430	4.941	0.733	0.015	0.000	0.000			2.007	0.180	2.970	0.205	0.002	0.002	0.0001	0.065	0.055	
	Number of Points Used*	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57			57	57	57	57	57	57	57	57	57	
	* Backpulse points in box are not included																											

Figure E18: Steady state test run 1.25 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

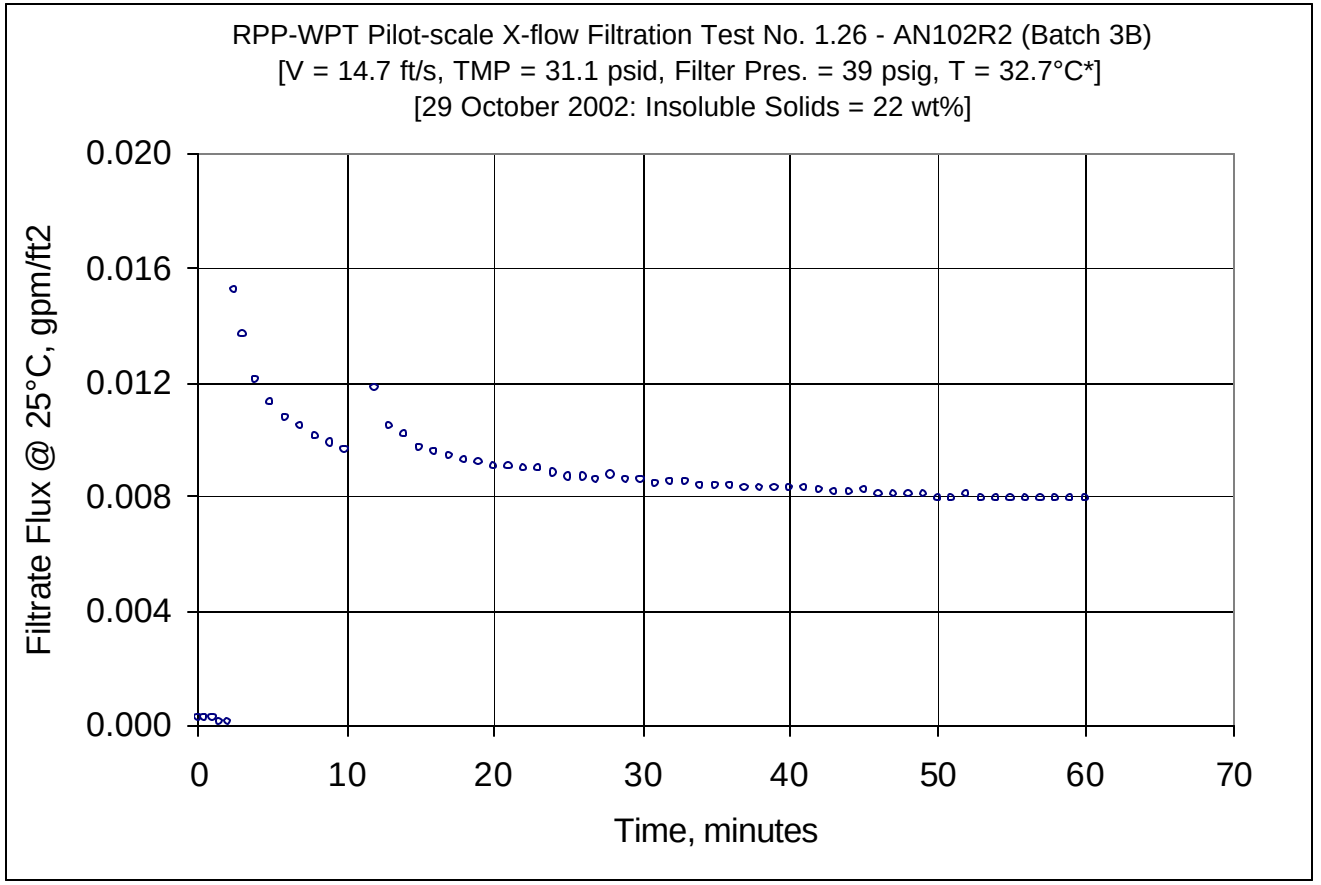


Figure E19: Steady state test run 1.26 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt%

DATE	TIME	<<<<<<<<< Temperature Measurements >>>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>											
		Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
10/29/2002	7:44:20 AM	22.171	22.452	21.341	22.224	22.286	-0.129	0.071	-0.054	0.054	-0.385	0.366	-0.216	0.001	0.001	0.002											
10/29/2002	7:44:33 AM	22.171	22.452	21.341	22.224	22.286	-0.129	0.071	-0.054	0.054	-0.385	0.366	-0.216	0.001	0.001	0.002											
10/29/2002	7:44:34 AM	22.171	22.447	21.351	22.244	22.283	-0.129	0.073	-0.053	0.058	-0.364	0.364	-0.212	0.002	0.001	0.002											
10/29/2002	7:44:35 AM	22.171	22.447	21.366	22.239	22.283	-0.127	0.071	-0.053	0.058	-0.382	0.361	-0.212	0.002	0.001	0.002											
10/29/2002	7:44:36 AM	22.171	22.452	21.351	22.239	22.273	-0.129	0.071	-0.053	0.056	-0.344	0.361	-0.21	0.002	0.001	0.003											
10/29/2002	7:44:37 AM	22.171	22.447	21.346	22.229	22.283	-0.127	0.071	-0.053	0.056	-0.347	0.361	-0.214	0.002	0.001	0.003											
10/29/2002	7:44:38 AM	22.176	22.452	21.346	22.239	22.283	-0.129	0.073	-0.053	0.056	-0.37	0.364	-0.212	0.002	0.001	0.003											
10/29/2002	7:44:39 AM	22.176	22.447	21.351	22.234	22.283	-0.129	0.073	-0.053	0.056	-0.382	0.361	-0.214	0.001	0.001	0.002											
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	ft2	ft2	ft2/psi	ft2/psi	day/bar
10/29/2002	11:56:28 AM	26.131	24.733	26.619	25.843	24.905	42	53.379	26.049	9.788	5.33	93.886	58.25	0.002	0.001	0	0	0	51.9	14.3	25.9	1.785	0.000	0.000	0.0000	0.011	0.01
10/29/2002	11:56:58 AM	26.112	24.734	26.91	25.879	24.922	40.536	53.654	26.049	8.656	7.023	93.55	57.088	0.002	0.001	-0.001	0.50	0.00833	52.2	14.0	24.6	1.696	0.000	0.000	0.0000	0.011	0.01
10/29/2002	11:57:28 AM	26.399	24.747	27.262	25.892	24.944	13.441	46.322	18.647	-4.409	26.892	49.275	67.929	0.002	0.001	0	1.00	0.01667	44.9	16.6	4.5	0.311	0.000	0.000	0.0001	0.062	0.05
10/29/2002	11:57:58 AM	25.828	24.765	27.605	25.985	24.973	22.074	46.138	18.746	4.22	18.192	0.5	64.408	0.149	0.001	0	1.50	0.025	44.7	15.8	13.1	0.906	0.000	0.000	0.0000	0.011	0.01
10/29/2002	11:58:28 AM	27.05	24.778	27.697	26.008	24.99	39.488	45.923	19.04	21.27	0.404	0.532	65.211	0.139	0.001	0	2.00	0.03333	44.5	16.0	30.4	2.095	0.000	0.000	0.0000	0.005	0.00
10/29/2002	11:58:58 AM	27.421	24.784	27.873	25.989	24.997	39.25	45.646	19.09	21.027	0.251	0.547	65.337	0.111	0.001	0	2.50	0.04167	44.2	16.0	30.1	2.078	0.017	0.015	0.0005	0.507	0.43
10/29/2002	11:59:25 AM	27.768	24.797	28.02	25.987	25.009	38.098	44.468	18.689	20.409	0.251	0.564	64.825	0.1	0.001	0	2.95	0.04917	43.0	15.9	29.3	2.017	0.015	0.014	0.0005	0.469	0.40
10/29/2002	12:00:25 PM	28.196	24.817	28.339	25.992	25.044	37.719	43.945	18.655	19.952	0.251	0.596	64.502	0.089	0.001	0	3.95	0.06583	42.5	15.8	28.8	1.988	0.013	0.012	0.0004	0.419	0.36
10/29/2002	12:01:25 PM	28.544	24.821	28.662	26.021	25.064	37.019	43.318	18.405	19.434	0.251	0.626	64.196	0.084	0.001	0	4.95	0.0825	41.8	15.7	28.2	1.946	0.013	0.011	0.0004	0.401	0.34
10/29/2002	12:02:25 PM	28.868	24.836	28.995	25.986	25.069	36.4	42.867	18.139	19.033	0.254	0.662	61.736	0.081	0.001	0	5.95	0.09917	41.4	15.1	27.7	1.911	0.012	0.011	0.0004	0.390	0.33
10/29/2002	12:03:25 PM	29.212	24.862	29.305	25.977	25.074	36	42.453	17.803	19.055	0.292	0.709	62.73	0.079	0.001	0	6.95	0.11583	41.0	15.4	27.5	1.898	0.012	0.010	0.0004	0.380	0.32
10/29/2002	12:04:25 PM	29.525	24.861	29.557	25.956	25.089	35.746	42.145	17.771	18.892	0.289	0.716	62.252	0.077	0.001	0	7.95	0.1325	40.7	15.3	27.3	1.884	0.011	0.010	0.0004	0.370	0.32
10/29/2002	12:05:25 PM	29.791	24.868	29.818	25.928	25.076	35.3	41.823	17.583	18.517	0.297	0.744	61.704	0.076	0.001	0	8.95	0.14917	40.4	15.1	26.9	1.855	0.011	0.010	0.0004	0.368	0.31
10/29/2002	12:06:25 PM	30.049	24.873	30.156	25.898	25.075	35.205	41.682	17.487	18.503	0.361	0.77	60.773	0.075	0.001	0	9.95	0.16583	40.2	14.9	26.9	1.851	0.011	0.010	0.0004	0.361	0.31
10/29/2002	12:07:25 PM	30.163	24.887	30.527	25.932	25.024	39.217	41.645	17.416	22.366	-1.289	-4.358	61.564	0.27	0.001	0	10.95	0.1825	40.2	15.1	30.8	2.123	0.040	0.035	0.0011	1.122	0.95
10/29/2002	12:08:25 PM	29.414	24.879	30.733	25.874	25.087	41.35	41.597	17.517	24.46	-1.289	-6.31	60.198	0.093	0.001	0	11.95	0.19917	40.1	14.8	32.9	2.269	0.014	0.012	0.0004	0.360	0.31
10/29/2002	12:09:25 PM	29.427	24.903	30.965	25.858	25.066	41.597	41.56	17.656	24.681	-1.286	-6.486	60.809	0.083	0.001	0	12.95	0.21583	40.1	14.9	33.1	2.285	0.012	0.010	0.0003	0.317	0.27
10/29/2002	12:10:25 PM	29.504	24.909	31.16	25.869	25.077	41.797	41.88	17.563	25.009	-1.289	-6.472	60.872	0.081	0.001	0	13.95	0.2325	40.4	14.9	33.4	2.303	0.012	0.010	0.0003	0.305	0.26
10/29/2002	12:11:25 PM	29.602	24.913	31.332	25.883	25.06	41.006	41.254	17.379	24.425	-1.289	-6.53	59.118	0.078	0.001	0	14.95	0.24917	39.8	14.5	32.7	2.256	0.012	0.010	0.0003	0.299	0.25
10/29/2002	12:12:25 PM	29.759	24.931	31.519	26.006	25.044	40.969	41.167	17.251	24.442	-1.286	-6.507	59.848	0.077	0.001	0	15.95	0.26583	39.7	14.7	32.7	2.255	0.011	0.010	0.0003	0.293	0.25
10/29/2002	12:13:25 PM	29.862	24.925	31.636	25.985	25.077	41.232	41.434	17.49	24.575	-1.289	-6.541	60.916	0.076	0.001	0	16.95	0.2825	40.0	14.9	32.9	2.269	0.011	0.009	0.0003	0.287	0.24
10/29/2002	12:14:25 PM	30.009	24.922	31.778	25.987	25.085	40.874	41.1	17.403	24.177	-1.292	-6.541	60.385	0.075	0.001	0	17.95	0.29917	39.6	14.8	32.5	2.243	0.011	0.009	0.0003	0.285	0.24
10/29/2002	12:15:25 PM	30.151	24.936	31.925	26.04	25.118	40.588	40.829	17.253	24.106	-1.289	-6.553	60.062	0.075	0.001	0	18.95	0.31583	39.4	14.7	32.3	2.230	0.011	0.009	0.0003	0.286	0.24
10/29/2002	12:16:25 PM	30.283	24.933	32.056	26.088	25.126	40.633	41.026	17.264	24.241	-1.289	-6.553	59.924	0.074	0.001	0	19.95	0.3325	39.6	14.7	32.4	2.236	0.011	0.009	0.0003	0.280	0.24
10/29/2002	12:17:25 PM	30.401	24.947	32.178	26.066	25.119	40.105	40.609	17.038	23.989	-1.292	-6.518	59.991	0.074	0.001	0	20.95	0.34917	39.0	14.7	32.0	2.210	0.011	0.009	0.0003	0.283	0.24
10/29/2002	12:18:25 PM	30.515	24.942	32.302	25.961	25.109	40.213	40.619	16.952	24.151	-1.289	-6.559	59.471	0.074	0.001	0	21.95	0.36583	39.0	14.6	32.2	2.219	0.011	0.009	0.0003	0.280	0.24
10/29/2002	12:19:25 PM	30.632	24.949	32.428	25.979	25.137	40.165	40.542	17.063	23.96	-1.289	-6.541	60.358	0.074	0.001	0	22.95	0.3825	39.1	14.8	32.1	2.211	0.011	0.009	0.0003	0.281	0.24
10/29/2002	12:20:25 PM	30.763	24.967	32.57	25.972	25.104	40.062	40.349	17.145	23.901	-1.289	-6.565	61.891	0.073	0.001	0	23.95	0.39917	38.9	15.2	32.0	2.205	0.011	0.009	0.0003	0.276	0.24
10/29/2002	12:21:25 PM	30.86	24.969	32.671	26.004	25.122	40.161	40.654	17.088	23.93	-1.289	-6.553	59.25	0.072	0.001	0	24.95	0.41583	39.2	14.5	32.0	2.209	0.011	0.009	0.0003	0.271	0.23
10/29/2002	12:22:25 PM	30.968	24.963	32.759	26.113	25.08	40.147	40.606	17.14	23.682	-1.295	-6.565	59.534	0.072	0.001	0	25.95	0.4325	39.1	14.6	31.9	2.200	0.011	0.009	0.0003	0.272	0.23
10/29/2002	12:23:25 PM	31.121	24.997	32.892	26.182	25.135	39.679	40.285	16.889	23.59	-1.289	-6.559	59.49	0.072	0.001	0	26.95	0.44917	38.8	14.6	31.6	2.181	0.011	0.009	0.0003	0.273	0.23
10/29/2002	12:24:25 PM	31.228	24.985	32.973	26.195	25.152	39.702	40.149	17.009	23.486	-1.289	-6.559	57.937	0.073	0.001	0	27.95	0.46583	38.7	14.2	31.6	2.178	0.011	0.009	0.0003	0.277	0.24
10/29/2002	12:25:25 PM	31.317	24.999	33.057	26.189	25.177	39.66	40.188	16.901	23.667	-1.289	-6.569	60.381	0.072	0.001	0	28.95	0.4825	38.7	14.8	31.7	2.183	0.011	0.009	0.0003	0.272	0.23
10/29/2002	12:26:25 PM	31.375	24.998	33.129	26.187	25.185	39.414	40.031	16.868	23.393	-1.289	-6.566	58.648	0.072	0.001	0	29.95	0.49917	38.6	14.4	31.4	2.165	0.011	0.009	0.0003	0.274	0.23
10/29/2002	12:27:25 PM	31.462	25.016	33.227	26.221	25.209	39.737	40.492	16.868	23.754	-1.289	-6.568	59.548	0.071	0.001	0	30.95	0.51583	39.0	14.6	31.7	2.189	0.011	0.008	0.0003	0.266	0.23
10/29/2002	12:28:25 PM	31.46	25.004	33.284	26.243	25.226	39.795	40.486	17.002	23.574	-1.292	-6.568	60.047	0.072	0.001	0	31.95	0.5325	39.0	14.7	31.7	2.185	0.011	0.009	0.0003	0.270	0.23
10/29/2002	12:29:25 PM	31.559	25.024	33.368	26.279	25.257	39.565	40.416	16.803	23.483	-1.292	-6.57	59.873	0.072	0.001	0	32.95	0.54917	38.9	14.7	31.5	2.173	0.011	0.009	0.0003	0.271	0.23
10/29/2002	12:30:25 PM	31.697	25.047	33.466	26.342	25.275	39.283	39.923	16.833	23.267	-1.289	-6.568	59.036	0.071	0.001	0	33.95	0.56583	38.5	14.5	31.3	2.156	0.011	0.008	0.0003	0.268	0.23
10/29/2002	12:31:25 PM	31.795	25.061	33.533	26.401	25.284	39.107	39.927	16.674	23.164	-1.292	-6.57	59.227	0.071	0.001	0	34.95	0.5825	38.5	14.5	31.1	2.147	0.011	0.008	0.0003	0.269	0.23
10/29/2002	12:32:25 PM	31.876	25.058	33.584	26.322	25.3	39.799	40.635	16.901	23.659	-1.289	-6.57	58.657	0.071	0.001	0	35.95	0.59917	39.2	14.4	31.7	2.188	0.011	0.008	0.0003	0.264	0.22
10/29/2002	12:33:25 PM	31.967	25.08	33.691	26.335	25.318	39.308	40.215	16.569	23.512	-1.289	-6.57	59.005	0.071	0.001	0	36.95	0.61583	38.7	14.5	31.4	2.166	0.011	0.008	0.0003	0.266	0.23
10/29/2002	12:34:25 PM	32.069	25.077	33.742	26.262	25.35	39.341	40.074	16.7	23.584	-1.289	-6.57	60.157	0.071	0.001	0	37.95	0.6325	38.6	14.7	31.5	2.169	0.011	0.008	0.0003	0.265	0.23
10/29/2002	12:35:25 PM	32.129	25.098	33.807	26.258	25.366	39.327	40.215	16.69	23.502	-1.289	-6.57	59.07	0.071	0.001	0	38.95	0.64917	38.7	14.5	31.4	2.166	0.011	0.008	0.0003	0.265	0.23
10/29/2002	12:36:25 PM	32.143	25.103	33.856	26.203	25.356	39.414	40.225	16.704	23.645	-1.289	-6.594	59.028	0.071	0.001	0	39.95	0.66583	38.8	14.5	31.5	2.174	0.011	0.008	0.0003	0.264	0.22
10/29/2002	12:37:25 PM	32.229	25.109	33.922	26.183	25.357	39.078	39.882	16.622	23.404	-1.289	-6.588	59.255	0.071	0.001	0	40.95	0.6825	38.4	14.5	31.2	2.154	0.011	0.008	0.0003	0.266	0.23
10/29/2002	12:38:25 PM	32.303	25.119	33.976	26.188	25.367	39.498	40.389	16.812	23.594	-1.289	-6.594	59.836	0.071	0.001	0	41.95	0.69917	38.9	14.7	31.5	2.175	0.011	0.008	0.0003	0.263	0.22
10/29/2002	12:39:25 PM	32.363	25.13	34.036	26.194	25.368	38.888	39.812	16.682	23.127	-1.289	-6.594	59.552	0.07	0.001	0	42.95	0.71583	38.3	14.6	31.0	2.138	0.010	0.008	0.0003	0.263	0.22
10/29/2002	12:40:25 PM	32.408	25.135	34.051	26.174	25.368	39.42	40.469	16.854	23.264	-1.292	-6.591	58.822	0.07	0.001	0	43.95	0.7325	39.0	14.4	31.3	2.161	0.010	0.008	0.0003	0.260	0.22
10/29/2002	12:41:25 PM	32.447	25.14	34.09	26.159	25.373	39.01	39.932	16.724	23.183	-1.289	-6.591	59.953	0.071	0.001	0	44.95	0.74917	38.5	14.7	31.1	2.144	0.011	0.008	0.0003	0.266	0.23
10/29/2002	12:42:25 PM	32.496	25.149	34.144	26.163	25.372	38.916	39.865	16.601	23.097	-1.292	-6.594	58.667	0.07	0.001	0	45.95	0.76583	38.4	14.4	31.0	2.138	0.010	0.008	0.0003	0.262	0.22
10/29/2002	12:43:25 PM	32.561	25.16	34.184	26.139	25.388	38.945	40.002	16.727	22.875	-1.289	-6.576	59.227	0.07	0.001	0	46.95	0.7825	38.5	14.5	30.9	2.131	0.010	0.008	0.0003	0.263	0.22
10/29/2002	12:44:25 PM	32.595	25.169	34.233	26.218	25.382	39.01	40.027	16.674	23.199	-1.289	-6.565	59.221	0.07	0.001	0	47.95	0.79917	38.6	14.5	31.1	2.145	0.010	0.008	0.0003	0.261	0.22
10/29/2002	12:45:25 PM	32.659	25.163	34.261	26.248	25.391	39.066	40.281	16.638	23.152	-1.289	-6.582	59.775	0.07	0.001	0	48.95	0.81583	38.8	14.6	31.1	2.145	0.010	0.008	0.0003	0.261	0.22
10/29/2002	12:46:25 PM	32.708	25.173	34.296	26.248	25.396	38.948	40.008	16.698	23.121	-1.286	-6.582	58.948	0.069	0.001	0	49.95	0.8325	38.5	14.4	31.0	2.140	0.010	0.008	0.0003	0.257	0.22
10/29/2002	12:47:25 PM	32.718	25.173	34.301	26.253	25.396	39.273	40.269	16.784	23.291	-1.292	-6.582	59.546	0.069	0.001	0	50.95	0.84917	38.8	14.6	31.3	2.157	0.010	0.008	0.0003	0.255	0.22
10/29/2002	12:48:25 PM	32.779	25.195	34.352	26.239	25.398	39.099	40.31	16.692	23.162	-1.286	-6.582	59.968	0.07	0.001	0	51.95	0.86583	38.8	14.7	31.1	2.146	0.010	0.008	0.0003	0.260	0.22
10/29/2002	12:49:25 PM	32.787	25.208	34.404	26.177	25.426	38.883	39.977	16.755	22.963	-1.292	-6.562	58.72	0.069	0.001	0	52.95	0.8825	38.5	14.4	30.9	2.132	0.010	0.008	0.0003	0.257	0.22
10/29/2002	12:50:25 PM	32.83	25.226	34.447	25.961	25.419	38.788	40.014	16.51	23.117	-1.289	-6.576	58.835	0.069	0.001	0	53.95	0.89917	38.5	14.4	31.0	2.134	0.010	0.008	0.0003	0.257	0.22
10/29/2002	12:51:25 PM	32.867	25.229	34.469	25.673	25.401	39.149	40.453	16.846	23.207	-1.292	-6.582	59.389	0.069	0.001	0	54.95	0.91583	39.0	14.6	31.2	2.150	0.010	0.008	0.0003	0.255	0.22
10/29/2002	12:52:25 PM	32.898	25.23	34.48	25.664	25.357	38.651	39.927	16.59	22.722	-1.289	-6.579	58.942	0.069	0.001	0	55.95	0.9325	38.5	14.4	30.7	2.116	0.010	0.008	0.0003	0.259	0.22
10/29/2002	12:53:25 PM	32.913	25.22	34.5	25.439	25.282	38.654	39.867	16.584	23.027	-1.289	-6.579	59.435	0.069	0.001	0	56.95	0.94917	38.4	14.6	30.8	2.126	0.010	0.008	0.0003	0.257	0.22
10/29/2002	12:54:25 PM	32.902	25.204	34.514	25.438	25.231	38.927	40.296	16.603	22.968	-1.292	-6.582	60.679	0.069	0.001	0	57.95	0.96583	38.8	14.9	30.9	2.134	0.010	0.008	0.0003	0.256	0.22
10/29/2002	12:55:25 PM	32.936	25.188	34.538	25.387	25.17	38.761	39.994	16.57	23.117	-1.289	-6.579	59.536	0.069	0.001	0	58.95	0.9825	38.5	14.6	30.9	2.133	0.010	0.008	0.0003	0.256	0.22
10/29/2002	12:56:25 PM	32.973	25.191	34.585	25.405	25.149	38.533	39.896	16.475	22.841	-1.286	-6.573	59.179	0.069	0.001	0	59.95	0.99917	38.4	14.5	30.7	2.116	0.010	0.008	0.0003	0.258	0.22
	Averages	31.2	25.0	32.7	26.0	25.2	39.2	40.8	17.1	23.0	-1.1	-5.5	60.1	0.1	0.0	0.0			39.3	14.7	31.1	2.143	0.012	0.009	0.0003	0.304	0.258
	Maximum	33.0	25.2	34.6	26.4	25.4	41.8	44.5	18.7	25.0	0.4	0.8	64.8	0.3	0.0	0.0			43.0	15.9	33.4	2.303	0.040	0.035	0.0011	1.122	0.955
	Median	31.5	25.0	33.3	26.1	25.2	39.3	40.4	16.9	23.3	-1.3	-6.6	59.7	0.1	0.0	0.0			38.9	14.6	31.3	2.159	0.011	0.009	0.0003	0.270	0.230
	Minimum	27.8	24.8	28.0	25.4	25.0	35.2	39.8	16.5	18.5	-1.3	-6.6	57.9	0.1	0.0	0.0			38.3	14.2	26.9	1.851	0.010	0.008	0.0003	0.255	0.217
	2 x Std Dev	2.801	0.254	3.594	0.471	0.268	2.794	2.050	1.032	3.192	1.083	4.991	2.827	0.052	0.000	0.000			2.049	0.693	2.954	0.204	0.008	0.007	0.0002	0.236	0.201
Number of Points Used*		58	58	58	58	58	58	58	58	58	58	58	58	58	58	58			58	58	58	58	58	58	58	58	58
	* Backpulse points in box are not included																										

Figure E20: Steady state test run 1.26 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

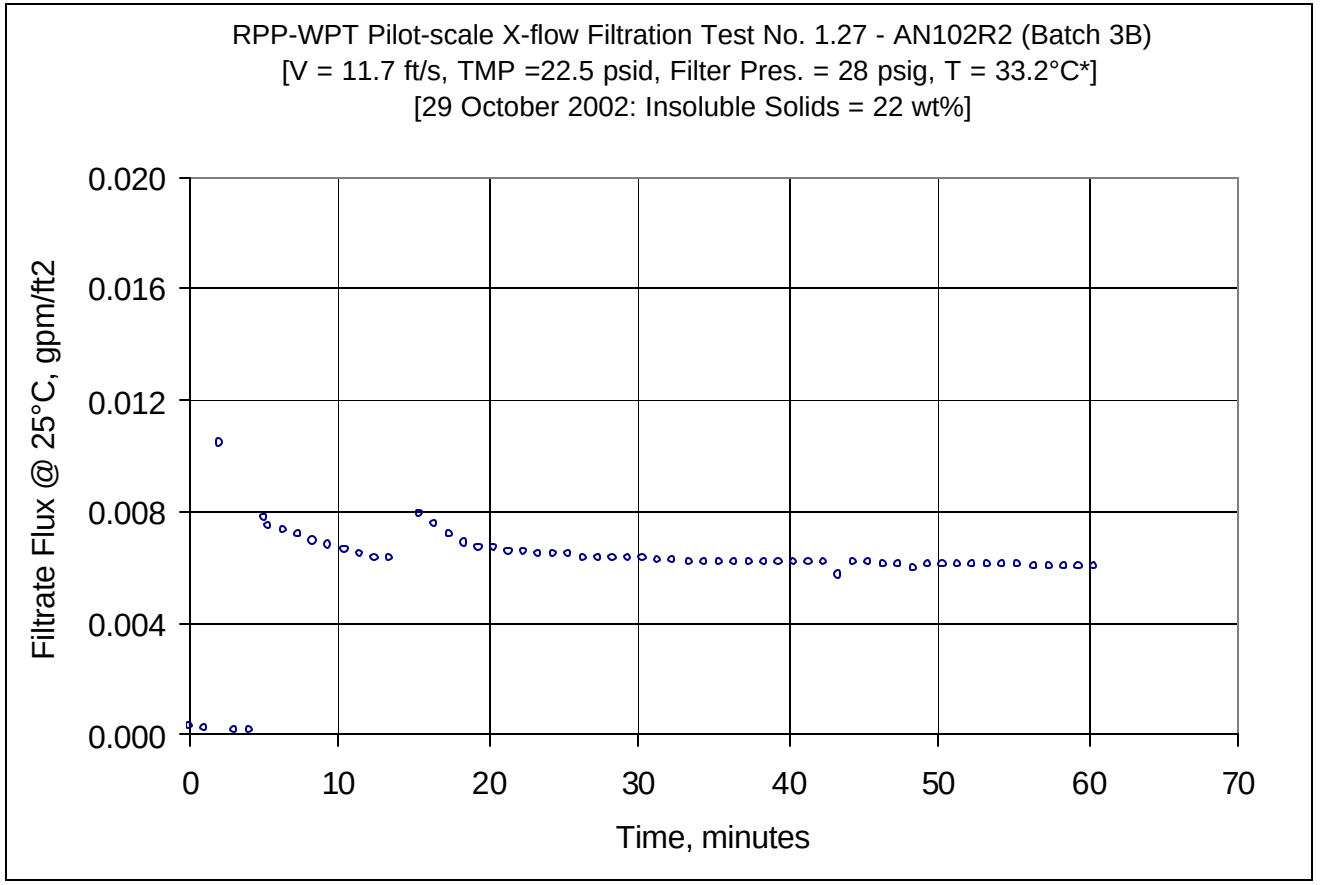


Figure E21: Steady state test run 1.27 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt%

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>			
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp
Zeros																
10/29/2002	7:44:20 AM	22.171	22.452	21.341	22.224	22.288	-0.129	0.071	-0.054	0.054	-0.385	0.356	-0.216	0.001	0.001	0.002
10/29/2002	7:44:33 AM	22.171	22.452	21.341	22.224	22.288	-0.129	0.071	-0.054	0.054	-0.385	0.356	-0.216	0.001	0.001	0.002
10/29/2002	7:44:34 AM	22.171	22.447	21.351	22.244	22.283	-0.129	0.073	-0.053	0.058	-0.364	0.364	-0.212	0.002	0.001	0.002
10/29/2002	7:44:35 AM	22.171	22.447	21.356	22.239	22.283	-0.127	0.071	-0.053	0.058	-0.382	0.361	-0.212	0.002	0.001	0.002
10/29/2002	7:44:36 AM	22.171	22.452	21.351	22.239	22.273	-0.129	0.071	-0.053	0.056	-0.344	0.361	-0.21	0.002	0.001	0.003
10/29/2002	7:44:37 AM	22.171	22.447	21.346	22.229	22.283	-0.127	0.071	-0.053	0.056	-0.347	0.361	-0.214	0.002	0.001	0.003
10/29/2002	7:44:38 AM	22.176	22.452	21.346	22.239	22.283	-0.129	0.073	-0.053	0.056	-0.37	0.364	-0.212	0.002	0.001	0.003
10/29/2002	7:44:39 AM	22.176	22.447	21.351	22.234	22.283	-0.129	0.073	-0.053	0.056	-0.382	0.361	-0.214	0.001	0.001	0.002
Data - Per Minute																
10/29/2002	1:30:01 PM	26.45	24.371	27.961	23.482	23.797	24.319	30.004	15.712	9.315	-0.521	69.491	47.516	0.002	0.001	0
10/29/2002	1:31:01 PM	26.35	24.351	29.017	23.492	23.802	7.845	28.136	11.763	-3.078	14.241	41.124	51.178	0.002	0.001	0
10/29/2002	1:32:01 PM	27.787	24.34	29.722	23.466	23.796	21.939	28.15	12.201	10.562	0.185	0.564	51.262	0.08	0.001	0
10/29/2002	1:33:01 PM	28.589	24.304	30.282	23.405	23.815	21.997	28.286	12.661	10.226	0.127	0.555	50.869	0.068	0.001	0
10/29/2002	1:34:01 PM	29.293	24.306	30.592	23.437	23.842	22.343	28.688	12.1	11.006	0.147	0.579	48.971	0.065	0.001	0
10/29/2002	1:35:01 PM	29.801	24.272	30.722	23.508	23.883	22.66	28.969	12.343	11.043	0.182	0.622	48.839	0.061	0.001	0
10/29/2002	1:35:19 PM	29.925	24.261	30.776	23.542	23.887	22.474	28.831	12.314	10.826	0.179	0.605	49.07	0.059	0.001	0
10/29/2002	1:36:19 PM	30.285	24.259	30.883	23.62	23.93	22.892	29.112	12.332	11.379	0.179	0.625	48.713	0.058	0.001	0
10/29/2002	1:37:19 PM	30.587	24.263	30.937	23.599	23.989	22.676	28.998	12.048	11.506	0.185	0.648	47.86	0.057	0.001	0
10/29/2002	1:38:19 PM	30.79	24.267	30.931	23.679	24.014	22.923	29.321	12.22	11.418	0.225	0.674	48.132	0.055	0.001	0
10/29/2002	1:39:19 PM	30.924	24.261	31.054	23.829	24.008	22.911	29.222	12.268	11.452	0.245	0.691	47.933	0.054	0.001	0
10/29/2002	1:40:19 PM	31.023	24.241	31.163	23.834	24.008	22.602	29.007	12.076	11.301	0.248	0.706	47.994	0.053	0.001	0
10/29/2002	1:41:19 PM	31.135	24.236	31.345	23.767	23.991	22.67	29.013	12.161	11.436	0.251	0.729	47.769	0.052	0.001	0
10/29/2002	1:42:19 PM	31.248	24.208	31.552	23.71	23.99	22.486	28.905	12.053	11.19	0.269	0.744	47.836	0.051	0.001	0
10/29/2002	1:43:19 PM	31.422	24.203	31.83	23.67	23.965	22.575	28.922	12.122	11.301	0.289	0.77	47.755	0.051	0.001	0
10/29/2002	1:44:19 PM	31.711	24.19	31.985	23.667	23.937	23.638	28.884	11.856	12.613	-0.847	-1.304	47.409	0.202	0.001	0
10/29/2002	1:45:19 PM	30.555	24.17	32.168	23.627	23.907	29.292	29.261	12.242	17.821	-1.286	-6.359	47.47	0.065	0.001	0
10/29/2002	1:46:19 PM	30.368	24.157	32.324	23.579	23.894	29.205	29.038	12.324	17.702	-1.289	-6.478	46.869	0.062	0.001	0
10/29/2002	1:47:19 PM	30.385	24.149	32.479	23.525	23.905	29.642	29.48	12.673	17.813	-1.286	-6.553	47.524	0.059	0.001	0
10/29/2002	1:48:19 PM	30.422	24.136	32.629	23.407	23.897	29.981	29.774	12.952	17.813	-1.289	-6.547	47.006	0.057	0.001	0
10/29/2002	1:49:19 PM	30.483	24.123	32.839	23.338	23.879	29.393	29.213	12.731	17.518	-1.289	-6.573	47.201	0.056	0.001	0
10/29/2002	1:50:19 PM	30.556	24.126	33.035	23.296	23.837	29.604	29.455	12.891	17.59	-1.289	-6.591	47.283	0.056	0.001	0
10/29/2002	1:51:19 PM	30.622	24.087	33.175	23.152	23.813	29.863	29.776	13.051	17.555	-1.286	-6.591	48.168	0.055	0.001	0
10/29/2002	1:52:19 PM	30.724	24.066	33.321	23.145	23.766	29.661	29.371	12.921	17.582	-1.286	-6.599	47.522	0.055	0.001	0
10/29/2002	1:53:19 PM	30.807	24.048	33.453	23.128	23.764	29.666	29.526	12.934	17.522	-1.286	-6.597	47.323	0.055	0.001	0
10/29/2002	1:54:19 PM	30.914	24.036	33.57	23.197	23.763	29.81	29.834	13.01	17.494	-1.286	-6.611	47.232	0.055	0.001	0
10/29/2002	1:55:19 PM	31.012	24	33.633	23.275	23.771	29.723	29.654	13.016	17.502	-1.289	-6.614	47.513	0.055	0.001	0
10/29/2002	1:56:19 PM	31.111	23.99	33.717	23.366	23.801	29.633	29.654	12.919	17.526	-1.289	-6.62	47.461	0.054	0.001	0
10/29/2002	1:57:19 PM	31.181	24.005	33.835	23.622	23.811	29.598	29.637	12.842	17.606	-1.286	-6.611	47.656	0.054	0.001	0
10/29/2002	1:58:19 PM	31.265	23.965	33.855	23.702	23.872	29.901	29.906	13.191	17.577	-1.286	-6.617	47.016	0.054	0.001	0
10/29/2002	1:59:19 PM	31.337	23.992	33.936	23.795	23.924	29.64	29.673	13.021	17.491	-1.289	-6.617	47.289	0.054	0.001	0
10/29/2002	2:00:19 PM	31.397	23.983	33.977	23.991	23.97	29.505	29.495	12.882	17.524	-1.286	-6.62	48.252	0.054	0.001	0
10/29/2002	2:01:19 PM	31.473	23.999	33.998	23.973	24.027	29.865	29.855	13.146	17.653	-1.286	-6.617	47.719	0.054	0.001	0
10/29/2002	2:02:19 PM	31.563	24.005	34.038	23.898	24.083	30.129	30.175	13.301	17.575	-1.289	-6.623	47.366	0.054	0.001	0
10/29/2002	2:03:19 PM	31.623	24.01	34.063	23.763	24.113	30.056	30.14	13.218	17.586	-1.289	-6.623	47.857	0.053	0.001	0
10/29/2002	2:04:19 PM	31.698	24.016	34.079	23.749	24.139	29.979	29.942	13.279	17.661	-1.289	-6.623	47.692	0.053	0.001	0
10/29/2002	2:05:19 PM	31.757	24.015	34.068	23.673	24.133	29.749	29.88	13.058	17.465	-1.289	-6.62	47.037	0.053	0.001	0
10/29/2002	2:06:19 PM	31.799	24.013	34.08	23.59	24.11	29.725	29.824	13.059	17.465	-1.286	-6.625	47.792	0.053	0.001	0
10/29/2002	2:07:19 PM	31.838	24.007	34.08	23.539	24.09	29.812	30.082	13.145	17.352	-1.289	-6.623	47.585	0.053	0.001	0
10/29/2002	2:08:19 PM	31.862	24.001	34.079	23.578	24.064	29.7	29.863	13.074	17.528	-1.289	-6.623	47.696	0.053	0.001	0
10/29/2002	2:09:19 PM	31.873	23.997	34.05	23.539	24.029	29.745	29.809	13.198	17.371	-1.286	-6.623	47.748	0.053	0.001	0
10/29/2002	2:10:19 PM	31.863	23.988	34.071	23.57	24.02	30.1	30.316	13.378	17.449	-1.286	-6.625	47.677	0.053	0.001	0
10/29/2002	2:11:19 PM	31.892	23.971	34.049	23.503	24.004	29.663	29.882	13.11	17.311	-1.286	-6.623	47.902	0.053	0.001	0
10/29/2002	2:12:19 PM	31.901	23.95	34.024	23.442	23.978	29.81	30.179	13.1	17.504	-1.289	-6.623	47.723	0.053	0.001	0
10/29/2002	2:13:19 PM	31.915	23.939	33.993	23.376	23.968	29.88	30.093	13.272	17.457	-1.289	-6.623	47.886	0.052	0.001	0
10/29/2002	2:14:19 PM	31.942	23.936	33.985	23.267	23.929	29.863	30.088	13.34	17.356	-1.289	-6.582	47.776	0.053	0.001	0
10/29/2002	2:15:19 PM	31.937	23.902	33.946	23.127	23.834	29.961	30.382	13.131	17.586	-1.289	-6.588	47.969	0.053	0.001	0
10/29/2002	2:16:19 PM	31.932	23.877	33.922	23.052	23.809	29.894	30.088	13.27	17.457	-1.286	-6.585	47.912	0.052	0.001	0
10/29/2002	2:17:19 PM	31.927	23.846	33.867	22.956	23.753	29.899	30.211	13.227	17.481	-1.292	-6.591	47.931	0.052	0.001	0
10/29/2002	2:18:19 PM	31.922	23.841	33.887	22.931	23.718	29.807	30.107	13.229	17.491	-1.286	-6.547	48.057	0.051	0.001	0
10/29/2002	2:19:19 PM	31.909	23.818	33.849	22.898	23.71	30.211	30.587	13.39	17.594	-1.286	-6.553	47.797	0.052	0.001	0
10/29/2002	2:20:19 PM	31.892	23.806	33.823	22.931	23.708	29.961	30.246	13.372	17.377	-1.289	-6.556	48.218	0.052	0.001	0
10/29/2002	2:21:19 PM	31.849	23.787	33.784	22.787	23.689	29.888	30.296	13.249	17.424	-1.286	-6.556	47.987	0.052	0.001	0
10/29/2002	2:22:19 PM	31.836	23.759	33.762	22.804	23.691	29.998	30.355	13.382	17.498	-1.292	-6.556	48.017	0.052	0.001	0
10/29/2002	2:23:19 PM	31.817	23.735	33.718	22.769	23.677	30.17	30.571	13.414	17.494	-1.286	-6.559	48.162	0.052	0.001	0
10/29/2002	2:24:19 PM	31.809	23.732	33.7	22.766	23.689	29.863	30.144	13.244	17.545	-1.289	-6.553	48.537	0.052	0.001	0
10/29/2002	2:25:19 PM	31.778	23.726	33.669	22.75	23.703	29.926	30.304	13.276	17.446	-1.286	-6.556	48.361	0.052	0.001	0
10/29/2002	2:26:19 PM	31.739	23.717	33.655	22.851	23.719	30.244	30.676	13.412	17.623	-1.289	-6.562	47.946	0.051	0.001	0
10/29/2002	2:27:19 PM	31.745	23.702	33.616	22.892	23.74	29.953	30.262	13.366	17.561	-1.289	-6.559	48.344	0.051	0.001	0
10/29/2002	2:28:19 PM	31.7	23.691	33.571	22.876	23.754	29.764	30.159	13.205	17.506	-1.286	-6.559	47.161	0.051	0.001	0
10/29/2002	2:29:19 PM	31.684	23.666	33.521	22.901	23.783	29.781	30.223	13.248	17.408	-1.289	-6.562	48.556	0.051	0.001	0
10/29/2002	2:30:19 PM	31.683	23.665	33.505	22.91	23.803	29.932	30.397	13.364	17.289	-1.289	-6.562	48.174	0.051	0.001	0
	Averages	31.4	24.0	33.2	23.4	23.9	28.6	29.8	12.9	16.4	-1.0	-5.3	47.8	0.1	0.0	0.0
	Maximum	31.9	24.3	34.1	24.0	24.1	30.2	30.7	13.4	17.8	0.3	0.8	49.1	0.2	0.0	0.0
	Median	31.7	24.0	33.7	23.5	23.9	29.8	29.9	13.1	17.5	-1.3	-6.6	47.8	0.1	0.0	0.0
	Minimum	29.9	23.7	30.8	22.8	23.7	22.5	28.8	11.9	10.8	-1.3	-6.6	46.9	0.0	0.0	0.0
	2 x Std Dev	1.119	0.346	2.073	0.724	0.267	5.404	0.988	0.879	4.678	1.115	5.442	0.880	0.040	0.000	0.000
Number of Points Used*		56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
	* Backpulse points in box are not included															

<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>

Filter Surface 6.707 FT2
Conversion 851 m3/m2/day/barg / gpm/ft2/barg

Note: Gauge Pressure P1 is approximately 1.4 psig

Pressure P1 is corrected for 40.88 inches of water tubing

VVVV < Filtrate Flux << PERMIABILITY >>

Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
						at 25C		x 1000		
Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
0	0	28.5	11.6	16.8	1.159	0.000	0.000	0.0000	0.016	0.01
1.00	0.01667	26.7	12.5	2.4	0.164	0.000	0.000	0.0001	0.112	0.10
2.00	0.03333	26.7	12.6	16.3	1.120	0.012	0.010	0.0006	0.644	0.55
3.00	0.05	26.8	12.5	16.1	1.111	0.000	0.000	0.0000	0.008	0.01
4.00	0.06667	27.2	12.0	16.7	1.150	0.000	0.000	0.0000	0.008	0.01
5.00	0.08333	27.5	12.0	16.9	1.162	0.009	0.008	0.0005	0.461	0.39
5.30	0.08833	27.4	12.0	16.7	1.148	0.009	0.007	0.0005	0.450	0.38
6.30	0.105	27.6	11.9	17.1	1.181	0.009	0.007	0.0004	0.429	0.37
7.30	0.12167	27.5	11.7	17.1	1.178	0.008	0.007	0.0004	0.422	0.36
8.30	0.13833	27.9	11.8	17.2	1.184	0.008	0.007	0.0004	0.405	0.35
9.30	0.155	27.8	11.7	17.2	1.185	0.008	0.007	0.0004	0.396	0.34
10.30	0.17167	27.5	11.8	17.0	1.169	0.008	0.007	0.0004	0.393	0.33
11.30	0.18833	27.5	11.7	17.1	1.176	0.008	0.007	0.0004	0.382	0.32
12.30	0.205	27.5	11.7	16.8	1.161	0.008	0.006	0.0004	0.377	0.32
13.30	0.22167	27.5	11.7	16.9	1.168	0.008	0.006	0.0004	0.372	0.32
14.30	0.23833	27.4	11.6	18.1	1.250	0.030	0.025	0.0014	1.371	1.17
15.30	0.255	27.8	11.6	23.6	1.624	0.010	0.008	0.0003	0.338	0.29
16.30	0.27167	27.6	11.5	23.5	1.617	0.009	0.008	0.0003	0.322	0.27
17.30	0.28833	28.0	11.6	23.7	1.636	0.009	0.007	0.0003	0.302	0.26
18.30	0.305	28.3	11.5	23.9	1.648	0.008	0.007	0.0003	0.288	0.25
19.30	0.32167	27.7	11.6	23.5	1.617	0.008	0.007	0.0003	0.287	0.24
20.30	0.33833	28.0	11.6	23.6	1.627	0.008	0.007	0.0003	0.284	0.24
21.30	0.355	28.3	11.8	23.7	1.634	0.008	0.007	0.0003	0.277	0.24
22.30	0.37167	27.9	11.6	23.6	1.626	0.008	0.007	0.0003	0.277	0.24
23.30	0.38833	28.1	11.6	23.6	1.626	0.008	0.007	0.0003	0.276	0.23
24.30	0.405	28.4	11.6	23.7	1.631	0.008	0.006	0.0003	0.274	0.23
25.30	0.42167	28.2	11.6	23.6	1.628	0.008	0.006	0.0003	0.274	0.23
26.30	0.43833	28.2	11.6	23.6	1.626	0.008	0.006	0.0003	0.269	0.23
27.30	0.455	28.2	11.7	23.6	1.627	0.008	0.006	0.0003	0.268	0.23
28.30	0.47167	28.4	11.5	23.7	1.637	0.008	0.006	0.0003	0.266	0.23
29.30	0.48833	28.2	11.6	23.6	1.625	0.008	0.006	0.0003	0.268	0.23
30.30	0.505	28.0	11.8	23.5	1.621	0.008	0.006	0.0003	0.268	0.23
31.30	0.52167	28.4	11.7	23.8	1.638	0.008	0.006	0.0003	0.265	0.23
32.30	0.53833	28.7	11.6	23.9	1.644	0.008	0.006	0.0003	0.264	0.22
33.30	0.555	28.7	11.7	23.8	1.642	0.008	0.006	0.0003	0.263	0.22
34.30	0.57167	28.5	11.7	23.8	1.642	0.008	0.006	0.0003	0.259	0.22
35.30	0.58833	28.4	11.5	23.6	1.628	0.008	0.006	0.0003	0.261	0.22
36.30	0.605	28.4	11.7	23.6	1.627	0.008	0.006	0.0003	0.261	0.22
37.30	0.62167	28.6	11.7	23.6	1.626	0.008	0.006	0.0003	0.261	0.22
38.30	0.63833	28.4	11.7	23.6	1.628	0.008	0.006	0.0003	0.261	0.22
39.30	0.655	28.3	11.7	23.6	1.624	0.008	0.006	0.0003	0.262	0.22
40.30	0.67167	28.8	11.7	23.8	1.639	0.008	0.006	0.0003	0.259	0.22
41.30	0.68833	28.4	11.7	23.5	1.619	0.008	0.006	0.0003	0.263	0.22
42.30	0.705	28.7	11.7	23.7	1.631	0.008	0.006	0.0003	0.261	0.22
43.30	0.72167	28.6	11.7	23.7	1.632	0.007	0.006	0.0002	0.241	0.21
44.30	0.73833	28.6	11.7	23.6	1.628	0.008	0.006	0.0003	0.262	0.22
45.30	0.755	28.9	11.8	23.8	1.639	0.008	0.006	0.0003	0.260	0.22
46.30	0.77167	28.6	11.7	23.7	1.632	0.008	0.006	0.0003	0.257	0.22
47.30	0.78833	28.7	11.7	23.7	1.633	0.008	0.006	0.0003	0.257	0.22
48.30	0.805	28.6	11.8	23.6	1.631	0.008	0.006	0.0003	0.252	0.21
49.30	0.82167	29.1	11.7	23.9	1.648	0.008	0.006	0.0003	0.255	0.22
50.30	0.83833	28.8	11.8	23.7	1.632	0.008	0.006	0.0003	0.257	0.22
51.30	0.855	28.8	11.8	23.7	1.631	0.008	0.006	0.0003	0.258	0.22
52.30	0.87167	28.9	11.8	23.7	1.637	0.008	0.006	0.0003	0.257	0.22
53.30	0.88833	29.1	11.8	23.8	1.643	0.008	0.006	0.0003	0.256	0.22
54.30	0.905	28.7	11.9	23.7	1.634	0.008	0.006	0.0003	0.258	0.22
55.30	0.92167	28.8	11.9	23.7	1.633	0.008	0.006	0.0003	0.258	0.22
56.30	0.93833	29.2	11.7	23.9	1.650	0.008	0.006	0.0003	0.251	0.21
57.30	0.955	28.8	11.8	23.8	1.638	0.008	0.006	0.0003	0.253	0.22
58.30	0.97167	28.7	11.6	23.6	1.630	0.008	0.006	0.0003	0.254	0.22
59.30	0.98833	28.8	11.9	23.6	1.627	0.008	0.006	0.0003	0.255	0.22
60.30	1.005	28.9	11.8	23.6	1.628	0.008	0.006	0.0003	0.255	0.22
		28.3	11.7	22.5	1.551	0.008	0.007	0.0003	0.308	0.262
		29.2	12.0	23.9	1.650	0.030	0.025	0.0014	1.371	1.167
		28.4	11.7	23.6	1.628	0.008	0.006	0.0003	0.263	0.224
		27.4	11.5	16.7	1.148	0.007	0.006	0.0002	0.241	0.205
		0.989	0.216	5.035	0.347	0.006	0.005	0.0003	0.306	0.260
		56	56	56	56	56	56	56	56	56

Figure E22: Steady state test run 1.27 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

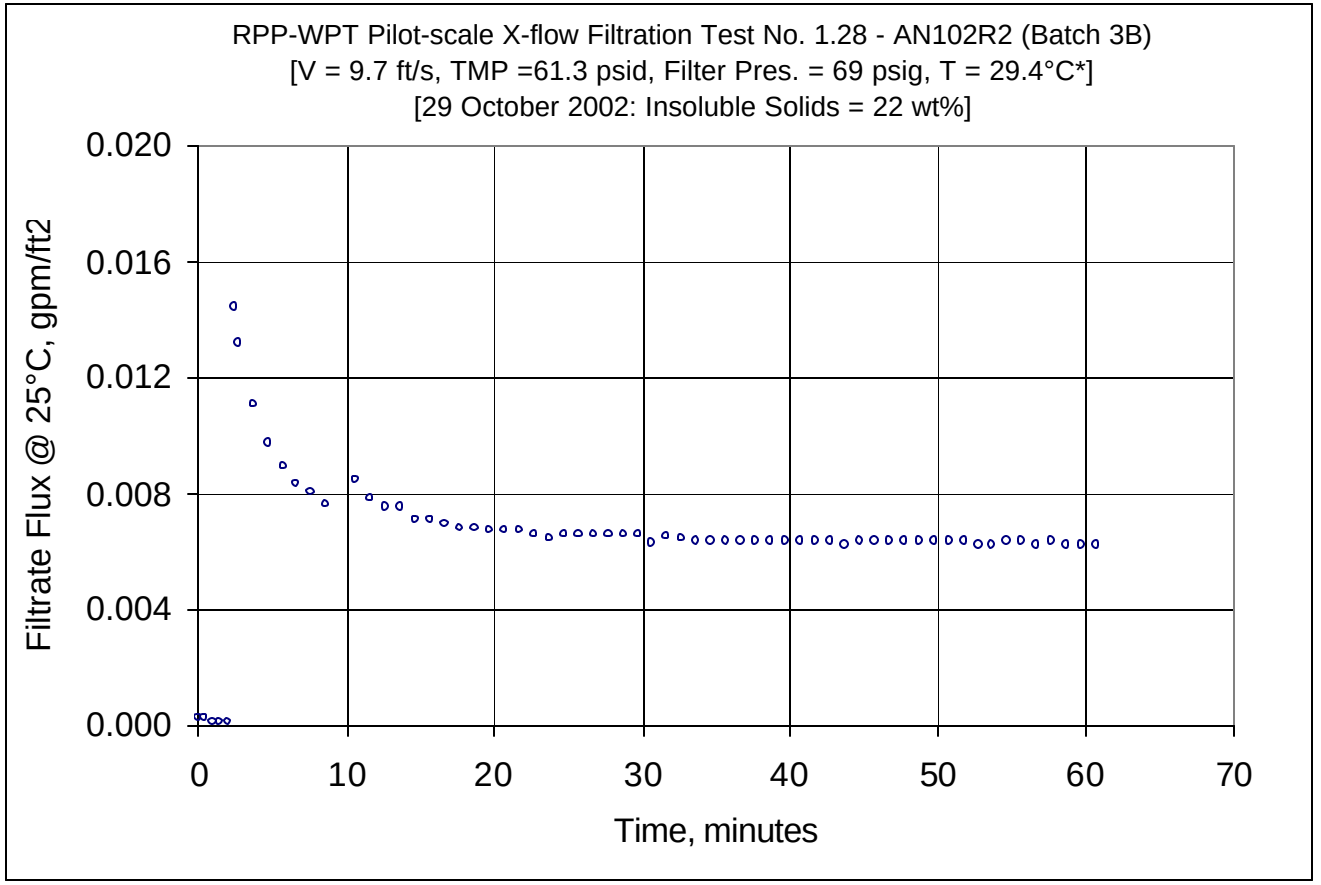


Figure E23: Steady state test run 1.28 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt%

		<<<<<<<<< Temperature Measurements >>>>>>>>>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>>>>>>						<<<<<<<<< Flow Measurements >>>>>>>>>			
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp
Zeros																
10/29/2002	7:44:20 AM	22.171	22.452	21.341	22.224	22.288	-0.129	0.071	-0.054	0.054	-0.385	0.356	-0.216	0.001	0.001	0.002
10/29/2002	7:44:33 AM	22.171	22.452	21.341	22.224	22.288	-0.129	0.071	-0.054	0.054	-0.385	0.356	-0.216	0.001	0.001	0.002
10/29/2002	7:44:34 AM	22.171	22.447	21.351	22.244	22.283	-0.129	0.073	-0.053	0.058	-0.364	0.364	-0.212	0.002	0.001	0.002
10/29/2002	7:44:35 AM	22.171	22.447	21.356	22.239	22.283	-0.127	0.071	-0.053	0.058	-0.382	0.361	-0.212	0.002	0.001	0.002
10/29/2002	7:44:36 AM	22.171	22.452	21.351	22.239	22.273	-0.129	0.071	-0.053	0.056	-0.344	0.361	-0.21	0.002	0.001	0.003
10/29/2002	7:44:37 AM	22.171	22.447	21.346	22.229	22.283	-0.127	0.071	-0.053	0.056	-0.347	0.361	-0.214	0.002	0.001	0.003
10/29/2002	7:44:38 AM	22.176	22.452	21.346	22.239	22.283	-0.129	0.073	-0.053	0.056	-0.37	0.364	-0.212	0.002	0.001	0.003
10/29/2002	7:44:39 AM	22.176	22.447	21.351	22.234	22.283	-0.129	0.073	-0.053	0.056	-0.382	0.361	-0.214	0.001	0.001	0.002
Data - Per Minute																
10/29/2002	2:44:06 PM	29.38	23.677	27.071	23.018	23.71	49.345	69.333	15.893	34.212	13.833	109.348	40.525	0.002	0.001	0
10/29/2002	2:44:36 PM	26.651	23.66	27.168	22.99	23.677	-7.461	67.39	7.818	-18.557	81.44	83.404	41.775	0.002	0.001	1.083
10/29/2002	2:45:06 PM	27.894	23.655	27.343	22.895	23.667	6.086	67.742	9.118	-2.126	55.952	6.969	43.638	0.001	0.001	0
10/29/2002	2:45:36 PM	28.546	23.659	27.402	22.884	23.651	60.179	68.141	10.757	50.194	1.902	0.576	43.006	0.36	0.001	0
10/29/2002	2:46:06 PM	28.665	23.644	27.497	22.874	23.626	62.275	68.783	11.782	51.331	0.404	0.599	42.503	0.129	0.001	0
10/29/2002	2:46:36 PM	28.71	23.643	27.561	22.959	23.595	62.186	68.481	12.34	50.723	0.292	0.622	42.063	0.104	0.001	0
10/29/2002	2:46:47 PM	28.744	23.643	27.591	22.969	23.585	62.027	68.549	12.52	50.207	0.292	0.654	41.57	0.095	0.001	0
10/29/2002	2:47:47 PM	28.85	23.629	27.731	23.08	23.551	62.281	68.611	12.991	50.053	0.251	0.66	41.085	0.08	0.001	0
10/29/2002	2:48:47 PM	28.93	23.609	27.876	23.136	23.547	62.404	68.758	13.432	49.838	0.251	0.689	40.622	0.071	0.001	0
10/29/2002	2:49:47 PM	29.021	23.601	28.032	23.183	23.563	62.791	69.109	13.879	49.754	0.251	0.709	40.483	0.065	0.001	0
10/29/2002	2:50:47 PM	29.122	23.592	28.164	23.24	23.57	62.333	68.743	13.943	49.247	0.257	0.738	40.225	0.061	0.001	0
10/29/2002	2:51:47 PM	29.205	23.585	28.271	23.559	23.603	62.605	69.147	14.122	49.165	0.283	0.755	39.764	0.059	0.001	0
10/29/2002	2:52:47 PM	29.307	23.573	28.378	23.511	23.64	62.716	69.283	14.124	49.306	0.289	0.796	39.481	0.056	0.001	0
10/29/2002	2:53:47 PM	29.274	23.565	28.46	23.418	23.668	65.759	69.42	14.315	52.197	-1.289	-3.562	39.363	0.311	0.001	0
10/29/2002	2:54:47 PM	28.654	23.577	28.582	23.285	23.695	68.744	69.286	14.505	55.079	-1.289	-5.301	39.428	0.063	0.001	0
10/29/2002	2:55:47 PM	28.501	23.574	28.648	23.166	23.722	68.207	69.052	14.463	54.5	-1.289	-5.481	39.199	0.058	0.001	0
10/29/2002	2:56:47 PM	28.433	23.595	28.744	23.157	23.718	69.143	70.094	14.87	54.929	-1.284	-6.495	39.309	0.056	0.001	0
10/29/2002	2:57:47 PM	28.423	23.58	28.784	23.032	23.708	68.373	69.008	14.738	54.518	-1.286	-6.585	39.25	0.056	0.001	0
10/29/2002	2:58:47 PM	28.447	23.569	28.808	22.95	23.707	68.425	69.389	14.839	54.287	-1.289	-6.562	39.313	0.053	0.001	0
10/29/2002	2:59:47 PM	28.461	23.568	28.857	22.858	23.731	68.891	69.552	14.934	54.911	-1.289	-6.585	39.225	0.053	0.001	0
10/29/2002	3:00:47 PM	28.5	23.587	28.93	22.963	23.755	68.416	69.147	14.89	54.408	-1.289	-6.553	39.262	0.052	0.001	0
10/29/2002	3:01:47 PM	28.545	23.603	28.996	23.054	23.806	68.371	69.469	14.971	54.021	-1.286	-6.553	39.164	0.051	0.001	0
10/29/2002	3:02:47 PM	28.603	23.631	29.103	23.168	23.875	69.164	69.838	15.137	54.891	-1.289	-6.568	39.304	0.051	0.001	0
10/29/2002	3:03:47 PM	28.641	23.639	29.166	23.176	23.908	68.35	69.316	14.934	54.184	-1.286	-6.576	39.336	0.051	0.001	0
10/29/2002	3:04:47 PM	28.681	23.639	29.211	23.196	23.943	69.079	70.119	15.148	54.721	-1.289	-6.585	39.382	0.051	0.001	0
10/29/2002	3:05:47 PM	28.724	23.662	29.273	23.149	23.966	68.772	69.788	15.063	54.481	-1.289	-6.582	39.428	0.051	0.001	0
10/29/2002	3:06:47 PM	28.757	23.66	29.316	23.157	23.974	69.122	70.27	15.285	54.51	-1.289	-6.582	39.573	0.05	0.001	0
10/29/2002	3:07:47 PM	28.793	23.657	29.338	23.088	23.94	68.859	70.144	15.18	54.364	-1.289	-6.541	39.443	0.049	0.001	0
10/29/2002	3:08:47 PM	28.839	23.668	29.399	23.07	23.922	68.714	70.007	15.054	54.322	-1.292	-6.559	39.487	0.05	0.001	0
10/29/2002	3:09:47 PM	28.891	23.671	29.456	23.077	23.884	69.054	70.104	15.21	54.688	-1.286	-6.62	39.447	0.05	0.001	0
10/29/2002	3:10:47 PM	28.909	23.663	29.496	23.124	23.856	69.031	70.113	15.182	54.655	-1.289	-6.623	39.585	0.05	0.001	0
10/29/2002	3:11:47 PM	28.931	23.655	29.53	23.097	23.823	69.023	69.811	15.245	54.846	-1.289	-6.625	39.657	0.05	0.001	0
10/29/2002	3:12:47 PM	28.982	23.656	29.571	23.037	23.789	69.325	70.526	15.243	54.821	-1.286	-6.625	39.623	0.05	0.001	0
10/29/2002	3:13:47 PM	29.006	23.641	29.596	23.047	23.729	69.166	70.555	15.101	54.852	-1.286	-6.625	39.548	0.05	0.001	0
10/29/2002	3:14:47 PM	29.031	23.63	29.63	23.046	23.683	68.897	70.115	15.238	54.526	-1.286	-6.591	39.768	0.048	0.001	0
10/29/2002	3:15:47 PM	29.05	23.625	29.674	22.991	23.653	69.226	70.589	15.342	54.608	-1.289	-6.594	39.558	0.05	0.001	0
10/29/2002	3:16:47 PM	29.06	23.605	29.689	22.946	23.638	69.441	70.845	15.238	54.796	-1.286	-6.597	39.749	0.049	0.001	0
10/29/2002	3:17:47 PM	29.07	23.589	29.723	22.895	23.627	69.559	70.827	15.343	55.075	-1.289	-6.617	39.707	0.049	0.001	0
10/29/2002	3:18:47 PM	29.099	23.584	29.758	22.825	23.607	68.907	70.212	15.202	54.551	-1.292	-6.599	39.772	0.049	0.001	0
10/29/2002	3:19:47 PM	29.124	23.574	29.793	22.835	23.567	69.477	71.017	15.3	54.831	-1.286	-6.597	39.812	0.049	0.001	0
10/29/2002	3:20:47 PM	29.138	23.558	29.812	22.774	23.551	69.122	70.634	15.181	54.667	-1.286	-6.597	39.797	0.049	0.001	0
10/29/2002	3:21:47 PM	29.163	23.543	29.842	22.804	23.531	69.553	71.309	15.457	54.657	-1.286	-6.597	39.6	0.049	0.001	0
10/29/2002	3:22:47 PM	29.204	23.544	29.863	22.835	23.537	69.305	70.789	15.34	54.756	-1.286	-6.597	39.77	0.049	0.001	0
10/29/2002	3:23:47 PM	29.21	23.525	29.868	22.85	23.542	68.837	70.357	15.281	54.283	-1.289	-6.597	39.862	0.049	0.001	0
10/29/2002	3:24:47 PM	29.236	23.526	29.895	22.852	23.549	68.915	70.427	15.277	54.416	-1.286	-6.597	39.407	0.049	0.001	0
10/29/2002	3:25:47 PM	29.256	23.511	29.89	22.736	23.539	69.444	71.052	15.409	54.766	-1.289	-6.597	39.984	0.049	0.001	0
10/29/2002	3:26:47 PM	29.262	23.512	29.91	22.672	23.55	69.433	70.715	15.359	55.048	-1.289	-6.597	39.879	0.049	0.001	0
10/29/2002	3:27:47 PM	29.278	23.503	29.906	22.597	23.566	69.398	70.795	15.38	54.864	-1.289	-6.599	39.974	0.048	0.001	0
10/29/2002	3:28:47 PM	29.288	23.509	29.927	22.648	23.592	69.56	71.151	15.47	54.778	-1.284	-6.594	40.124	0.049	0.001	0
10/29/2002	3:29:47 PM	29.289	23.499	29.923	22.709	23.607	69.705	71.267	15.325	55.103	-1.289	-6.599	40.383	0.049	0.001	0
10/29/2002	3:30:47 PM	29.295	23.505	29.973	22.725	23.603	69.663	71.455	15.398	54.923	-1.286	-6.597	39.523	0.049	0.001	0
10/29/2002	3:31:47 PM	29.311	23.497	29.975	22.611	23.626	69.226	70.797	15.039	55.073	-1.289	-6.597	39.806	0.049	0.001	0
10/29/2002	3:32:47 PM	29.293	23.508	29.996	22.588	23.626	69.864	71.431	15.368	55.449	-1.289	-6.599	40.135	0.049	0.001	0
10/29/2002	3:33:47 PM	29.293	23.488	29.971	22.477	23.621	69.599	71.402	15.414	54.87	-1.289	-6.597	39.862	0.049	0.001	0
10/29/2002	3:34:47 PM	29.308	23.488	29.956	22.407	23.616	69.615	71.189	15.189	55.271	-1.292	-6.602	40.017	0.049	0.001	0
10/29/2002	3:35:47 PM	29.304	23.494	29.962	22.377	23.652	69.974	71.453	15.429	55.368	-1.286	-6.597	39.785	0.049	0.001	0
10/29/2002	3:36:47 PM	29.304	23.48	29.963	22.373	23.678	69.833	71.991	15.411	54.977	-1.286	-6.599	39.82	0.048	0.001	0
10/29/2002	3:37:47 PM	29.315	23.486	29.954	22.434	23.704	69.398	71.271	15.243	54.868	-1.286	-6.599	40.053	0.048	0.001	0
10/29/2002	3:38:47 PM	29.325	23.486	29.969	22.429	23.704	69.719	71.375	15.157	55.46	-1.284	-6.594	39.833	0.049	0.001	0
10/29/2002	3:39:47 PM	29.301	23.466	29.945	22.49	23.71	69.918	71.91	15.387	55.12	-1.289	-6.599	39.906	0.049	0.001	0
10/29/2002	3:40:47 PM	29.31	23.466	29.959	22.5	23.724	69.762	71.519	15.271	55.226	-1.286	-6.602	39.925	0.048	0.001	0
10/29/2002	3:41:47 PM	29.28	23.475	29.973	22.544	23.748	70.129	72.016	15.447	55.456	-1.284	-6.594	39.833	0.049	0.001	0
10/29/2002	3:42:47 PM	29.269	23.489	30.017	22.634	23.773	70.289	72.273	15.495	55.441	-1.286	-6.597	39.887	0.048	0.001	0
10/29/2002	3:43:47 PM	29.29	23.481	30.013	22.696	23.834	70.274	72.312	15.485	55.454	-1.292	-6.602	40.093	0.048	0.001	0
10/29/2002	3:44:47 PM	29.322	23.493	30.021	22.914	23.862	69.912	71.745	15.246	55.519	-1.289	-6.602	39.885	0.048	0.001	0
	Averages	29.0	23.6	29.4	22.9	23.7	68.4	70.4	15.0	54.2	-1.1	-5.7	39.8	0.1	0.0	0.0
	Maximum	29.3	23.7	30.0	23.6	24.0	70.3	72.3	15.5	55.5	0.3	0.8	41.6	0.3	0.0	0.0
	Median	29.1	23.6	29.7	22.9	23.7	69.1	70.4	15.2	54.8	-1.3	-6.6	39.8	0.0	0.0	0.0
	Minimum	28.4	23.5	27.6	22.4	23.5	62.0	68.5	12.5	49.2	-1.3	-6.6	39.2	0.0	0.0	0.0
	2 x Std Dev	0.579	0.127	1.334	0.572	0.251	4.554	1.981	1.213	3.460	1.006	4.748	0.871	0.069	0.000	0.000
Number of Points Used*		59	59	59	59	59	59	59	59	59	59	59	59	59	59	59
	* Backpulse points in box are not included															

Figure E24: Steady state test run 1.28 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

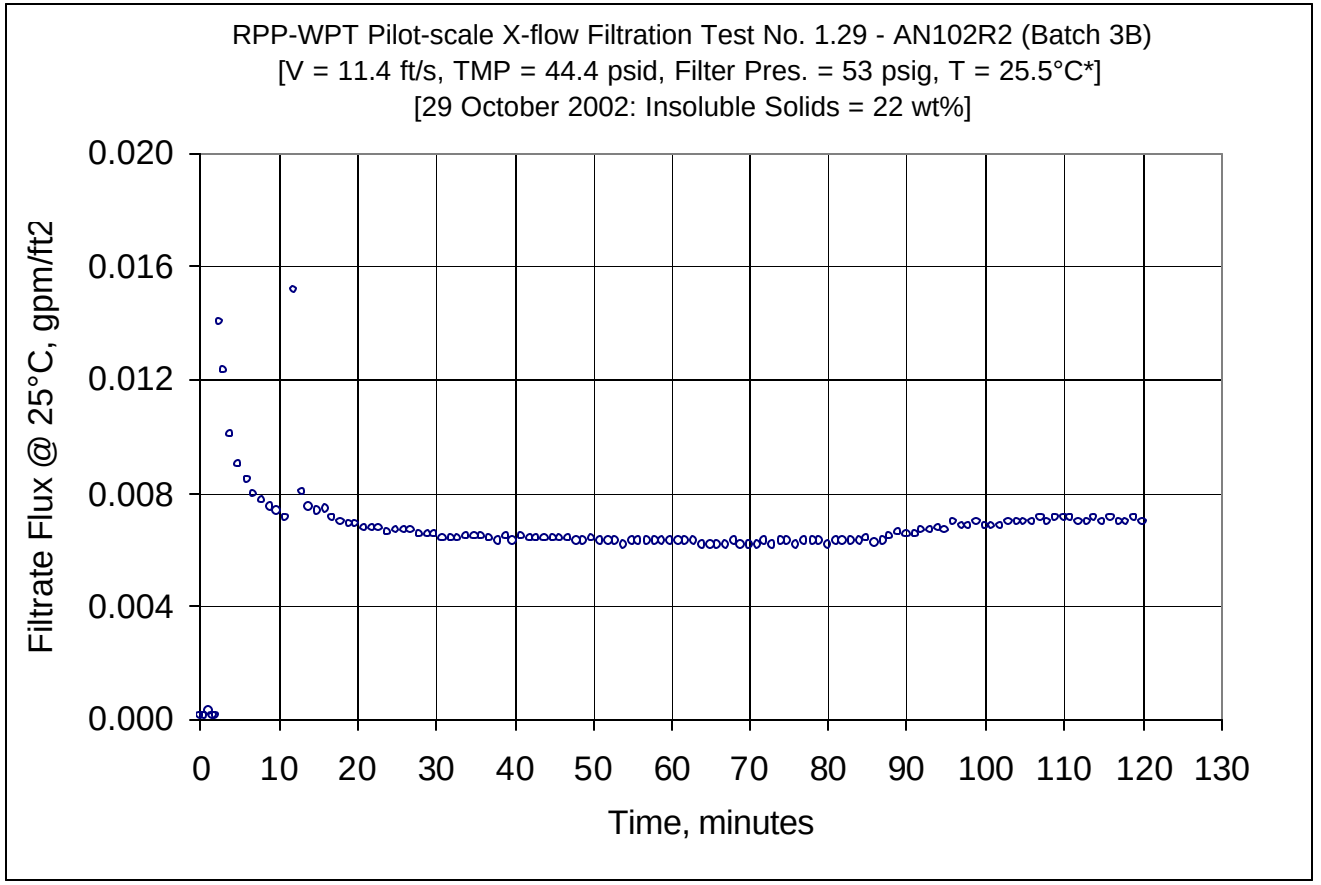


Figure E25: Steady state test run 1.29 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt%

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
10/29/2002	7:44:20 AM	22.171	22.452	21.341	22.224	22.288	-0.129	0.071	-0.054	0.054	-0.385	0.366	-0.216	0.001	0.001	0.002			Filter Surface	6.707	FT2						
10/29/2002	7:44:33 AM	22.171	22.452	21.341	22.224	22.288	-0.129	0.071	-0.054	0.054	-0.385	0.366	-0.216	0.001	0.001	0.002			Conversion	851	m3/m2/day/barg / gpm/ft2/barg						
10/29/2002	7:44:34 AM	22.171	22.447	21.351	22.244	22.283	-0.129	0.073	-0.053	0.058	-0.364	0.364	-0.212	0.002	0.001	0.002											
10/29/2002	7:44:35 AM	22.171	22.447	21.356	22.239	22.283	-0.127	0.071	-0.053	0.058	-0.382	0.361	-0.212	0.002	0.001	0.002			Note: Gauge Pressure P1 is approximately 1.4 psig								
10/29/2002	7:44:36 AM	22.171	22.452	21.351	22.239	22.273	-0.129	0.071	-0.053	0.056	-0.344	0.361	-0.21	0.002	0.001	0.003											
10/29/2002	7:44:37 AM	22.171	22.447	21.346	22.229	22.263	-0.127	0.071	-0.053	0.056	-0.347	0.361	-0.214	0.002	0.001	0.003			Pressure P1is corrected for 40.88 inches of water tubing								
10/29/2002	7:44:38 AM	22.176	22.452	21.346	22.239	22.263	-0.129	0.073	-0.053	0.056	-0.37	0.364	-0.212	0.002	0.001	0.003			VVVV					< Filtrate Flux << PERMIABILITY >>			
10/29/2002	7:44:39 AM	22.176	22.447	21.351	22.234	22.263	-0.129	0.073	-0.053	0.056	-0.382	0.361	-0.214	0.001	0.001	0.002								at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
10/29/2002	3:53:28 PM	29.504	23.601	27.898	22.947	24.055	43.838	51.808	18.644	25.807	1.826	90.741	44.621	0.001	0.001	0	0	0	50.3	10.9	34.8	2.401	0.000	0.000	0.0000	0.004	0.00
10/29/2002	3:53:58 PM	29.429	23.6	27.753	22.921	24.049	42.454	52.303	18.628	24.331	3.465	89.931	44.67	0.001	0.001	0	0.50	0.00833	50.8	10.9	33.4	2.302	0.000	0.000	0.0000	0.004	0.00
10/29/2002	3:54:28 PM	27.316	23.625	27.927	22.916	24.049	6.451	51.606	9.61	-2.153	39.312	53.384	45.036	0.002	0.001	0	1.00	0.01667	50.1	11.0	2.1	0.148	0.000	0.000	0.0001	0.128	0.11
10/29/2002	3:54:58 PM	28.777	23.63	28.007	22.916	24.049	21.51	50.795	10.083	12.368	23.802	0.526	45.813	0.234	0.001	0	1.50	0.025	49.3	11.2	16.9	1.168	0.000	0.000	0.0000	0.008	0.01
10/29/2002	3:55:28 PM	29.28	23.646	27.983	22.861	24.045	44.223	50.64	11.63	33.49	0.474	0.584	46.417	0.146	0.001	0	2.00	0.03333	49.2	11.4	38.9	2.679	0.000	0.000	0.0000	0.004	0.00
10/29/2002	3:55:58 PM	29.394	23.635	27.843	22.8	24.019	44.329	50.817	12.564	32.499	0.251	0.599	48.315	0.102	0.001	0	2.50	0.04167	49.3	11.8	38.4	2.649	0.015	0.014	0.0004	0.366	0.31
10/29/2002	3:56:20 PM	29.527	23.634	27.726	22.794	23.998	44.525	50.859	12.876	32.423	0.254	0.616	46.433	0.089	0.001	0	2.87	0.04778	49.4	11.4	38.5	2.653	0.013	0.012	0.0003	0.320	0.27
10/29/2002	3:57:20 PM	29.511	23.638	27.372	22.632	23.942	44.823	51.035	13.797	32.016	0.188	0.645	46.593	0.072	0.001	0	3.87	0.06444	49.6	11.4	38.4	2.649	0.011	0.010	0.0003	0.261	0.22
10/29/2002	3:58:20 PM	29.424	23.631	27.05	22.504	23.844	44.314	50.799	13.944	31.078	0.199	0.668	46.169	0.064	0.001	0	4.87	0.08111	49.3	11.3	37.7	2.599	0.010	0.009	0.0002	0.239	0.20
10/29/2002	3:59:20 PM	29.311	23.607	26.781	22.455	23.8	44.339	50.687	14.132	30.902	0.248	0.697	45.848	0.06	0.001	-0.001	5.87	0.09778	49.2	11.2	37.6	2.594	0.009	0.009	0.0002	0.226	0.19
10/29/2002	4:00:20 PM	29.183	23.608	26.563	22.406	23.752	44.54	50.739	14.304	31.125	0.211	0.712	45.758	0.056	0.001	0	6.87	0.11444	49.3	11.2	37.8	2.608	0.008	0.008	0.0002	0.211	0.18
10/29/2002	4:01:20 PM	29.036	23.58	26.36	22.338	23.708	43.819	50.017	14.117	30.671	0.251	0.749	45.607	0.054	0.001	0	7.87	0.13111	48.5	11.2	37.2	2.568	0.008	0.008	0.0002	0.208	0.18
10/29/2002	4:02:20 PM	28.879	23.588	26.208	22.335	23.681	44.148	50.505	14.287	30.665	0.248	0.746	45.196	0.052	0.001	-0.001	8.87	0.14778	49.0	11.1	37.4	2.579	0.008	0.007	0.0002	0.200	0.17
10/29/2002	4:03:20 PM	28.725	23.568	26.059	22.306	23.646	44.233	50.47	14.289	30.8	0.254	0.773	45.15	0.051	0.001	0	9.87	0.16444	49.0	11.1	37.5	2.587	0.008	0.007	0.0002	0.197	0.17
10/29/2002	4:04:20 PM	28.565	23.558	25.903	22.235	23.64	44.202	50.722	14.385	30.665	0.289	0.787	44.953	0.049	0.001	0	10.87	0.18111	49.2	11.0	37.4	2.581	0.007	0.007	0.0002	0.190	0.16
10/29/2002	4:05:20 PM	28.22	23.551	25.757	22.213	23.609	47.839	49.884	14.107	34.589	-1.286	-5.887	44.756	0.104	0.001	0	11.87	0.19778	48.4	11.0	41.2	2.842	0.016	0.015	0.0004	0.368	0.31
10/29/2002	4:06:20 PM	27.885	23.536	25.596	22.243	23.579	49.049	50.789	14.481	35.33	-1.289	-6.35	44.747	0.055	0.001	0	12.87	0.21444	49.3	11.0	42.2	2.909	0.008	0.008	0.0002	0.191	0.16
10/29/2002	4:07:20 PM	27.671	23.531	25.452	22.254	23.554	49.09	50.82	14.441	35.349	-1.289	-6.446	44.516	0.051	0.001	0	13.87	0.23111	49.3	10.9	42.2	2.911	0.008	0.008	0.0002	0.178	0.15
10/29/2002	4:08:20 PM	27.444	23.498	25.304	22.231	23.506	48.866	50.468	14.519	35.146	-1.286	-6.417	44.6	0.05	0.001	0	14.87	0.24778	49.0	10.9	42.0	2.896	0.007	0.007	0.0002	0.176	0.15
10/29/2002	4:09:20 PM	27.273	23.497	25.188	22.285	23.52	48.991	50.584	14.552	35.367	-1.292	-6.501	44.621	0.05	0.001	0	15.87	0.26444	49.1	10.9	42.2	2.908	0.007	0.007	0.0002	0.176	0.15
10/29/2002	4:10:20 PM	27.117	23.49	25.081	22.328	23.508	49.355	51.047	14.754	35.416	-1.286	-6.486	44.613	0.048	0.001	0	16.87	0.28111	49.6	10.9	42.4	2.922	0.007	0.007	0.0002	0.168	0.14
10/29/2002	4:11:20 PM	26.983	23.492	24.987	22.365	23.519	48.908	50.565	14.618	35.091	-1.286	-6.51	44.349	0.047	0.001	0	17.87	0.29778	49.1	10.9	42.0	2.896	0.007	0.007	0.0002	0.167	0.14
10/29/2002	4:12:20 PM	26.829	23.483	24.883	22.311	23.52	48.956	50.749	14.587	35.095	-1.289	-6.515	44.489	0.046	0.001	0	18.87	0.31444	49.3	10.9	42.0	2.898	0.007	0.007	0.0002	0.164	0.14
10/29/2002	4:13:20 PM	26.701	23.489	24.804	22.357	23.537	48.492	50.191	14.472	34.892	-1.289	-6.521	44.607	0.046	0.001	0	19.87	0.33111	48.7	10.9	41.7	2.875	0.007	0.007	0.0002	0.165	0.14
10/29/2002	4:14:20 PM	26.558	23.476	24.726	22.399	23.539	49.303	50.867	14.76	35.476	-1.286	-6.484	44.642	0.045	0.001	0	20.87	0.34778	49.4	10.9	42.4	2.923	0.007	0.007	0.0002	0.159	0.14
10/29/2002	4:15:20 PM	26.437	23.485	24.655	22.469	23.588	48.686	50.548	14.529	34.767	-1.289	-6.527	44.416	0.045	0.001	0	21.87	0.36444	49.1	10.9	41.7	2.877	0.007	0.007	0.0002	0.162	0.14
10/29/2002	4:16:20 PM	26.343	23.501	24.595	22.55	23.609	48.866	50.619	14.51	35.177	-1.289	-6.527	44.565	0.045	0.001	0	22.87	0.38111	49.1	10.9	42.0	2.897	0.007	0.007	0.0002	0.161	0.14
10/29/2002	4:17:20 PM	26.249	23.517	24.541	22.596	23.605	49.401	51.175	14.761	35.422	-1.289	-6.53	44.309	0.044	0.001	0	23.87	0.39778	49.7	10.9	42.4	2.924	0.007	0.007	0.0002	0.157	0.13
10/29/2002	4:18:20 PM	26.17	23.524	24.487	22.568	23.616	49.736	51.533	14.915	35.58	-1.289	-6.53	44.391	0.044	0.001	0	24.87	0.41444	50.1	10.9	42.7	2.941	0.007	0.007	0.0002	0.156	0.13
10/29/2002	4:19:20 PM	26.062	23.511	24.404	22.605	23.634	49.003	50.919	14.601	35.152	-1.289	-6.501	44.367	0.044	0.001	0	25.87	0.43111	49.4	10.9	42.1	2.901	0.007	0.007	0.0002	0.159	0.13
10/29/2002	4:20:20 PM	25.988	23.522	24.365	22.586	23.629	49.043	50.786	14.633	35.279	-1.286	-6.541	44.443	0.044	0.001	0	26.87	0.44778	49.3	10.9	42.2	2.907	0.007	0.007	0.0002	0.158	0.13
10/29/2002	4:21:20 PM	25.904	23.512	24.301	22.576	23.635	49.074	50.791	14.613	35.308	-1.286	-6.541	44.367	0.043	0.001	0	27.87	0.46444	49.3	10.9	42.2	2.909	0.006	0.007	0.0002	0.155	0.13
10/29/2002	4:22:20 PM	25.833	23.517	24.255	22.656	23.629	48.976	50.677	14.655	35.318	-1.289	-6.541	44.453	0.043	0.001	0	28.87	0.48111	49.2	10.9	42.1	2.906	0.006	0.007	0.0002	0.155	0.13
10/29/2002	4:23:20 PM	25.768	23.517	24.205	22.606	23.649	49.129	50.96	14.534	35.476	-1.284	-6.513	44.368	0.043	0.001	0	29.87	0.49778	49.5	10.9	42.3	2.917	0.006	0.007	0.0002	0.155	0.13
10/29/2002	4:24:20 PM	25.683	23.517	24.15	22.691	23.639	49.73	51.73	14.846	35.664	-1.289	-6.515	44.588	0.042	0.001	0	30.87	0.51444	50.3	10.9	42.7	2.944	0.006	0.006	0.0002	0.150	0.13
10/29/2002	4:25:20 PM	25.61	23.529	24.107	22.663	23.657	49.2	50.877	14.695	35.51	-1.292	-6.524	44.583	0.042	0.001	-0.001	31.87	0.53111	49.4	10.9	42.4	2.920	0.006	0.006	0.0002	0.152	0.13
10/29/2002	4:26:20 PM	25.541	23.53	24.088	22.694	23.662	49.517	51.5	14.87	35.332	-1.286	-6.518	44.693	0.042	0.001	0	32.87	0.54778	50.0	11.0	42.4	2.925	0.006	0.006	0.0002	0.151	0.13
10/29/2002	4:27:20 PM	25.478	23.537	24.05	22.812	23.69	49.654	51.663	14.881	35.484	-1.286	-6.496	44.714	0.042	0.001	0	33.87	0.56444	50.2	11.0	42.6	2.935	0.006	0.006	0.0002	0.151	0.13
10/29/2002	4:28:20 PM	25.405	23.533	24.011	22.753	23.671	49.471	51.506	14.794	35.336	-1.289	-6.484	44.37	0.042	0.001	0	34.87	0.58111	50.0	10.9	42.4	2.924	0.006	0.006	0.0002	0.152	0.13
10/29/2002	4:29:20 PM	25.332	23.546	23.983	22.695	23.684	49.359	51.252	14.653	35.635	-1.289	-6.486	44.537	0.042	0.001	0	35.87	0.59778	49.8	10.9	42.5	2.930	0.006	0.006	0.0002	0.152	0.13
10/29/2002	4:30:20 PM	25.262	23.546	24.415	22.777	23.694	49.204	51.333	14.688	36.107	-1.286	-6.484	44.745	0.042	0.001	0	36.87	0.61444	49.9	11.0	42.2	2.906	0.006	0.006	0.0002	0.151	0.13
10/29/2002	4:31:20 PM	25.224	23.543	24.512	22.743	23.721	49.742	51.825	14.862	35.572	-1.292	-6.481	44.732	0.042	0.001	0	37.87	0.63111	50.4	11.0	42.7	2.941	0.006	0.006	0.0001	0.149	0.13
10/29/2002	4:32:20 PM	25.205	23.565	24.824	22.664	23.728	49.13	51.008	14.622	35.535	-1.289	-6.478	44.73	0.043	0.001	0	38.87	0.64778	49.5	11.0	42.3	2.919	0.006	0.006	0.0002	0.152	0.13
10/29/2002	4:33:20 PM	25.191	23.57	24.9	22.594	23.743	49.432	51.554	14.81	35.383	-1.289	-6.478	44.795	0.042	0.001	0	39.87	0.66444	50.1	11.0	42.4	2.924	0.006	0.006	0.0001	0.148	0.13
10/29/2002	4:34:20 PM	25.196	23.575	24.895	22.599	23.723	49.498	51.523	14.814	35.58	-1.286	-6.478	45.028	0.043	0.001	0	40.87	0.68111	50.1	11.0	42.5	2.933	0.006	0.006	0.0002	0.151	0.13
10/29/2002	4:35:20 PM	25.215	23.575	25.199	22.644	23.728	50.169	52.22	15.023	35.817	-1.286	-6.44	45.628	0.043	0.001	0	41.87	0.69778	50.7	11.2	43.0	2.964	0.006	0.006	0.0001	0.148	0.13
10/29/2002	4:36:20 PM	25.243	23.567	25.157	22.647	23.71	50.109	52.044	15.132	35.944	-1.286	-6.501	44.917	0.043	0.001	0	42.87	0.71444	50.6	11.0	43.0	2.967	0.006	0.006	0.0001	0.148	0.13
10/29/2002	4:37:20 PM	25.247	23.531	25.111	22.656	23.669	49.469	51.748	14.822	35.353	-1.286	-6.539	45.058	0.043	0.001	0	43.87	0.73111	50.3	11.0	42.4	2.924	0.006	0.006	0.0002	0.151	0.13
10/29/2002	4:38:20 PM	25.29	23.529	25.319	22.719	23.652	50.581	52.559	15.284	36.112	-1.289	-6.539	45.181	0.043	0.001	0	44.87	0.74778	51.1	11.1	43.3	2.989	0.006	0.006	0.0001	0.147	0.12
10/29/2002	4:39:20 PM	25.321	23.504	25.244	22.704	23.627	49.968	52.158	15.16	35.48	-1.292	-6.544	45.041	0.043	0.001	0	45.87	0.76444	50.7	11.0	42.7	2.946	0.006	0.006	0.0001	0.149	0.13
10/29/2002	4:40:20 PM	25.397	23.531	25.225	22.766	23.618	49.596	51.664	14.815	35.758	-1.286	-6.539	45.139	0.043	0.001	0	46.87	0.78111	50.2	11.1	42.7	2.942	0.006	0.006	0.0001	0.149	0.13
10/29/2002	4:41:20 PM	25.429	23.522	25.447	22.762	23.615	48.305	50.433	14.353	34.812	-1.286	-6.513	45.028	0.043	0.001	0	47.87	0.79778	49.0	11.0	41.6	2.865	0.006	0.006	0.0002	0.152	0.13
10/29/2002	4:42:20 PM	25.46	23.513	25.388	22.749	23.606	49.643	51.798	14.944	35.537	-1.289	-6.515	44.542	0.043	0.001	0	48.87	0.81444	50.3	10.9	42.6	2.936	0.006	0.006	0.0001	0.149	0.13
10/29/2002	4:43:20 PM	25.51	23.528	25.318	22.653	23.626	50.327	52.512	15.242	35.828	-1.292	-6.521	45.204	0.043	0.001	-0.001	49.87	0.83111	51.0	11.1	43.1	2.970	0.006	0.006	0.0001	0.147	0.13
10/29/2002	4:44:20 PM	25.559	23.563	25.563	22.702	23.65	50.033	52.324	15.003	35.805	-1.284	-6.513	45.596	0.043	0.001	0	50.87	0.84778	50.9	11.2	42.9	2.959	0.006	0.006	0.0001	0.147	0.13
10/29/2002	4:45:20 PM	25.565	23.564	25.544	22.704	23.667	50.25	52.489	15.124	35.895	-1.289	-6.515	45.36	0.043	0.001	0	51.87	0.86444	51.0	11.1	43.1	2.970	0.006	0.006	0.0001	0.147	0.12
10/29/2002	4:46:20 PM	25.592	23.566	25.486	22.695	23.668	49.983	52.152	14.986	35.779	-1.289	-6.518	45.414	0.043	0.001	0	52.87	0.88111	50.7	11.1	42.9	2.956	0.006	0.006	0.0001	0.147	0.13
10/29/2002	4:47:20 PM	25.593	23.551	25.396	22.611	23.669	50.144	52.388	15.013	35.944	-1.292	-6.521	45.615	0.042	0.001	0	53.87	0.89778	50.9	11.2	43.0	2.968	0.006	0.006	0.0001	0.144	0.12
10/29/2002	4:48:20 PM	25.632	23.576	25.651	22.801	23.704	50.084	52.239	15.082	35.819	-1.289	-6.513	45.471	0.043	0.001	0	54.87	0.91444	50.8	11.1	43.0	2.961	0.006	0.006	0.0001	0.147	0.12
10/29/2002	4:49:20 PM	25.651	23.575	25.605	22.88	23.722	50.02	52.276	15.071	35.676	-1.289	-6.515	45.485	0.043	0.001	0	55.87	0.93111	50.8	11.1	42.8	2.954	0.006	0.006	0.0001	0.147	0.13

Figure E26-1: Steady state test run 1.29 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

10/29/2002	4:50:20 PM	25.653	23.567	25.527	22.968	23.75	50.745	53.054	15.23	36.245	-1.289	-6.515	45.647	0.043	0.001	0	56.87	0.94778	51.6	11.2	43.5	2.999	0.006	0.006	0.0001	0.145	0.12
10/29/2002	4:51:20 PM	25.681	23.575	25.445	23.091	23.763	49.939	52.278	14.989	35.758	-1.286	-6.513	45.33	0.043	0.001	0	57.87	0.96444	50.8	11.1	42.8	2.954	0.006	0.006	0.0001	0.148	0.13
10/29/2002	4:52:20 PM	25.671	23.56	25.62	22.981	23.753	49.769	52.055	15.012	35.461	-1.289	-6.515	45.263	0.043	0.001	0	58.87	0.98111	50.6	11.1	42.6	2.938	0.006	0.006	0.0001	0.148	0.13
10/29/2002	4:53:20 PM	25.682	23.566	25.6	22.836	23.748	50.236	52.532	14.965	36.147	-1.292	-6.515	45.492	0.043	0.001	0	59.87	0.99778	51.1	11.1	43.2	2.978	0.006	0.006	0.0001	0.146	0.12
10/29/2002	4:54:20 PM	25.698	23.572	25.562	22.802	23.75	50.896	53.163	15.217	36.593	-1.289	-6.515	45.458	0.043	0.001	0	60.87	1.01444	51.7	11.1	43.7	3.016	0.006	0.006	0.0001	0.144	0.12
10/29/2002	4:55:20 PM	25.719	23.583	25.478	22.773	23.756	50.3	52.828	15.171	35.717	-1.286	-6.513	45.488	0.043	0.001	0	61.87	1.03111	51.4	11.1	43.0	2.965	0.006	0.006	0.0001	0.147	0.13
10/29/2002	4:56:20 PM	25.738	23.602	25.662	22.736	23.765	50.648	52.977	15.387	36.102	-1.286	-6.513	45.37	0.043	0.001	0	62.87	1.04778	51.5	11.1	43.4	2.991	0.006	0.006	0.0001	0.145	0.12
10/29/2002	4:57:20 PM	25.719	23.588	25.638	22.632	23.756	50.861	53.257	15.402	36.178	-1.289	-6.486	45.578	0.042	0.001	-0.001	63.87	1.06444	51.8	11.2	43.5	3.001	0.006	0.006	0.0001	0.141	0.12
10/29/2002	4:58:20 PM	25.715	23.589	25.604	22.819	23.762	50.876	53.161	15.345	36.364	-1.286	-6.489	45.267	0.042	0.001	0	64.87	1.08111	51.7	11.1	43.6	3.007	0.006	0.006	0.0001	0.141	0.12
10/29/2002	4:59:20 PM	25.727	23.596	25.516	22.967	23.779	50.892	53.345	15.418	36.237	-1.286	-6.489	46.435	0.042	0.001	0	65.87	1.09778	51.9	11.4	43.6	3.004	0.006	0.006	0.0001	0.142	0.12
10/29/2002	5:00:20 PM	25.733	23.602	25.477	22.973	23.785	51.491	53.925	15.653	36.501	-1.289	-6.547	44.72	0.042	0.001	0	66.87	1.11444	52.5	11.0	44.0	3.033	0.006	0.006	0.0001	0.140	0.12
10/29/2002	5:01:20 PM	25.745	23.613	25.688	22.889	23.786	50.757	53.226	15.361	36.073	-1.286	-6.544	45.664	0.043	0.001	0	67.87	1.13111	51.8	11.2	43.4	2.993	0.006	0.006	0.0001	0.145	0.12
10/29/2002	5:02:20 PM	25.74	23.608	25.643	22.758	23.796	50.374	52.756	15.262	35.91	-1.286	-6.553	45.747	0.042	0.001	0	68.87	1.14778	51.3	11.2	43.1	2.974	0.006	0.006	0.0001	0.143	0.12
10/29/2002	5:03:20 PM	25.745	23.609	25.574	22.744	23.787	51.116	53.557	15.413	36.395	-1.289	-6.553	45.666	0.042	0.001	0	69.87	1.16444	52.1	11.2	43.8	3.017	0.006	0.006	0.0001	0.141	0.12
10/29/2002	5:04:20 PM	25.756	23.615	25.485	22.765	23.798	50.548	53.031	15.333	35.948	-1.289	-6.556	45.802	0.042	0.001	0	70.87	1.18111	51.6	11.2	43.2	2.982	0.006	0.006	0.0001	0.143	0.12
10/29/2002	5:05:20 PM	25.772	23.631	25.726	22.971	23.809	50.95	53.515	15.398	36.206	-1.286	-6.547	46.048	0.043	0.001	0	71.87	1.19778	52.0	11.3	43.6	3.005	0.006	0.006	0.0001	0.144	0.12
10/29/2002	5:06:20 PM	25.762	23.621	25.691	22.871	23.803	50.784	53.226	15.454	36.051	-1.289	-6.553	45.943	0.042	0.001	0	72.87	1.21444	51.8	11.5	43.4	2.993	0.006	0.006	0.0001	0.141	0.12
10/29/2002	5:07:20 PM	25.744	23.603	25.607	22.883	23.786	50.826	53.186	15.397	36.387	-1.289	-6.553	46.444	0.043	0.001	0	73.87	1.23111	51.7	11.4	43.6	3.007	0.006	0.006	0.0001	0.145	0.12
10/29/2002	5:08:20 PM	25.752	23.61	25.52	22.866	23.763	50.935	53.627	15.502	35.989	-1.289	-6.556	46.221	0.043	0.001	0	74.87	1.24778	52.2	11.3	43.5	2.997	0.006	0.006	0.0001	0.145	0.12
10/29/2002	5:09:20 PM	25.765	23.614	25.594	22.789	23.772	51.226	53.832	15.572	36.403	-1.286	-6.55	45.815	0.042	0.001	0	75.87	1.26444	52.4	11.2	43.8	3.021	0.006	0.006	0.0001	0.141	0.12
10/29/2002	5:10:20 PM	25.769	23.617	25.702	22.817	23.785	51.629	54.028	15.605	36.892	-1.289	-6.55	46.477	0.043	0.001	0	76.87	1.28111	52.6	11.4	44.3	3.052	0.006	0.006	0.0001	0.142	0.12
10/29/2002	5:11:20 PM	25.769	23.622	25.672	22.908	23.79	51.271	53.856	15.576	36.477	-1.286	-6.55	46.387	0.043	0.001	0	77.87	1.29778	52.4	11.4	43.9	3.025	0.006	0.006	0.0001	0.143	0.12
10/29/2002	5:12:20 PM	25.757	23.611	25.591	22.891	23.809	51.366	54.096	15.634	36.413	-1.289	-6.55	46.716	0.043	0.001	0	78.87	1.31444	52.6	11.4	43.9	3.026	0.006	0.006	0.0001	0.144	0.12
10/29/2002	5:13:20 PM	25.748	23.602	25.487	22.832	23.805	51.662	54.125	15.803	36.739	-1.289	-6.553	46.112	0.042	0.001	0	79.87	1.33111	52.7	11.3	44.2	3.047	0.006	0.006	0.0001	0.140	0.12
10/29/2002	5:14:20 PM	25.767	23.616	25.711	22.755	23.799	51.621	54.2	15.801	36.532	-1.289	-6.553	46.57	0.043	0.001	0	80.87	1.34778	52.7	11.4	44.1	3.039	0.006	0.006	0.0001	0.143	0.12
10/29/2002	5:15:20 PM	25.772	23.626	25.706	22.686	23.803	51.737	54.541	15.752	36.587	-1.292	-6.556	46.712	0.043	0.001	0	81.87	1.36444	53.1	11.4	44.2	3.045	0.006	0.006	0.0001	0.142	0.12
10/29/2002	5:16:20 PM	25.778	23.647	25.686	22.716	23.804	50.95	53.59	15.437	36.278	-1.286	-6.55	46.23	0.043	0.001	0	82.87	1.38111	52.1	11.3	43.6	3.007	0.006	0.006	0.0001	0.144	0.12
10/29/2002	5:17:20 PM	25.805	23.654	25.628	22.723	23.832	51.404	54.107	15.717	36.36	-1.289	-6.55	46.5	0.043	0.001	0	83.87	1.39778	52.6	11.4	43.9	3.026	0.006	0.006	0.0001	0.144	0.12
10/29/2002	5:18:20 PM	25.801	23.65	25.74	22.72	23.803	53.783	56.577	16.353	38.082	-1.286	-6.541	48.032	0.044	0.001	0	84.87	1.41444	55.1	11.8	45.9	3.167	0.007	0.006	0.0001	0.140	0.12
10/29/2002	5:19:20 PM	25.803	23.642	25.797	22.726	23.805	52.648	55.152	16.074	37.427	-1.289	-6.544	46.979	0.043	0.001	0	85.87	1.43111	53.7	11.5	45.0	3.105	0.006	0.006	0.0001	0.139	0.12
10/29/2002	5:20:20 PM	25.786	23.629	25.734	22.739	23.787	51.52	54.276	15.788	36.499	-1.289	-6.55	46.824	0.043	0.001	0	86.87	1.44778	52.8	11.5	44.0	3.034	0.006	0.006	0.0001	0.143	0.12
10/29/2002	5:21:20 PM	25.8	23.634	25.684	22.748	23.762	53.806	56.368	16.379	38.383	-1.289	-6.541	47.977	0.044	0.001	0	87.87	1.46444	54.9	11.8	46.1	3.178	0.007	0.006	0.0001	0.140	0.12
10/29/2002	5:22:20 PM	25.808	23.632	25.622	22.742	23.77	54.065	56.776	16.542	38.321	-1.286	-6.539	48.128	0.045	0.001	0	88.87	1.48111	55.3	11.8	46.2	3.185	0.007	0.007	0.0001	0.143	0.12
10/29/2002	5:23:20 PM	25.827	23.631	25.851	22.76	23.779	54.686	57.257	16.711	38.905	-1.289	-6.539	48.185	0.045	0.001	0	89.87	1.49778	55.8	11.8	46.8	3.226	0.007	0.007	0.0001	0.140	0.12
10/29/2002	5:24:20 PM	25.788	23.622	25.827	22.737	23.775	54.898	57.675	16.822	38.829	-1.286	-6.539	48.728	0.045	0.001	0	90.87	1.51444	56.2	11.9	46.9	3.231	0.007	0.007	0.0001	0.140	0.12
10/29/2002	5:25:20 PM	25.782	23.6	25.745	22.755	23.748	55.476	58.207	16.959	39.271	-1.286	-6.539	49.647	0.046	0.001	0	91.87	1.53111	56.7	11.9	47.4	3.266	0.007	0.007	0.0001	0.142	0.12
10/29/2002	5:26:20 PM	25.817	23.611	25.691	22.776	23.744	55.577	58.364	17.017	39.253	-1.289	-6.536	46.408	0.046	0.001	0	92.87	1.54778	56.9	11.4	47.4	3.269	0.007	0.007	0.0001	0.142	0.12
10/29/2002	5:27:20 PM	25.801	23.63	25.655	22.815	23.773	55.635	58.526	16.979	39.347	-1.286	-6.53	48.623	0.046	0.001	0	93.87	1.56444	57.1	11.9	47.5	3.274	0.007	0.007	0.0001	0.142	0.12
10/29/2002	5:28:20 PM	25.767	23.641	25.871	22.841	23.764	56.261	59.099	17.268	39.732	-1.289	-6.53	49.221	0.046	0.001	0	94.87	1.58111	57.6	12.1	48.0	3.309	0.007	0.007	0.0001	0.139	0.12
10/29/2002	5:29:20 PM	25.779	23.643	25.892	22.817	23.755	57.366	60.129	17.507	40.722	-1.286	-6.524	49.793	0.048	0.001	0	95.87	1.59778	58.7	12.2	49.0	3.381	0.007	0.007	0.0001	0.142	0.12
10/29/2002	5:30:20 PM	25.819	23.643	25.878	22.773	23.751	57.574	60.439	17.655	40.626	-1.286	-6.527	49.678	0.047	0.001	0	96.87	1.61444	59.0	12.2	49.1	3.385	0.007	0.007	0.0001	0.139	0.12
10/29/2002	5:31:20 PM	25.836	23.635	25.814	22.729	23.747	57.851	60.696	17.725	40.86	-1.286	-6.527	49.613	0.047	0.001	0	97.87	1.63111	59.2	12.2	49.4	3.403	0.007	0.007	0.0001	0.139	0.12
10/29/2002	5:32:20 PM	25.847	23.635	25.765	22.725	23.753	57.727	60.551	17.67	40.886	-1.289	-6.527	49.865	0.048	0.001	0	98.87	1.64778	59.1	12.2	49.3	3.400	0.007	0.007	0.0001	0.142	0.12
10/29/2002	5:33:20 PM	25.857	23.631	25.706	22.68	23.759	58.011	60.82	17.785	41.029	-1.286	-6.524	50.183	0.047	0.001	0	99.87	1.66444	59.3	12.3	49.5	3.414	0.007	0.007	0.0001	0.139	0.12
10/29/2002	5:34:20 PM	25.865	23.633	25.663	22.848	23.816	57.75	60.532	17.669	40.956	-1.286	-6.527	50.064	0.047	0.001	0	100.67	1.68111	59.1	12.3	49.4	3.403	0.007	0.007	0.0001	0.139	0.12
10/29/2002	5:35:20 PM	25.867	23.646	25.821	23.344	23.884	58.531	61.536	18.003	41.179	-1.284	-6.521	50.112	0.047	0.001	0	101.87	1.69778	60.1	12.3	49.9	3.437	0.007	0.007	0.0001	0.137	0.12
10/29/2002	5:36:20 PM	25.86	23.639	25.944	23.748	23.918	58.85	61.767	18.061	41.535	-1.289	-6.524	50.441	0.048	0.001	0	102.87	1.71444	60.3	12.4	50.2	3.461	0.007	0.007	0.0001	0.139	0.12
10/29/2002	5:37:20 PM	25.884	23.643	25.968	24.028	23.968	59.229	62.282	18.153	41.662	-1.292	-6.53	50.565	0.048	0.001	-0.001	103.87	1.73111	60.8	12.4	50.4	3.478	0.007	0.007	0.0001	0.138	0.12
10/29/2002	5:38:20 PM	25.903	23.642	25.957	24.258	24.02	59.328	62.303	18.167	41.922	-1.289	-6.524	50.295	0.048	0.001	0	104.87	1.74778	60.8	12.3	50.6	3.490	0.007	0.007	0.0001	0.138	0.12
10/29/2002	5:39:20 PM	25.943	23.662	25.967	24.503	24.076	59.552	62.576	18.323	41.932	-1.286	-6.527	51.02	0.048	0.001	0	105.87	1.76444	61.1	12.5	50.7	3.498	0.007	0.007	0.0001	0.137	0.12
10/29/2002	5:40:20 PM	25.983	23.682	25.956	24.708	24.14	59.316	62.282	18.138	41.973	-1.286	-6.527	50.968	0.049	0.001	0	106.87	1.78111	60.8	12.5	50.6	3.492	0.007	0.007	0.0001	0.140	0.12
10/29/2002	5:41:20 PM	26.012	23.691	25.941	24.803	24.205	59.301	62.554	18.202	41.639	-1.289	-6.524	50.693	0.048	0.001	0	107.87	1.79778	61.1	12.4	50.5	3.480	0.007	0.007	0.0001	0.138	0.12
10/29/2002	5:42:20 PM	26.032	23.702	25.931	24.964	24.271	59.295	62.289	18.251	41.801	-1.286	-6.524	51.052	0.049	0.001	0	108.87	1.81444	60.8	12.5	50.5	3.485	0.007	0.007	0.0001	0.141	0.12
10/29/2002	5:43:20 PM	26.063	23.727	25.941	25.004	24.336	59.871	62.901	18.399	42.301	-1.286	-6.524	50.832	0.049	0.001	0	109.67	1.83111	61.4	12.5	51.1	3.522	0.007	0.007	0.0001	0.139	0.12
10/29/2002	5:44:20 PM	26.072	23.731	25.931	25.134	24.406	60.084	63.112	18.406	42.45	-1.286	-6.527	51.129	0.049	0.001	0	110.87	1.84778	61.6	12.5	51.3	3.535	0.007	0.007	0.0001	0.139	0.12
10/29/2002	5:45:20 PM	26.092	23.746	25.916	25.184	24.466	59.823	62.808	18.305	42.393	-1.286	-6.524	51.24	0.048	0.001	0	111.87	1.86444	61.3	12.6	51.1	3.524	0.007	0.007	0.0001	0.136	0.12
10/29/2002	5:46:20 PM	26.127	23.772	25.931	25.229	24.526	59.989	63.174	18.471	42.09	-1.284	-6.524	51.153	0.048	0.001	0	112.87	1.88111	61.7	12.5	51.0	3.519	0.007	0.007	0.0001	0.137	0.12
10/29/2002	5:47:20 PM	26.141	23.79	25.925	25.213	24.59	59.864	63.027	18.412	42.098	-1.289	-6.527	51.01	0.049	0.001	0	113.87	1.89778	61.6	12.5	51.0	3.515	0.007	0.007	0.0001	0.140	0.12
10/29/2002	5:48:20 PM	26.155	23.809	25.939	25.262	24.644	60.415	63.441	18.526	42.694	-1.286	-6.527	51.224	0.048	0.001	0	114.87	1.91444	62.0	12.6	51.6	3.555	0.007	0.007	0.0001	0.135	0.12
10/29/2002	5:49:20 PM	26.17	23.824	25.938	25.276	24.689	59.92	63.23	18.44	42.098	-1.289	-6.527	51.067	0.049	0.001	0	115.87	1.93111	61.8	12.5	51.0	3.517	0.007	0.007	0.0001	0.139	0.12
10/29/2002	5:50:20 PM	26.189	23.844	25.933	25.376	24.753	59.752	62.911	18.317	42.102	-1.286	-6.53	51.341	0.048	0.001	0	116.87	1.94778	61.4	12.6	50.9	3.511	0.007	0.007	0.0001	0.137	0.12
10/29/2002	5:51:20 PM	26.202	23.857	25.941	25.374	24.792	60.397	63.617	18.54	42.651	-1.286	-6.53	51.18	0.048	0.001	0	117.87	1.96444	62.1	12.5	51.5	3.552	0.007	0.007	0.0001	0.135	0.12
10/29/2002	5:52:20 PM	26.221	23.881	25.95	25.433	24.846	60.279	63.391	18.585	42.44	-1.286	-6.53	51.318	0.049	0.001	0	118.87	1.98111	61.9	12.6	51.4	3.541	0.007	0.007	0.0001	0.138	0.12
10/29/2002	5:53:20 PM	26.236	23.896	25.935	25.478	24.896	60.163	63.302	18.539	42.411	-1.295	-6.533	50.991	0.048	0.001	0	119.87	1.99778	61.8	12.5	51.3	3.536	0.007	0.007	0.0001	0.136	0.12
	Averages	26.1	23.6	25.5	23.0	23.8	51.9	54.6	15.8	36.9	-1.2	-6.0	46.7	0.0	0.0	0.0			53.2	11.4	44.4	3.063	0.007	0.007	0.0002	0.155	0.132
	Maximum	29.5	23.9	27.7	25.5	24.9	60.4	63.6	18.6	42.7	0.3	0.8	51.3	0.1	0.0	0.0			62.1	12.6	51.6	3.555	0.016	0.015	0.0004	0.368	0.313
	Median	25.8	23.6	25.6	22.7	23.8	50.6	52.9	15.3	36.0	-1.3	-6.5	45.7	0.0	0.0	0.0			51.4	11.2	43.3	2.985	0.006	0.007	0.0001	0.145	0.124
	Minimum	25.2	23.5	24.0	22.2	23.5	43.8	49.9	12.9	30.7	-1.3	-6.6	44.3	0.0	0.0	0.0			48.4	10.9	37.2	2.568	0.006	0.006	0.0001	0.135	0.115
	2 x Std Dev	2.002	0.169	1.299	1.711	0.587	8.813	8.760	2.845	5.992	0.810	3.838	4.633	0.016	0.000	0.000			8.760	1.135	7.394	0.510	0.002	0.002	0.0001	0.065	0.055
	Number of Points Used*	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118			118	118	118	118	118	118	118	118	118
	* Backpulse points in box are not included																										

Figure E26-2: Steady state test run 1.29 of AN-102R2, batch 3B, insoluble solids concentration of 22 wt% - Raw & Calculated Data

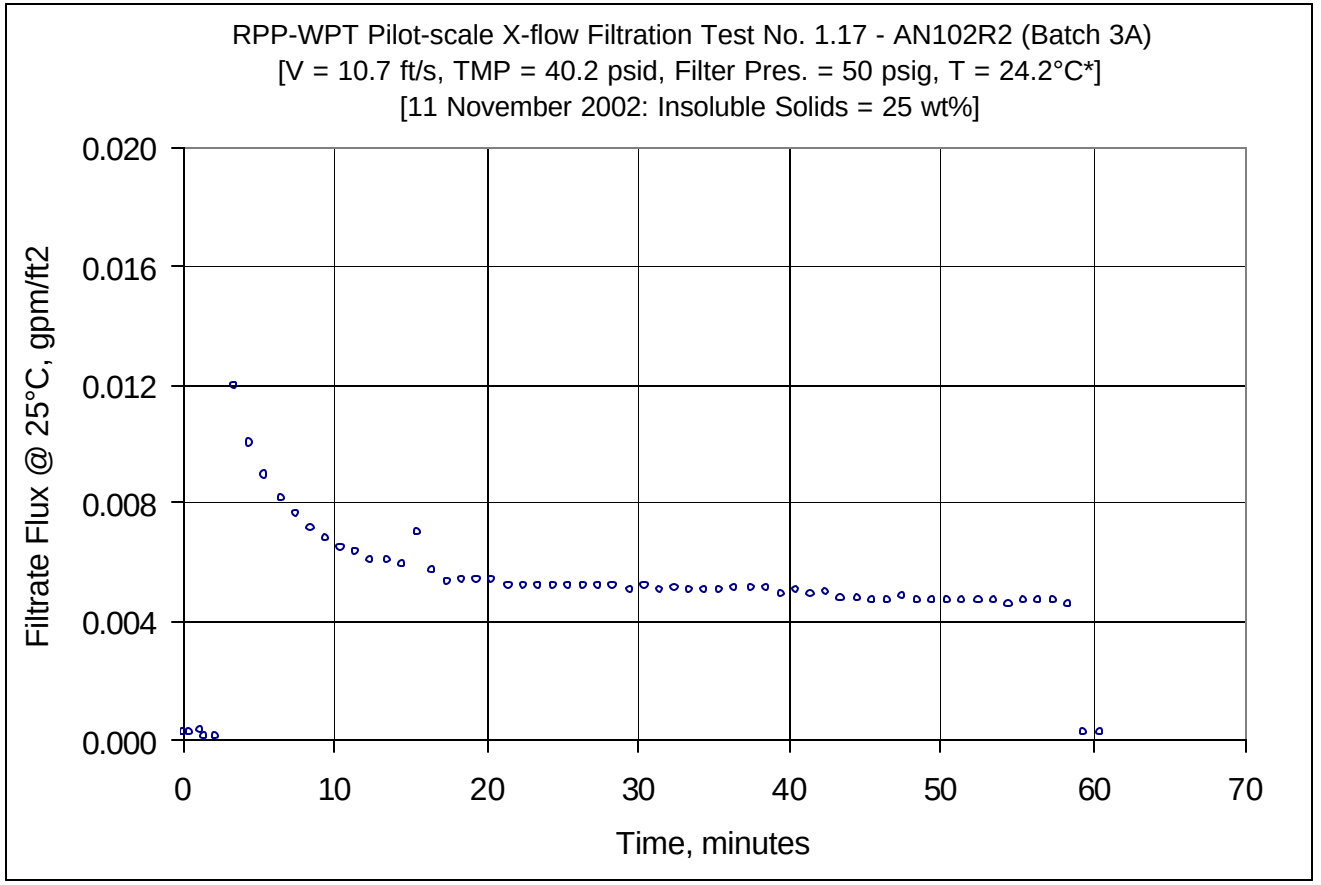


Figure E27: Steady state test run 1.17 of AN-102R2, batch 3A, insoluble solids concentration of 25 wt%

DATE	TIME	<<<<<<<<< Temperature Measurements >>>>>>>>>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>>>>>>						<<<<<<<<< Flow Measurements >>>>>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>											
		Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse											
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm											
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp											
Zeros																											
11/11/2002	8:48:51 AM	22.487	21.865	21.521	21.33	20.743	-0.125	0.018	-0.045	0.061	-0.377	0.32	-0.211	0.001	0.001	0.002											
11/11/2002	8:49:09 AM	22.487	21.865	21.521	21.33	20.743	-0.125	0.018	-0.045	0.061	-0.377	0.32	-0.211	0.001	0.001	0.002											
11/11/2002	8:49:10 AM	22.481	21.839	21.51	21.28	20.707	-0.125	0.018	-0.045	0.063	-0.375	0.322	-0.205	0.001	0.001	0.003											
11/11/2002	8:49:11 AM	22.471	21.834	21.51	21.284	20.702	-0.125	0.018	-0.045	0.063	-0.372	0.32	-0.211	0.001	0.001	0.002											
11/11/2002	8:49:12 AM	22.481	21.829	21.515	21.289	20.702	-0.125	0.016	-0.045	0.063	-0.375	0.32	-0.205	0.001	0.001	0.003											
11/11/2002	8:49:13 AM	22.48	21.833	21.509	21.284	20.696	-0.125	0.018	-0.045	0.061	-0.377	0.32	-0.209	0.001	0.001	0.001											
11/11/2002	8:49:14 AM	22.475	21.833	21.509	21.284	20.696	-0.125	0.02	-0.045	0.061	-0.375	0.322	-0.205	0.001	0.001	0											
11/11/2002	8:49:15 AM	22.481	21.844	21.515	21.279	20.702	-0.127	0.018	-0.045	0.063	-0.377	0.32	-0.211	0.001	0.001	0.001											
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	ft2	ft2	ft2/psi	ft2/psi	day/bar
11/11/2002	2:20:34 PM	24.328	22.997	22.289	24.11	23.441	32.949	54.502	17.593	16.511	15.568	94.091	42.304	0.002	0.001	0	0	0	53.0	10.4	24.7	1.705	0.000	0.000	0.0000	0.013	0.01
11/11/2002	2:20:58 PM	24.328	22.997	22.289	24.11	23.441	32.949	54.502	17.593	16.511	15.568	94.091	42.304	0.002	0.001	0	0.40	0.00667	53.0	10.4	24.7	1.705	0.000	0.000	0.0000	0.013	0.01
11/11/2002	2:21:38 PM	24.167	23.027	22.223	24.069	23.49	-7.476	53.832	10.587	-18.573	78.125	78.977	41.058	0.002	0.001	0.61	1.07	0.01778	52.4	10.1	-13.0	-0.898	0.000	0.000	0.0000	-0.025	-0.02
11/11/2002	2:21:58 PM	24.269	23.033	22.19	24.091	23.492	4.485	53.484	12.265	-6.7	43.284	66.118	44.625	0.001	0.001	0.001	1.40	0.02333	52.0	10.9	-1.1	-0.076	0.000	0.000	-0.0001	-0.146	-0.12
11/11/2002	2:22:38 PM	24.267	23.051	22.127	24.069	23.465	14.011	53.79	12.493	2.511	34.927	0.541	44.3	0.174	0.001	0	2.07	0.03444	52.3	10.9	8.3	0.570	0.000	0.000	0.0000	0.020	0.02
11/11/2002	2:22:58 PM	24.117	23.052	22.082	24.089	23.465	47.164	53.73	13.263	34.894	0.526	0.579	43.981	0.143	0.001	0	2.40	0.04	52.3	10.8	41.0	2.829	0.021	0.023	0.0006	0.565	0.48
11/11/2002	2:23:58 PM	24.086	23.066	22.035	24.083	23.494	47.197	53.662	14.4	33.576	0.297	0.61	43.443	0.074	0.001	0	3.40	0.05667	52.2	10.6	40.4	2.785	0.011	0.012	0.0003	0.297	0.25
11/11/2002	2:24:58 PM	24.025	23.09	22.01	24.152	23.544	47.916	54.399	14.844	33.938	0.292	0.626	42.008	0.062	0.001	0	4.40	0.07333	52.9	10.3	40.9	2.822	0.009	0.010	0.0002	0.246	0.21
11/11/2002	2:25:58 PM	23.968	23.088	21.922	24.146	23.582	48.345	54.746	15.427	33.844	0.286	0.648	41.513	0.055	0.001	0	5.40	0.09	53.3	10.2	41.1	2.833	0.008	0.009	0.0002	0.218	0.19
11/11/2002	2:26:58 PM	23.916	23.116	21.885	24.134	23.64	48.651	55.327	15.765	33.682	0.289	0.665	40.942	0.05	0.001	0	6.40	0.10667	53.9	10.0	41.2	2.838	0.007	0.008	0.0002	0.198	0.17
11/11/2002	2:27:58 PM	23.889	23.15	21.874	24.293	23.674	48.512	54.835	15.976	33.4	0.292	0.686	40.426	0.047	0.001	0	7.40	0.12333	53.4	9.9	41.0	2.824	0.007	0.008	0.0002	0.187	0.16
11/11/2002	2:28:58 PM	23.848	23.169	21.868	24.347	23.703	48.914	55.331	16.322	33.437	0.292	0.703	40.189	0.044	0.001	0	8.40	0.14	53.9	9.8	41.2	2.839	0.007	0.007	0.0002	0.174	0.15
11/11/2002	2:29:58 PM	23.827	23.208	21.967	24.406	23.747	48.757	55.129	16.477	33.259	0.295	0.72	40.005	0.042	0.001	0	9.40	0.15667	53.7	9.8	41.0	2.827	0.006	0.007	0.0002	0.166	0.14
11/11/2002	2:30:58 PM	23.775	23.212	21.921	24.385	23.771	49.241	55.814	16.811	33.152	0.332	0.732	39.457	0.04	0.001	0	10.40	0.17333	54.3	9.7	41.2	2.840	0.006	0.007	0.0002	0.158	0.13
11/11/2002	2:31:58 PM	23.733	23.22	21.914	24.448	23.794	48.864	55.238	16.78	33.039	0.335	0.744	39.285	0.039	0.001	0	11.40	0.19	53.8	9.6	41.0	2.823	0.006	0.006	0.0002	0.155	0.13
11/11/2002	2:32:58 PM	23.692	23.244	22.25	24.276	23.823	49.071	55.662	16.919	32.888	0.323	0.758	39.17	0.038	0.001	0	12.40	0.20667	54.2	9.6	41.0	2.825	0.006	0.006	0.0001	0.149	0.13
11/11/2002	2:33:58 PM	23.661	23.263	22.369	24.275	23.833	48.922	55.458	16.964	32.82	0.37	0.777	39.005	0.038	0.001	0	13.40	0.22333	54.0	9.6	40.9	2.818	0.006	0.006	0.0001	0.149	0.13
11/11/2002	2:34:58 PM	23.586	23.244	22.405	24.266	23.767	49.04	55.489	17.155	32.861	0.39	0.784	38.832	0.037	0.001	0	14.40	0.24	54.0	9.5	41.0	2.823	0.006	0.006	0.0001	0.145	0.12
11/11/2002	2:35:58 PM	23.698	23.265	22.628	24.222	23.739	53.462	55.451	17.158	37.293	-1.286	-5.737	38.919	0.044	0.001	0	15.40	0.25667	54.0	9.5	45.4	3.129	0.007	0.007	0.0002	0.155	0.13
11/11/2002	2:36:58 PM	23.719	23.261	23.412	24.153	23.71	49.042	50.88	18.944	31.15	-1.286	-6.151	46.056	0.037	0.001	0	16.40	0.27333	49.4	11.3	40.1	2.764	0.006	0.006	0.0001	0.144	0.12
11/11/2002	2:37:58 PM	23.766	23.278	24.101	24.215	23.751	47.402	49.415	18.751	29.635	-1.286	-5.679	46.091	0.035	0.001	0	17.40	0.29	47.9	11.3	38.5	2.656	0.005	0.005	0.0001	0.139	0.12
11/11/2002	2:38:58 PM	23.814	23.295	24.274	24.232	23.814	48.637	50.708	18.556	30.943	-1.289	-5.792	45.508	0.036	0.001	0	18.40	0.30667	49.2	11.2	39.8	2.743	0.005	0.005	0.0001	0.138	0.12
11/11/2002	2:39:58 PM	23.912	23.314	24.423	24.236	23.828	48.666	50.493	18.258	31.39	-1.284	-5.794	44.85	0.036	0.001	0	19.40	0.32333	49.0	11.0	40.0	2.760	0.005	0.005	0.0001	0.136	0.12
11/11/2002	2:40:58 PM	24.005	23.316	24.395	24.303	23.81	48.786	50.584	18.108	31.664	-1.284	-5.789	44.384	0.036	0.001	0	20.40	0.34	49.1	10.9	40.2	2.773	0.005	0.005	0.0001	0.136	0.12
11/11/2002	2:41:58 PM	24.113	23.324	24.668	24.261	23.838	48.657	50.915	18.306	31.129	-1.289	-5.797	45.129	0.035	0.001	0	21.40	0.35667	49.4	11.1	39.9	2.760	0.005	0.005	0.0001	0.132	0.11
11/11/2002	2:42:58 PM	24.222	23.348	24.767	24.31	23.867	48.218	50.404	18.104	31.113	-1.289	-5.887	45.332	0.035	0.001	0	22.40	0.37333	48.9	11.1	39.7	2.736	0.005	0.005	0.0001	0.132	0.11
11/11/2002	2:43:58 PM	24.315	23.346	24.685	24.443	23.854	48.806	50.681	18.108	31.692	-1.286	-5.887	44.833	0.035	0.001	0	23.40	0.39	49.2	11.0	40.2	2.775	0.005	0.005	0.0001	0.131	0.11
11/11/2002	2:44:58 PM	24.434	23.364	24.803	24.456	23.868	48.614	50.65	18.069	31.5	-1.289	-5.887	44.722	0.035	0.001	0	24.40	0.40667	49.2	11.0	40.1	2.762	0.005	0.005	0.0001	0.131	0.11
11/11/2002	2:45:58 PM	24.522	23.382	24.822	24.344	23.911	48.771	50.989	18.058	31.57	-1.289	-5.887	44.778	0.035	0.001	0	25.40	0.42333	49.5	11.0	40.2	2.770	0.005	0.005	0.0001	0.131	0.11
11/11/2002	2:46:58 PM	24.612	23.407	24.796	24.349	23.976	48.552	50.594	17.969	31.606	-1.289	-5.887	44.672	0.035	0.001	0	26.40	0.44	49.1	10.9	40.1	2.763	0.005	0.005	0.0001	0.131	0.11
11/11/2002	2:47:58 PM	24.691	23.416	24.72	24.267	24.01	48.943	51.211	18.023	31.905	-1.289	-5.887	44.355	0.035	0.001	0	27.40	0.45667	49.7	10.9	40.4	2.787	0.005	0.005	0.0001	0.130	0.11
11/11/2002	2:48:58 PM	24.766	23.436	24.81	24.292	24.055	48.968	51.059	18.02	31.883	-1.289	-5.89	44.428	0.035	0.001	0	28.40	0.47333	49.6	10.9	40.4	2.787	0.005	0.005	0.0001	0.130	0.11
11/11/2002	2:49:58 PM	24.825	23.449	24.803	24.371	24.073	48.84	51.033	17.995	31.729	-1.286	-5.89	44.347	0.034	0.001	0	29.40	0.49	49.6	10.9	40.3	2.777	0.005	0.005	0.0001	0.127	0.11
11/11/2002	2:50:58 PM	24.895	23.479	24.768	24.346	24.096	48.655	50.888	17.831	31.766	-1.286	-5.89	44.217	0.035	0.001	0	30.40	0.50667	49.4	10.8	40.2	2.772	0.005	0.005	0.0001	0.131	0.11
11/11/2002	2:51:58 PM	24.944	23.488	24.657	24.415	24.146	48.972	51.066	17.851	32.075	-1.289	-5.893	44.086	0.034	0.001	0	31.40	0.52333	49.6	10.8	40.5	2.794	0.005	0.005	0.0001	0.126	0.11
11/11/2002	2:52:58 PM	24.987	23.502	24.565	24.484	24.196	48.96	51.03	17.867	32.126	-1.292	-5.893	43.979	0.034	0.001	0	32.40	0.54	49.6	10.8	40.5	2.795	0.005	0.005	0.0001	0.127	0.11
11/11/2002	2:53:58 PM	25.027	23.521	24.64	24.508	24.23	48.678	50.685	17.877	31.967	-1.289	-5.896	44.036	0.034	0.001	0	33.40	0.55667	49.2	10.8	40.3	2.780	0.005	0.005	0.0001	0.127	0.11
11/11/2002	2:54:58 PM	25.06	23.54	24.693	24.541	24.259	49.057	51.44	18.016	31.959	-1.286	-5.893	44.044	0.034	0.001	0	34.40	0.57333	50.0	10.8	40.5	2.793	0.005	0.005	0.0001	0.126	0.11
11/11/2002	2:55:58 PM	25.074	23.553	24.627	24.455	24.278	49.204	51.602	17.685	32.528	-1.289	-5.896	43.392	0.034	0.001	0	35.40	0.59	50.1	10.6	40.9	2.818	0.005	0.005	0.0001	0.125	0.11
11/11/2002	2:56:58 PM	25.107	23.571	24.574	24.543	24.31	48.701	50.706	17.83	31.916	-1.286	-5.896	43.935	0.034	0.001	0	36.40	0.60667	49.2	10.8	40.3	2.779	0.005	0.005	0.0001	0.127	0.11
11/11/2002	2:57:58 PM	25.129	23.589	24.507	24.626	24.333	49.049	51.351	17.969	31.995	-1.286	-5.899	43.94	0.034	0.001	0	37.40	0.62333	49.9	10.8	40.5	2.794	0.005	0.005	0.0001	0.127	0.11
11/11/2002	2:58:58 PM	25.148	23.603	24.526	24.669	24.362	48.66	50.911	17.874	31.598	-1.286	-5.899	44.105	0.034	0.001	0	38.40	0.64	49.4	10.8	40.1	2.763	0.005	0.005	0.0001	0.128	0.11
11/11/2002	2:59:58 PM	25.156	23.615	24.664	24.577	24.36	48.949	51.049	17.824	32.096	-1.286	-5.899	43.977	0.033	0.001	0	39.40	0.65667	49.6	10.8	40.5	2.794	0.005	0.005	0.0001	0.123	0.10
11/11/2002	3:00:58 PM	25.174	23.633	24.632	24.755	24.403	48.864	51.27	17.829	31.922	-1.289	-5.899	43.862	0.034	0.001	0	40.40	0.67333	49.8	10.7	40.4	2.785	0.005	0.005	0.0001	0.127	0.11
11/11/2002	3:01:58 PM	25.186	23.65	24.574	24.772	24.44	49.293	51.471	18.037	32.233	-1.289	-5.896	43.858	0.033	0.001	0	41.40	0.69	50.0	10.7	40.8	2.810	0.005	0.005	0.0001	0.122	0.10
11/11/2002	3:02:58 PM	25.198	23.663	24.501	24.734	24.462	48.989	51.37	17.805	31.993	-1.289	-5.899	43.782	0.033	0.001	0	42.40	0.70667	49.9	10.7	40.5	2.792	0.005	0.005	0.0001	0.123	0.10
11/11/2002	3:03:58 PM	25.211	23.681	24.809	24.692	24.505	48.175	50.518	18.335	30.892	-1.289	-5.907	45.575	0.032	0.001	0	43.40	0.72333	49.0	11.2	39.5	2.726	0.005	0.005	0.0001	0.121	0.10
11/11/2002	3:04:58 PM	25.229	23.714	25.002	24.765	24.528	47.8	50.077	18.188	30.65	-1.286	-5.904	45.517	0.032	0.001	0	44.40	0.74	48.6	11.2	39.2	2.704	0.005	0.005	0.0001	0.122	0.10
11/11/2002	3:05:58 PM	25.252	23.731	25.08	24.788	24.551	47.841	50.029	18.083	30.884	-1.286	-5.904	45.599	0.032	0.001	0	45.40	0.75667	48.6	11.2	39.4	2.714	0.005	0.005	0.0001	0.121	0.10
11/11/2002	3:06:58 PM	25.274	23.744	25.092	24.911	24.576	48.092	50.369	18.086	30.927	-1.289	-5.904	45.622	0.032	0.001	0	46.40	0.77333	48.9	11.2	39.5	2.724	0.005	0.005	0.0001	0.120	0.10
11/11/2002	3:07:58 PM	25.306	23.761	25.276	24.858	24.605	48.274	50.594	18.249	30.896	-1.286	-5.907	45.722	0.033	0.001	0	47.40	0.79	49.1	11.2	39.6	2.729	0.005	0.005	0.0001	0.123	0.10
11/11/2002	3:08:58 PM	25.343	23.783	25.267	24.915	24.617	48.171	50.513	18.028	31.044	-1.286	-5.904	45.498	0.032	0.001	0	48.40	0.80667	49.0	11.1	39.6	2.731	0.005	0.005	0.0001	0.120	0.10
11/11/2002	3:09:58 PM	25.37	23.795	25.238	24.891	24.694	48.007	50.464	18.091	30.724	-1.289	-5.904	45.599	0.032	0.001	0	49.40	0.82333	49.0	11.2	39.4	2.714	0.005	0.005	0.0001	0.120	0.10
11/11/2002	3:10:58 PM	25.422	23.822	25.29	24.923	24.706	48.017	50.439	18.122	30.833	-1.286	-5.904	45.653	0.032	0.001	0	50.40	0.84	49.0	11.2	39.4	2.718	0.005	0.005	0.0001	0.120	0.10
11/11/2002	3:11:58 PM	25.454	23.839	25.343	24.88	24.748	48.316	50.65	18.087	31.166	-1.292	-5.91	45.397	0.032	0.001	0	51.40	0.85667	49.2	11.1	39.7	2.740	0.005	0.005	0.0001	0.119	0.10
11/11/2002	3:12:58 PM	25.496	23.851	25.29	24.908	24.706	48.166	50.503	18.01	31.115	-1.289	-5.91	45.33	0.032	0.001	0	52.40	0.87333	49.0	11.1	39.6	2.733	0.005	0.005	0.0001	0.119	0.10
11/11/2002	3:13:58 PM	25.517	23.857	25.18	24.933	24.711	48.276	50.741	17.944	31.179	-1.289	-5.91	45.16	0.032	0.001	0	53.40	0.89	49.3	11.1	39.7	2.739	0.005	0.005	0.0001	0.119	0.10
11/11/2002	3:14:58 PM	25.554	23.884	25.107	25.036	24.728	48.394	50.801	17.979	31.418	-1.289	-5.907	45.127	0.031	0.001	0	54.40	0.90667	49.3	11.1	39.9	2.751	0.005	0.005	0.0001	0.115	0.10
11/11/2002	3:15:58 PM	25.575	23.89	25.243	25.001	24.769	48.583	51.066	18.036	31.186	-1.286	-5.907	44.978	0.032	0.001	0	55.40	0.92333	49.6	11.0	39.9	2.760	0.005	0.005	0.0001	0.119	0.10
11/11/2002	3:16:58 PM	25.601	23.911	25.22	24.973	24.786	48.171	50.428	17.942	31.269	-1.286	-5.907	45.488	0.032	0.001	0	56.40	0.94	49.0	11.1	39.7	2.739	0.005	0.005	0.0001	0.119	0.10
11/11/2002	3:17:58 PM	25.613	23.928	25.161	24.954	24.792	48.048	50.573	17.907	31.078	-1.289	-5.91	45.093	0.032	0.001	0	57.40	0.95667	49.1	11.1	39.6	2.728	0.005	0.005	0.0001	0.120	0.10
11/11/2002	3:18:58 PM	25.639	23.955	25.112	24.976	24.844	48.023	50.387	17.927	31.101	-1.286	-5.904	45.085	0.031	0.001	0	58.40	0.97333	48.9	11.0	39.6	2.728	0.005	0.005	0.0001	0.116	0.10
11/11/2002	3:19:58 PM	25.641	23.952	25.095	24.903	24.866	47.413	50.484	17.999	30.403	-1.289	0.538	45.175	0.002	0.001	0	59.40	0.99	49.0	11.1	38.9	2.683	0.000	0.000	0.0000	0.008	0.01
11/11/2002	3:20:58 PM	25.784	23.989	25.197	24.885	24.948	45.441	50.784	17.943	28.354	-0.862	91.972	45.353	0.002	0.001	0	60.40	1.00667	49.3	11.1	36.9	2.544	0.000	0.000	0.0000	0.008	0.01
	Averages	24.7	23.5	24.2	24.5	24.2	48.6	51.7	17.6	31.9	-0.9	-2.7	43.8	0.0	0.0	0.0			50.3	10.7	40.2	2.772	0.005	0.005	0.0001	0.135	0.115
	Maximum	25.8	24.0	25.3	25.0	24.9	53.5	55.8	18.9	37.3	0.4	92.0	46.1	0.1	0.0	0.0			54.3	11.3	45.4	3.129	0.011	0.012	0.0003	0.297	0.253
	Median	25.0	23.5	24.7	24.5	24.2	48.7	50.9	18.0	31.7	-1.3	-5.9	44.4	0.0	0.0	0.0			49.4	10.9	40.2	2.773	0.005	0.005	0.0001	0.127	0.108
	Minimum	23.6	23.1	21.9	24.1	23.5	45.4	49.4	14.4	28.4	-1.3	-6.2	38.8	0.0	0.0	0.0			47.9	9.5	36.9	2.544	0.000	0.000	0.0000	0.008	0.007
	2 x Std Dev	1.383	0.528	2.380	0.568	0.833	1.792	3.750	1.776	2.519	1.297	25.676	4.220	0.020	0.000	0.000			3.749	1.034	2.011	0.139	0.003	0.003	0.0001	0.081	0.069
Number of Points Used*		58	58	58	58	58	58	58	58	58	58	58	58	58	58	58			58	58	58	58	58	58	58	58	58
	* Backpulse points in box are not included																										

Figure E28: Steady state test run 1.17 of AN-102R2, batch 3A, insoluble solids concentration of 25 wt% - Raw & Calculated Data

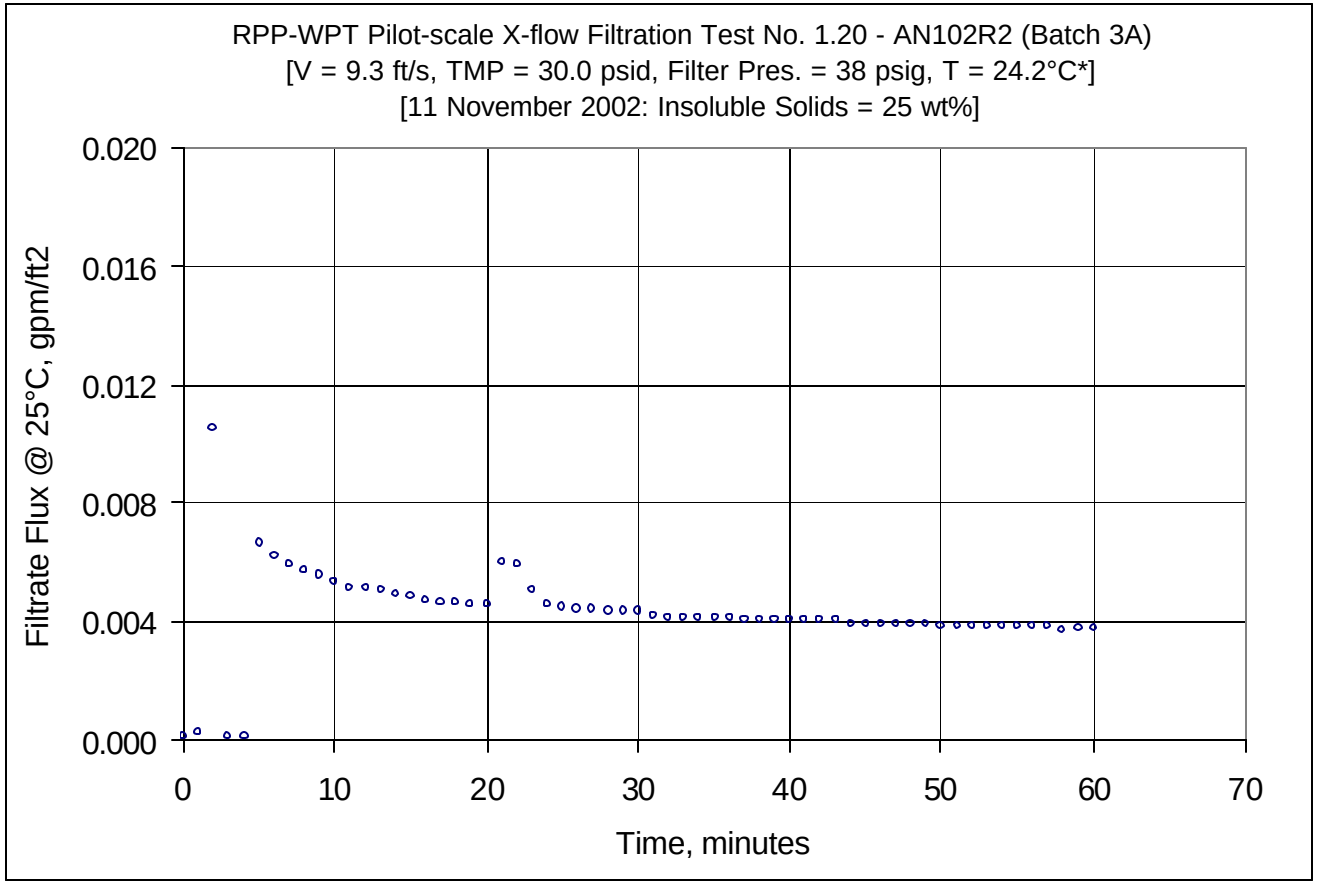


Figure E29: Steady state test run 1.20 of AN-102R2, batch 3A, insoluble solids concentration of 25 wt%

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>													
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse														
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm														
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp														
Zeros																														
11/11/2002	8:48:51 AM	22.487	21.865	21.521	21.33	20.743	-0.125	0.018	-0.045	0.061	-0.377	0.32	-0.211	0.001	0.001	0.002														
11/11/2002	8:49:09 AM	22.487	21.865	21.521	21.33	20.743	-0.125	0.018	-0.045	0.061	-0.377	0.32	-0.211	0.001	0.001	0.002														
11/11/2002	8:49:10 AM	22.481	21.839	21.51	21.28	20.707	-0.125	0.018	-0.045	0.063	-0.375	0.322	-0.205	0.001	0.001	0.003														
11/11/2002	8:49:11 AM	22.471	21.834	21.51	21.284	20.702	-0.125	0.018	-0.045	0.063	-0.372	0.32	-0.211	0.001	0.001	0.002														
11/11/2002	8:49:12 AM	22.481	21.829	21.515	21.289	20.702	-0.125	0.016	-0.045	0.063	-0.375	0.32	-0.205	0.001	0.001	0.003														
11/11/2002	8:49:13 AM	22.48	21.833	21.509	21.284	20.696	-0.125	0.018	-0.045	0.061	-0.377	0.32	-0.209	0.001	0.001	0.001														
11/11/2002	8:49:14 AM	22.475	21.833	21.509	21.284	20.696	-0.125	0.02	-0.045	0.061	-0.375	0.322	-0.205	0.001	0.001	0														
11/11/2002	8:49:15 AM	22.481	21.844	21.515	21.279	20.702	-0.127	0.018	-0.045	0.063	-0.377	0.32	-0.211	0.001	0.001	0.001														
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter			
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	ft2	ft2	ft2/psi	ft2/psi	day/bar			
11/11/2002	4:09:27 PM	28.656	24.121	26.168	24.189	23.792	30.903	40.829	18.232	13.688	3.711	80.497	38.39	0.001	0.001	0	0	0	39.4	9.4	22.3	1.537	0.000	0.000	0.0000	0.006	0.01			
11/11/2002	4:10:27 PM	27.122	24.109	25.376	24.227	23.744	-7.453	38.91	10.088	-18.554	57.08	57.866	43.243	0.002	0.001	0.535	1.00	0.01667	37.4	10.6	-13.0	-0.897	0.000	0.000	0.0000	-0.023	-0.02			
11/11/2002	4:11:27 PM	28.318	24.101	24.267	24.336	23.717	32.473	38.798	11.895	21.565	0.214	0.55	42.243	0.069	0.001	0	2.00	0.03333	37.3	10.4	27.0	1.863	0.010	0.011	0.0004	0.389	0.33			
11/11/2002	4:12:27 PM	28.591	24.091	23.534	24.39	23.686	32.68	39.086	12.66	21.002	0.182	0.59	41.926	0.051	0.001	0	3.00	0.05	37.6	10.3	26.8	1.851	0.000	0.000	0.0000	0.006	0.00			
11/11/2002	4:13:27 PM	28.665	24.084	23.011	24.429	23.65	33.068	39.67	13.077	20.865	0.202	0.605	41.353	0.047	0.001	0	4.00	0.06667	38.1	10.1	27.0	1.869	0.000	0.000	0.0000	0.006	0.00			
11/11/2002	4:14:27 PM	28.373	24.072	22.732	24.497	23.607	32.931	39.261	13.188	20.597	0.182	0.596	40.844	0.042	0.001	0	5.00	0.08333	37.8	10.0	26.8	1.845	0.006	0.007	0.0002	0.250	0.21			
11/11/2002	4:15:27 PM	28.127	24.05	22.575	24.55	23.58	32.846	39.166	13.439	20.327	0.222	0.631	40.554	0.039	0.001	0	6.00	0.1	37.7	9.9	26.6	1.833	0.006	0.006	0.0002	0.234	0.20			
11/11/2002	4:16:27 PM	27.885	24.053	22.542	24.553	23.563	33.308	39.805	13.685	20.423	0.188	0.625	40.307	0.037	0.001	0	7.00	0.11667	38.3	9.9	26.9	1.852	0.006	0.006	0.0002	0.220	0.19			
11/11/2002	4:17:27 PM	27.63	24.042	22.607	24.582	23.557	33.326	39.894	13.728	20.497	0.191	0.634	40.104	0.036	0.001	0	8.00	0.13333	38.4	9.8	26.9	1.855	0.005	0.006	0.0002	0.213	0.18			
11/11/2002	4:18:27 PM	27.365	24.031	22.702	24.602	23.552	33.498	39.898	13.783	20.673	0.248	0.645	39.588	0.035	0.001	0	9.00	0.15	38.4	9.7	27.1	1.867	0.005	0.006	0.0002	0.206	0.17			
11/11/2002	4:19:27 PM	27.116	24.032	22.803	24.657	23.577	33.523	39.905	13.895	20.681	0.243	0.662	39.353	0.034	0.001	0	10.00	0.16667	38.4	9.6	27.1	1.869	0.005	0.005	0.0002	0.199	0.17			
11/11/2002	4:20:27 PM	26.882	24.013	23.1	24.618	23.558	33.418	39.791	13.9	20.488	0.251	0.671	39.26	0.033	0.001	0	11.00	0.18333	38.3	9.6	27.0	1.868	0.005	0.005	0.0002	0.193	0.16			
11/11/2002	4:21:27 PM	26.644	23.995	23.338	24.635	23.555	33.65	40.248	13.927	20.748	0.26	0.706	39.164	0.033	0.001	0	12.00	0.2	38.8	9.6	27.2	1.875	0.005	0.005	0.0002	0.190	0.16			
11/11/2002	4:22:27 PM	26.448	23.998	23.557	24.604	23.544	33.745	40.062	14.037	20.738	0.248	0.706	39.013	0.033	0.001	0	13.00	0.21667	38.6	9.6	27.2	1.878	0.005	0.005	0.0002	0.188	0.16			
11/11/2002	4:23:27 PM	26.265	23.98	23.789	24.505	23.545	33.848	40.327	14.174	20.527	0.261	0.703	38.757	0.032	0.001	0	14.00	0.23333	38.9	9.5	27.2	1.874	0.005	0.005	0.0002	0.182	0.16			
11/11/2002	4:24:27 PM	26.102	23.977	24.103	24.482	23.523	33.722	40.153	14.143	20.515	0.283	0.716	38.744	0.032	0.001	0	15.00	0.25	38.7	9.5	27.1	1.870	0.005	0.005	0.0002	0.180	0.15			
11/11/2002	4:25:27 PM	25.969	23.964	24.29	24.414	23.514	33.749	40.198	14.125	20.589	0.289	0.729	38.595	0.031	0.001	0	16.00	0.26667	38.7	9.5	27.2	1.873	0.005	0.005	0.0002	0.174	0.15			
11/11/2002	4:26:27 PM	25.836	23.946	24.538	24.396	23.545	33.757	40.275	14.2	20.472	0.292	0.738	38.501	0.031	0.001	0	17.00	0.28333	38.8	9.4	27.1	1.869	0.005	0.005	0.0002	0.173	0.15			
11/11/2002	4:27:27 PM	25.687	23.937	24.785	24.362	23.548	33.79	40.383	14.201	20.476	0.289	0.752	38.476	0.031	0.001	0	18.00	0.3	38.9	9.4	27.1	1.871	0.005	0.005	0.0002	0.171	0.15			
11/11/2002	4:28:27 PM	25.573	23.944	25.066	24.394	23.579	33.747	40.263	14.223	20.523	0.292	0.764	38.298	0.031	0.001	0	19.00	0.31667	38.8	9.4	27.1	1.871	0.005	0.005	0.0002	0.170	0.14			
11/11/2002	4:29:27 PM	25.578	23.914	25.357	24.369	23.534	33.873	40.354	14.333	20.513	0.289	0.77	38.317	0.031	0.001	0	20.00	0.33333	38.9	9.4	27.2	1.875	0.005	0.005	0.0002	0.168	0.14			
11/11/2002	4:30:27 PM	25.648	23.909	25.672	24.389	23.539	39.368	40.209	14.103	26.44	-1.289	-5.936	38.283	0.041	0.001	0	21.00	0.35	38.7	9.4	32.9	2.269	0.006	0.006	0.0002	0.182	0.16			
11/11/2002	4:31:27 PM	25.648	23.899	25.862	24.364	23.489	39.757	40.492	14.343	26.278	-1.286	-6.31	38.346	0.041	0.001	0	22.00	0.36667	39.0	9.4	33.0	2.276	0.006	0.006	0.0002	0.181	0.15			
11/11/2002	4:32:27 PM	25.688	23.893	26.026	24.383	23.468	39.565	40.161	14.233	26.444	-1.284	-6.388	38.331	0.035	0.001	0	23.00	0.38333	38.7	9.4	33.0	2.276	0.005	0.005	0.0002	0.154	0.13			
11/11/2002	4:33:27 PM	25.721	23.851	26.44	24.346	23.452	37.444	38.018	14.095	24.186	-1.289	-6.408	37.44	0.032	0.001	0	24.00	0.4	36.5	9.2	30.8	2.125	0.005	0.005	0.0001	0.149	0.13			
11/11/2002	4:34:27 PM	25.786	23.861	27.004	24.356	23.452	37.802	38.446	14.079	24.601	-1.292	-6.408	37.144	0.032	0.001	0	25.00	0.41667	37.0	9.1	31.2	2.151	0.005	0.005	0.0001	0.145	0.12			
11/11/2002	4:35:27 PM	25.864	23.844	27.381	24.324	23.43	37.452	38.082	14.009	24.366	-1.289	-6.4	37.641	0.032	0.001	0	26.00	0.43333	36.6	9.2	30.9	2.131	0.005	0.004	0.0001	0.144	0.12			
11/11/2002	4:36:27 PM	25.942	23.817	27.713	24.307	23.402	37.251	37.904	13.903	24.44	-1.289	-6.4	37.624	0.032	0.001	0	27.00	0.45	36.4	9.2	30.8	2.127	0.005	0.004	0.0001	0.143	0.12			
11/11/2002	4:37:27 PM	26.055	23.79	27.96	24.305	23.35	37.487	38.426	13.869	24.491	-1.289	-6.403	37.681	0.032	0.001	0	28.00	0.46667	37.0	9.2	31.0	2.137	0.005	0.004	0.0001	0.142	0.12			
11/11/2002	4:38:27 PM	26.202	23.776	28.136	24.216	23.296	37.678	38.546	13.942	24.591	-1.286	-6.397	37.62	0.032	0.001	0	29.00	0.48333	37.1	9.2	31.1	2.147	0.005	0.004	0.0001	0.140	0.12			
11/11/2002	4:39:27 PM	26.354	23.758	28.298	24.233	23.223	37.46	38.111	13.908	24.616	-1.289	-6.4	37.799	0.032	0.001	0	30.00	0.5	36.6	9.3	31.0	2.140	0.005	0.004	0.0001	0.140	0.12			
11/11/2002	4:40:27 PM	26.512	23.751	28.43	24.211	23.256	37.444	38.072	13.842	24.73	-1.286	-6.4	37.589	0.031	0.001	0	31.00	0.51667	36.6	9.2	31.1	2.143	0.005	0.004	0.0001	0.135	0.12			
11/11/2002	4:41:27 PM	26.657	23.741	28.53	24.211	23.301	37.516	38.413	13.917	24.568	-1.286	-6.403	37.769	0.031	0.001	0	32.00	0.53333	36.9	9.3	31.0	2.140	0.005	0.004	0.0001	0.135	0.11			
11/11/2002	4:42:27 PM	26.792	23.726	28.614	24.206	23.301	37.593	38.508	13.871	24.55	-1.286	-6.4	37.685	0.031	0.001	0	33.00	0.55	37.0	9.2	31.1	2.142	0.005	0.004	0.0001	0.135	0.11			
11/11/2002	4:43:27 PM	26.919	23.714	28.612	24.144	23.214	37.384	38.173	13.834	24.613	-1.289	-6.405	37.551	0.031	0.001	0	34.00	0.56667	36.7	9.2	31.0	2.137	0.005	0.004	0.0001	0.135	0.11			
11/11/2002	4:44:27 PM	27.031	23.67	28.609	24.241	23.135	37.332	38.372	13.769	24.501	-1.289	-6.405	37.562	0.031	0.001	0	35.00	0.58333	36.9	9.2	30.9	2.132	0.005	0.004	0.0001	0.135	0.12			
11/11/2002	4:45:27 PM	27.153	23.663	28.612	24.234	23.118	37.344	38.27	13.771	24.495	-1.286	-6.405	37.496	0.031	0.001	0	36.00	0.6	36.8	9.2	30.9	2.132	0.005	0.004	0.0001	0.135	0.12			
11/11/2002	4:46:27 PM	27.235	23.624	28.553	24.085	23.049	37.27	38.049	13.809	24.46	-1.289	-6.405	37.518	0.03	0.001	0	37.00	0.61667	36.6	9.2	30.9	2.128	0.004	0.004	0.0001	0.131	0.11			
11/11/2002	4:47:27 PM	27.33	23.595	28.519	24.166	22.975	37.286	38.173	13.8	24.464	-1.289	-6.405	37.631	0.03	0.001	0	38.00	0.63333	36.7	9.2	30.9	2.129	0.004	0.004	0.0001	0.131	0.11			
11/11/2002	4:48:27 PM	27.396	23.56	28.46	24.171	22.904	37.287	38.275	13.846	24.276	-1.292	-6.408	37.471	0.03	0.001	0	39.00	0.65	36.8	9.2	30.8	2.122	0.004	0.004	0.0001	0.132	0.11			
11/11/2002	4:49:27 PM	27.487	23.557	28.491	24.238	22.836	37.44	38.343	13.835	24.47	-1.284	-6.405	37.49	0.03	0.001	0	40.00	0.66667	36.9	9.2	31.0	2.134	0.004	0.004	0.0001	0.131	0.11			
11/11/2002	4:50:27 PM	27.541	23.521	28.456	24.207	22.78	37.548	38.657	13.844	24.626	-1.284	-6.405	37.478	0.03	0.001	0	41.00	0.68333	37.2	9.2	31.1	2.143	0.004	0.004	0.0001	0.131	0.11			
11/11/2002	4:51:27 PM	27.586	23.486	28.401	24.177	22.72	37.216	38.039	13.788	24.456	-1.284	-6.411	37.301	0.03	0.001	0	42.00	0.7	36.6	9.1	30.8	2.126	0.004	0.004	0.0001	0.132	0.11			
11/11/2002	4:52:27 PM	27.612	23.441	28.307	24.147	22.65	37.382	38.577	13.772	24.56	-1.286	-6.408	37.343	0.03	0.001	0	43.00	0.71667	37.1	9.2	31.0	2.135	0.004	0.004	0.0001	0.132	0.11			
11/11/2002	4:53:27 PM	27.652	23.412	28.263	24.178	22.565	37.359	38.353	13.925	24.278	-1.286	-6.237	37.408	0.029	0.001	0	44.00	0.73333	36.9	9.2	30.8	2.125	0.004	0.004	0.0001	0.128	0.11			
11/11/2002	4:54:27 PM	27.668	23.372	28.198	24.199	22.505	37.127	38.07	13.861	24.04	-1.286	-6.232	37.318	0.029	0.001	0	45.00	0.75	36.6	9.1	30.6	2.109	0.004	0.004	0.0001	0.129	0.11			
11/11/2002	4:55:27 PM	27.673	23.338	28.159	24.174	22.456	37.353	38.525	13.876	24.397	-1.289	-6.237	37.379	0.029	0.001	0	46.00	0.76667	37.1	9.2	30.9	2.129	0.004	0.004	0.0001	0.128	0.11			
11/11/2002	4:56:27 PM	27.666	23.316	28.117	24.072	22.413	37.142	38.188	13.878	24.31	-1.286	-6.235	37.303	0.029	0.001	0	47.00	0.78333	36.7	9.1	30.7	2.118	0.004	0.004	0.0001	0.129	0.11			
11/11/2002	4:57:27 PM	27.655	23.284	28.081	23.965	22.412	37.655	38.736	14.004	24.489	-1.289	-6.237	37.364	0.029	0.001	0	48.00	0.8	37.3	9.2	31.1	2.142	0.004	0.004	0.0001	0.128	0.11			
11/11/2002	4:58:27 PM	27.658	23.252	28.024	23.903	22.395	37.291	38.421	13.937	24.276	-1.286	-6.236	37.282	0.029	0.001	0	49.00	0.81667	36.9	9.1	30.8	2.122	0.004	0.004	0.0001	0.129	0.11			
11/11/2002	4:59:27 PM	27.647	23.216	27.938	23.811	22.363	37.521	38.453	14.043	24.429	-1.289	-6.24	37.176	0.028	0.001	0	50.00	0.83333	37.0	9.1	31.0	2.136	0.004	0.004	0.0001	0.124	0.11			
11/11/2002	5:00:27 PM	27.614	23.188	27.866	23.754	22.33	37.258	38.306	13.867	24.341	-1.286	-6.24	37.247	0.028	0.001	0	51.00	0.85	36.8	9.1	30.8	2.124	0.004	0.004	0.0001	0.125	0.11			
11/11/2002	5:01:27 PM	27.61	23.178	27.841	23.739	22.301	37.173	38.231	13.836	24.442	-1.289	-6.243	37.192	0.028	0.001	0	52.00	0.86667	36.8	9.1	30.8	2.124	0.004	0.004	0.0001	0.125	0.11			
11/11/2002	5:02:27 PM	27.589	23.147	27.791	23.653	22.27	37.208	38.295	13.782	24.372	-1.289	-6.243	37.232	0.028	0.001	0	53.00	0.88333	36.8	9.1	30.8	2.123	0.004	0.004	0.0001	0.125	0.11			
11/11/2002	5:03:27 PM	27.564	23.122	27.751	23.693	22.26	37.593	38.763	13.994	24.478	-1.286	-6.24	37.211	0.028	0.001	0	54.00	0.9	37.3	9.1	31.0	2.140	0.004	0.004	0.0001	0.125	0.11			
11/11/2002	5:04:27 PM	27.547	23.105	27.694	23.792	22.233	37.595	38.659	14.113	24.36	-1.286	-6.246	37.119	0.028	0.001	0	55.00	0.91667	37.2	9.1	31.0	2.136	0.004	0.004	0.0001	0.125	0.11			
11/11/2002	5:05:27 PM	27.519	23.062	27.651	23.803	22.184	37.597	38.606	14.084	24.546	-1.286	-6.246	37.215	0.028	0.001	0	56.00	0.93333	37.1	9.1	31.1	2.142	0.004	0.004	0.0001	0.125	0.11			
11/11/2002	5:06:27 PM	27.491	23.039	27.613	23.786	22.181	37.4	38.529	13.931	24.329	-1.286	-6.243	37.085	0.028	0.001	0	57.00	0.95	37.1	9.1	30.9	2.128	0.004	0.004	0.0001	0.126	0.11			
11/11/2002	5:07:27 PM	27.47	23.033	27.557	23.709	22.21	37.251	38.467	13.789	24.435	-1.286	-6.243	36.706	0.027	0.001	0	58.00	0.96667	37.0	9.0	30.8	2.127	0.004	0.004	0.0001	0.122	0.10			
11/11/2002	5:08:27 PM	27.439	23.007	27.372	23.693	22.195	37.374	38.682	13.789	24.581	-1.284	-6.246	36.729	0.027	0.001	0	59.00	0.98333	37.2	9.0	31.0	2.136	0.004	0.004	0.0001	0.122	0.10			
11/11/2002	5:09:27 PM	27.398	22.975	27.25	23.611	22.187	37.394	38.583	13.894	24.403	-1.286	-6.249	36.691	0.027	0.001	0	60.00	1	37.1	9.0	30.9	2.130	0.004	0.004	0.0001	0.122	0.10			
	Averages	26.9	23.6	26.7	24.2	23.0	36.5	38.9	13.9	23.5	-0.9	-4.4	37.9	0.0	0.0	0.0			37.5	9.3	30.0	2.067	0.005	0.004	0.0001	0.150	0.128			
	Maximum	28.1	24.1	28.6	24.7	23.6	39.8	40.5	14.3	26.4	0.3	0.8	40.6	0.0	0.0	0.0			39.0	9.9	33.0	2.276	0.006	0.006	0.0002	0.234	0.199			
	Median	27.2	23.7	27.7	24.2	23.2	37.3	38.5	13.9	24.4	-1.3	-6.2	37.6	0.0	0.0	0.0			37.1	9.2	30.9	2.128	0.005	0.004	0.0001	0.135	0.115			
	Minimum	25.6	23.0	22.5	23.6	22.2	32.8	37.9	13.4	20.3	-1.3	-6.4	36.7	0.0	0.0	0.0			36.4	9.0	26.6	1.833	0.004	0.004	0.0001	0.122	0.103			
	2 x Std Dev	1.546	0.678	4.054	0.577	1.045	3.694	1.698	0.342	3.717	1.375	6.253	1.791	0.006	0.000	0.000			1.697	0.439	3.701	0.255	0.001	0.001	0.0001	0.058	0.050			
Number of Points Used*		55	55	55	55	55	55	55	55	55	55	55	55	55	55	55			55	55	55	55	55	55	55	55	55			
	* Backpulse points in box are not included																													

Figure E30: Steady state test run 1.20 of AN-102R2, batch 3A, insoluble solids concentration of 25 wt% - Raw & Calculated Data

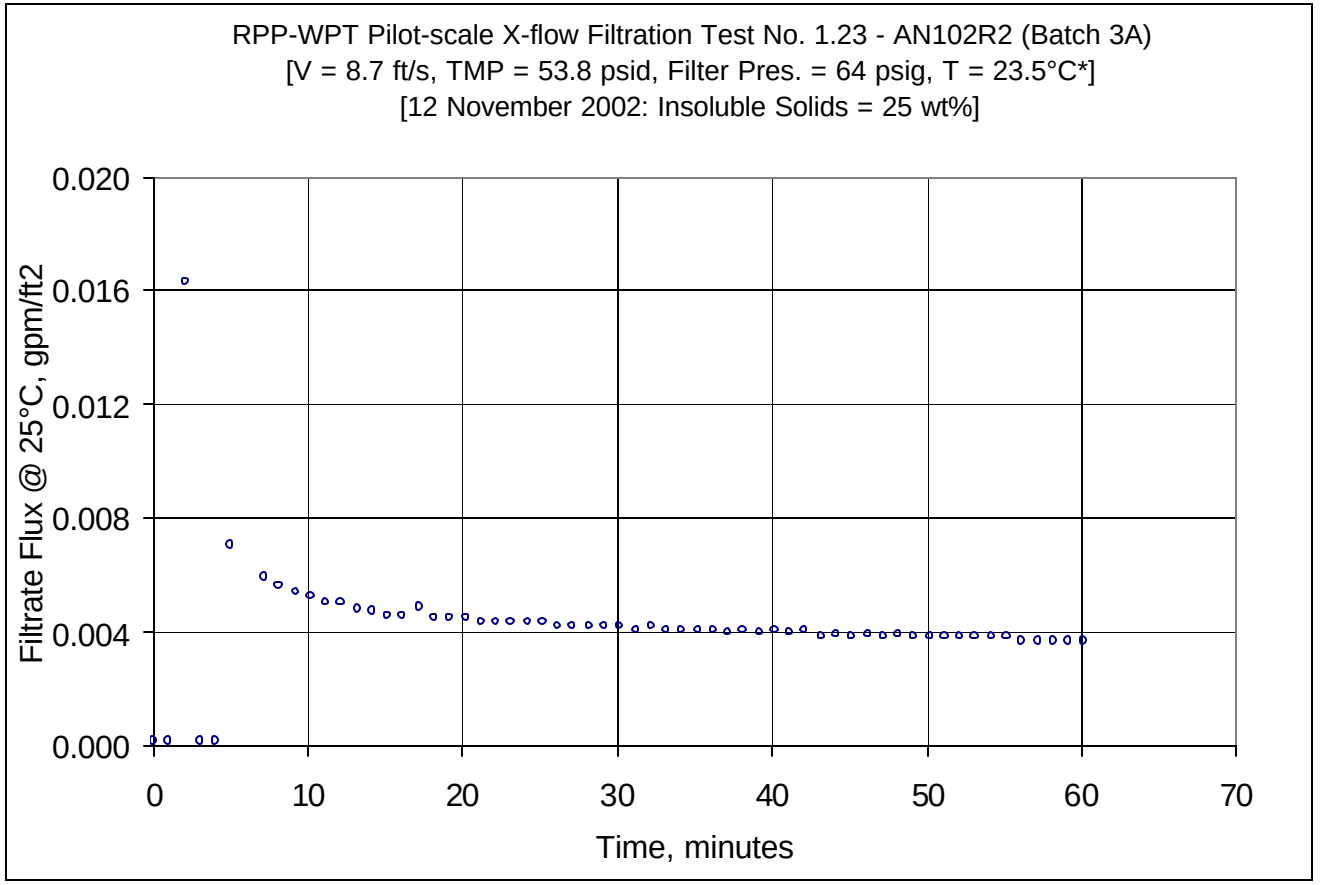


Figure E31: Steady state test run 1.23 of AN-102R2, batch 3A, insoluble solids concentration of 25 wt%

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>											
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse												
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm												
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp												
Zeros																												
11/12/2002	8:11:47 AM	21.54	21.663	20.804	21.275	21.296	-0.129	0.016	-0.042	0.049	-0.377	0.334	-0.211	0.001	0.001	0.001			Filter Surface	6.707	FT2							
11/12/2002	8:12:05 AM	21.54	21.663	20.804	21.275	21.296	-0.129	0.016	-0.042	0.049	-0.377	0.334	-0.211	0.001	0.001	0.001			Conversion	851	m3/m2/day/barg / gpm/ft2/barg							
11/12/2002	8:12:06 AM	21.541	21.644	20.79	21.271	21.267	-0.131	0.015	-0.043	0.049	-0.389	0.331	-0.213	0.001	0.001	0												
11/12/2002	8:12:07 AM	21.541	21.644	20.79	21.271	21.257	-0.129	0.016	-0.043	0.049	-0.377	0.331	-0.218	0.001	0.001	0.002			Note: Gauge Pressure P1 is approximately 1.4 psig									
11/12/2002	8:12:08 AM	21.542	21.65	20.791	21.271	21.263	-0.129	0.015	-0.042	0.049	-0.377	0.328	-0.213	0.001	0.001	0.002												
11/12/2002	8:12:09 AM	21.631	21.644	20.785	21.271	21.257	-0.129	0.015	-0.042	0.049	-0.418	0.334	-0.215	0.001	0.001	0.001			Pressure P1is corrected for 40.88 inches of water tubing									
11/12/2002	8:12:10 AM	21.541	21.644	20.785	21.271	21.257	-0.129	0.016	-0.042	0.049	-0.38	0.331	-0.211	0.001	0.001	0.002			VVVV					< Filtrate Flux <<		PERMIABILITY >>		
11/12/2002	8:12:11 AM	21.636	21.644	20.79	21.271	21.247	-0.129	0.015	-0.042	0.051	-0.377	0.334	-0.215	0.001	0.001	0								at 25C		x 1000		
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter	
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar	
11/12/2002	12:07:20 PM	27.6	18.407	20.864	20.447	18.828	45.377	64.774	14.001	32.183	13.309	105.261	37.489	0.001	0.001	0	0	0	63.3	9.2	38.8	2.674	0.000	0.000	0.0000	0.004	0.00	
11/12/2002	12:08:20 PM	24.061	18.37	20.822	20.436	18.705	5.83	64.71	11.188	-4.455	53.055	45.353	38.496	0.001	0.001	0	1.00	0.01667	63.2	9.4	0.7	0.047	0.000	0.000	0.0002	0.244	0.21	
11/12/2002	12:09:20 PM	25.007	18.297	20.704	20.368	18.526	57.243	64.648	12.241	45.886	1.331	0.618	37.831	0.097	0.001	0	2.00	0.03333	63.2	9.3	51.6	3.555	0.014	0.016	0.0003	0.317	0.27	
11/12/2002	12:10:20 PM	24.745	18.281	20.678	20.337	18.414	57.692	65.008	13.032	45.459	1.045	0.644	37.581	0.06	0.001	0	3.00	0.05	63.5	9.2	51.6	3.556	0.000	0.000	0.0000	0.003	0.00	
11/12/2002	12:11:20 PM	24.61	18.27	20.693	20.306	18.368	57.787	64.952	13.395	45.203	0.958	0.664	37.264	0.049	0.001	0	4.00	0.06667	63.5	9.1	51.5	3.550	0.000	0.000	0.0000	0.003	0.00	
11/12/2002	12:12:20 PM	24.4	18.236	20.748	20.342	18.313	58.04	64.983	13.721	45.223	0.929	0.679	37.086	0.042	0.001	0	5.00	0.08333	63.5	9.1	51.6	3.560	0.006	0.007	0.0001	0.137	0.12	
11/12/2002	12:14:29 PM	24.033	18.174	21.453	20.377	18.241	57.918	64.857	13.972	44.91	0.865	0.708	36.788	0.036	0.001	0	7.15	0.11917	63.4	9.0	51.4	3.545	0.005	0.006	0.0001	0.115	0.10	
11/12/2002	12:15:29 PM	23.89	18.156	21.505	20.334	18.228	58.2	65.082	14.198	44.906	0.865	0.719	36.56	0.034	0.001	0	8.15	0.13583	63.6	9.0	51.6	3.554	0.005	0.006	0.0001	0.109	0.09	
11/12/2002	12:16:29 PM	23.763	18.116	21.715	20.307	18.202	58.256	65.252	14.333	44.756	0.865	0.734	36.4	0.033	0.001	0	9.15	0.1525	63.8	8.9	51.5	3.551	0.005	0.005	0.0001	0.105	0.09	
11/12/2002	12:17:29 PM	23.607	18.129	21.791	20.292	18.242	58.355	65.246	14.491	44.762	0.868	0.742	36.222	0.032	0.001	0	10.15	0.16917	63.8	8.9	51.6	3.555	0.005	0.005	0.0001	0.101	0.09	
11/12/2002	12:18:29 PM	23.415	18.083	21.966	20.301	18.216	58.343	65.368	14.608	44.564	0.865	0.757	36.233	0.031	0.001	0	11.15	0.18583	63.9	8.9	51.5	3.548	0.005	0.005	0.0001	0.098	0.08	
11/12/2002	12:19:29 PM	23.287	18.044	22.265	20.313	18.071	58.098	65.043	14.552	44.474	0.865	0.765	36.061	0.031	0.001	0	12.15	0.2025	63.6	8.8	51.3	3.536	0.005	0.005	0.0001	0.097	0.08	
11/12/2002	12:20:29 PM	23.213	17.996	22.578	20.285	17.992	58.241	65.196	14.652	44.523	0.865	0.777	36.017	0.03	0.001	0	13.15	0.21917	63.7	8.8	51.4	3.543	0.004	0.005	0.0001	0.093	0.08	
11/12/2002	12:21:29 PM	23.118	17.961	22.865	20.199	17.947	58.51	65.512	14.691	44.756	0.865	0.786	35.973	0.03	0.001	0	14.15	0.23583	64.0	8.8	51.6	3.560	0.004	0.005	0.0001	0.092	0.08	
11/12/2002	12:22:29 PM	23.112	17.954	23.079	20.203	17.981	58.351	65.322	14.817	44.423	0.871	0.792	36.918	0.029	0.001	0	15.15	0.2525	63.8	8.8	51.4	3.543	0.004	0.005	0.0001	0.089	0.08	
11/12/2002	12:23:29 PM	23.12	17.963	23.163	20.05	18.02	58.469	65.411	14.897	44.46	0.88	0.806	36.786	0.029	0.001	0	16.15	0.26917	63.9	8.8	51.5	3.548	0.004	0.005	0.0001	0.088	0.08	
11/12/2002	12:24:29 PM	23.05	17.963	23.314	20.07	18.03	61.271	65.287	14.897	47.217	-1.285	-5.663	36.773	0.031	0.001	0	17.15	0.28583	63.8	8.8	54.2	3.740	0.005	0.005	0.0001	0.089	0.08	
11/12/2002	12:25:29 PM	23.102	17.99	23.511	20.087	18.143	61.155	65.117	14.876	47.141	-1.285	-5.535	36.71	0.029	0.001	0	18.15	0.3025	63.6	8.8	54.1	3.733	0.004	0.005	0.0001	0.083	0.07	
11/12/2002	12:26:29 PM	23.14	18.013	23.62	20.115	18.212	61.228	65.09	14.943	47.309	-1.285	-5.541	36.719	0.029	0.001	0	19.15	0.31917	63.6	8.8	54.3	3.742	0.004	0.005	0.0001	0.083	0.07	
11/12/2002	12:27:29 PM	23.178	18.006	23.572	20.098	18.2	61.429	65.374	14.981	47.424	-1.285	-5.538	36.777	0.029	0.001	0	20.15	0.33583	63.9	8.8	54.4	3.753	0.004	0.005	0.0001	0.083	0.07	
11/12/2002	12:28:29 PM	23.225	17.992	23.639	20.115	18.196	61.313	65.399	14.997	47.184	-1.288	-5.544	36.792	0.028	0.001	0	21.15	0.3525	63.9	8.8	54.2	3.740	0.004	0.004	0.0001	0.080	0.07	
11/12/2002	12:29:29 PM	23.261	17.988	23.665	20.101	18.223	61.402	65.468	14.997	47.334	-1.285	-5.516	36.726	0.028	0.001	0	22.15	0.36917	64.0	8.8	54.4	3.749	0.004	0.004	0.0001	0.080	0.07	
11/12/2002	12:30:29 PM	23.303	17.99	23.682	20.021	18.199	60.874	64.923	14.865	46.883	-1.288	-5.518	36.822	0.028	0.001	0	23.15	0.38583	63.4	8.8	53.9	3.715	0.004	0.004	0.0001	0.080	0.07	
11/12/2002	12:31:29 PM	23.3	17.941	23.604	20.049	18.1	61.099	65.159	14.965	47.078	-1.285	-5.512	36.819	0.028	0.001	0	24.15	0.4025	63.7	8.8	54.1	3.729	0.004	0.004	0.0001	0.080	0.07	
11/12/2002	12:32:29 PM	23.345	17.957	23.639	20.069	18.15	61.116	65.086	14.97	47.102	-1.285	-5.515	36.736	0.028	0.001	0	25.15	0.41917	63.6	8.8	54.1	3.731	0.004	0.004	0.0001	0.080	0.07	
11/12/2002	12:33:29 PM	23.407	17.999	23.781	20.131	18.238	61.203	65.229	15.014	47.145	-1.279	-5.512	36.826	0.027	0.001	0	26.15	0.43583	63.8	8.8	54.2	3.735	0.004	0.004	0.0001	0.077	0.07	
11/12/2002	12:34:29 PM	23.401	17.962	23.65	20.115	18.192	61.149	65.243	15.023	47.012	-1.288	-5.521	36.788	0.027	0.001	0	27.15	0.4525	63.8	8.8	54.1	3.729	0.004	0.004	0.0001	0.077	0.07	
11/12/2002	12:35:29 PM	23.469	17.991	23.793	20.158	18.255	61.383	65.641	15.104	47.066	-1.288	-5.515	36.771	0.027	0.001	0	28.15	0.46917	64.2	8.8	54.2	3.739	0.004	0.004	0.0001	0.077	0.07	
11/12/2002	12:36:29 PM	23.513	17.999	23.691	20.167	18.324	61.255	65.444	15.058	46.998	-1.288	-5.512	36.759	0.027	0.001	0	29.15	0.48583	64.0	8.8	54.1	3.732	0.004	0.004	0.0001	0.077	0.07	
11/12/2002	12:37:29 PM	23.546	18.012	23.825	20.115	18.343	61.192	65.204	15.026	47.127	-1.285	-5.512	36.807	0.027	0.001	0	30.15	0.5025	63.7	8.8	54.2	3.734	0.004	0.004	0.0001	0.077	0.07	
11/12/2002	12:38:29 PM	23.516	18.037	23.724	20.094	18.474	61.014	65.121	14.989	46.953	-1.285	-5.512	36.639	0.026	0.001	0	31.15	0.51917	63.6	8.7	54.0	3.722	0.004	0.004	0.0001	0.074	0.06	
11/12/2002	12:39:29 PM	23.562	18.084	23.836	20.126	18.652	61.145	65.051	15.021	47.066	-1.285	-5.512	36.719	0.027	0.001	0	32.15	0.53583	63.6	8.8	54.1	3.730	0.004	0.004	0.0001	0.077	0.07	
11/12/2002	12:40:29 PM	23.553	18.105	23.731	20.156	18.668	61.143	65.13	15.021	47.063	-1.285	-5.512	36.729	0.026	0.001	0	33.15	0.5525	63.7	8.8	54.1	3.730	0.004	0.004	0.0001	0.074	0.06	
11/12/2002	12:41:29 PM	23.566	18.113	23.769	20.159	18.605	61.118	65.281	14.92	47.022	-1.285	-5.509	35.482	0.026	0.001	0	34.15	0.56917	63.8	8.7	54.1	3.728	0.004	0.004	0.0001	0.074	0.06	
11/12/2002	12:42:29 PM	23.608	18.141	23.822	20.116	18.643	61.383	65.562	14.984	47.246	-1.285	-5.512	35.394	0.026	0.001	0	35.15	0.58583	64.1	8.7	54.3	3.745	0.004	0.004	0.0001	0.074	0.06	
11/12/2002	12:43:29 PM	23.628	18.171	23.766	20.091	18.779	61.482	65.703	15.007	47.332	-1.285	-5.509	35.436	0.026	0.001	0	36.15	0.6025	64.2	8.7	54.4	3.751	0.004	0.004	0.0001	0.074	0.06	
11/12/2002	12:44:29 PM	23.642	18.221	23.881	20.126	18.834	61.076	65.049	14.913	47.199	-1.282	-5.509	35.427	0.026	0.001	0	37.15	0.61917	63.6	8.7	54.1	3.733	0.004	0.004	0.0001	0.074	0.06	
11/12/2002	12:45:29 PM	23.647	18.246	23.771	20.156	18.905	61.404	65.682	14.97	47.217	-1.285	-5.509	35.289	0.026	0.001	0	38.15	0.63583	64.2	8.6	54.3	3.745	0.004	0.004	0.0001	0.074	0.06	
11/12/2002	12:46:29 PM	23.658	18.281	23.881	20.191	18.935	61.271	65.376	14.901	47.313	-1.285	-5.512	35.09	0.026	0.001	0	39.15	0.6525	63.9	8.6	54.3	3.743	0.004	0.004	0.0001	0.074	0.06	
11/12/2002	12:47:29 PM	23.696	18.321	23.774	20.24	18.944	61.547	65.827	14.972	47.34	-1.279	-5.509	35.066	0.026	0.001	0	40.15	0.66917	64.4	8.6	54.4	3.754	0.004	0.004	0.0001	0.074	0.06	
11/12/2002	12:48:29 PM	23.72	18.344	23.878	20.269	18.942	61.516	65.581	14.953	47.493	-1.282	-5.506	35.054	0.026	0.001	0	41.15	0.68583	64.1	8.6	54.5	3.758	0.004	0.004	0.0001	0.073	0.06	
11/12/2002	12:49:29 PM	23.727	18.362	23.765	20.292	18.96	61.483	65.539	14.924	47.547	-1.285	-5.506	34.945	0.026	0.001	0	42.15	0.7025	64.1	8.6	54.5	3.759	0.004	0.004	0.0001	0.074	0.06	
11/12/2002	12:50:29 PM	23.731	18.386	23.879	20.301	19.035	61.464	65.566	14.908	47.532	-1.285	-5.509	34.974	0.025	0.001	0	43.15	0.71917	64.1	8.6	54.5	3.757	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	12:51:29 PM	23.726	18.426	23.769	20.275	19.095	61.476	65.601	14.92	47.542	-1.288	-5.512	34.884	0.025	0.001	0	44.15	0.73583	64.1	8.5	54.5	3.758	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	12:52:29 PM	23.724	18.455	23.878	20.233	19.124	61.464	65.587	14.932	47.428	-1.285	-5.512	34.97	0.025	0.001	0	45.15	0.7525	64.1	8.6	54.4	3.754	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	12:53:29 PM	23.71	18.456	23.718	20.159	19.019	61.393	65.734	14.982	47.209	-1.285	-5.512	35.037	0.025	0.001	0	46.15	0.76917	64.3	8.6	54.3	3.744	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	12:54:29 PM	23.71	18.466	23.819	20.108	18.974	61.528	65.672	14.982	47.467	-1.288	-5.512	35.029	0.025	0.001	0	47.15	0.78583	64.2	8.6	54.5	3.757	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	12:55:29 PM	23.676	18.446	23.678	20.134	18.817	61.367	65.57	15.001	47.197	-1.288	-5.512	34.965	0.025	0.001	0	48.15	0.8025	64.1	8.6	54.3	3.743	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	12:56:29 PM	23.704	18.46	23.809	20.168	18.963	61.495	65.748	15	47.323	-1.285	-5.509	34.962	0.025	0.001	0	49.15	0.81917	64.3	8.6	54.4	3.751	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	12:57:29 PM	23.729	18.505	23.877	20.142	18.896	61.53	65.978	15.074	47.147	-1.282	-5.506	35.01	0.025	0.001	0	50.15	0.83583	64.5	8.6	54.3	3.746	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	12:58:29 PM	23.727	18.544	23.85	20.115	19.066	61.344	65.622	15.028	47.127	-1.285	-5.509	35.012	0.025	0.001	0	51.15	0.8525	64.1	8.6	54.2	3.739	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	12:59:29 PM	23.719	18.546	23.908	20.072	18.998	61.186	65.217	14.94	47.205	-1.285	-5.509	35.043	0.025	0.001	0	52.15	0.86917	63.7	8.6	54.2	3.737	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	1:00:29 PM	23.736	18.553	23.81	20.124	19.035	61.36	65.465	15.01	47.301	-1.285	-5.509	34.985	0.025	0.001	0	53.15	0.88583	64.0	8.6	54.3	3.746	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	1:01:29 PM	23.76	18.587	23.914	20.158	19.089	61.474	65.862	14.94	47.293	-1.285	-5.506	34.479	0.025	0.001	0	54.15	0.9025	64.4	8.4	54.4	3.750	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	1:02:29 PM	23.769	18.606	23.797	20.177	19.123	61.663	66.03	14.971	47.502	-1.285	-5.503	34.425	0.025	0.001	0	55.15	0.91917	64.6	8.4	54.6	3.763	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	1:03:29 PM	23.773	18.636	23.932	20.227	19.259	61.416	65.738	15.077	47.248	-1.288	-5.506	35.06	0.024	0.001	0	56.15	0.93583	64.3	8.6	54.3	3.746	0.004	0.004	0.0001	0.068	0.06	
11/12/2002	1:04:29 PM	23.783	18.682	23.822	20.217	19.315	61.424	65.649	15.082	47.217	-1.288	-5.506	35.046	0.024	0.001	0	57.15	0.9525	64.2	8.6	54.3	3.745	0.004	0.004	0.0001	0.068	0.06	
11/12/2002	1:05:29 PM	23.803	18.706	23.936	20.221	19.294	61.385	65.514	14.999	47.411	-1.282	-5.506	35.012	0.024	0.001	0	58.15	0.96917	64.0	8.6	54.4	3.751	0.004	0.004	0.0001	0.068	0.06	
11/12/2002	1:06:29 PM	23.812	18.736	23.81	20.231	19.405	61.296	65.504	14.941	47.348	-1.285	-5.503	34.662	0.024	0.001	0	59.15	0.98583	64.0	8.5	54.3	3.745	0.004	0.004	0.0001	0.068	0.06	
11/12/2002	1:07:29 PM	23.786	18.755	23.894	20.244	19.358	61.234	65.384	14.921	47.264	-1.285	-5.506	34.615	0.024	0.001	0	60.15	1.0025	63.9	8.5	54.2	3.740	0.004	0.004	0.0001	0.068	0.06	
	Averages	23.5	18.2	23.5	20.2	18.6	60.8	65.4	14.9	46.8	-0.9	-4.4	35.5	0.0	0.0	0.0			63.9	8.7	53.8	3.707	0.004	0.004	0.0001	0.079	0.067	
	Maximum	24.0	18.8	23.9	20.4	19.4	61.7	66.0	15.1	47.5	0.9	0.8	36.8	0.0	0.0	0.0			64.6	9.0	54.6	3.763	0.005	0.006	0.0001	0.115	0.098	
	Median	23.6	18.2	23.8	20.2	18.6	61.3	65.4	15.0	47.2	-1.3	-5.5	35.6	0.0	0.0	0.0			63.9	8.7	54.2	3.740	0.004	0.004	0.0001	0.074	0.063	
	Minimum	23.1	17.9	21.5	20.0	17.9	57.9	64.9	14.0	44.4	-1.3	-5.7	34.4	0.0	0.0	0.0			63.4	8.4	51.3	3.536	0.004	0.004	0.0001	0.068	0.058	
	2 x Std Dev	0.483	0.505	1.317	0.167	0.881	2.391	0.535	0.435	2.037	1.672	4.875	1.054	0.005	0.000	0.000			0.535	0.258	2.208	0.152	0.001	0.001	0.0000	0.022	0.019	
Number of Points Used*		54	54	54	54	54	54	54	54	54	54	54	54	54	54	54			54	54	54	54	54	54	54	54	54	
	* Backpulse points in box are not included																											

Figure E32: Steady state test run 1.23 of AN-102R2, batch 3A, insoluble solids concentration of 25 wt% - Raw & Calculated Data

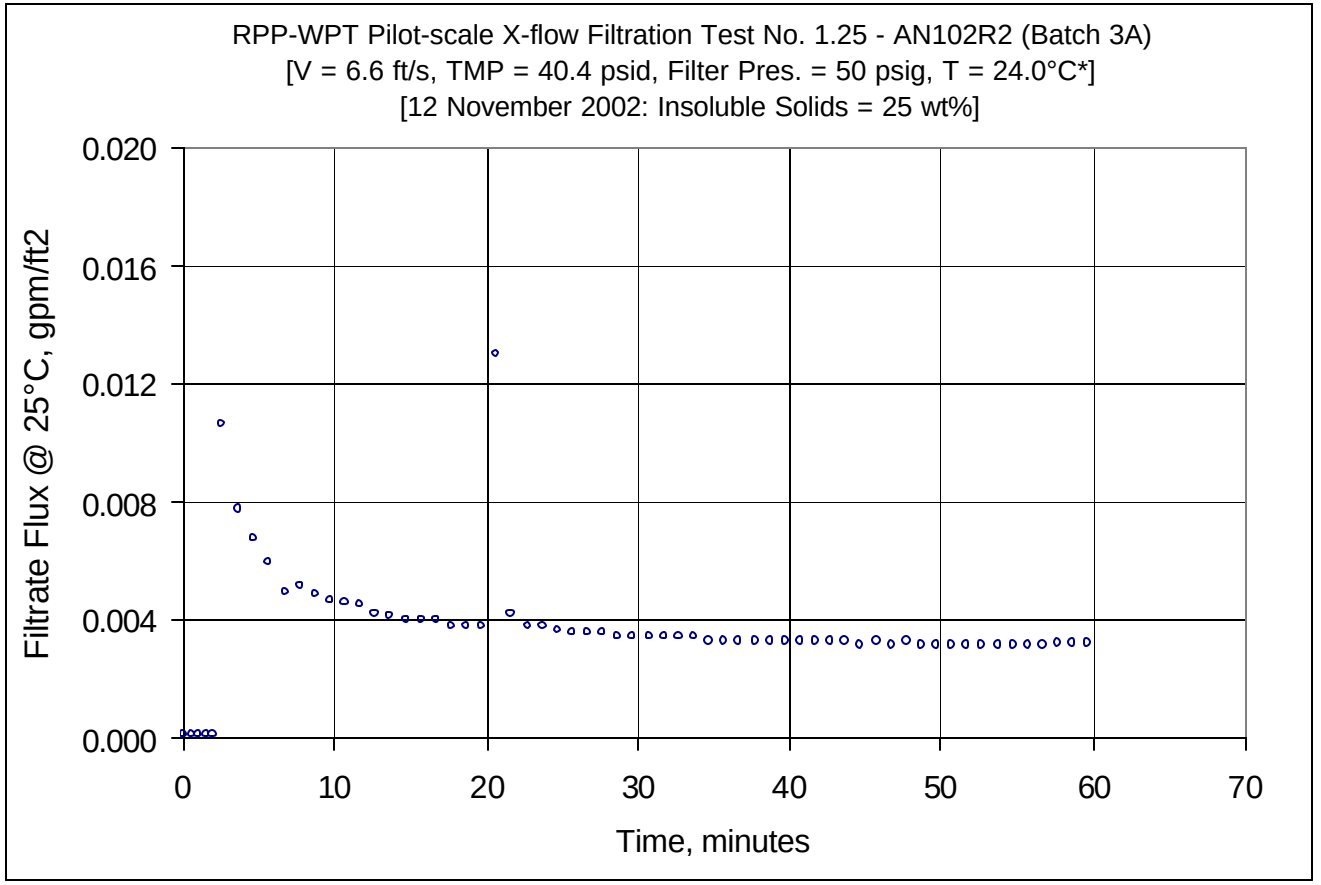


Figure E33: Steady state test run 1.25 of AN-102R2, batch 3A, insoluble solids concentration of 25 wt%

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>											
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse												
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm												
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp												
Zeros																												
11/12/2002	8:11:47 AM	21.54	21.663	20.804	21.275	21.296	-0.129	0.016	-0.042	0.049	-0.377	0.334	-0.211	0.001	0.001	0.001												
11/12/2002	8:12:05 AM	21.54	21.663	20.804	21.275	21.296	-0.129	0.016	-0.042	0.049	-0.377	0.334	-0.211	0.001	0.001	0.001												
11/12/2002	8:12:06 AM	21.541	21.644	20.79	21.271	21.267	-0.131	0.015	-0.043	0.049	-0.389	0.331	-0.213	0.001	0.001	0												
11/12/2002	8:12:07 AM	21.541	21.644	20.79	21.271	21.257	-0.129	0.016	-0.043	0.049	-0.377	0.331	-0.218	0.001	0.001	0.002												
11/12/2002	8:12:08 AM	21.542	21.65	20.791	21.271	21.263	-0.129	0.015	-0.042	0.049	-0.377	0.328	-0.213	0.001	0.001	0.002												
11/12/2002	8:12:09 AM	21.531	21.644	20.785	21.271	21.257	-0.129	0.015	-0.042	0.049	-0.418	0.334	-0.215	0.001	0.001	0.001												
11/12/2002	8:12:10 AM	21.541	21.644	20.785	21.271	21.257	-0.129	0.016	-0.042	0.049	-0.38	0.331	-0.211	0.001	0.001	0.002												
11/12/2002	8:12:11 AM	21.536	21.644	20.79	21.271	21.247	-0.129	0.015	-0.042	0.051	-0.377	0.334	-0.215	0.001	0.001	0												
Data - Per Minute																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter	
																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar	
11/12/2002	1:12:34 PM	23.695	18.81	22.076	20.204	19.201	43.268	51.021	12.283	32.037	1.839	91.478	29.269	0.001	0.001	0	0	0	49.5	7.2	37.6	2.596	0.000	0.000	0.000	0.000	0.000	
11/12/2002	1:13:04 PM	24.016	18.82	22.096	20.178	19.195	42.173	50.903	12.324	30.742	2.623	90.633	29.265	0.001	0.001	0	0.50	0.00833	49.4	7.2	36.5	2.514	0.000	0.000	0.000	0.000	0.004	0.00
11/12/2002	1:13:34 PM	22.092	18.835	21.905	20.158	19.221	4.405	50.284	9.742	-4.367	40.1	44.039	30.622	0.001	0.001	0.002	1.00	0.01667	48.8	7.5	0.0	0.001	0.000	0.000	0.000	0.0086	8.569	7.29
11/12/2002	1:14:04 PM	22.329	18.846	21.83	20.154	19.277	8.833	50.566	10.085	-0.27	35.975	0.632	30.289	0.049	0.001	0	1.50	0.025	49.1	7.4	4.3	0.295	0.000	0.000	0.0000	0.038	0.03	
11/12/2002	1:14:34 PM	23.234	18.846	21.825	20.169	19.263	42.794	50.537	10.521	33.153	1.64	0.606	29.995	0.124	0.001	0	2.00	0.03333	49.1	7.4	38.0	2.618	0.000	0.000	0.0000	0.004	0.00	
11/12/2002	1:15:04 PM	23.008	18.841	21.609	20.154	19.252	43.298	50.783	10.855	33.329	1.325	0.615	29.783	0.065	0.001	0	2.50	0.04167	49.3	7.3	38.3	2.642	0.010	0.011	0.0003	0.279	0.24	
11/12/2002	1:16:14 PM	22.999	18.863	21.484	20.191	19.299	43.55	50.653	11.263	33.323	1.178	0.641	28.988	0.047	0.001	0	3.67	0.06111	49.2	7.1	38.4	2.650	0.007	0.008	0.0002	0.202	0.17	
11/12/2002	1:17:14 PM	22.993	18.846	21.427	20.149	19.227	43.797	51.149	11.637	32.897	1.169	0.655	28.82	0.041	0.001	0	4.67	0.07778	49.7	7.1	38.3	2.644	0.006	0.007	0.0002	0.176	0.15	
11/12/2002	1:18:14 PM	23.004	18.873	21.414	20.175	19.263	44.11	51.375	11.881	33.063	1.065	0.67	28.686	0.036	0.001	0	5.67	0.09444	49.9	7.0	38.6	2.660	0.005	0.006	0.0002	0.154	0.13	
11/12/2002	1:19:14 PM	23.016	18.894	21.36	20.222	19.29	43.848	50.975	11.987	32.799	1.047	0.71	28.166	0.03	0.001	0	6.67	0.11111	49.5	6.9	38.3	2.642	0.004	0.005	0.0001	0.129	0.11	
11/12/2002	1:20:14 PM	22.967	18.861	21.145	20.209	19.15	44.19	51.536	12.148	32.877	1.047	0.699	27.713	0.031	0.001	0	7.67	0.12778	50.1	6.8	38.6	2.657	0.005	0.005	0.0001	0.134	0.11	
11/12/2002	1:21:14 PM	22.977	18.861	21.734	20.24	19.166	44.29	51.53	12.352	32.699	1.045	0.706	27.786	0.03	0.001	0	8.67	0.14444	50.1	6.8	38.5	2.654	0.004	0.005	0.0001	0.128	0.11	
11/12/2002	1:22:14 PM	22.968	18.867	22.359	20.276	19.157	44.565	51.637	12.367	33.19	1.042	0.716	27.742	0.029	0.001	0	9.67	0.16111	50.2	6.8	38.9	2.680	0.004	0.005	0.0001	0.120	0.10	
11/12/2002	1:23:14 PM	22.941	18.865	22.824	20.182	19.164	44.319	51.536	12.407	32.707	1.045	0.725	27.659	0.029	0.001	0	10.67	0.17778	50.1	6.8	38.5	2.655	0.004	0.005	0.0001	0.119	0.10	
11/12/2002	1:24:14 PM	22.904	18.833	23.124	20.196	19.057	44.333	51.319	12.486	32.85	1.045	0.737	27.619	0.029	0.001	0	11.67	0.19444	49.8	6.8	38.6	2.661	0.004	0.005	0.0001	0.118	0.10	
11/12/2002	1:25:14 PM	22.899	18.818	23.34	20.217	19.052	44.279	51.511	12.598	32.545	1.042	0.745	27.499	0.027	0.001	0	12.67	0.21111	50.0	6.7	38.4	2.648	0.004	0.004	0.0001	0.110	0.09	
11/12/2002	1:26:14 PM	22.927	18.81	23.493	20.239	19.039	44.468	51.621	12.687	32.703	1.068	0.754	27.302	0.027	0.001	0	13.67	0.22778	50.1	6.7	38.6	2.660	0.004	0.004	0.0001	0.109	0.09	
11/12/2002	1:27:14 PM	22.959	18.817	23.61	20.306	18.99	44.431	51.782	12.747	32.459	1.088	0.768	27.237	0.026	0.001	0	14.67	0.24444	50.3	6.7	38.4	2.651	0.004	0.004	0.0001	0.105	0.09	
11/12/2002	1:28:14 PM	23.014	18.787	23.726	20.362	18.92	44.317	51.337	12.837	32.498	1.079	0.771	27.04	0.026	0.001	0	15.67	0.26111	49.9	6.6	38.4	2.648	0.004	0.004	0.0001	0.105	0.09	
11/12/2002	1:29:14 PM	23.076	18.788	23.867	20.394	18.952	44.501	51.588	12.906	32.453	1.1	0.786	26.956	0.026	0.001	0	16.67	0.27778	50.1	6.6	38.5	2.653	0.004	0.004	0.0001	0.104	0.09	
11/12/2002	1:30:14 PM	23.139	18.791	24.056	20.377	19.005	44.267	51.441	12.889	32.398	1.097	0.786	26.834	0.025	0.001	0	17.67	0.29444	50.0	6.6	38.3	2.643	0.004	0.004	0.0001	0.100	0.09	
11/12/2002	1:31:14 PM	23.207	18.799	24.199	20.48	18.998	44.627	51.966	13.108	32.259	1.1	0.803	26.761	0.025	0.001	0	18.67	0.31111	50.5	6.6	38.4	2.651	0.004	0.004	0.0001	0.099	0.08	
11/12/2002	1:32:14 PM	23.281	18.808	24.328	20.434	19.022	44.588	51.852	13.149	32.353	1.149	0.812	26.635	0.025	0.001	0	19.67	0.32778	50.4	6.5	38.5	2.652	0.004	0.004	0.0001	0.099	0.08	
11/12/2002	1:33:14 PM	23.341	18.812	24.367	20.473	19.107	47.51	51.722	13.279	35.108	-1.288	-5.532	26.467	0.086	0.001	0	20.67	0.34444	50.2	6.5	41.3	2.848	0.013	0.013	0.0003	0.316	0.27	
11/12/2002	1:34:14 PM	23.374	18.811	24.381	20.562	19.121	47.444	51.917	13.337	34.893	-1.288	-5.275	26.27	0.028	0.001	0	21.67	0.36111	50.4	6.4	41.2	2.838	0.004	0.004	0.0001	0.103	0.09	
11/12/2002	1:35:14 PM	23.469	18.83	24.405	20.582	19.176	47.616	52.043	13.497	34.979	-1.288	-5.448	26.1	0.025	0.001	0	22.67	0.37778	50.6	6.4	41.3	2.847	0.004	0.004	0.0001	0.092	0.08	
11/12/2002	1:36:14 PM	23.537	18.823	24.368	20.575	19.133	47.278	51.747	13.232	34.858	-1.288	-5.446	26.581	0.025	0.001	0	23.67	0.39444	50.3	6.5	41.1	2.831	0.004	0.004	0.0001	0.092	0.08	
11/12/2002	1:37:14 PM	23.622	18.847	24.437	20.564	19.188	47.798	52.041	13.296	35.514	-1.285	-5.445	26.515	0.024	0.001	0	24.67	0.41111	50.6	6.5	41.7	2.872	0.004	0.004	0.0001	0.087	0.07	
11/12/2002	1:38:14 PM	23.689	18.839	24.53	20.526	19.155	47.678	51.933	13.292	35.268	-1.291	-5.446	26.562	0.024	0.001	0	25.67	0.42778	50.5	6.5	41.5	2.859	0.004	0.004	0.0001	0.087	0.07	
11/12/2002	1:39:14 PM	23.746	18.826	24.566	20.497	19.136	47.543	51.885	13.304	35.19	-1.286	-5.446	26.706	0.024	0.001	0	26.67	0.44444	50.4	6.5	41.4	2.852	0.004	0.004	0.0001	0.088	0.07	
11/12/2002	1:40:14 PM	23.805	18.849	24.63	20.5	19.15	47.668	52.034	13.365	35.198	-1.291	-5.44	26.633	0.024	0.001	0	27.67	0.46111	50.6	6.5	41.4	2.857	0.004	0.004	0.0001	0.087	0.07	
11/12/2002	1:41:14 PM	23.871	18.845	24.591	20.491	19.105	47.573	52.154	13.371	35.057	-1.288	-5.445	26.738	0.023	0.001	0	28.67	0.47778	50.7	6.6	41.3	2.849	0.003	0.003	0.0001	0.084	0.07	
11/12/2002	1:42:14 PM	23.907	18.841	24.542	20.462	19.061	47.347	51.753	13.38	34.77	-1.288	-5.442	26.671	0.023	0.001	0	29.67	0.49444	50.3	6.5	41.1	2.831	0.003	0.003	0.0001	0.085	0.07	
11/12/2002	1:43:14 PM	23.948	18.847	24.532	20.432	19.031	47.514	52.08	13.384	34.916	-1.282	-5.437	26.669	0.023	0.001	0	30.67	0.51111	50.6	6.5	41.2	2.842	0.003	0.003	0.0001	0.084	0.07	
11/12/2002	1:44:14 PM	24.004	18.853	24.543	20.433	19.017	47.401	51.772	13.337	34.987	-1.285	-5.44	26.683	0.023	0.001	0	31.67	0.52778	50.3	6.5	41.2	2.840	0.003	0.003	0.0001	0.084	0.07	
11/12/2002	1:45:14 PM	24.025	18.829	24.574	20.399	19.028	47.465	51.976	13.328	34.948	-1.285	-5.446	26.732	0.023	0.001	0	32.67	0.54444	50.5	6.6	41.2	2.841	0.003	0.003	0.0001	0.084	0.07	
11/12/2002	1:46:14 PM	24.061	18.83	24.63	20.39	18.993	47.301	51.805	13.322	34.801	-1.285	-5.44	26.723	0.023	0.001	0	33.67	0.56111	50.3	6.5	41.1	2.830	0.003	0.003	0.0001	0.084	0.07	
11/12/2002	1:47:14 PM	24.096	18.82	24.675	20.38	18.998	47.444	51.784	13.358	34.951	-1.288	-5.442	26.667	0.022	0.001	0	34.67	0.57778	50.3	6.5	41.2	2.840	0.003	0.003	0.0001	0.080	0.07	
11/12/2002	1:48:14 PM	24.117	18.826	24.707	20.376	19.05	47.63	52.214	13.379	35.076	-1.288	-5.448	26.765	0.022	0.001	0	35.67	0.59444	50.7	6.6	41.4	2.861	0.003	0.003	0.0001	0.080	0.07	
11/12/2002	1:49:14 PM	24.15	18.844	24.679	20.394	19.124	47.367	51.583	13.373	34.953	-1.288	-5.446	26.704	0.022	0.001	0	36.67	0.61111	50.1	6.5	41.2	2.838	0.003	0.003	0.0001	0.080	0.07	
11/12/2002	1:50:14 PM	24.163	18.852	24.627	20.382	19.192	47.365	51.623	13.366	34.94	-1.288	-5.448	26.742	0.022	0.001	0	37.67	0.62778	50.2	6.6	41.2	2.837	0.003	0.003	0.0001	0.081	0.07	
11/12/2002	1:51:14 PM	24.174	18.833	24.568	20.352	19.097	47.564	52.225	13.435	34.893	-1.285	-5.448	26.74	0.022	0.001	0	38.67	0.64444	50.8	6.6	41.2	2.843	0.003	0.003	0.0001	0.081	0.07	
11/12/2002	1:52:14 PM	24.189	18.812	24.563	20.337	19.021	47.568	51.91	13.411	35.127	-1.288	-5.445	26.698	0.022	0.001	0	39.67	0.66111	50.4	6.5	41.3	2.851	0.003	0.003	0.0001	0.080	0.07	
11/12/2002	1:53:14 PM	24.223	18.811	24.602	20.341	18.985	47.309	51.776	13.38	34.758	-1.288	-5.445	26.776	0.022	0.001	0	40.67	0.67778	50.3	6.6	41.0	2.829	0.003	0.003	0.0001	0.081	0.07	
11/12/2002	1:54:14 PM	24.232	18.8	24.661	20.365	18.968	47.473	51.735	13.332	35.153	-1.285	-5.448	26.667	0.022	0.001	0	41.67	0.69444	50.3	6.5	41.3	2.848	0.003	0.003	0.0001	0.080	0.07	
11/12/2002	1:55:14 PM	24.255	18.793	24.694	20.434	18.937	47.214	51.66	13.319	34.727	-1.288	-5.451	26.681	0.022	0.001	0	42.67	0.71111	50.2	6.5	41.0	2.825	0.003	0.003	0.0001	0.081	0.07	
11/12/2002	1:56:14 PM	24.274	18.792	24.703	20.448	18.941	47.216	51.776	13.334	34.777	-1.282	-5.448	26.69	0.022	0.001	0	43.67	0.72778	50.3	6.5	41.0	2.827	0.003	0.003	0.0001	0.081	0.07	
11/12/2002	1:57:14 PM	24.278	18.781	24.647	20.417	18.843	47.206	51.714	13.356	34.627	-1.288	-5.451	26.74	0.021	0.001	0	44.67	0.74444	50.2	6.6	40.9	2.821	0.003	0.003	0.0001	0.077	0.07	
11/12/2002	1:58:14 PM	24.279	18.779	24.659	20.42	18.912	47.602	51.997	13.412	35.053	-1.285	-5.448	26.736	0.022	0.001	0	45.67	0.76111	50.5	6.6	41.3	2.849	0.003	0.003	0.0001	0.080	0.07	
11/12/2002	1:59:14 PM	24.323	18.796	24.597	20.417	19	47.309	51.734	13.351	34.842	-1.288	-5.451	26.631	0.021	0.001	0	46.67	0.77778	50.3	6.5	41.1	2.832	0.003	0.003	0.0001	0.077	0.07	
11/12/2002	2:00:14 PM	24.32	18.803	24.619	20.388	19.057	47.425	51.917	13.321	35.01	-1.285	-5.451	26.643	0.022	0.001	0	47.67	0.79444	50.4	6.5	41.2	2.842	0.003	0.003	0.0001	0.080	0.07	
11/12/2002	2:01:14 PM	24.328	18.821	24.687	20.422	19.136	47.523	52.036	13.407	34.942	-1.285	-5.451	26.639	0.021	0.001	0	48.67	0.81111	50.6	6.5	41.2	2.843	0.003	0.003	0.0001	0.077	0.07	
11/12/2002	2:02:14 PM	24.326	18.829	24.73	20.505	19.185	47.227	51.712	13.299	34.76	-1.288	-5.454	26.689	0.021	0.001	0	49.67	0.82778	50.2	6.5	41.0	2.826	0.003	0.003	0.0001	0.077	0.07	
11/12/2002	2:03:14 PM	24.346	18.864	24.785	20.545	19.326	47.792	52.287	13.493	35.143	-1.285	-5.454	26.719	0.021	0.001	0	50.67	0.84444	50.8	6.5	41.5	2.859	0.003	0.003	0.0001	0.076	0.06	
11/12/2002	2:04:14 PM	24.37	18.904	24.809	20.625	19.467	47.423	51.972	13.363	34.873	-1.285	-5.454	26.679	0.021	0.001	0	51.67	0.86111	50.5	6.5	41.1	2.837	0.003	0.003	0.0001	0.076	0.07	
11/12/2002	2:05:14 PM	24.365	18.924	24.734	20.605	19.593	47.535	52.066	13.315	35.209	-1.285	-5.454	26.729	0.021	0.001	0	52.67	0.87778	50.6	6.6	41.4	2.852	0.003	0.003	0.0001	0.076	0.06	
11/12/2002	2:06:14 PM	24.38	18.969	24.689	20.666	19.696	47.301	51.689	13.355	34.897	-1.282	-5.451	26.66	0.021	0.001	0	53.67	0.89444	50.2	6.5	41.1	2.834	0.003	0.003	0.0001	0.077	0.07	
11/12/2002	2:07:14 PM	24.381	18.98	24.67	20.641	19.765	47.502	51.987	13.354	34.998	-1.288	-5.454	26.436	0.021	0.001	0	54.67	0.91111	50.5	6.5	41.3	2.844	0.003	0.003	0.0001	0.077	0.07	
11/12/2002	2:08:14 PM	24.375	19.005	24.464	20.767	19.85	47.32	51.817	13.359	34.797	-1.288	-5.457	26.44	0.021	0.001	0	55.67	0.92778	50.3	6.5	41.1	2.831	0.003	0.003	0.0001	0.077	0.07	
11/12/2002	2:09:14 PM	24.369	19.029	24.227	20.75	19.905	47.483	52.005	13.358	35.047	-1.288	-5.46	26.339	0.021	0.001	0	56.67	0.94444	50.5	6.5	41.3	2.845	0.003	0.003	0.0001	0.078	0.07	
11/12/2002	2:10:14 PM	24.368	19.054	24.091	20.679	19.889	47.939	52.452	13.556	35.139	-1.288	-5.457	26.278	0.021	0.001	0	57.67	0.96111	51.0	6.4	41.5	2.864	0.003	0.003	0.0001	0.077	0.07	
11/12/2002	2:11:14 PM	24.356	19.067	24.049	20.667	19.932	47.477	52.014	13.329	35.02	-1.288	-5.46	26.289	0.021	0.001	0	58.67	0.97778	50.5	6.4	41.2	2.844	0.003	0.003	0.0001	0.078	0.07	
11/12/2002	2:12:14 PM	24.334	19.095	24.031	20.74	19.92	47.229	51.735	13.374	34.668	-1.288	-5.454	26.22	0.021	0.001	0	59.67	0.99444	50.3	6.4	40.9	2.823	0.003	0.003	0.0001	0.079	0.07	
	Averages	23.8	18.9	24.0	20.4	19.2	46.5	51.8	13.1	34.3	-0.6	-3.6	26.9	0.0	0.0	0.0			50.3	6.6	40.4	2.786	0.004	0.004	0.0001	0.098	0.084	
	Maximum	24.4	19.1	24.8	20.8	19.9	47.9	52.5	13.6	35.5	1.2	0.8	29.0	0.1	0.0	0.0			51.0	7.1	41.7	2.872	0.013	0.013	0.0003	0.316	0.269	
	Median	24.0	18.8	24.5	20.4	19.1	47.3	51.8	13.3	34.9	-1.3	-5.4	26.7	0.0	0.0	0.0			50.3	6.5	41.1	2.834	0.003	0.003	0.0001	0.084	0.072	
	Minimum	22.9	18.8	21.1	20.1	18.8	43.6	50.7	11.3	32.3	-1.3	-5.5	26.1	0.0	0.0	0.0			49.2	6.4	38.3	2.642	0.003	0.003	0.0001	0.076	0.065	
	2 x Std Dev	1.114	0.145	2.039	0.307	0.560	2.959	0.622	1.014	2.115	2.168	5.656	1.222	0.019	0.000	0.000			0.623	0.300	2.518	0.174	0.003	0.003	0.0001	0.077	0.065	
	Number of Points Used*	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57			57	57	57	57	57	57	57	57	57	
	* Backpulse points in box are not included																											

Figure E34: Steady state test run 1.25 of AN-102R2, batch 3A, insoluble solids concentration of 25 wt% - Raw & Calculated Data

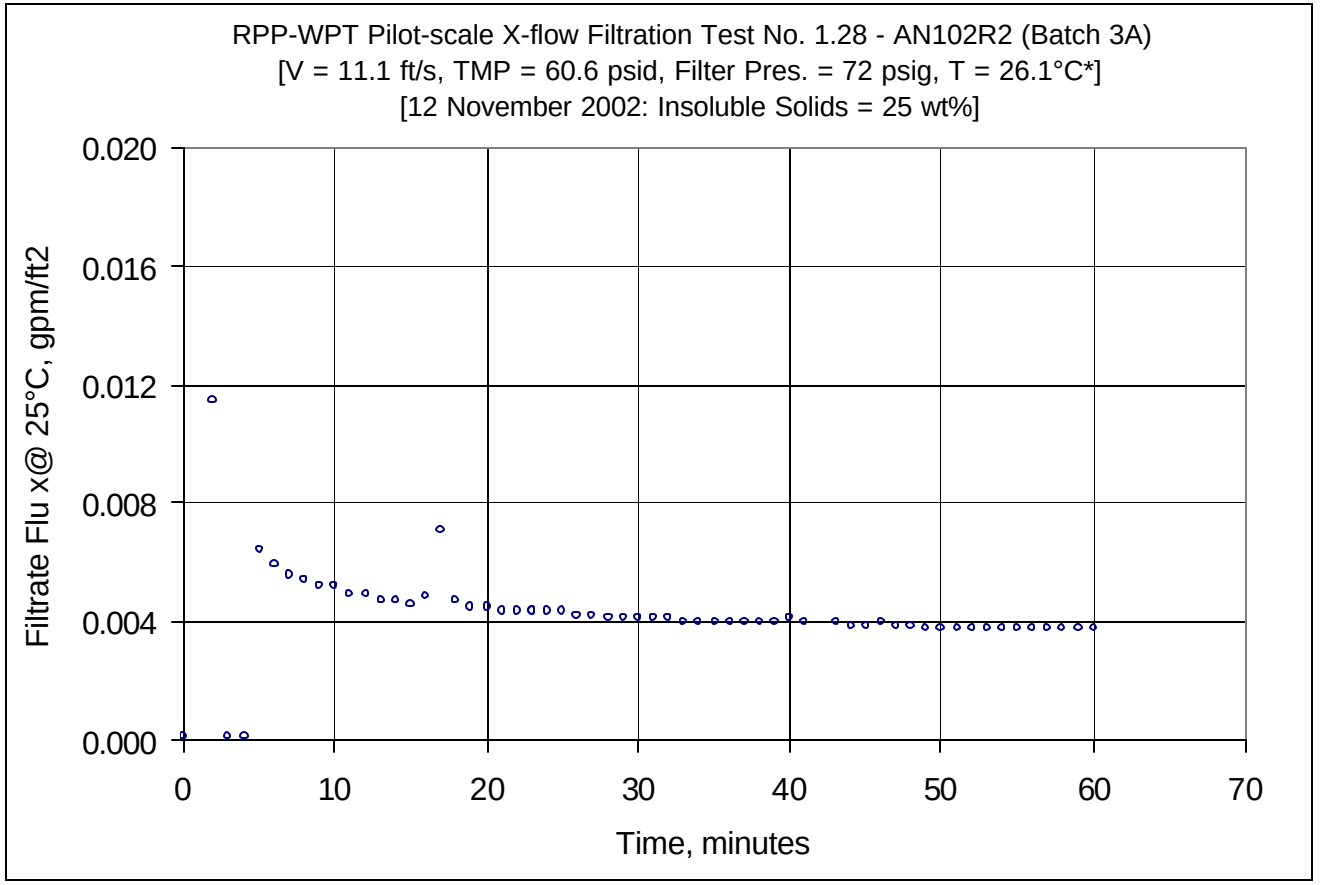


Figure E35: Steady state test run 1.28 of AN-102R2, batch 3A, insoluble solids concentration of 25 wt%

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>											
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse												
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm												
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp												
Zeros																												
11/12/2002	8:11:47 AM	21.54	21.663	20.804	21.275	21.296	-0.129	0.016	-0.042	0.049	-0.377	0.334	-0.211	0.001	0.001	0.001			Filter Surface	6.707	FT2							
11/12/2002	8:12:05 AM	21.54	21.663	20.804	21.275	21.296	-0.129	0.016	-0.042	0.049	-0.377	0.334	-0.211	0.001	0.001	0.001			Conversion	851	m3/m2/day/barg / gpm/ft2/barg							
11/12/2002	8:12:06 AM	21.541	21.644	20.79	21.271	21.267	-0.131	0.015	-0.043	0.049	-0.389	0.331	-0.213	0.001	0.001	0												
11/12/2002	8:12:07 AM	21.541	21.644	20.79	21.271	21.267	-0.129	0.016	-0.043	0.049	-0.377	0.331	-0.218	0.001	0.001	0.002			Note: Gauge Pressure P1 is approximately 1.4 psig									
11/12/2002	8:12:08 AM	21.542	21.65	20.791	21.271	21.263	-0.129	0.015	-0.042	0.049	-0.377	0.328	-0.213	0.001	0.001	0.002												
11/12/2002	8:12:09 AM	21.531	21.644	20.785	21.271	21.257	-0.129	0.015	-0.042	0.049	-0.418	0.334	-0.215	0.001	0.001	0.001			Pressure P1is corrected for 40.88 inches of water tubing									
11/12/2002	8:12:10 AM	21.541	21.644	20.785	21.271	21.257	-0.129	0.016	-0.042	0.049	-0.38	0.331	-0.211	0.001	0.001	0.002			VVVV					< Filtrate Flux << PERMIABILITY >>				
11/12/2002	8:12:11 AM	21.536	21.644	20.79	21.271	21.247	-0.129	0.016	-0.042	0.051	-0.377	0.334	-0.215	0.001	0.001	0							at 25C		x 1000			
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter	
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar	
11/12/2002	2:24:23 PM	24.213	19.276	23.439	20.639	19.92	60.474	72.962	17.535	43.856	6.502	113.725	46.657	0.001	0.001	0	0	0	71.5	11.4	52.2	3.597	0.000	0.000	0.0000	0.003	0.00	
11/12/2002	2:25:23 PM	23.47	19.25	23.589	20.553	19.803	21.277	72.015	13.066	9.333	45.742	0.557	48.67	0.185	0.001	0	1.00	0.01667	70.5	11.9	15.3	1.055	0.028	0.029	0.0019	1.876	1.60	
11/12/2002	2:26:23 PM	23.687	19.196	23.721	20.498	19.643	64.873	72.602	14.212	51.42	1.498	0.661	47.458	0.074	0.001	0	2.00	0.03333	71.1	11.6	58.1	4.009	0.011	0.011	0.0002	0.197	0.17	
11/12/2002	2:27:23 PM	23.645	19.124	23.86	20.446	19.51	65.142	72.511	14.704	51.391	1.328	0.661	47.386	0.055	0.001	0	3.00	0.05	71.0	11.6	58.3	4.017	0.000	0.000	0.0000	0.003	0.00	
11/12/2002	2:28:23 PM	23.688	19.056	24.008	20.414	19.331	65.09	72.526	15.123	50.626	1.27	0.676	47.246	0.047	0.001	0	4.00	0.06667	71.1	11.6	58.0	3.996	0.000	0.000	0.0000	0.003	0.00	
11/12/2002	2:29:23 PM	23.74	18.961	24.115	20.334	19.175	65.295	72.466	15.255	50.955	1.209	0.69	47.013	0.042	0.001	0	5.00	0.08333	71.0	11.5	58.1	4.008	0.006	0.006	0.0001	0.110	0.09	
11/12/2002	2:30:23 PM	23.806	18.912	24.261	20.351	19.152	66.163	72.55	15.515	50.476	1.209	0.731	46.839	0.039	0.001	0	6.00	0.1	71.1	11.5	57.8	3.986	0.006	0.006	0.0001	0.103	0.09	
11/12/2002	2:31:23 PM	23.898	18.883	24.418	20.367	19.269	65.569	72.825	15.685	50.748	1.186	0.719	46.736	0.037	0.001	0	7.00	0.11667	71.4	11.5	58.2	4.010	0.006	0.006	0.0001	0.096	0.08	
11/12/2002	2:32:23 PM	23.971	18.851	24.576	20.386	19.302	65.558	72.881	15.874	50.56	1.178	0.731	46.566	0.036	0.001	0	8.00	0.13333	71.4	11.4	58.1	4.003	0.005	0.005	0.0001	0.094	0.08	
11/12/2002	2:33:23 PM	24.027	18.821	24.672	20.361	19.419	65.991	73.316	15.84	51.033	1.201	0.739	46.929	0.035	0.001	0	9.00	0.15	71.8	11.3	58.5	4.034	0.005	0.005	0.0001	0.090	0.08	
11/12/2002	2:34:23 PM	24.081	18.835	24.816	20.39	19.555	65.805	73.103	15.911	50.759	1.201	0.768	45.841	0.035	0.001	0	10.00	0.16667	71.6	11.2	58.3	4.018	0.005	0.005	0.0001	0.090	0.08	
11/12/2002	2:35:23 PM	24.085	18.829	24.896	20.344	19.66	65.761	73.09	15.968	50.687	1.192	0.765	45.568	0.033	0.001	0	11.00	0.18333	71.6	11.2	58.2	4.014	0.005	0.005	0.0001	0.085	0.07	
11/12/2002	2:36:23 PM	24.141	18.854	25.016	20.339	19.725	65.662	72.795	15.98	50.693	1.206	0.783	45.629	0.033	0.001	0	12.00	0.2	71.3	11.2	58.2	4.011	0.005	0.005	0.0001	0.085	0.07	
11/12/2002	2:37:23 PM	24.151	18.865	25.086	20.294	19.806	66.161	73.492	16.261	50.793	1.206	0.789	45.402	0.032	0.001	0	13.00	0.21667	72.0	11.1	58.5	4.032	0.005	0.005	0.0001	0.081	0.07	
11/12/2002	2:38:23 PM	24.202	18.906	25.207	20.32	19.842	66.076	73.426	16.239	50.683	1.212	0.803	45.346	0.032	0.001	0	14.00	0.23333	72.0	11.1	58.4	4.025	0.005	0.005	0.0001	0.081	0.07	
11/12/2002	2:39:23 PM	24.261	18.905	25.281	20.309	19.857	66.128	73.45	16.366	50.626	1.209	0.812	45.071	0.031	0.001	0	15.00	0.25	72.0	11.0	58.4	4.025	0.005	0.005	0.0001	0.079	0.07	
11/12/2002	2:40:23 PM	24.225	18.945	25.376	20.268	19.902	68.748	73.088	16.366	53.27	-1.285	-5.826	45.096	0.033	0.001	0	16.00	0.26667	71.6	11.1	61.0	4.206	0.005	0.005	0.0001	0.080	0.07	
11/12/2002	2:41:23 PM	24.239	18.938	25.409	20.216	19.925	68.91	73.179	16.338	53.44	-1.288	-5.826	44.853	0.048	0.001	0	17.00	0.28333	71.7	11.0	61.2	4.218	0.007	0.007	0.0001	0.116	0.10	
11/12/2002	2:42:23 PM	24.304	18.974	25.47	20.201	19.961	69.392	73.525	16.268	54.065	-1.288	-5.894	44.737	0.032	0.001	0	18.00	0.3	72.1	11.0	61.7	4.256	0.005	0.005	0.0001	0.076	0.06	
11/12/2002	2:43:23 PM	24.374	19.009	25.549	20.165	20.031	69.022	73.192	16.464	53.446	-1.285	-5.885	45.239	0.031	0.001	0	19.00	0.31667	71.7	11.1	61.2	4.222	0.005	0.005	0.0001	0.074	0.06	
11/12/2002	2:44:23 PM	24.454	19.044	25.619	20.155	20.102	69.104	73.305	16.436	53.551	-1.288	-5.883	45.17	0.031	0.001	0	20.00	0.33333	71.8	11.1	61.3	4.228	0.005	0.005	0.0001	0.074	0.06	
11/12/2002	2:45:23 PM	24.5	19.09	25.679	20.261	20.173	69.077	73.27	16.439	53.516	-1.288	-5.883	45.352	0.03	0.001	0	21.00	0.35	71.8	11.1	61.3	4.226	0.004	0.004	0.0001	0.072	0.06	
11/12/2002	2:46:23 PM	24.534	19.125	25.734	20.357	20.243	69.212	73.51	16.5	53.465	-1.288	-5.885	45.172	0.03	0.001	0	22.00	0.36667	72.0	11.1	61.3	4.229	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	2:47:22 PM	24.595	19.202	25.83	20.544	20.33	69.341	73.676	16.518	53.717	-1.288	-5.885	45.289	0.03	0.001	0	22.98	0.38306	72.2	11.1	61.5	4.242	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	2:47:23 PM	24.6	19.197	25.835	20.539	20.324	69.22	73.568	16.47	53.623	-1.288	-5.885	45.239	0.03	0.001	0	23.00	0.38333	72.1	11.1	61.4	4.235	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	2:48:23 PM	24.626	19.252	25.89	20.509	20.405	69.212	73.574	16.446	53.616	-1.285	-5.885	45.218	0.03	0.001	0	24.00	0.4	72.1	11.1	61.4	4.234	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	2:49:23 PM	24.696	19.313	25.97	20.484	20.476	69.229	73.392	16.402	53.743	-1.288	-5.883	45.234	0.03	0.001	0	25.00	0.41667	71.9	11.1	61.5	4.239	0.004	0.004	0.0001	0.071	0.06	
11/12/2002	2:50:23 PM	24.756	19.354	26.036	20.494	20.512	68.935	73.165	16.393	53.442	-1.291	-5.888	45.088	0.029	0.001	0	26.00	0.43333	71.7	11.0	61.2	4.219	0.004	0.004	0.0001	0.069	0.06	
11/12/2002	2:51:23 PM	24.837	19.42	26.076	20.54	20.549	69.258	73.688	16.535	53.553	-1.288	-5.886	45.287	0.029	0.001	0	27.00	0.45	72.2	11.1	61.4	4.234	0.004	0.004	0.0001	0.068	0.06	
11/12/2002	2:52:23 PM	24.892	19.445	26.096	20.58	20.557	69.216	73.525	16.47	53.668	-1.291	-5.891	45.344	0.029	0.001	0	28.00	0.46667	72.1	11.1	61.4	4.236	0.004	0.004	0.0001	0.068	0.06	
11/12/2002	2:53:23 PM	24.977	19.496	26.186	20.651	20.603	68.993	73.326	16.453	53.379	-1.288	-5.888	45.299	0.029	0.001	0	29.00	0.48333	71.9	11.1	61.2	4.219	0.004	0.004	0.0001	0.068	0.06	
11/12/2002	2:54:23 PM	25.027	19.546	26.241	20.621	20.633	69.167	73.711	16.582	53.377	-1.285	-5.885	45.348	0.029	0.001	0	30.00	0.5	72.2	11.1	61.3	4.224	0.004	0.004	0.0001	0.068	0.06	
11/12/2002	2:55:23 PM	25.057	19.571	26.265	20.706	20.658	69.272	73.539	16.464	53.753	-1.291	-5.894	45.364	0.029	0.001	0	31.00	0.51667	72.1	11.1	61.5	4.241	0.004	0.004	0.0001	0.068	0.06	
11/12/2002	2:56:23 PM	25.12	19.614	26.329	20.785	20.681	68.705	72.989	16.369	53.291	-1.288	-5.868	45.279	0.029	0.001	0	32.00	0.53333	71.5	11.1	61.0	4.206	0.004	0.004	0.0001	0.068	0.06	
11/12/2002	2:57:23 PM	25.185	19.68	26.394	20.81	20.731	68.98	73.417	16.468	53.41	-1.285	-5.865	45.425	0.028	0.001	0	33.00	0.55	71.9	11.1	61.2	4.219	0.004	0.004	0.0001	0.066	0.06	
11/12/2002	2:58:23 PM	25.213	19.698	26.402	20.717	20.765	69.338	73.765	16.516	53.719	-1.288	-5.871	45.474	0.028	0.001	0	34.00	0.56667	72.3	11.1	61.5	4.242	0.004	0.004	0.0001	0.065	0.06	
11/12/2002	2:59:23 PM	25.212	19.743	26.421	20.747	20.824	68.874	73.347	16.531	53.131	-1.288	-5.871	45.383	0.028	0.001	0	35.00	0.58333	71.9	11.1	61.0	4.206	0.004	0.004	0.0001	0.066	0.06	
11/12/2002	3:00:23 PM	25.267	19.803	26.5	20.771	20.879	68.848	73.262	16.532	53.148	-1.288	-5.877	45.45	0.028	0.001	0	36.00	0.6	71.8	11.1	61.0	4.206	0.004	0.004	0.0001	0.066	0.06	
11/12/2002	3:01:23 PM	25.296	19.853	26.545	20.73	20.924	68.899	73.237	16.398	53.43	-1.291	-5.874	45.444	0.028	0.001	0	37.00	0.61667	71.8	11.1	61.2	4.217	0.004	0.004	0.0001	0.065	0.06	
11/12/2002	3:02:23 PM	25.311	19.893	26.589	20.74	20.974	68.831	73.272	16.443	53.26	-1.285	-5.874	45.337	0.028	0.001	0	38.00	0.63333	71.8	11.1	61.0	4.209	0.004	0.004	0.0001	0.065	0.06	
11/12/2002	3:03:23 PM	25.345	19.942	26.633	20.724	21.024	68.974	73.461	16.508	53.272	-1.285	-5.874	45.469	0.028	0.001	0	39.00	0.65	72.0	11.1	61.1	4.214	0.004	0.004	0.0001	0.065	0.06	
11/12/2002	3:04:23 PM	25.389	19.982	26.657	20.632	21.053	68.638	73.128	16.424	53.043	-1.288	-5.871	45.396	0.029	0.001	0	40.00	0.66667	71.7	11.1	60.8	4.195	0.004	0.004	0.0001	0.068	0.06	
11/12/2002	3:05:23 PM	25.443	19.975	26.666	20.565	21.011	69.206	73.568	16.501	53.708	-1.291	-5.874	45.341	0.028	0.001	0	41.00	0.68333	72.1	11.1	61.5	4.237	0.004	0.004	0.0001	0.065	0.06	
11/12/2002	3:07:23 PM	25.516	19.913	26.615	20.518	20.783	68.769	73.26	16.43	53.274	-1.288	-5.874	45.36	0.028	0.001	0	43.00	0.71667	71.8	11.1	61.0	4.207	0.004	0.004	0.0001	0.065	0.06	
11/12/2002	3:08:23 PM	25.607	19.908	26.635	20.529	20.763	68.682	72.997	16.386	53.277	-1.288	-5.874	45.392	0.027	0.001	0	44.00	0.73333	71.5	11.1	61.0	4.204	0.004	0.004	0.0001	0.063	0.05	
11/12/2002	3:09:23 PM	25.633	19.91	26.656	20.424	20.78	68.889	73.502	16.514	53.227	-1.288	-5.877	45.44	0.027	0.001	0	45.00	0.75	72.0	11.1	61.1	4.210	0.004	0.004	0.0001	0.063	0.05	
11/12/2002	3:10:23 PM	25.671	19.928	26.689	20.397	20.808	68.85	73.312	16.502	53.313	-1.285	-5.874	45.427	0.028	0.001	0	46.00	0.76667	71.8	11.1	61.1	4.211	0.004	0.004	0.0001	0.065	0.06	
11/12/2002	3:11:23 PM	25.708	19.93	26.686	20.384	20.83	68.79	73.283	16.488	53.213	-1.288	-5.877	45.354	0.027	0.001	0	47.00	0.78333	71.8	11.1	61.0	4.206	0.004	0.004	0.0001	0.063	0.05	
11/12/2002	3:12:23 PM	25.722	19.944	26.715	20.503	20.839	68.555	73.068	16.458	52.918	-1.288	-5.88	45.375	0.027	0.001	0	48.00	0.8	71.6	11.1	60.7	4.188	0.004	0.004	0.0001	0.063	0.05	
11/12/2002	3:13:23 PM	25.75	19.962	26.737	20.572	20.862	68.962	73.593	16.488	53.34	-1.288	-5.88	45.3	0.027	0.001	0	49.00	0.81667	72.1	11.1	61.2	4.216	0.004	0.004	0.0001	0.063	0.05	
11/12/2002	3:14:23 PM	25.772	19.976	26.77	20.575	20.89	68.726	73.334	16.531	52.998	-1.288	-5.877	45.43	0.027	0.001	0	50.00	0.83333	71.9	11.1	60.9	4.196	0.004	0.004	0.0001	0.063	0.05	
11/12/2002	3:15:23 PM	25.786	19.988	26.774	20.558	20.913	68.703	73.281	16.524	53.08	-1.288	-5.877	45.463	0.027	0.001	0	51.00	0.85	71.8	11.1	60.9	4.198	0.004	0.004	0.0001	0.063	0.05	
11/12/2002	3:16:23 PM	25.784	20.012	26.792	20.561	20.957	69.003	73.701	16.591	53.227	-1.288	-5.883	45.398	0.027	0.001	0	52.00	0.86667	72.2	11.1	61.1	4.214	0.004	0.004	0.0001	0.063	0.05	
11/12/2002	3:17:23 PM	25.807	20.024	26.799	20.609	20.929	69.162	73.767	16.636	53.369	-1.288	-5.877	45.453	0.027	0.001	0	53.00	0.88333	72.3	11.1	61.3	4.224	0.004	0.004	0.0001	0.062	0.05	
11/12/2002	3:18:23 PM	25.849	20.032	26.797	20.576	20.942	68.999	73.525	16.451	53.461	-1.285	-5.88	45.274	0.027	0.001	0	54.00	0.9	72.1	11.1	61.2	4.222	0.004	0.004	0.0001	0.063	0.05	
11/12/2002	3:19:23 PM	25.882	20.045	26.815	20.508	20.965	68.781	73.434	16.493	53.105	-1.288	-5.883	45.495	0.027	0.001	0	55.00	0.91667	72.0	11.1	60.9	4.202	0.004	0.004	0.0001	0.063	0.05	
11/12/2002	3:20:23 PM	25.869	20.061	26.826	20.52	20.986	68.527	73.156	16.525	52.898	-1.285	-5.88	45.471	0.027	0.001	0	56.00	0.93333	71.7	11.1	60.7	4.186	0.004	0.004	0.0001	0.063	0.05	
11/12/2002	3:21:23 PM	25.847	20.095	26.85	20.685	21.02	68.796	73.51	16.579	53.008	-1.291	-5.88	45.536	0.027	0.001	0	57.00	0.95	72.0	11.2	60.9	4.199	0.004	0.004	0.0001	0.063	0.05	
11/12/2002	3:22:23 PM	25.86	20.118	26.868	20.799	21.048	68.97	73.792	16.572	53.301	-1.288	-5.883	45.509	0.027	0.001	0	58.00	0.96667	72.3	11.2	61.1	4.215	0.004	0.004	0.0001	0.062	0.05	
11/12/2002	3:23:23 PM	25.873	20.152	26.896	20.747	21.092	69.003	73.758	16.591	53.223	-1.291	-5.883	45.472	0.027	0.001	0	59.00	0.98333	72.3	11.1	61.1	4.214	0.004	0.004	0.0001	0.062	0.05	
11/12/2002	3:24:23 PM	25.861	20.195	26.909	20.81	21.14	68.962	73.639	16.555	53.285	-1.288	-5.883	45.44	0.027	0.001	0	60.00	1	72.2	11.1	61.1	4.214	0.004	0.004	0.0001	0.062	0.05	
	Averages	25.0	19.5	26.1	20.5	20.5	68.4	73.4	16.4	52.9	-0.8	-4.7	45.4	0.0	0.0	0.0			71.9	11.1	60.6	4.181	0.004	0.004	0.0001	0.072	0.061	
	Maximum	25.9	20.2	26.9	20.8	21.1	69.4	73.8	16.6	54.1	1.2	0.8	46.8	0.0	0.0	0.0			72.3	11.5	61.7	4.256	0.007	0.007	0.0001	0.116	0.098	
	Median	25.1	19.6	26.3	20.5	20.7	68.9	73.3	16.5	53.3	-1.3	-5.9	45.4	0.0	0.0	0.0			71.9	11.1	61.1	4.214	0.004	0.004	0.0001	0.068	0.068	
	Minimum	23.8	18.8	24.3	20.2	19.2	65.2	72.6	15.5	50.5	-1.3	-5.9	44.7	0.0	0.0	0.0			71.1	11.0	57.8	3.986	0.004	0.004	0.0001	0.062	0.053	
	2 x Std Dev	1.323	0.932	1.473	0.357	1.083	2.501	0.535	0.470	2.104	1.919	5.116	0.721	0.007	0.000	0.000			0.535	0.177	2.297	0.158	0.001	0.001	0.0000	0.023	0.019	
Number of Points Used*		55	55	55	55	55	55	55	55	55	55	55	55	55	55	55			55	55	55	55	55	55	55	55	55	
	* Backpulse points in box are not included																											

Figure E36: Steady state test run 1.28 of AN-102R2, batch 3A, insoluble solids concentration of 25 wt% - Raw & Calculated Data

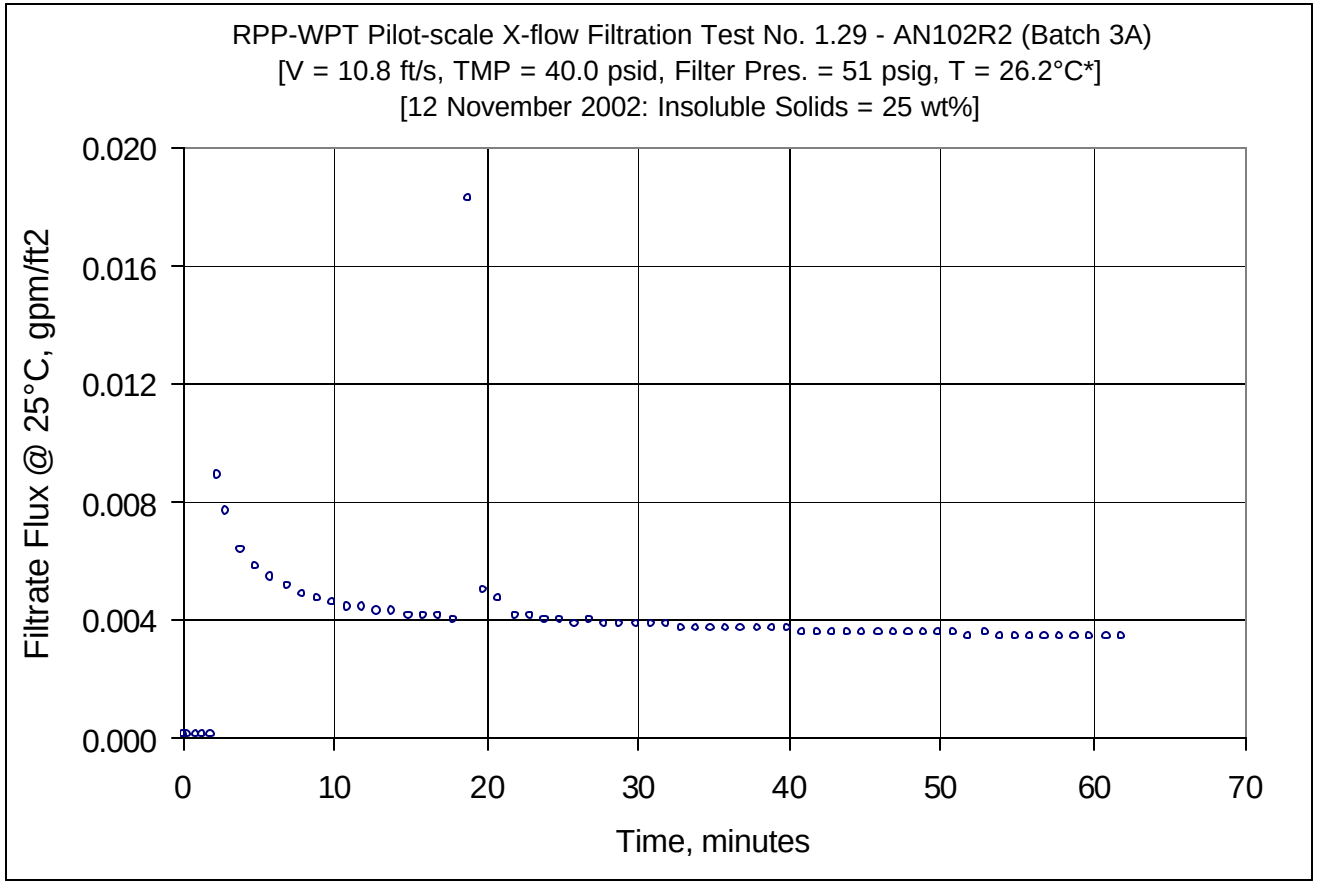
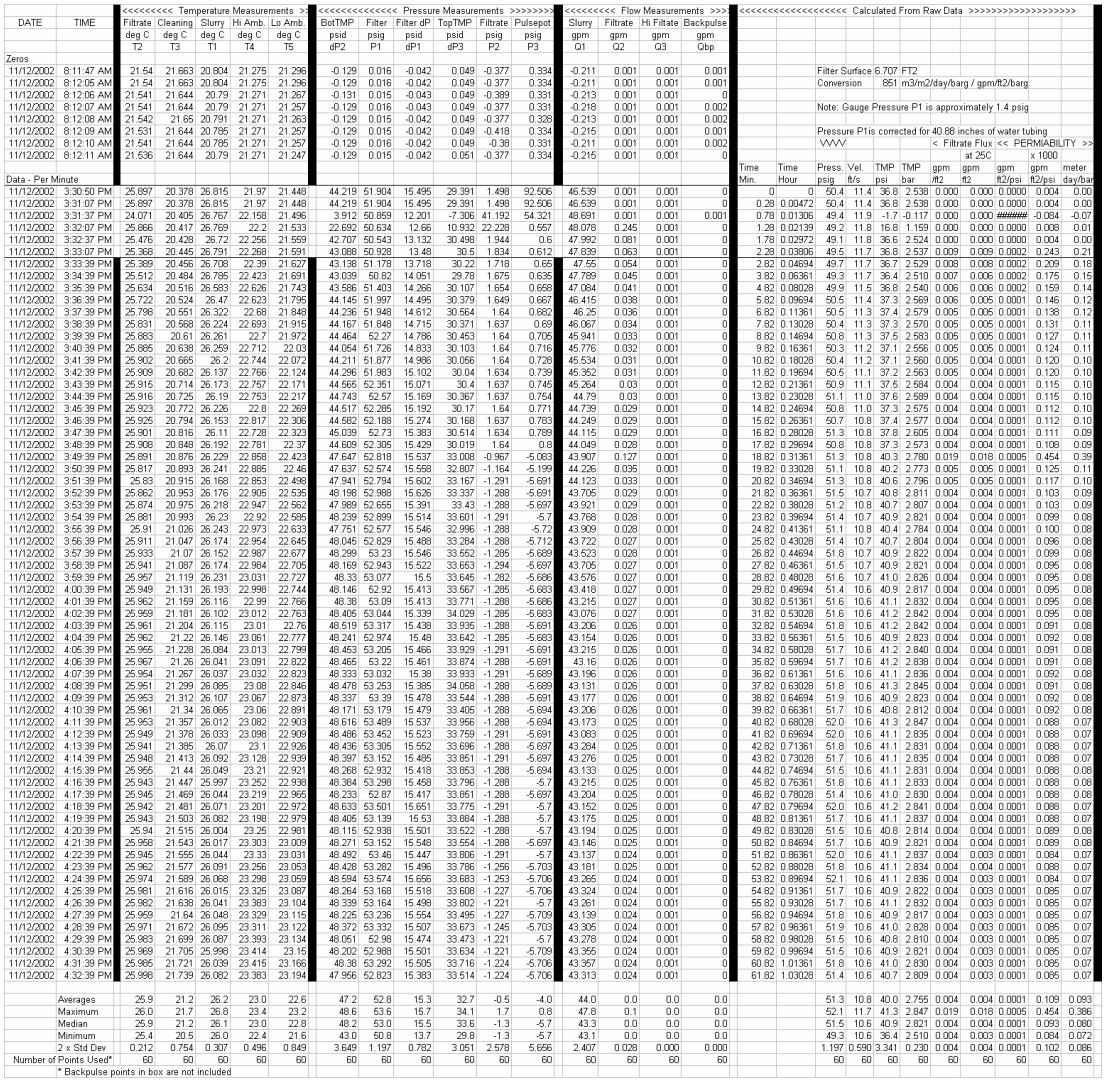


Figure E37: Steady state test run 1.29 of AN-102R2, batch 3A, insoluble solids concentration of 25 wt%



		<< Temperature Measurements >>					<< Pressure Measurements >>						<< Flow Measurements >>				<< Calculated From Raw Data >>															
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse															
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm															
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp															
Zeros																															
11/12/2002	8:11:47 AM	21.54	21.863	20.804	21.275	21.296	-0.129	0.016	-0.042	0.049	-0.377	0.334	-0.211	0.001	0.001	0.001															
11/12/2002	8:12:05 AM	21.54	21.863	20.804	21.275	21.296	-0.129	0.016	-0.042	0.049	-0.377	0.334	-0.211	0.001	0.001	0.001															
11/12/2002	8:12:06 AM	21.541	21.644	20.79	21.271	21.267	-0.131	0.015	-0.043	0.049	-0.389	0.331	-0.213	0.001	0.001	0															
11/12/2002	8:12:07 AM	21.541	21.644	20.79	21.271	21.257	-0.129	0.016	-0.043	0.049	-0.377	0.331	-0.218	0.001	0.001	0.002															
11/12/2002	8:12:08 AM	21.542	21.65	20.791	21.271	21.263	-0.129	0.015	-0.042	0.049	-0.377	0.328	-0.213	0.001	0.001	0.002															
11/12/2002	8:12:09 AM	21.531	21.644	20.785	21.271	21.257	-0.129	0.015	-0.042	0.049	-0.418	0.334	-0.215	0.001	0.001	0.001															
11/12/2002	8:12:10 AM	21.541	21.644	20.785	21.271	21.257	-0.129	0.016	-0.042	0.049	-0.38	0.331	-0.211	0.001	0.001	0.002															
11/12/2002	8:12:11 AM	21.536	21.644	20.79	21.271	21.247	-0.129	0.015	-0.042	0.051	-0.377	0.334	-0.215	0.001	0.001	0															
Data - Per Minute																	Time Min.	Time Hour	Press. psig	Vel. ft/s	TMP psi	TMP bar	Filtrate gpm	Filtrate ft2	Filtrate gpm/ft2	Filtrate gpm/psi	Filtrate meter day/bar					
11/12/2002	3:30:50 PM	25.897	20.378	26.815	21.97	21.448	44.219	51.904	15.495	29.391	1.498	92.506	46.539	0.001	0.001	0	0	0	50.4	11.4	36.8	2.538	0.000	0.000	0.0000	0.0000	0.004	0.00			
11/12/2002	3:31:07 PM	25.897	20.378	26.815	21.97	21.448	44.219	51.904	15.495	29.391	1.498	92.506	46.539	0.001	0.001	0	0.28	0.00472	50.4	11.4	36.8	2.538	0.000	0.000	0.0000	0.004	0.00			
11/12/2002	3:31:37 PM	24.071	20.405	26.767	22.158	21.496	3.912	50.859	12.201	-7.306	41.192	54.321	48.691	0.001	0.001	0.001	0.78	0.01306	49.4	11.9	-1.7	-0.117	0.000	#######	-0.084	-0.07			
11/12/2002	3:32:07 PM	25.866	20.417	26.769	22.2	21.533	22.692	50.634	12.66	10.932	22.228	0.557	48.078	0.245	0.001	0	1.28	0.02139	49.2	11.8	16.8	1.159	0.000	0.000	0.0000	0.008	0.01			
11/12/2002	3:32:37 PM	25.476	20.429	26.72	22.256	21.559	42.707	50.643	13.132	30.498	1.944	0.6	47.992	0.081	0.001	0	1.78	0.02972	49.1	11.8	36.8	2.524	0.000	0.000	0.0000	0.004	0.00			
11/12/2002	3:33:07 PM	25.388	20.445	26.791	22.268	21.591	43.088	50.928	13.48	30.5	1.834	0.612	47.839	0.063	0.001	0	2.28	0.03806	49.5	11.7	36.8	2.537	0.009	0.009	0.0002	0.243	0.21			
11/12/2002	3:33:39 PM	25.389	20.456	26.708	22.39	21.627	43.138	51.178	13.718	30.22	1.718	0.65	47.55	0.054	0.001	0	2.82	0.04694	49.7	11.7	36.7	2.529	0.008	0.008	0.0002	0.209	0.18			
11/12/2002	3:34:39 PM	25.512	20.484	26.785	22.423	21.691	43.039	50.82	14.051	29.78	1.675	0.635	47.789	0.045	0.001	0	3.82	0.06361	49.3	11.7	36.4	2.510	0.007	0.006	0.0002	0.175	0.15			
11/12/2002	3:35:39 PM	25.634	20.516	26.583	22.626	21.743	43.586	51.403	14.266	30.107	1.654	0.658	47.084	0.041	0.001	0	4.82	0.08028	49.9	11.5	36.8	2.540	0.006	0.006	0.0002	0.159	0.14			
11/12/2002	3:36:39 PM	25.722	20.524	26.47	22.623	21.795	44.145	51.997	14.495	30.379	1.649	0.667	46.415	0.038	0.001	0	5.82	0.09694	50.5	11.4	37.3	2.569	0.006	0.005	0.0001	0.146	0.12			
11/12/2002	3:37:39 PM	25.798	20.551	26.322	22.68	21.848	44.236	51.948	14.612	30.564	1.64	0.682	46.25	0.036	0.001	0	6.82	0.11361	50.5	11.3	37.4	2.579	0.005	0.005	0.0001	0.138	0.12			
11/12/2002	3:38:39 PM	25.831	20.568	26.224	22.693	21.915	44.167	51.848	14.715	30.371	1.637	0.69	46.067	0.034	0.001	0	7.82	0.13028	50.4	11.3	37.3	2.570	0.005	0.005	0.0001	0.131	0.11			
11/12/2002	3:39:39 PM	25.883	20.61	26.283	22.7	21.972	43.464	52.27	14.786	30.453	1.64	0.705	45.941	0.033	0.001	0	8.82	0.14694	50.8	11.3	37.5	2.583	0.005	0.005	0.0001	0.127	0.11			
11/12/2002	3:40:39 PM	25.885	20.638	26.259	22.712	22.03	44.054	51.726	14.833	30.103	1.64	0.716	45.776	0.032	0.001	0	9.82	0.16361	50.3	11.2	37.1	2.556	0.005	0.005	0.0001	0.124	0.11			
11/12/2002	3:41:39 PM	25.902	20.665	26.2	22.744	22.072	44.211	51.877	14.986	30.056	1.64	0.728	45.534	0.031	0.001	0	10.82	0.18028	50.4	11.2	37.1	2.560	0.005	0.004	0.0001	0.120	0.10			
11/12/2002	3:42:39 PM	25.909	20.682	26.137	22.766	22.124	44.296	51.983	15.102	30.04	1.634	0.739	45.352	0.031	0.001	0	11.82	0.19694	50.5	11.1	37.2	2.563	0.005	0.004	0.0001	0.120	0.10			
11/12/2002	3:43:39 PM	25.915	20.714	26.173	22.757	22.171	44.565	52.351	15.071	30.4	1.637	0.745	45.264	0.03	0.001	0	12.82	0.21361	50.9	11.1	37.5	2.584	0.004	0.004	0.0001	0.115	0.10			
11/12/2002	3:44:39 PM	25.916	20.725	26.19	22.753	22.217	44.743	52.57	15.169	30.367	1.637	0.754	44.79	0.03	0.001	0	13.82	0.23028	51.1	11.0	37.6	2.589	0.004	0.004	0.0001	0.115	0.10			
11/12/2002	3:45:39 PM	25.923	20.772	26.226	22.8	22.269	44.517	52.285	15.192	30.17	1.64	0.771	44.739	0.029	0.001	0	14.82	0.24694	50.8	11.0	37.3	2.575	0.004	0.004	0.0001	0.112	0.10			
11/12/2002	3:46:39 PM	25.925	20.794	26.153	22.817	22.306	44.582	52.188	15.274	30.168	1.637	0.783	44.249	0.029	0.001	0	15.82	0.26361	50.7	10.9	37.4	2.577	0.004	0.004	0.0001	0.112	0.10			
11/12/2002	3:47:39 PM	25.901	20.816	26.11	22.728	22.323	45.039	52.73	15.383	30.514	1.634	0.789	44.115	0.029	0.001	0	16.82	0.28028	51.3	10.8	37.8	2.605	0.004	0.004	0.0001	0.111	0.09			
11/12/2002	3:48:39 PM	25.908	20.848	26.192	22.781	22.37	44.609	52.305	15.429	30.019	1.64	0.8	44.049	0.028	0.001	0	17.82	0.29694	50.8	10.8	37.3	2.573	0.004	0.004	0.0001	0.108	0.09			
11/12/2002	3:49:39 PM	25.891	20.876	26.229	22.858	22.423	47.647	52.818	15.537	33.008	-0.967	-5.083	43.907	0.127	0.001	0	18.82	0.31361	51.3	10.8	40.3	2.780	0.019	0.018	0.0005	0.454	0.39			
11/12/2002	3:50:39 PM	25.817	20.893	26.241	22.885	22.46	47.637	52.574	15.558	32.807	-1.164	-5.199	44.226	0.035	0.001	0	19.82	0.33028	51.1	10.8	40.2	2.773	0.005	0.005	0.0001	0.125	0.11			
11/12/2002	3:51:39 PM	25.83	20.915	26.168	22.853	22.498	47.941	52.794	15.602	33.167	-1.291	-5.691	44.123	0.033	0.001	0	20.82	0.34694	51.3	10.8	40.6	2.796	0.005	0.005	0.0001	0.117	0.10			
11/12/2002	3:52:39 PM	25.862	20.953	26.176	22.905	22.535	48.198	52.988	15.626	33.337	-1.288	-5.691	43.705	0.029	0.001	0	21.82	0.36361	51.5	10.7	40.8	2.811	0.004	0.004	0.0001	0.103	0.09			
11/12/2002	3:53:39 PM	25.874	20.975	26.218	22.947	22.562	47.989	52.655	15.391	33.43	-1.288	-5.697	43.921	0.029	0.001	0	22.82	0.38028	51.2	10.8	40.7	2.807	0.004	0.004	0.0001	0.103	0.09			
11/12/2002	3:54:39 PM	25.881	20.993	26.23	22.92	22.586	48.239	52.899	15.514	33.601	-1.291	-5.7	43.768	0.028	0.001	0	23.82	0.39694	51.4	10.7	40.9	2.821	0.004	0.004	0.0001	0.099	0.08			
11/12/2002	3:55:39 PM	25.91	21.026	26.243	22.973	22.633	47.751	52.577	15.546	32.996	-1.288	-5.72	43.909	0.028	0.001	0	24.82	0.41361	51.1	10.8	40.4	2.784	0.004	0.004	0.0001	0.100	0.08			
11/12/2002	3:56:39 PM	25.911	21.047	26.174	22.954	22.645	48.045	52.829	15.488	33.284	-1.288	-5.712	43.722	0.027	0.001	0	25.82	0.43028	51.4	10.7	40.7	2.804	0.004	0.004	0.0001	0.096	0.08			
11/12/2002	3:57:39 PM	25.933	21.07	26.152	22.987	22.677	48.299	53.23	15.546	33.552	-1.285	-5.689	43.523	0.028	0.001	0	26.82	0.44694	51.8	10.7	40.9	2.822	0.004	0.004	0.0001	0.099	0.08			
11/12/2002	3:58:39 PM	25.941	21.087	26.174	22.984	22.705	48.169	52.943	15.522	33.653	-1.294	-5.697	43.705	0.027	0.001	0	27.82	0.46361	51.5	10.7	40.9	2.821	0.004	0.004	0.0001	0.095	0.08			
11/12/2002	3:59:39 PM	25.957	21.119	26.231	23.031	22.727	48.33	53.077	15.5	33.645	-1.282	-5.686	43.576	0.027	0.001	0	28.82	0.48028	51.6	10.7	41.0	2.826	0.004	0.004	0.0001	0.095	0.08			
11/12/2002	4:00:39 PM	25.949	21.131	26.193	22.998	22.744	48.146	52.92	15.413	33.667	-1.285	-5.683	43.418	0.027	0.001	0	29.82	0.49694	51.4	10.6	40.9	2.817	0.004	0.004	0.0001	0.095	0.08			
11/12/2002	4:01:39 PM	25.962	21.159	26.116	22.99	22.766	48.38	53.09	15.413	33.771	-1.288	-5.686	43.215	0.027	0.001	0	30.82	0.51361	51.6	10.6	41.1	2.832	0.004	0.004	0.0001	0.095	0.08			
11/12/2002	4:02:39 PM	25.959	21.181	26.102	23.012	22.763	48.405	53.044	15.339	34.029	-1.285	-5.683	43.076	0.027	0.001	0	31.82	0.53028	51.6	10.6	41.2	2.842	0.004	0.004	0.0001	0.095	0.08			
11/12/2002	4:03:39 PM	25.961	21.204	26.115	23.01	22.76	48.519	53.317	15.438	33.935	-1.288	-5.691	43.206	0.026	0.001	0	32.82	0.54694	51.8	10.6	41.2	2.842	0.004	0.004	0.0001	0.091	0.08			
11/12/2002	4:04:39 PM	25.962	21.22	26.146	23.061	22.777	48.241	52.974	15.48	33.642	-1.285	-5.683	43.154	0.026	0.001	0	33.82	0.56361	51.5	10.6	40.9	2.823	0.004	0.004	0.0001	0.092	0.08			
11/12/2002	4:05:39 PM	25.955	21.228	26.084	23.013	22.799	48.453	53.205	15.466	33.929	-1.291	-5.691	43.215	0.026	0.001	0	34.82	0.58028	51.7	10.6	41.2	2.840	0.004	0.004	0.0001	0.091	0.08			
11/12/2002	4:06:39 PM	25.967	21.26	26.041	23.091	22.822	48.465	53.22	15.461	33.874	-1.288	-5.691	43.16	0.026	0.001	0	35.82	0.59694	51.7	10.6	41.2	2.838	0.004	0.004	0.0001	0.091	0.08			
11/12/2002	4:07:39 PM	25.954	21.267	26.037	23.032	22.823	48.333	53.032	15.39	33.933	-1.291	-5.689	43.196	0.026	0.001	0	36.82	0.61361	51.6	10.6	41.1	2.836	0.004	0.004	0.0001	0.092	0.08			
11/12/2002	4:08:39 PM	25.951	21.299	26.005	23.08	22.845	48.478	53.253	15.385	34.058	-1.288	-5.689	43.131	0.026	0.001	0	37.82	0.63028	51.8	10.6	41.3	2.845	0.004	0.004	0.0001	0.091	0.08			
11/12/2002	4:09:39 PM	25.953	21.312	26.107	23.067	22.873	48.337	53.39	15.478	33.544	-1.288	-5.691	43.177	0.026	0.001	0	38.82	0.64694	51.9	10.6	40.9	2.823	0.004	0.004	0.0001	0.092	0.08			
11/12/2002	4:10:39 PM	25.961	21.34	26.065	23.06	22.891	48.171	53.179	15.479	33.405	-1.288	-5.694	43.206	0.026	0.001	0	39.82	0.66361	51.7	10.6	40.8	2.812	0.004	0.004	0.0001	0.092	0.08			
11/12/2002	4:11:39 PM	25.953	21.357	26.012	23.082	22.903	48.616	53.489	15.537	33.956	-1.288	-5.694	43.173	0.025	0.001	0	40.82	0.68028	52.0	10.6	41.3	2.847	0.004	0.004	0.0001	0.088	0.07			
11/12/2002	4:12:39 PM	25.949	21.378	26.033	23.098	22.909	48.486	53.452	15.523	33.759	-1.291	-5.691	43.083	0.025	0.001	0	41.82	0.69694	52.0	10.6	41.1	2.835	0.004	0.004	0.0001	0.088	0.07			
11/12/2002	4:13:39 PM	25.941	21.385	26.07	23.1	22.926	48.436	53.305	15.552	33.696	-1.288	-5.697	43.284	0.025	0.001	0	42.82	0.71361	51.8	10.6	41.1	2.831	0.004	0.004	0.0001	0.088	0.07			
11/12/2002	4:14:39 PM	25.948	21.413	26.092	23.128	22.939	48.397	53.152	15.495	33.851	-1.291	-5.697	43.276	0.025	0.001	0	43.82	0.73028	51.7	10.6	41.1	2.835	0.004	0.004	0.0001	0.088	0.07			
11/12/2002	4:15:39 PM	25.955	21.44	26.049	23.21	22.921	48.268	52.932	15.418	33.853	-1.288	-5.694	43.133	0.025	0.001	0	44.82	0.74694	51.5	10.6	41.1	2.831	0.004	0.004	0.0001	0.088	0.06			
11/12/2002	4:16:39 PM	25.943	21.447	25.997	23.252	22.938	48.384	53.298	15.458	33.796	-1.288	-5.7	43.215	0.025	0.001	0	45.82	0.76361	51.8	10.6	41.1	2.833	0.004	0.004	0.0001	0.088	0.06			
11/12/2002	4:17:39 PM	25.945	21.469	26.044	23.219	22.965	48.233	52.87	15.417	33.851	-1.288	-5.697	43.204	0.025	0.001	0	46.82	0.78028	51.4	10.6	41.0	2.830	0.004	0.004	0.0001	0.088	0.06			
11/12/2002	4:18:39 PM	25.942	21.481	26.071	23.201	22.972	48.633	53.501	15.651	33.775	-1.291	-5.7	43.152	0.025	0.001	0	47.82	0.79694	52.0	10.6	41.2	2.841	0.004	0.004	0.0001	0.088	0.07			
11/12/2002	4:19:39 PM	25.943	21.503	26.082	23.198	22.979	48.405	53.139	15.53	33.884	-1.288	-5.7	43.175	0.025	0.001	0	48.82	0.81361	51.7	10.6	41.1	2.837	0.004	0.004	0.0001	0.088	0.07			
11/12/2002	4:20:39 PM	25.94	21.515	26.004	23.25	22.981	48.115	52.938	15.501	33.522	-1.288	-5.7	43.194	0.025	0.001	0	49.82	0.83028	51.5	10.6	40.8	2.814	0.004	0.004	0.0001	0.089	0.08			
11/12/2002	4:21:39 PM	25.958	21.543	26.017	23.303	23.009	48.271	53.152	15.548	33.564	-1.288	-5.697	43.146	0.025	0.001	0	50.82	0.84694	51.7	10.6	40.9	2.821	0.004	0.004	0.0001	0.089	0.08			
11/12/2002	4:22:39 PM	25.945	21.555	26.044	23.33	23.031	48.493	53.46	15.447	33.806	-1.291	-5.7	43.137	0.024	0.001	0	51.82	0.86361	52.0	10.6	41.1	2.837	0.004	0.004	0.0001	0.094	0.07			
11/12/2002	4:23:39 PM	25.962	21.577	26.091	23.256	23.053	48.428	53.282	15.496	33.786	-1.256	-5.703	43.181	0.025	0.001	0	52.82	0.88028	51.8	10.6	41.1	2.834	0.004	0.004	0.0001	0.088	0.07			
11/12/2002	4:24:39 PM	25.974	21.589	26.068	23.298	23.059	48.594	53.574	15.656	33.683	-1.253	-5.706	43.265	0.024	0.001	0	53.82	0.89694	52.1	10.6	41.1	2.836	0.004	0.003	0.0001	0.084	0.07			
11/12/2002	4:25:39 PM	25.981	21.616	26.015	23.325	23.087	48.264	53.168	15.518	33.608	-1.227	-5.706	43.324	0.024	0.001	0	54.82	0.91361	51.7	10.6	40.9	2.822	0.004	0.003	0.0001	0.085	0.07			
11/12/2002	4:26:39 PM	25.982	21.638	26.041	23.383	23.104	48.339	53.164	15.498	33.802	-1.221	-5.7	43.261	0.024	0.001	0	55.82	0.93028	51.7	10.6	41.1	2.832	0.004	0.003	0.0001	0.085	0.07			
11/12/2002	4:27:39 PM	25.959	21.64	26.048	23.329	23.115	48.225	53.236	15.554	33.495	-1.227	-5.709	43.139	0.024	0.001	0	56.82	0.94694	51.8	10.6	40.9	2.817	0.004	0.003	0.0001	0.085	0.07			
11/12/2002	4:28:39 PM	25.971	21.672	26.095	23.311	23.122	48.372	53.332	15.507	33.673	-1.245	-5.703	43.305	0.024	0.001	0	57.82	0.96361	51.9	10.6	41.0	2.828	0.004	0.003	0.0001	0.085	0.07			
11/12/2002	4:29:39 PM	25.983	21.699	26.087	23.393	23.134	48.051	52.98	15.474	33.473	-1.221	-5.7	43.278	0.024	0.001	0	58.82	0.98028	51.5	10.6	40.8	2.810	0.004	0.003	0.0001	0.085	0.07			
11/12/2002	4:30:39 PM	25.969	21.705	25.998	23.414	23.15	48.202	52.988	15.501	33.634	-1.221	-5.709	43.355	0.024	0.001	0	59.82	0.99694	51.5	10.6	40.9	2.821	0.004	0.003	0.0001	0.085	0.07			
11/12/2002	4:31:39 PM	25.985	21.721	26.039	23.415	23.166	48.38	53.292	15.505	33.716	-1.224	-5.706	43.357	0.024	0.001	0	60.82	1.01361	51.8	10.6	41.0	2.830	0.004	0.003	0.0001	0.085	0.07			
11/12/2002	4:32:39 PM	25.998	21.739	26.082	23.383	23.194	47.956	52.823	15.383	33.514	-1.224	-5.706	43.313	0.024	0.001	0	61.82	1.03028	51.4	10.6	40.7	2.809	0.004	0.003	0.0001	0.085	0.07			
	Averages	25.9	21.2	26.2	23.0	22.6	47.2	52.8	15.3	32.7	-0.5	-4.0	44.0	0.0	0.0	0.0			51.3	10.8	40.0	2.755	0.004	0.004	0.0001	0.109	0.093			
	Maximum	26.0	21.7	26.8	23.4	23.2	48.6	53.6	15.7	34.1	1.7	0.8	47.8	0.1	0.0	0.0			52.1	11.7	41.3	2.847	0.019	0.018	0.0005	0.454	0.386			
	Median	25.9	21.2	26.1	23.0	22.8	48.2	53.0	15.5	33.6	-1.3	-5.7	43.3	0.0	0.0	0.0			51.5	10.6	40.9	2.821	0.004	0.004	0.0001	0.093	0.080			
	Minimum	25.4	20.5	26.0	22.4	21.6	43.0	50.8	13.7	29.8	-1.3	-5.7	43.1	0.0	0.0	0.0			49.3	10.6	36.4	2.510	0.004	0.003	0.0001	0.084	0.072			
	2 x Std Dev	0.212	0.754	0.307	0.496	0.849	3.649	1.197	0.782	3.051	2.578	5.656	2.407	0.028	0.000	0.000			1.197	0.590	3.341	0.230	0.004	0.004	0.0001	0.102	0.086			
Number of Points Used*		60	60	60	60	60	60	60	60	60	60	60	60	60	60	60			60	60	60	60	60	60	60	60	60				
	* Backpulse points in box are not included																														

Figure E38: Steady state test run 1.29 of AN-102R2, batch 3A, insoluble solids concentration of 25 wt% - Raw & Calculated Data

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Appendix F: Slurry Wash and Concentration of Washed Slurry, AN-102R2, Batch 3B

While this report deals with four different batches of AN-102 simulant only after the first successful dewatering test could the steady state runs be done, and therefore, the washing test run. This occurred after the second batch, i.e., 3B. For subsequent batches most steady-state runs were not required, as well as the washing tests.

After the last steady state run with AN-102, batch 3B, i.e., run 1.29, the test rig was made ready to wash the slurry. The washing cycle followed the method to be used by WTP. That is, for the plant the concentrated slurry would have an approximately volume of 18,000 gallons and it would be washed with 21,000 gallons of inhibited water. The washing liquid would be added 1,000 gallons at a time and an equal volume of washed filtratre removed before adding the next 1,000 gallons, for a total of 21 cycles. The same was done for the pilot wash test. Of course the scale was reduced. At the end of test run 1.29 there was approximately 67 liters of concentrated slurry. As required by the test specification (Townson, 2002), the slurry insoluble solids concentration was reduced from was attained during the dewater test run, i.e., 1.16 to 20 wt%, if it happened to be higher. The actual concentration was approximately 22 wt%, therefore some of the previously removed filtate was added back to the slurry to reduce the solids concentration. The amount was 7.5 kg, or approximately 5.8 liters. The filtrate addition reduced the solids concentration of the simulant to 18.8 wt%. Then, to this approximate volume 72.8 liters of slurry were added 72.8 x 21/18 – 85 liters of wash water. The 85 liters were added in 4.04-liter batches while 4.04 liters of washed filtrate were removed before adding the next batch. This was done 21 times.

This appendix contain the raw data for the washing run and for test run 1.30, which concentrated the washed slurry until it could not be concentrated further.

This Appendix includes the following test runs:

Washing test run with simulant slurry AN-102R2 Batch 3B at insoluble solids of 18.8 wt%:

Washing test run done on 31 October 2002

Concentration of washed slurry: insoluble solids of increased from 18.3 wt% to 25 wt%*:

1.30 done on 31 October 2002

Test 1.30 was stopped at 25 wt% because during the last 5 minutes of the test the slurry temperature began to increase very rapidly, i.e., from approximately 25°C to above 45°C.

Each test in this Appendix contains a graph of the filtrate flux with time and tables of the data taken and calculated. To better understand the presented information important aspects of the graphs and tables are explained below:

Graphs – Each graph contains time averages of some of the imporant parameters taken during the run at the top of the figures, i.e. Slurry velocity in the filter tube, V; transmembrane pressure, TMP; slurry pressure at the entrance of the filter tube, Filter Pres; and the slurry temperature, T.

Tables – Each table is divided into raw data (the first 17 columns) and calculations (the last 10 columns) which are based on the raw data. The raw data section is divided into three parts:

Individual Entries – Raw Data

Temperature	Filtrate – from the filtrate loop at the exit of the filter bundle
	Cleaning – from the cleaning loop (this loop was not used, except for tests Clean 1 & 2)
	Slurry – from the slurry loop in the slurry reservoir
	Hi Amb. – outside ambient temperature at the top of the test rig
	Lo Amb. – inside ambient temperature at the bottom of the test rig
Pressure	BotTMP – differential pressure across the filter tube at the bottom of the vertical tube
	Filter – gauge pressureof the slurry at the entrance of the filter tube bundle
	Filter dP – differential pressure of the slurry along the height of the vertical 90-inch tube
	TopTMP – differential pressure across the filter tube at the top the vertical 90-inch tube
	Filtrate – gauge pressure of the filtrate at the exit of the filter tube housing
	Pulsepot – gauge pressure of the filtrate at the bottom of the pulsepot
Flow	Slurry – rate of slurry just before entering the seven-filter-tube bundle
	Filtrate – rate of slurry filtrate under normal flow (max. is 1.2 gpm)
	Hi Filtrate – rate of any liquid with has a high flowrate (water, acid, etc.) (max. 5 gpm)
	Backpulse – rate of filtrate in opposite direction from normal flow, i.e., backpulse

Individual Entries – Calculated Data

Time – Minutes after start of test, including the backpulse (based on raw data TIME column)
Press. – Internal filter pressure of slurry at the filter bundle entrance (based on raw data P1 column and corrected for a 40.9-inch water column that exists from the transducer to the point where P1 is measured.)
Vel. – Slurry velocity in filter tube (based on raw data Q1 column and i.d. of the tubes of 0.488 inches)
TMP – Filter transmembrane pressure (based on average of raw data columns dP2 and dP3) in psi.
TMP – Filter transmembrane pressure (based on average of raw data columns dP2 and dP3) in bar.
Filtrate Flux – Filtrate flow rate (raw data columns Q2/Q3) divided by inside filter surface area (6.87 ft2)
Filtrate Flux @ 25°C – Same as Filtrate flux, but correct for temperature with the following multiplier:

T(corrected) = T x Exp[2500/((1/273+T))-(1/298)] as per Test Spec 24590-WTP-TSP-RT-01-029, Rev. 0

Permiability – Filterate flow rate per TMP (based on calculated columns Filtrate Flux @ 25°C and TMP)
Permiability x 1000 – Same as the above Permiability, but increase by 1000 to facilitate graphing
Permiability – Same as Permiability but in metric units, meter/day/bar

Statistics

At the bottom of the last individual entry there are six rows with some data statistics to better understand the data and their fluctuations. The columns are self explained with titles of Averages, Maximum, Median, and Minimum. The next row 2 x Std Dev, is two times the population standard deviation based on the number of data points used, which is the last row. The Number of Points used generally do not included the points taken during the backpulse sequence of each test. This is explained below.

Raw Data Table Layout

The raw data is generally made up of three sections:

Zeros – These eight rows include approximately 15 to 20 seconds of data taken with the pressure transducers placed in the "zero" mode to determine if any zero drift occurred from one test to the next.

Data-Per Minute – On most of the tables the first six rows of these data are contained in a box which indicate data taken during the backpulse. This is were the filtrate flow is reversed temporarily to knock the filtrate cake of the filter surface. During these first few minutes the filtrate flow is stopped, then reversed, then stopped again, then it is finally returned to normal operation. The data during the backpulse operation were taken with a separate log, therefore those data are marked with a box to note this fact. Most or all of those data points are not counted in the statistics at the bottom of the table. The tables of some of the later tests do not show the boxed data because separate logs of data were not taken, however since a backpulse for each run still occurred only those data were not included in the statistics at the bottom of the page.

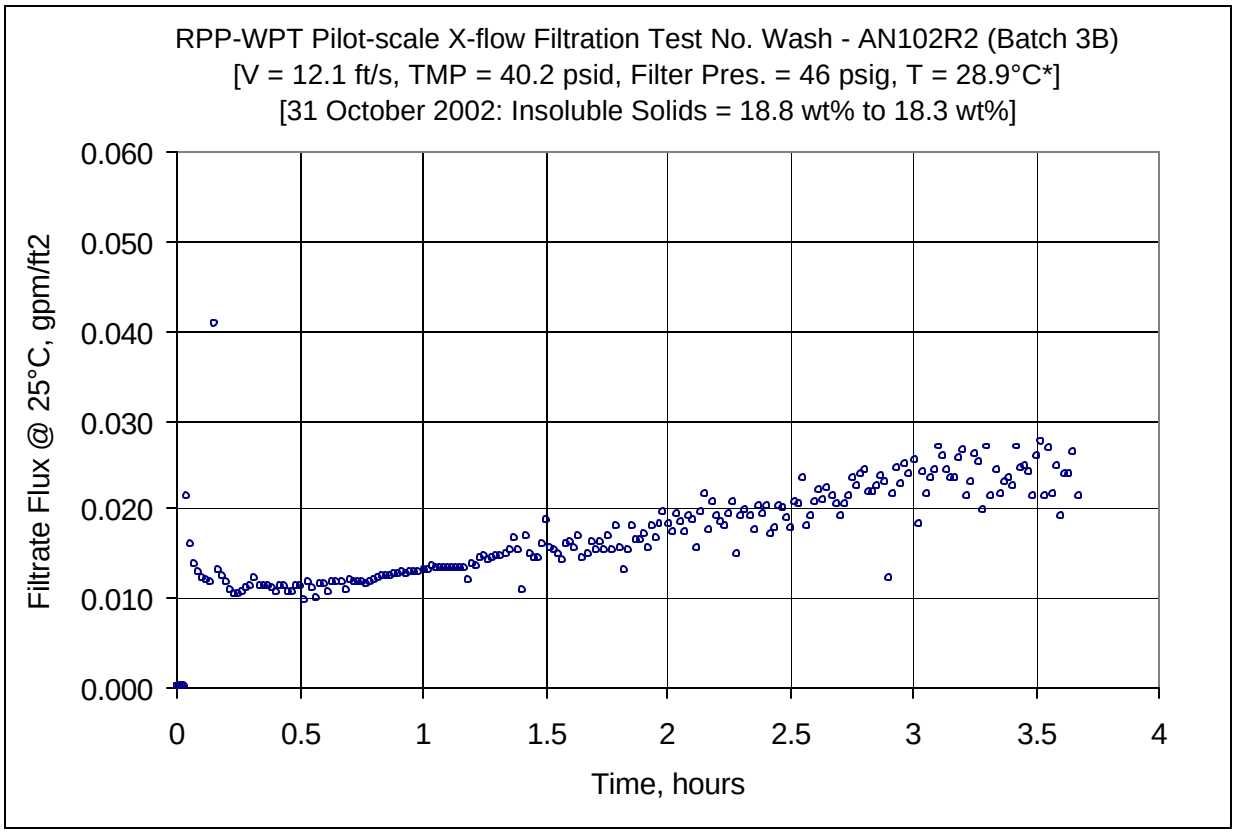

Figure F1. Complete washing cycle – 21 mini-batches of inhibited/filtered water with a Volume = Total Slurry Volume x (21/18)/21 were added and removed. At an average filtrate flux of 0.0175 gpm/ft2 the mini-batch additions occurred approximately, on the average, every 10 minutes

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
10/31/2002	7:40:03 AM	20.304	19.817	17.419	19.7	19.142	-0.122	-0.013	-0.041	0.065	-0.369	0.375	-0.22	0.001	0.001	0.001			Filter Surface	6.707	FT2					
10/31/2002	7:40:29 AM	20.304	19.817	17.419	19.7	19.142	-0.122	-0.013	-0.041	0.065	-0.369	0.375	-0.22	0.001	0.001	0.001			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
10/31/2002	7:40:30 AM	20.305	19.817	17.42	19.736	19.147	-0.122	-0.014	-0.042	0.065	-0.375	0.372	-0.216	0.001	0.001	0.001										
10/31/2002	7:40:31 AM	20.305	19.827	17.42	19.731	19.147	-0.122	-0.013	-0.042	0.065	-0.375	0.369	-0.218	0.001	0.001	0.001			Note: Gauge Pressure P1 is approximately 1.4 psig							
10/31/2002	7:40:32 AM	20.294	19.807	17.399	19.705	19.142	-0.12	-0.014	-0.042	0.063	-0.375	0.369	-0.216	0.001	0.001	0										
10/31/2002	7:40:33 AM	20.289	19.807	17.394	19.7	19.142	-0.122	-0.014	-0.042	0.063	-0.375	0.369	-0.22	0.001	0.001	0.001			Pressure P1is corrected for 40.88 inches of water tubing							
10/31/2002	7:40:34 AM	20.295	19.812	17.399	19.706	19.147	-0.122	-0.013	-0.042	0.063	-0.372	0.372	-0.216	0.001	0.001	0			VVVV			< Filtrate Flux <<		PERMIABILITY >>		
10/31/2002	7:40:35 AM	20.295	19.817	17.404	19.706	19.147	-0.12	-0.014	-0.042	0.061	-0.375	0.369	-0.22	0.001	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
10/31/2002	7:50:43 AM	21.694	19.8	24.586	19.987	19.216	20.842	53.35	18.312	3.3	26.555	93.511	48.681	0.001	0.001	0	0	0	51.9	11.9	12.1	0.832	0.000	0.000	0.0000	0.012	0.01
10/31/2002	7:51:20 AM	21.694	19.8	24.586	19.987	19.216	20.842	53.35	18.312	3.3	26.555	93.511	48.681	0.001	0.001	0	0.62	0.01028	51.9	11.9	12.1	0.832	0.000	0.000	0.0000	0.012	0.01
10/31/2002	7:51:43 AM	21.133	19.808	24.568	20.181	19.259	-7.517	51.666	11.6	-18.615	55.624	56.776	51.898	0.001	0.001	0.673	1.00	0.01667	50.2	12.7	-13.1	-0.901	0.000	0.000	0.0000	-0.012	-0.01
10/31/2002	7:52:13 AM	21.278	19.812	24.638	20.291	19.284	8.479	51.281	11.925	-2.602	37.05	0.58	52.613	0.001	0.001	0	1.50	0.025	49.8	12.9	2.9	0.203	0.000	0.000	0.0001	0.051	0.04
10/31/2002	7:52:43 AM	23.732	19.812	24.728	20.301	19.298	38.662	51.792	12.296	27.174	7.351	0.609	51.9	0.364	0.001	0	2.00	0.03333	50.3	12.7	32.9	2.270	0.000	0.000	0.0000	0.005	0.00
10/31/2002	7:53:13 AM	23.154	19.821	24.702	20.421	19.323	45.762	52.206	12.936	33.708	0.591	0.629	51.392	0.143	0.001	0	2.50	0.04167	50.7	12.6	39.7	2.740	0.021	0.021	0.0005	0.541	0.46
10/31/2002	7:53:59 AM	23.782	19.832	24.898	20.528	19.369	45.729	52.01	13.545	33.016	0.472	0.667	51.187	0.107	0.001	0	3.27	0.05444	50.5	12.5	39.4	2.715	0.016	0.016	0.0004	0.406	0.35
10/31/2002	7:54:59 AM	24.399	19.852	24.903	20.624	19.42	45.739	52.01	13.782	32.803	0.475	0.699	52.011	0.093	0.001	0	4.27	0.07111	50.5	12.7	39.3	2.708	0.014	0.014	0.0004	0.354	0.30
10/31/2002	7:55:59 AM	24.674	19.852	25.093	20.699	19.46	45.727	52.057	13.736	32.889	0.478	0.734	51.088	0.087	0.001	0	5.27	0.08778	50.6	12.5	39.3	2.710	0.013	0.013	0.0003	0.329	0.28
10/31/2002	7:56:59 AM	24.911	19.874	25.2	20.777	19.517	45.911	52.517	13.977	32.547	0.475	0.765	50.985	0.083	0.001	0	6.27	0.10444	51.0	12.5	39.2	2.705	0.012	0.012	0.0003	0.314	0.27
10/31/2002	7:57:59 AM	25.078	19.891	25.221	20.828	19.584	45.829	52.086	13.945	32.748	0.493	0.797	50.262	0.081	0.001	0	7.27	0.12111	50.6	12.3	39.3	2.709	0.012	0.012	0.0003	0.305	0.26
10/31/2002	7:58:59 AM	25.251	19.924	25.454	20.907	19.632	45.713	52.154	13.898	32.605	0.53	0.826	50.918	0.08	0.001	0	8.27	0.13778	50.7	12.5	39.2	2.700	0.012	0.012	0.0003	0.301	0.26
10/31/2002	7:59:59 AM	25.013	19.921	25.462	21.02	19.711	49.693	52.219	13.939	36.574	-1.282	-4.195	50.417	0.278	0.001	0	9.27	0.15444	50.7	12.4	43.1	2.974	0.041	0.041	0.0009	0.949	0.81
10/31/2002	8:00:59 AM	24.379	19.944	25.504	21.063	19.769	51.33	52.388	14.149	37.921	-1.285	-6.161	50.612	0.09	0.001	0	10.27	0.17111	50.9	12.4	44.6	3.077	0.013	0.013	0.0003	0.296	0.25
10/31/2002	8:01:59 AM	24.312	19.936	25.657	21.076	19.832	51.112	52.167	14.066	37.774	-1.285	-6.262	50.658	0.085	0.001	0	11.27	0.18778	50.7	12.4	44.4	3.064	0.013	0.012	0.0003	0.280	0.24
10/31/2002	8:02:59 AM	24.32	19.96	25.63	21.13	19.886	50.911	51.871	14.07	37.577	-1.282	-6.23	50.738	0.08	0.001	0	12.27	0.20444	50.4	12.4	44.2	3.050	0.012	0.012	0.0003	0.265	0.23
10/31/2002	8:03:59 AM	24.374	19.979	25.684	21.174	19.956	46.932	47.781	13.31	34.404	-1.285	-6.331	48.697	0.074	0.001	0	13.27	0.22111	46.3	11.9	40.7	2.804	0.011	0.011	0.0003	0.266	0.23
10/31/2002	8:04:59 AM	24.428	19.988	25.698	21.233	20	46.713	47.527	13.293	34.207	-1.285	-6.337	48.949	0.072	0.001	0	14.27	0.23778	46.1	12.0	40.5	2.790	0.011	0.011	0.0003	0.260	0.22
10/31/2002	8:05:59 AM	24.477	20.012	25.476	21.388	20.069	46.831	47.663	13.265	34.484	-1.282	-6.279	48.827	0.072	0.001	0	15.27	0.25444	46.2	12.0	40.7	2.803	0.011	0.011	0.0003	0.261	0.22
10/31/2002	8:06:59 AM	24.526	20.025	25.38	21.336	20.128	46.62	47.473	13.084	34.443	-1.282	-6.32	49.031	0.073	0.001	0	16.27	0.27111	46.0	12.0	40.5	2.795	0.011	0.011	0.0003	0.266	0.23
10/31/2002	8:07:59 AM	24.56	20.05	25.32	21.401	20.198	46.591	47.39	13.103	34.316	-1.285	-6.326	49.148	0.075	0.001	0	17.27	0.28778	45.9	12.0	40.5	2.789	0.011	0.011	0.0003	0.274	0.23
10/31/2002	8:08:59 AM	24.56	20.07	25.104	21.461	20.269	46.655	47.645	13.063	34.465	-1.282	-6.282	49.297	0.076	0.001	0	18.27	0.30444	46.2	12.1	40.6	2.796	0.011	0.011	0.0003	0.279	0.24
10/31/2002	8:09:59 AM	24.554	20.079	25.163	21.536	20.328	46.34	47.134	13.081	34.07	-1.285	-6.331	49.8	0.083	0.001	0	19.27	0.32111	45.7	12.2	40.2	2.772	0.012	0.012	0.0003	0.306	0.26
10/31/2002	8:10:59 AM	24.554	20.104	25.213	21.561	20.399	46.45	47.442	13.113	34.126	-1.285	-6.462	49.918	0.077	0.001	0	20.27	0.33778	46.0	12.2	40.3	2.778	0.011	0.011	0.0003	0.283	0.24
10/31/2002	8:11:59 AM	24.548	20.124	25.102	21.65	20.448	46.322	47.088	13.026	34.226	-1.285	-6.444	49.626	0.077	0.001	0	21.27	0.35444	45.6	12.2	40.3	2.777	0.011	0.011	0.0003	0.284	0.24
10/31/2002	8:12:59 AM	24.533	20.128	25.202	21.65	20.508	46.433	47.353	12.951	34.367	-1.288	-6.447	49.761	0.077	0.001	0	22.27	0.37111	45.9	12.2	40.4	2.785	0.011	0.011	0.0003	0.283	0.24
10/31/2002	8:13:59 AM	24.532	20.153	25.207	21.746	20.548	46.355	47.309	12.95	34.269	-1.285	-6.462	48.899	0.075	0.001	0	23.27	0.38778	45.8	12.0	40.3	2.779	0.011	0.011	0.0003	0.276	0.23
10/31/2002	8:14:59 AM	24.547	20.178	25.151	21.796	20.619	46.141	47.156	12.962	34.019	-1.288	-6.427	48.777	0.072	0.001	0	24.27	0.40444	45.7	12.0	40.1	2.763	0.011	0.011	0.0003	0.267	0.23
10/31/2002	8:15:59 AM	24.571	20.198	25.296	21.785	20.673	46.087	47.125	12.979	33.919	-1.282	-6.476	49.517	0.077	0.001	0	25.27	0.42111	45.7	12.1	40.0	2.758	0.011	0.011	0.0003	0.285	0.24
10/31/2002	8:16:59 AM	24.611	20.228	25.236	21.835	20.729	46.355	47.372	12.957	34.234	-1.285	-6.47	49.482	0.077	0.001	0	26.27	0.43778	45.9	12.1	40.3	2.778	0.011	0.011	0.0003	0.283	0.24
10/31/2002	8:17:59 AM	24.606	20.243	25.225	21.83	20.784	46.266	47.312	12.975	34.123	-1.285	-6.456	49.245	0.073	0.001	0	27.27	0.45444	45.8	12.1	40.2	2.771	0.011	0.011	0.0003	0.269	0.23
10/31/2002	8:18:59 AM	24.631	20.263	25.336	21.895	20.85	46.293	47.388	12.997	34.126	-1.285	-6.45	49.494	0.073	0.001	0	28.27	0.47111	45.9	12.1	40.2	2.772	0.011	0.011	0.0003	0.268	0.23
10/31/2002	8:19:59 AM	24.62	20.272	25.215	21.975	20.909	46.338	47.498	13.055	34.07	-1.285	-6.479	49.207	0.077	0.001	0	29.27	0.48778	46.0	12.1	40.2	2.772	0.011	0.011	0.0003	0.284	0.24
10/31/2002	8:20:59 AM	24.63	20.297	25.279	21.934	20.969	46.305	47.462	12.877	34.353	-1.285	-6.462	48.962	0.077	0.001	0	30.27	0.50444	46.0	12.0	40.3	2.781	0.011	0.011	0.0003	0.282	0.24
10/31/2002	8:21:59 AM	24.649	20.317	25.369	21.949	21.014	46.319	47.477	12.922	34.21	-1.285	-6.41	49.48	0.066	0.001	0	31.27	0.52111	46.0	12.1	40.3	2.776	0.010	0.010	0.0002	0.242	0.21
10/31/2002	8:22:59 AM	24.664	20.337	25.239	22.009	21.064	46.324	47.547	12.973	34.113	-1.291	-6.459	48.894	0.08	0.001	0	32.27	0.53778	46.1	12.0	40.2	2.773	0.012	0.012	0.0003	0.295	0.25
10/31/2002	8:23:59 AM	24.689	20.367	25.364	21.974	21.125	46.123	47.247	12.968	34.078	-1.285	-6.462	49.366	0.076	0.001	0	33.27	0.55444	45.8	12.1	40.1	2.765	0.011	0.011	0.0003	0.280	0.24
10/31/2002	8:24:59 AM	24.714	20.396	25.348	22.074	21.174	46.216	47.564	12.876	34.187	-1.285	-6.392	48.999	0.068	0.001	0	34.27	0.57111	46.1	12.0	40.2	2.772	0.010	0.010	0.0002	0.250	0.21
10/31/2002	8:25:59 AM	24.718	20.406	25.167	22.123	21.234	46.031	47.309	12.846	34.025	-1.285	-6.462	49.731	0.078	0.001	0	35.27	0.58778	45.8	12.2	40.0	2.760	0.012	0.012	0.0003	0.289	0.25
10/31/2002	8:26:59 AM	24.744	20.432	25.173	22.053	21.285	45.779	47.057	12.885	33.634	-1.282	-6.462	50.277	0.078	0.001	0	36.27	0.60444	45.6	12.3	39.7	2.738	0.012	0.012	0.0003	0.291	0.25
10/31/2002	8:27:59 AM	24.737	20.451	25.042	22.193	21.339	45.851	47.282	12.875	33.73	-1.285	-6.372	50.134	0.072	0.001	0	37.27	0.62111	45.8	12.3	39.8	2.743	0.011	0.011	0.0003	0.269	0.23
10/31/2002	8:28:59 AM	24.727	20.471	25.167	22.238	21.405	45.684	47.04	12.881	33.7	-1.288	-6.439	49.92	0.08	0.001	0	38.27	0.63778	45.6	12.2	39.7	2.737	0.012	0.012	0.0003	0.299	0.25
10/31/2002	8:29:59 AM	24.733	20.512	25.618	22.088	21.466	45.758	47.061	12.818	33.864	-1.285	-6.444	50.568	0.081	0.001	0	39.27	0.65444	45.6	12.4	39.8	2.745	0.012	0.012	0.0003	0.298	0.25
10/31/2002	8:30:59 AM	24.738	20.517	26.218	21.882	21.506	45.464	46.836	12.805	33.54	-1.285	-6.439	49.897	0.082	0.001	0	40.27	0.67111	45.4	12.2	39.5	2.724	0.012	0.012	0.0003	0.299	0.25
10/31/2002	8:31:59 AM	24.838	20.557	26.512	21.957	21.546	45.758	47.465	12.828	33.636	-1.282	-6.383	49.414	0.077	0.001	0	41.27	0.68778	46.0	12.1	39.7	2.737	0.011	0.011	0.0003	0.277	0.24
10/31/2002	8:32:59 AM	24.983	20.577	26.941	21.876	21.591	45.429	46.902	12.695	33.524	-1.285	-6.421	49.88	0.085	0.001	0	42.27	0.70444	45.4	12.2	39.5	2.722	0.013	0.012	0.0003	0.304	0.26
10/31/2002	8:33:59 AM	25.148	20.607	27.181	21.987	21.616	45.404	46.925	12.848	33.391	-1.288	-6.427	50.43	0.084	0.001	0	43.27	0.72111	45.5	12.4	39.4	2.716	0.013	0.012	0.0003	0.299	0.25
10/31/2002	8:34:59 AM	25.307	20.606	27.335	21.966	21.661	45.302	46.999	12.742	33.329	-1.291	-6.424	50.109	0.084	0.001	0	44.27	0.73778	45.5	12.3	39.3	2.711	0.013	0.012	0.0003	0.298	0.25
10/31/2002	8:35:59 AM	25.492	20.626	27.668	21.935	21.695	45.363	46.97	12.561	33.644	-1.288	-6.418	49.205	0.085	0.001	0	45.27	0.75444	45.5	12.1	39.5	2.724	0.013	0.012	0.0003	0.298	0.25
10/31/2002	8:36:59 AM	25.682	20.655	27.763	22.045	21.72	45.899	47.371	12.585	34.246	-1.282	-6.41	49.555	0.084	0.001	0	46.27	0.77111	45.9	12.1	40.1	2.763	0.013	0.012	0.0003	0.289	0.25

Figure F2-1: Wash run after the last steady state test run (1.29) of AN-102R2, batch 3B, insoluble solids concentration of 19 wt% - Raw & Calculated Data

10/31/2002	8:37:59 AM	25.866	20.675	27.762	22.054	21.77	45.671	47.216	12.433	34.259	-1.285	-6.404	49.737	0.086	0.001	0	47.27	0.78778	45.7	12.2	40.0	2.755	0.013	0.012	0.0003	0.297	0.25
10/31/2002	8:38:59 AM	26.025	20.699	27.905	21.973	21.809	45.41	47.208	12.368	33.89	-1.288	-6.386	49.727	0.087	0.001	0	48.27	0.80444	45.7	12.2	39.7	2.734	0.013	0.012	0.0003	0.302	0.26
10/31/2002	8:39:59 AM	26.154	20.717	27.744	22.107	21.837	45.361	47.303	12.44	33.645	-1.288	-6.395	50.331	0.089	0.001	0	49.27	0.82111	45.8	12.3	39.5	2.724	0.013	0.012	0.0003	0.311	0.26
10/31/2002	8:40:59 AM	26.258	20.737	27.763	22.071	21.882	44.959	46.898	12.387	33.147	-1.285	-6.386	50.314	0.09	0.001	0	50.27	0.83778	45.4	12.3	39.1	2.693	0.013	0.012	0.0003	0.318	0.27
10/31/2002	8:41:59 AM	26.341	20.76	28.016	22.084	21.931	45.137	46.964	12.394	33.651	-1.285	-6.357	50.448	0.091	0.001	0	51.27	0.85444	45.5	12.4	39.4	2.716	0.014	0.012	0.0003	0.317	0.27
10/31/2002	8:42:59 AM	26.44	20.779	28.07	22.209	21.975	45.381	47.251	11.803	34.427	-1.288	-6.369	48.983	0.092	0.001	0	52.27	0.87111	45.8	12.0	39.9	2.751	0.014	0.013	0.0003	0.316	0.27
10/31/2002	8:43:59 AM	26.534	20.803	28.088	22.298	22.014	45.827	47.81	11.886	34.762	-1.285	-6.346	48.917	0.093	0.001	0	53.27	0.88778	46.3	12.0	40.3	2.778	0.014	0.013	0.0003	0.316	0.27
10/31/2002	8:44:59 AM	26.607	20.827	28.291	22.312	22.052	45.462	47.539	11.693	34.47	-1.285	-6.363	47.852	0.094	0.001	0	54.27	0.90444	46.1	11.7	40.0	2.756	0.014	0.013	0.0003	0.320	0.27
10/31/2002	8:45:59 AM	26.691	20.851	28.31	22.437	22.102	45.845	47.798	11.763	34.875	-1.285	-6.352	48.781	0.095	0.001	0	55.27	0.92111	46.3	12.0	40.4	2.783	0.014	0.013	0.0003	0.320	0.27
10/31/2002	8:46:59 AM	26.775	20.88	28.284	22.471	22.161	45.559	47.543	11.551	34.84	-1.285	-6.349	48.095	0.094	0.001	0	56.27	0.93778	46.1	11.8	40.2	2.772	0.014	0.013	0.0003	0.318	0.27
10/31/2002	8:47:59 AM	26.863	20.904	28.472	22.49	22.185	45.681	47.793	11.638	34.775	-1.285	-6.343	48.594	0.095	0.001	0	57.27	0.95444	46.3	11.9	40.2	2.774	0.014	0.013	0.0003	0.320	0.27
10/31/2002	8:48:59 AM	26.937	20.923	28.486	22.523	22.224	46.054	48.509	11.727	34.944	-1.288	-6.346	50.323	0.095	0.001	0	58.27	0.97111	47.0	12.3	40.5	2.792	0.014	0.013	0.0003	0.317	0.27
10/31/2002	8:49:59 AM	26.98	20.946	28.3	22.456	22.242	45.812	48.106	11.663	34.899	-1.285	-6.34	48.532	0.095	0.001	0	59.27	0.98778	46.6	11.9	40.4	2.782	0.014	0.013	0.0003	0.320	0.27
10/31/2002	8:50:59 AM	27.064	20.965	28.189	22.485	22.286	45.539	47.692	11.593	34.803	-1.288	-6.337	49.234	0.096	0.001	0	60.27	1.00444	46.2	12.1	40.2	2.770	0.014	0.013	0.0003	0.326	0.28
10/31/2002	8:51:59 AM	27.122	21.009	28.182	22.554	22.345	45.325	47.614	11.593	34.439	-1.282	-6.323	50.545	0.097	0.001	0	61.27	1.02111	46.1	12.4	39.9	2.750	0.014	0.013	0.0003	0.332	0.28
10/31/2002	8:52:59 AM	27.105	21.012	28.111	22.607	22.368	45.12	47.614	11.57	34.197	-1.288	-6.317	49.198	0.099	0.001	0	62.27	1.03778	46.1	12.1	39.7	2.734	0.015	0.014	0.0003	0.341	0.29
10/31/2002	8:53:59 AM	27.109	21.046	28.309	22.596	22.417	45.087	47.45	11.536	34.271	-1.285	-6.308	48.995	0.099	0.001	0	63.27	1.05444	46.0	12.0	39.7	2.736	0.015	0.013	0.0003	0.339	0.29
10/31/2002	8:54:59 AM	27.133	21.07	28.407	22.665	22.451	45.176	47.651	11.654	34.185	-1.285	-6.308	49.243	0.099	0.001	0	64.27	1.07111	46.2	12.1	39.7	2.736	0.015	0.013	0.0003	0.338	0.29
10/31/2002	8:55:59 AM	27.172	21.084	28.341	22.719	22.485	45.209	47.673	11.554	34.42	-1.285	-6.288	50.499	0.098	0.001	0	65.27	1.08778	46.2	12.4	39.8	2.745	0.015	0.013	0.0003	0.334	0.28
10/31/2002	8:56:59 AM	27.206	21.118	28.48	22.628	22.514	45.106	47.601	11.527	34.246	-1.288	-6.285	49.117	0.099	0.001	0	66.27	1.10444	46.1	12.0	39.7	2.736	0.015	0.013	0.0003	0.338	0.29
10/31/2002	8:57:59 AM	27.249	21.142	28.568	22.646	22.538	45.255	47.862	11.597	34.345	-1.285	-6.308	48.683	0.099	0.001	0	67.27	1.12111	46.4	11.9	39.8	2.744	0.015	0.013	0.0003	0.336	0.29
10/31/2002	8:58:59 AM	27.277	21.16	28.471	22.694	22.561	44.867	47.543	11.512	34.068	-1.285	-6.276	48.311	0.099	0.001	0	68.27	1.13778	46.1	11.8	39.5	2.721	0.015	0.013	0.0003	0.340	0.29
10/31/2002	8:59:59 AM	27.305	21.178	28.544	22.677	22.604	45.199	47.87	11.6	34.349	-1.288	-6.294	48.737	0.099	0.001	0	69.27	1.15444	46.4	11.9	39.8	2.742	0.015	0.013	0.0003	0.336	0.29
10/31/2002	9:00:59 AM	27.372	21.206	28.507	22.645	22.647	44.888	47.63	11.429	34.242	-1.288	-6.276	48.733	0.099	0.001	0	70.27	1.17111	46.2	11.9	39.6	2.728	0.015	0.013	0.0003	0.338	0.29
10/31/2002	9:01:59 AM	27.416	21.245	28.271	22.795	22.691	44.787	47.614	11.449	33.978	-1.285	-6.172	48.311	0.089	0.001	0	71.27	1.18778	46.1	11.8	39.4	2.715	0.013	0.012	0.0003	0.308	0.26
10/31/2002	9:02:59 AM	27.414	21.273	28.195	22.833	22.729	44.799	47.642	11.487	34.011	-1.288	-6.268	50.035	0.102	0.001	0	72.27	1.20444	46.2	12.3	39.4	2.717	0.015	0.014	0.0004	0.353	0.30
10/31/2002	9:03:59 AM	27.417	21.286	28.337	22.816	22.758	45.423	48.24	11.521	34.623	-1.285	-6.187	49.626	0.1	0.001	0	73.27	1.22111	46.8	12.2	40.0	2.759	0.015	0.014	0.0003	0.339	0.29
10/31/2002	9:04:59 AM	27.41	21.315	28.306	22.924	22.796	45.524	48.408	11.589	34.557	-1.288	-6.236	49.786	0.106	0.001	0	74.27	1.23778	46.9	12.2	40.0	2.761	0.016	0.014	0.0004	0.360	0.31
10/31/2002	9:05:59 AM	27.403	21.338	28.383	22.862	22.834	45.609	48.414	11.587	34.625	-1.288	-6.204	49.67	0.108	0.001	0	75.27	1.25444	46.9	12.2	40.1	2.766	0.016	0.015	0.0004	0.365	0.31
10/31/2002	9:06:59 AM	27.462	21.367	28.561	22.926	22.878	45.688	48.857	11.689	34.633	-1.291	-5.118	49.74	0.105	0.001	0	76.27	1.27111	47.4	12.2	40.2	2.769	0.016	0.014	0.0004	0.353	0.30
10/31/2002	9:07:59 AM	27.484	21.4	28.534	23.044	22.901	45.557	48.305	11.546	34.635	-1.285	-6.169	49.526	0.107	0.001	0	77.27	1.28778	46.8	12.1	40.1	2.764	0.016	0.014	0.0004	0.361	0.31
10/31/2002	9:08:59 AM	27.517	21.408	28.552	23.007	22.924	45.847	48.567	11.616	34.971	-1.285	-5.961	49.777	0.109	0.001	0	78.27	1.30444	47.1	12.2	40.4	2.786	0.016	0.015	0.0004	0.364	0.31
10/31/2002	9:09:59 AM	27.55	21.431	28.729	22.869	22.937	45.628	48.358	11.521	34.811	-1.285	-6.132	49.366	0.11	0.001	0	79.27	1.32111	46.9	12.1	40.2	2.773	0.016	0.015	0.0004	0.368	0.31
10/31/2002	9:10:59 AM	27.603	21.459	28.608	23.048	22.965	45.916	48.662	11.622	34.926	-1.288	-6.189	49.576	0.11	0.001	0	80.27	1.33778	47.2	12.1	40.4	2.787	0.016	0.015	0.0004	0.367	0.31
10/31/2002	9:11:59 AM	27.652	21.488	28.781	22.896	22.994	45.644	48.462	11.46	34.871	-1.288	-5.998	49.673	0.115	0.001	0	81.27	1.35444	47.0	12.2	40.3	2.776	0.017	0.015	0.0004	0.383	0.33
10/31/2002	9:12:59 AM	27.704	21.516	28.749	22.899	23.022	45.561	48.544	11.465	34.758	-1.285	-5.651	49.345	0.124	0.001	0	82.27	1.37111	47.1	12.1	40.2	2.769	0.018	0.017	0.0004	0.415	0.35
10/31/2002	9:13:59 AM	27.732	21.534	28.756	22.901	23.034	45.487	48.166	11.439	34.705	-1.288	-6.161	49.656	0.114	0.001	0	83.27	1.38778	46.7	12.2	40.1	2.764	0.017	0.015	0.0004	0.382	0.32
10/31/2002	9:14:59 AM	27.795	21.557	29.058	22.854	23.052	45.752	48.424	11.471	34.916	-1.291	-5.466	50.161	0.082	0.001	0	84.27	1.40444	47.0	12.3	40.3	2.781	0.012	0.011	0.0003	0.271	0.23
10/31/2002	9:15:59 AM	27.848	21.575	29.141	22.953	23.096	45.69	48.228	11.467	34.844	-1.291	-5.943	49.23	0.128	0.001	0	85.27	1.42111	46.8	12.1	40.3	2.776	0.019	0.017	0.0004	0.422	0.36
10/31/2002	9:16:59 AM	27.926	21.629	29.233	23.057	23.129	45.478	48.133	11.371	34.815	-1.285	-5.998	49.651	0.113	0.001	0	86.27	1.43778	46.7	12.2	40.1	2.768	0.017	0.015	0.0004	0.373	0.32
10/31/2002	9:17:59 AM	28.004	21.637	29.455	23.02	23.157	45.599	48.16	11.434	34.856	-1.285	-5.975	50.144	0.11	0.001	0	87.27	1.45444	46.7	12.3	40.2	2.774	0.016	0.014	0.0004	0.360	0.31
10/31/2002	9:18:59 AM	28.081	21.664	29.517	23.178	23.18	45.433	48.124	11.35	34.719	-1.288	-6.106	50.025	0.11	0.001	0	88.27	1.47111	46.7	12.3	40.1	2.763	0.016	0.014	0.0004	0.361	0.31
10/31/2002	9:19:59 AM	28.168	21.682	29.5	23.226	23.203	46.133	48.53	11.408	35.421	-1.288	-6.085	50.17	0.122	0.001	0	89.27	1.48778	47.1	12.3	40.8	2.811	0.018	0.016	0.0004	0.394	0.34
10/31/2002	9:20:59 AM	28.221	21.705	29.677	23.072	23.225	45.812	48.544	11.433	35.186	-1.288	-5.303	49.675	0.143	0.001	0	90.27	1.50444	47.1	12.2	40.5	2.792	0.021	0.019	0.0005	0.462	0.39
10/31/2002	9:21:59 AM	28.313	21.733	29.729	23.256	23.253	45.798	48.429	11.471	34.86	-1.285	-5.909	50.625	0.12	0.001	0	91.27	1.52111	47.0	12.4	40.3	2.781	0.018	0.016	0.0004	0.389	0.33
10/31/2002	9:22:59 AM	28.381	21.751	29.657	23.304	23.286	45.994	48.487	11.454	35.247	-1.288	-5.72	50.627	0.118	0.001	0	92.27	1.53778	47.0	12.4	40.6	2.801	0.018	0.015	0.0004	0.381	0.32
10/31/2002	9:23:59 AM	28.454	21.779	29.815	23.378	23.324	45.791	48.298	11.416	34.991	-1.288	-5.946	50.128	0.115	0.001	0	93.27	1.55444	46.8	12.3	40.4	2.785	0.017	0.015	0.0004	0.371	0.32
10/31/2002	9:24:59 AM	28.531	21.802	29.912	23.511	23.362	45.524	48.276	11.477	34.603	-1.285	-5.428	49.775	0.109	0.001	0	94.27	1.57111	46.8	12.2	40.1	2.762	0.016	0.014	0.0004	0.354	0.30
10/31/2002	9:25:59 AM	28.573	21.815	29.676	23.488	23.405	45.804	48.238	11.455	34.989	-1.291	-6.077	48.509	0.123	0.001	0	95.27	1.58778	46.8	11.9	40.4	2.785	0.018	0.016	0.0004	0.399	0.34
10/31/2002	9:26:59 AM	28.631	21.853	29.664	23.511	23.438	45.528	47.969	11.379	34.854	-1.288	-5.72	50.348	0.124	0.001	0	96.27	1.60444	46.5	12.3	40.2	2.771	0.018	0.016	0.0004	0.404	0.34
10/31/2002	9:27:59 AM	28.664	21.891	29.632	23.539	23.481	45.611	47.982	11.44	34.85	-1.285	-5.926	50.277	0.119	0.001	0	97.27	1.62111	46.5	12.3	40.2	2.774	0.018	0.016	0.0004	0.388	0.33
10/31/2002	9:28:59 AM	28.662	21.909	29.446	23.502	23.509	44.803	47.417	11.339	34.027	-1.285	-5.466	50.358	0.128	0.001	0	98.27	1.63778	45.9	12.3	39.4	2.718	0.019	0.017	0.0004	0.428	0.36
10/31/2002	9:29:59 AM	28.63	21.938	29.573	23.455	23.563	45.278	47.647	11.228	34.744	-1.285	-5.848	51.912	0.11	0.001	0	99.27	1.65444	46.2	12.7	40.0	2.759	0.016	0.014	0.0004	0.361	0.31
10/31/2002	9:30:59 AM	28.658	21.955	29.72	23.453	23.631	45.624	48.046	10.966	35.286	-1.288	-5.859	50.098	0.115	0.001	0	100.27	1.67111	46.6	12.3	40.5	2.789	0.017	0.015	0.0004	0.372	0.32
10/31/2002	9:31:59 AM	28.691	21.994	29.684	23.582	23.644	45.677	48.174	11.117	35.067	-1.288	-5.839	49.423	0.125	0.001	0	101.27	1.68778	46.7	12.1	40.4	2.784	0.019	0.016	0.0004	0.405	0.35
10/31/2002	9:32:59 AM	28.714	22.017	30.119	23.459	23.657	45.926	48.178	11.063	35.554	-1.285	-5.83	50.027	0.119	0.001	0	102.27	1.70444	46.7	12.3	40.7	2.809	0.018	0.015	0.0004	0.378	0.32
10/31/2002	9:33:59 AM	28.777	22.041	30.152	23.518	23.675	45.82	48.205	11.122	35.309	-1.288	-5.857	49.681	0.126	0.001	0	103.27	1.72111	46.7	12.2	40.6	2.797	0.019	0.016	0.0004	0.402	0.34
10/31/2002	9:34:59 AM	28.869	22.063	30.344	23.45	23.723	45.822	48.211	11.079	35.389	-1.285	-5.949	48.924	0.119	0.001	0	104.27	1.73778	46.7	12.0	40.6	2.800	0.018	0.015	0.0004	0.377	0.32
10/31/2002	9:35:59 AM	28.972	22.082	30.377	23.524	23.737	45.601	48.04	10.982	35.202	-1.288	-5.961	50.016	0.132	0.001	0	105.27	1.75444	46.6	12.3	40.4	2.786	0.020	0.017	0.0004	0.420	0.36
10/31/2002	9:36:59 AM	29.064	22.125	30.215	23.592	23.759	45.344	47.963	11.011	34.772	-1.285	-5.619	50.211	0.12	0.001	0	106.27	1.77111	46.5	12.3	40.1	2.762	0.018	0.015	0.0004	0.387	0.33
10/31/2002	9:37:59 AM	29.087	22.137	30.263	23.524	23.782	45.265	47.763	10.952	34.844	-1.285	-5.839	51.805	0.14	0.001	0	107.27	1.78778	46.3	12.7	40.1	2.762	0.021	0.018	0.0005	0.451	0.38
10/31/2002	9:38:59 AM	29.144	22.164	30.498	23.546	23.769	45.186	47.711	10.919	34.842	-1.288	-5.622	49.23	0.122	0.001	0	108.27	1.80444	46.2	12.1	40.0	2.759	0.018	0.016	0.0004	0.390	0.33
10/31/2002	9:39:59 AM	29.221	22.187	30.491	23.634	23.817	45.004	47.57	10.871	34.723	-1.288	-5.046	50.186	0.102	0.001	0	109.27	1.82111	46.1	12.3	39.9	2.748	0.015	0.013	0.0003	0.328	0.28
10/31/2002	9:40:59 AM	29.278	22.21	30.642	23.647	23.834	45.588	47.738	10.875	35.37	-1.285	-5.859	50.103	0.12	0.001	0	110.27	1.83778	46.3	12.3	40.5	2.791	0.018	0.015	0.0004	0.378	0.32
10/31/2002	9:41:59 AM	29.345	22.222	30.843	23.588	23.871	45.449	47.721	10.884	35.129	-1.288	-5.767	49.968	0.142	0.001	0	111.27	1.85444	46.3	12.2	40.3	2.778	0.021	0.018	0.0004	0.447	0.38

Figure F2-2: Wash run after the last steady state test run (1.29) of AN-102R2, batch 3B, insoluble solids concentration of 19 wt% - Raw & Calculated Data

10/31/2002	9:42:59 AM	29.437	22.25	30.781	23.701	23.864	45.321	47.589	10.799	35.028	-1.288	-5.891	50.214	0.13	0.001	0	112.27	1.87111	46.1	12.3	40.2	2.770	0.019	0.017	0.0004	0.411	0.35
10/31/2002	9:43:59 AM	29.494	22.262	30.857	23.578	23.876	45.331	47.465	10.744	35.292	-1.288	-5.859	48.982	0.13	0.001	0	113.27	1.88778	46.0	12.0	40.3	2.779	0.019	0.016	0.0004	0.409	0.35
10/31/2002	9:44:59 AM	29.576	22.285	30.9	23.596	23.914	45.274	47.529	10.802	34.922	-1.291	-5.804	49.553	0.135	0.001	0	114.27	1.90444	46.1	12.1	40.1	2.765	0.020	0.017	0.0004	0.427	0.36
10/31/2002	9:45:59 AM	29.633	22.317	30.659	23.708	23.961	44.772	47.398	10.695	34.695	-1.288	-4.991	50.425	0.122	0.001	0	115.27	1.92111	45.9	12.4	39.7	2.739	0.018	0.016	0.0004	0.392	0.33
10/31/2002	9:46:59 AM	29.67	22.34	30.557	23.691	23.944	45.073	47.098	10.694	35.022	-1.288	-5.857	50.541	0.142	0.001	0	116.27	1.93778	45.6	12.4	40.0	2.761	0.021	0.018	0.0005	0.453	0.39
10/31/2002	9:47:59 AM	29.682	22.362	30.748	23.617	23.951	44.845	47.469	10.703	34.774	-1.288	-4.721	50.461	0.132	0.001	0	117.27	1.95444	46.0	12.4	39.8	2.745	0.020	0.017	0.0004	0.422	0.36
10/31/2002	9:48:59 AM	29.679	22.389	30.72	23.68	23.993	45.663	47.789	10.461	35.737	-1.288	-5.781	49.586	0.143	0.001	0	118.27	1.97111	46.3	12.2	40.7	2.806	0.021	0.018	0.0004	0.447	0.38
10/31/2002	9:49:59 AM	29.701	22.401	30.752	23.631	23.995	45.727	48.056	10.475	35.708	-1.288	-5.515	49.119	0.154	0.001	0	119.27	1.98778	46.6	12.0	40.7	2.807	0.023	0.020	0.0005	0.481	0.41
10/31/2002	9:50:59 AM	29.762	22.422	30.981	23.618	23.996	45.802	47.765	10.312	35.964	-1.285	-5.764	47.5	0.145	0.001	0	120.27	2.00444	46.3	11.6	40.9	2.819	0.022	0.018	0.0004	0.448	0.38
10/31/2002	9:51:59 AM	29.804	22.455	30.795	23.671	24.009	45.891	47.75	10.41	36.044	-1.288	-5.634	49.073	0.137	0.001	0	121.27	2.02111	46.3	12.0	41.0	2.825	0.020	0.017	0.0004	0.425	0.36
10/31/2002	9:52:59 AM	29.831	22.477	30.623	23.767	24.015	45.98	48.24	10.405	36.06	-1.285	-5.602	49.337	0.152	0.001	0	122.27	2.03778	46.8	12.1	41.0	2.828	0.023	0.019	0.0005	0.473	0.40
10/31/2002	9:53:59 AM	29.828	22.474	30.65	23.629	24.022	45.458	47.547	10.279	35.688	-1.291	-5.706	49.232	0.145	0.001	0	123.27	2.05444	46.1	12.1	40.6	2.797	0.022	0.018	0.0005	0.456	0.39
10/31/2002	9:54:59 AM	29.85	22.506	30.488	23.801	24.039	45.329	47.322	10.066	35.933	-1.285	-5.665	49.289	0.136	0.001	0	124.27	2.07111	45.9	12.1	40.6	2.801	0.020	0.017	0.0004	0.429	0.36
10/31/2002	9:55:59 AM	29.826	22.527	30.454	23.908	24.056	45.495	47.398	10.271	35.821	-1.288	-5.822	49.268	0.15	0.001	0	125.27	2.08778	45.9	12.1	40.7	2.803	0.022	0.019	0.0005	0.473	0.40
10/31/2002	9:56:59 AM	29.808	22.549	30.585	23.794	24.057	45.681	47.825	10.319	35.974	-1.288	-5.463	49.056	0.146	0.001	0	126.27	2.10444	46.4	12.0	40.8	2.815	0.022	0.019	0.0005	0.457	0.39
10/31/2002	9:57:59 AM	29.789	22.565	30.502	23.906	24.079	45.814	47.653	10.225	36.197	-1.291	-5.729	48.831	0.122	0.001	0	127.27	2.12111	46.2	12.0	41.0	2.827	0.018	0.016	0.0004	0.381	0.32
10/31/2002	9:58:59 AM	29.786	22.582	30.419	23.953	24.096	45.671	47.638	10.217	36.077	-1.288	-5.732	48.617	0.153	0.001	0	128.27	2.13778	46.2	11.9	40.9	2.818	0.023	0.020	0.0005	0.480	0.41
10/31/2002	9:59:59 AM	29.743	22.605	30.347	23.81	24.103	45.578	47.634	10.248	35.847	-1.288	-5.474	49.542	0.169	0.001	0	129.27	2.15444	46.2	12.1	40.7	2.807	0.025	0.022	0.0005	0.534	0.45
10/31/2002	10:00:59 AM	29.705	22.606	30.169	23.791	24.134	45.561	47.487	10.227	35.739	-1.288	-5.619	49.467	0.137	0.001	0	130.27	2.17111	46.0	12.1	40.7	2.803	0.020	0.018	0.0004	0.436	0.37
10/31/2002	10:01:59 AM	29.662	22.638	29.948	23.853	24.151	45.441	47.328	10.166	35.704	-1.288	-5.715	46.646	0.16	0.001	0	131.27	2.18778	45.9	11.4	40.6	2.797	0.024	0.021	0.0005	0.513	0.44
10/31/2002	10:02:59 AM	29.614	22.665	30.129	23.89	24.168	45.603	47.62	10.222	35.722	-1.285	-5.663	49.27	0.149	0.001	0	132.27	2.20444	46.1	12.1	40.7	2.804	0.022	0.019	0.0005	0.474	0.40
10/31/2002	10:03:59 AM	29.577	22.677	30.22	23.938	24.185	45.205	47.241	10.09	35.688	-1.285	-5.332	48.502	0.144	0.001	0	133.27	2.22111	45.8	11.9	40.4	2.789	0.021	0.019	0.0005	0.459	0.39
10/31/2002	10:04:59 AM	29.563	22.694	30.117	23.959	24.197	45.483	47.493	10.069	35.841	-1.291	-5.72	49.123	0.139	0.001	0	134.27	2.23778	46.0	12.0	40.7	2.804	0.021	0.018	0.0004	0.442	0.38
10/31/2002	10:05:59 AM	29.556	22.722	30.229	24.022	24.22	45.323	47.336	10.043	35.741	-1.288	-5.697	48.238	0.15	0.001	0	135.27	2.25444	45.9	11.8	40.5	2.795	0.022	0.019	0.0005	0.477	0.41
10/31/2002	10:06:59 AM	29.562	22.733	30.236	24.093	24.251	45.296	47.094	10.468	35.43	-1.288	-5.608	49.427	0.16	0.001	0	136.27	2.27111	45.6	12.1	40.4	2.783	0.024	0.021	0.0005	0.511	0.44
10/31/2002	10:07:59 AM	29.58	22.761	29.975	24.156	24.269	44.847	47.011	10.428	34.766	-1.288	-5.425	49.909	0.115	0.001	0	137.27	2.28778	45.5	12.2	39.8	2.745	0.017	0.015	0.0004	0.375	0.32
10/31/2002	10:08:59 AM	29.531	22.762	29.891	24.107	24.29	44.884	46.784	10.495	34.871	-1.288	-5.596	50.134	0.147	0.001	0	138.27	2.30444	45.3	12.3	39.9	2.749	0.022	0.019	0.0005	0.480	0.41
10/31/2002	10:09:59 AM	29.518	22.799	30.042	24.154	24.317	44.578	46.664	10.464	34.568	-1.285	-5.492	50.874	0.153	0.001	0	139.27	2.32111	45.2	12.5	39.6	2.728	0.023	0.020	0.0005	0.501	0.43
10/31/2002	10:10:59 AM	29.5	22.816	29.965	24.216	24.329	44.874	46.815	10.067	35.401	-1.288	-5.451	49.406	0.147	0.001	0	140.27	2.33778	45.3	12.1	40.1	2.767	0.022	0.019	0.0005	0.476	0.40
10/31/2002	10:11:59 AM	29.456	22.827	30.021	24.137	24.345	44.95	47.212	10.172	35.204	-1.288	-5.101	49.589	0.136	0.001	0	141.27	2.35444	45.7	12.2	40.1	2.763	0.020	0.018	0.0004	0.440	0.37
10/31/2002	10:12:59 AM	29.464	22.855	30.212	24.18	24.357	45.29	46.9	10.026	35.859	-1.288	-5.616	48.03	0.157	0.001	0	142.27	2.37111	45.4	11.8	40.6	2.797	0.023	0.020	0.0005	0.499	0.43
10/31/2002	10:13:59 AM	29.499	22.875	30.133	24.306	24.393	45.317	47.216	10.043	35.868	-1.288	-5.529	49.06	0.15	0.001	0	143.27	2.38778	45.7	12.0	40.6	2.799	0.022	0.019	0.0005	0.478	0.41
10/31/2002	10:14:59 AM	29.49	22.877	30.095	24.302	24.414	45.352	47.425	9.99	35.859	-1.288	-5.379	48.601	0.156	0.001	0	144.27	2.40444	46.0	11.9	40.6	2.800	0.023	0.020	0.0005	0.497	0.42
10/31/2002	10:15:59 AM	29.528	22.91	30.266	24.19	24.467	45.224	47.545	9.936	35.643	-1.291	-5.214	48.324	0.134	0.001	0	145.27	2.42111	46.1	11.8	40.4	2.788	0.020	0.017	0.0004	0.427	0.36
10/31/2002	10:16:59 AM	29.569	22.941	30.203	24.366	24.484	45.421	47.473	9.974	35.921	-1.285	-5.5	48.706	0.138	0.001	0	146.27	2.43778	46.0	11.9	40.7	2.804	0.021	0.018	0.0004	0.438	0.37
10/31/2002	10:17:59 AM	29.561	22.958	30.16	24.413	24.515	45.487	47.545	10.04	35.847	-1.291	-5.526	49.356	0.157	0.001	0	147.27	2.45444	46.1	12.1	40.7	2.804	0.023	0.020	0.0005	0.499	0.42
10/31/2002	10:18:59 AM	29.568	22.98	30.246	24.31	24.542	45.507	47.539	10.043	35.921	-1.291	-5.532	49.083	0.155	0.001	0	148.27	2.47111	46.1	12.0	40.7	2.807	0.023	0.020	0.0005	0.491	0.42
10/31/2002	10:19:59 AM	29.595	23.012	30.05	24.387	24.574	45.439	47.566	9.963	35.886	-1.288	-5.33	48.582	0.147	0.001	0	149.27	2.48778	46.1	11.9	40.7	2.804	0.022	0.019	0.0005	0.469	0.40
10/31/2002	10:20:59 AM	29.587	23.034	29.868	24.504	24.612	45.29	47.456	9.913	35.796	-1.285	-5.477	48.601	0.137	0.001	0	150.27	2.50444	46.0	11.9	40.5	2.795	0.020	0.018	0.0004	0.440	0.37
10/31/2002	10:21:59 AM	29.549	23.057	29.989	24.341	24.644	45.41	47.303	9.946	35.878	-1.285	-5.576	49.087	0.16	0.001	0	151.27	2.52111	45.8	12.0	40.6	2.802	0.024	0.021	0.0005	0.511	0.44
10/31/2002	10:22:59 AM	29.535	23.068	30.015	24.513	24.66	45.265	47.179	9.917	35.831	-1.291	-5.561	48.519	0.158	0.001	0	152.27	2.53778	45.7	11.9	40.5	2.796	0.024	0.021	0.0005	0.506	0.43
10/31/2002	10:23:59 AM	29.533	23.096	29.973	24.561	24.678	44.934	47.069	9.704	35.485	-1.288	-5.358	47.915	0.18	0.001	0	153.27	2.55444	45.6	11.7	40.2	2.772	0.027	0.023	0.0006	0.582	0.49
10/31/2002	10:24:59 AM	29.571	23.124	30.17	24.594	24.711	45.1	47.208	9.992	35.503	-1.291	-5.164	49.012	0.14	0.001	0	154.27	2.57111	45.7	12.0	40.3	2.779	0.021	0.018	0.0004	0.449	0.38
10/31/2002	10:25:59 AM	29.573	23.136	30.023	24.666	24.738	45.037	47.113	9.927	35.634	-1.291	-5.332	48.993	0.147	0.001	0	155.27	2.58778	45.6	12.0	40.3	2.781	0.022	0.019	0.0005	0.473	0.40
10/31/2002	10:26:59 AM	29.56	23.168	29.826	24.668	24.74	44.909	46.999	9.814	35.544	-1.288	-5.555	48.454	0.159	0.001	0	156.27	2.60444	45.5	11.9	40.2	2.773	0.024	0.021	0.0005	0.516	0.44
10/31/2002	10:27:59 AM	29.547	23.175	29.828	24.619	24.752	44.892	47.146	9.956	35.155	-1.288	-5.535	49.228	0.169	0.001	0	157.27	2.62111	45.7	12.1	40.0	2.759	0.025	0.022	0.0006	0.551	0.47
10/31/2002	10:28:59 AM	29.529	23.193	29.92	24.692	24.789	45.158	47.328	9.908	35.538	-1.294	-5.431	49.027	0.161	0.001	0	158.27	2.63778	45.9	12.0	40.3	2.782	0.024	0.021	0.0005	0.519	0.44
10/31/2002	10:29:59 AM	29.517	23.225	29.907	24.729	24.797	44.741	46.832	9.814	35.327	-1.288	-5.332	48.586	0.172	0.001	0	159.27	2.65444	45.4	11.9	40.0	2.760	0.026	0.022	0.0006	0.559	0.48
10/31/2002	10:30:59 AM	29.534	23.252	30.078	24.651	24.824	44.741	46.765	9.746	35.471	-1.291	-5.385	47.479	0.166	0.001	0	160.27	2.67111	45.3	11.6	40.1	2.765	0.025	0.022	0.0005	0.536	0.46
10/31/2002	10:31:59 AM	29.556	23.264	30.17	24.643	24.841	44.93	47.198	9.778	35.55	-1.288	-5.133	48.685	0.159	0.001	0	161.27	2.68778	45.7	11.9	40.2	2.774	0.024	0.021	0.0005	0.511	0.43
10/31/2002	10:32:59 AM	29.578	23.286	29.899	24.656	24.858	45.012	47.196	9.926	35.405	-1.288	-5.318	49.5	0.147	0.001	0	162.27	2.70444	45.7	12.1	40.2	2.772	0.022	0.019	0.0005	0.476	0.41
10/31/2002	10:33:59 AM	29.575	23.304	29.896	24.773	24.875	44.77	46.79	9.85	35.26	-1.288	-5.474	49.045	0.157	0.001	0	163.27	2.72111	45.3	12.0	40.0	2.759	0.023	0.020	0.0005	0.511	0.43
10/31/2002	10:34:59 AM	29.572	23.326	29.893	24.77	24.907	44.571	46.395	9.656	35.55	-1.288	-5.518	49.691	0.164	0.001	0	164.27	2.73778	44.9	12.2	40.1	2.762	0.024	0.021	0.0005	0.533	0.45
10/31/2002	10:35:59 AM	29.565	23.369	29.886	24.888	24.935	45.11	47.301	9.91	35.366	-1.288	-5.442	49.241	0.179	0.001	0	165.27	2.75444	45.8	12.1	40.2	2.774	0.027	0.023	0.0006	0.579	0.49
10/31/2002	10:36:59 AM	29.521	23.345	29.987	24.774	24.937	45.108	47.127	9.853	35.583	-1.288	-5.46	48.878	0.174	0.001	0	166.27	2.77111	45.7	12.0	40.3	2.782	0.026	0.023	0.0006	0.560	0.48
10/31/2002	10:37:59 AM	29.558	23.377	30.158	24.822	24.944	44.969	46.997	9.8	35.626	-1.288	-5.414	48.857	0.184	0.001	0	167.27	2.78778	45.5	12.0	40.3	2.778	0.027	0.024	0.0006	0.590	0.50
10/31/2002	10:38:59 AM	29.596	23.395	29.991	24.855	24.982	45.033	47.084	9.873	35.532	-1.294	-5.286	48.555	0.188	0.001	0	168.27	2.80444	45.6	11.9	40.3	2.777	0.028	0.024	0.0006	0.606	0.52
10/31/2002	10:39:59 AM	29.583	23.433	29.934	24.847	25.004	44.803	47.177	9.69	35.339	-1.285	-5.26	48.597	0.168	0.001	0	169.27	2.82111	45.7	11.9	40.1	2.763	0.025	0.022	0.0005	0.545	0.46
10/31/2002	10:40:59 AM	29.541	23.43	29.927	24.865	25.037	44.752	46.786	9.562	35.671	-1.291	-5.584	47.98	0.168	0.001	0	170.27	2.83778	45.3	11.8	40.2	2.772	0.025	0.022	0.0005	0.543	0.46
10/31/2002	10:41:59 AM	29.534	23.473	29.815	24.968	25.06	44.52	46.546	9.59	35.321	-1.285	-5.483	49.748	0.172	0.001	0	171.27	2.85444	45.1	12.2	39.9	2.752	0.026	0.022	0.0006	0.562	0.48
10/31/2002	10:42:59 AM	29.526	23.486	29.902	24.995	25.067	44.43	46.738	9.689	35.03	-1.291	-5.295	48.529	0.181	0.001	0	172.27	2.87111	45.3	11.9	39.7	2.739	0.027	0.024	0.0006	0.593	0.50
10/31/2002	10:43:59 AM	29.494	23.499	30.114	24.892	25.1	43.627	46.565	9.497	34.537	-1.291	-4.776	48.825	0.178	0.001	0	173.27	2.88778	45.1	12.0	39.1	2.695	0.027	0.023	0.0006	0.589	0.50
10/31/2002	10:44:59 AM	29.542	23.537	30.067	25.041	25.138	43.979	47.191	9.676	34.517	-1.291	-4.154	48.678	0.094	0.001	0	174.27	2.90444	45.7	11.9	39.2	2.706	0.014	0.012	0.0003	0.310	0.26
10/31/2002	10:45:59 AM	29.554	23.554	29.92	25.048	25.16	44.996	46.809	9.558	35.749	-1.288	-5.39	48.659	0.166	0.001	0	175.27	2.92111	45.3	11.9	40.4	2.784	0.025	0.022	0.0005	0.535	0.46
10/31/2002	10:46:59 AM	29.557	23.577	29.958	25.056	25.183	44.671	46.527	9.425	35.776	-1.291	-5.327	48.531	0.188	0.001	0	176.27	2.93778	45.1	11.9	40.2	2.773	0.028	0.024	0.0006	0.607	0.52

Figure F2-3: Wash run after the last steady state test run (1.29) of AN-102R2, batch 3B, insoluble solids concentration of 19 wt% - Raw & Calculated Data

10/31/2002	10:47:59 AM	29.574	23.599	29.781	25.128	25.18	44.344	46.592	9.532	35.141	-1.288	-5.405	49.532	0.174	0.001	0	177.27	2.95444	45.1	12.1	39.7	2.740	0.026	0.023	0.0006	0.572	0.49
10/31/2002	10:48:59 AM	29.602	23.617	29.823	25.076	25.213	44.623	46.629	9.455	35.667	-1.291	-5.321	48.985	0.191	0.001	0	178.27	2.97111	45.2	12.0	40.1	2.768	0.028	0.025	0.0006	0.621	0.53
10/31/2002	10:49:59 AM	29.619	23.629	30.044	25.008	25.23	44.89	46.96	9.532	35.776	-1.294	-5.234	48.827	0.184	0.001	0	179.27	2.98778	45.5	12.0	40.3	2.781	0.027	0.024	0.0006	0.592	0.50
10/31/2002	10:50:59 AM	29.676	23.667	30.052	25.136	25.273	44.818	47.136	9.559	35.624	-1.291	-5.17	49.068	0.197	0.001	0	180.27	3.00444	45.7	12.0	40.2	2.773	0.029	0.026	0.0006	0.635	0.54
10/31/2002	10:51:59 AM	29.718	23.674	29.939	25.122	25.295	44.961	47.063	9.513	35.915	-1.294	-5.107	48.876	0.141	0.001	0	181.27	3.02111	45.6	12.0	40.4	2.788	0.021	0.018	0.0005	0.453	0.39
10/31/2002	10:52:59 AM	29.76	23.707	30.022	25.18	25.303	44.766	47.163	9.488	35.64	-1.288	-5.005	48.148	0.185	0.001	0	182.27	3.03778	45.7	11.8	40.2	2.772	0.028	0.024	0.0006	0.597	0.51
10/31/2002	10:53:59 AM	29.767	23.724	29.865	25.288	25.325	44.544	46.86	9.498	35.475	-1.288	-4.927	50.002	0.166	0.001	0	183.27	3.05444	45.4	12.3	40.0	2.759	0.025	0.022	0.0005	0.541	0.46
10/31/2002	10:54:59 AM	29.745	23.746	29.797	25.325	25.347	44.544	47.074	9.569	35.295	-1.291	-4.915	49.224	0.179	0.001	0	184.27	3.07111	45.6	12.1	39.9	2.752	0.027	0.023	0.0006	0.585	0.50
10/31/2002	10:55:59 AM	29.743	23.769	30.039	25.333	25.375	44.876	47.094	9.504	35.733	-1.291	-5.315	49.146	0.188	0.001	0	185.27	3.08778	45.6	12.0	40.3	2.779	0.028	0.024	0.0006	0.605	0.51
10/31/2002	10:56:59 AM	29.715	23.787	30.071	25.37	25.412	44.75	46.771	9.451	35.71	-1.288	-5.199	48.595	0.208	0.001	0	186.27	3.10444	45.3	11.9	40.2	2.774	0.031	0.027	0.0007	0.670	0.57
10/31/2002	10:57:59 AM	29.733	23.815	30.044	25.433	25.455	45.157	47.243	9.561	35.882	-1.291	-5.208	48.638	0.2	0.001	0	187.27	3.12111	45.8	11.9	40.5	2.794	0.030	0.026	0.0006	0.640	0.54
10/31/2002	10:58:59 AM	29.71	23.832	30.22	25.385	25.462	44.863	47.15	9.475	35.862	-1.291	-5.295	48.584	0.189	0.001	0	188.27	3.13778	45.7	11.9	40.4	2.783	0.028	0.024	0.0006	0.604	0.51
10/31/2002	10:59:59 AM	29.797	23.854	30.237	25.412	25.475	44.604	47.187	9.557	35.272	-1.288	-4.826	49.091	0.182	0.001	0	189.27	3.15444	45.7	12.0	39.9	2.754	0.027	0.023	0.0006	0.588	0.50
10/31/2002	11:00:59 AM	29.873	23.871	30.015	25.489	25.461	44.095	46.629	9.47	34.854	-1.288	-4.71	48.746	0.18	0.001	0	190.27	3.17111	45.2	11.9	39.5	2.722	0.027	0.023	0.0006	0.592	0.50
10/31/2002	11:01:59 AM	29.871	23.894	30.018	25.507	25.479	44.592	46.898	9.557	35.319	-1.291	-5.06	48.985	0.197	0.001	0	191.27	3.18778	45.4	12.0	40.0	2.755	0.029	0.026	0.0006	0.640	0.54
10/31/2002	11:02:59 AM	29.863	23.91	29.965	25.564	25.48	44.081	46.44	9.396	35.041	-1.288	-4.994	49.511	0.204	0.001	0	192.27	3.20444	45.0	12.1	39.6	2.728	0.030	0.027	0.0007	0.670	0.57
10/31/2002	11:03:59 AM	29.86	23.933	29.907	25.621	25.493	44.565	46.968	9.496	35.208	-1.291	-5.26	49.339	0.164	0.001	0	193.27	3.22111	45.5	12.1	39.9	2.750	0.024	0.021	0.0005	0.535	0.46
10/31/2002	11:04:59 AM	29.862	23.955	30.069	25.623	25.53	44.634	46.854	9.42	35.593	-1.288	-5.167	49.014	0.177	0.001	0	194.27	3.23778	45.4	12.0	40.1	2.766	0.026	0.023	0.0006	0.572	0.49
10/31/2002	11:05:59 AM	29.869	23.982	30.195	25.72	25.527	44.669	46.989	9.432	35.532	-1.288	-5.162	48.966	0.202	0.001	0	195.27	3.25444	45.5	12.0	40.1	2.765	0.030	0.026	0.0007	0.650	0.55
10/31/2002	11:06:59 AM	29.861	23.989	30.062	25.717	25.534	45	47.072	9.477	35.817	-1.291	-5.188	49.211	0.195	0.001	0	196.27	3.27111	45.6	12.1	40.4	2.786	0.029	0.025	0.0006	0.625	0.53
10/31/2002	11:07:59 AM	29.829	24.027	30.011	25.655	25.562	44.53	46.753	9.365	35.542	-1.291	-5.309	48.936	0.153	0.001	0	197.27	3.28778	45.3	12.0	40.0	2.760	0.023	0.020	0.0005	0.496	0.42
10/31/2002	11:08:59 AM	29.862	24.045	30.039	25.723	25.585	44.766	46.62	9.353	35.796	-1.291	-5.118	49.031	0.208	0.001	0	198.27	3.30444	45.1	12.0	40.3	2.777	0.031	0.027	0.0007	0.670	0.57
10/31/2002	11:09:59 AM	29.829	24.067	29.852	25.73	25.602	44.254	46.438	9.317	35.165	-1.291	-4.901	48.775	0.165	0.001	0	199.27	3.32111	45.0	12.0	39.7	2.738	0.025	0.022	0.0005	0.542	0.46
10/31/2002	11:10:59 AM	29.797	24.095	30.004	25.813	25.605	44.283	46.751	9.35	35.268	-1.288	-5.072	47.714	0.188	0.001	0	200.27	3.33778	45.3	11.7	39.8	2.742	0.028	0.024	0.0006	0.614	0.52
10/31/2002	11:11:59 AM	29.875	24.103	30.171	25.811	25.628	44.209	46.838	9.342	35.057	-1.291	-4.522	48.768	0.167	0.001	0	201.27	3.35444	45.4	12.0	39.6	2.733	0.025	0.022	0.0005	0.544	0.46
10/31/2002	11:12:59 AM	29.882	24.116	30.039	25.818	25.63	44.393	46.771	9.362	35.358	-1.291	-5.211	48.024	0.178	0.001	0	202.27	3.37111	45.3	11.8	39.9	2.749	0.027	0.023	0.0006	0.579	0.49
10/31/2002	11:13:59 AM	29.925	24.144	29.977	25.856	25.638	44.48	46.811	9.312	35.477	-1.288	-5.315	47.856	0.181	0.001	0	203.27	3.38778	45.3	11.7	40.0	2.756	0.027	0.024	0.0006	0.588	0.50
10/31/2002	11:14:59 AM	29.907	24.161	30.034	25.874	25.675	43.782	46.871	9.384	34.631	-1.291	-4.001	49.517	0.173	0.001	0	204.27	3.40444	45.4	12.1	39.2	2.703	0.026	0.022	0.0006	0.572	0.49
10/31/2002	11:15:59 AM	29.83	24.178	29.858	25.926	25.683	44.136	46.552	9.256	35.221	-1.291	-4.852	50.319	0.207	0.001	0	205.27	3.42111	45.1	12.3	39.7	2.736	0.031	0.027	0.0007	0.680	0.58
10/31/2002	11:16:59 AM	29.833	24.211	30.02	25.979	25.701	44.132	46.569	9.149	35.278	-1.285	-5.303	48.59	0.189	0.001	0	206.27	3.43778	45.1	11.9	39.7	2.738	0.028	0.025	0.0006	0.618	0.53
10/31/2002	11:17:59 AM	29.926	24.245	30.257	25.993	25.725	44.178	46.912	9.235	35.317	-1.288	-4.166	48.15	0.192	0.001	0	207.27	3.45444	45.4	11.8	39.7	2.740	0.029	0.025	0.0006	0.623	0.53
10/31/2002	11:18:59 AM	29.941	24.24	30.158	25.943	25.665	44.083	46.848	9.304	34.983	-1.291	-4.38	48.492	0.186	0.001	0	208.27	3.47111	45.4	11.9	39.5	2.726	0.028	0.024	0.0006	0.608	0.52
10/31/2002	11:19:59 AM	29.95	24.25	30.177	25.902	25.619	44.402	46.941	9.375	35.307	-1.288	-4.756	48.162	0.166	0.001	0	209.27	3.48778	45.5	11.8	39.9	2.748	0.025	0.021	0.0005	0.538	0.46
10/31/2002	11:20:59 AM	29.979	24.274	30.39	25.806	25.568	44.718	47.088	9.588	35.362	-1.288	-4.803	48.66	0.201	0.001	0	210.27	3.50444	45.6	11.9	40.0	2.761	0.030	0.026	0.0006	0.645	0.55
10/31/2002	11:21:59 AM	29.966	24.271	30.272	25.733	25.495	44.733	47.028	9.572	35.395	-1.291	-4.968	48.336	0.215	0.001	0	211.27	3.52111	45.6	11.8	40.1	2.762	0.032	0.028	0.0007	0.692	0.59
10/31/2002	11:22:59 AM	29.938	24.277	30.249	25.634	25.426	44.482	46.86	9.554	35.147	-1.288	-5.043	48.29	0.166	0.001	0	212.27	3.53778	45.4	11.8	39.8	2.745	0.025	0.021	0.0005	0.538	0.46
10/31/2002	11:23:59 AM	29.982	24.267	30.402	25.494	25.366	44.745	46.838	9.566	35.497	-1.294	-5.057	48.473	0.209	0.001	0	213.27	3.55444	45.4	11.9	40.1	2.766	0.031	0.027	0.0007	0.669	0.57
10/31/2002	11:24:59 AM	30.061	24.276	30.342	25.443	25.285	44.863	47.26	9.615	35.393	-1.288	-4.869	48.391	0.168	0.001	0	214.27	3.57111	45.8	11.9	40.1	2.767	0.025	0.022	0.0005	0.538	0.46
10/31/2002	11:25:59 AM	30.075	24.281	30.277	25.317	25.234	44.812	46.867	9.625	35.432	-1.288	-5.182	48.36	0.193	0.001	0	215.27	3.58778	45.4	11.9	40.1	2.766	0.029	0.025	0.0006	0.620	0.53
10/31/2002	11:26:59 AM	30.071	24.281	30.456	25.268	25.23	44.704	46.952	9.674	35.245	-1.288	-5.182	48.943	0.149	0.001	0	216.27	3.60444	45.5	12.0	40.0	2.756	0.022	0.019	0.0005	0.478	0.41
10/31/2002	11:27:59 AM	30.108	24.284	30.409	25.376	25.258	44.335	46.786	9.567	35.065	-1.291	-5.153	47.93	0.186	0.001	0	217.27	3.62111	45.3	11.7	39.7	2.737	0.028	0.024	0.0006	0.601	0.51
10/31/2002	11:28:59 AM	30.152	24.283	30.334	25.425	25.287	44.462	46.939	9.604	35.041	-1.288	-4.829	47.821	0.186	0.001	0	218.27	3.63778	45.5	11.7	39.8	2.741	0.028	0.024	0.0006	0.602	0.51
10/31/2002	11:29:59 AM	30.192	24.288	30.503	25.485	25.307	44.749	46.999	9.642	35.491	-1.291	-5.092	47.607	0.206	0.001	0	219.27	3.65444	45.5	11.7	40.1	2.766	0.031	0.026	0.0007	0.658	0.56
10/31/2002	11:30:59 AM	30.234	24.321	30.505	25.592	25.344	44.288	46.732	9.674	34.791	-1.288	-4.858	48.299	0.167	0.001	0	220.27	3.67111	45.3	11.8	39.5	2.726	0.025	0.021	0.0005	0.541	0.46
	Averages	28.1	22.2	28.9	23.6	23.4	45.4	47.6	11.0	35.0	-1.2	-5.5	# 49.3	0.1	0.0	0.0	111.8	1.9	46.1	12.1	40.2	2.771	0.020	0.017	0.0004	0.434	0.369
	Maximum	30.2	24.3	31.0	26.0	25.7	51.3	52.5	14.1	37.9	0.5	0.8	# 52.0	0.3	0.0	0.0	220.3	3.7	51.0	12.7	44.6	3.077	0.041	0.041	0.0009	0.949	0.807
	Median	29.4	22.2	29.9	23.6	23.9	45.3	47.4	10.8	35.0	-1.3	-5.6	# 49.2	0.1	0.0	0.0	111.8	1.9	45.9	12.1	40.2	2.769	0.019	0.017	0.0004	0.421	0.358
	Minimum	23.8	19.8	24.9	20.5	19.4	43.6	46.4	9.1	32.5	-1.3	-6.5	# 46.6	0.1	0.0	0.0	3.3	0.1	44.9	11.4	39.1	2.693	0.010	0.010	0.0002	0.242	0.206
	2 x Std Dev	3.976	2.771	3.678	2.852	3.523	1.925	2.241	2.726	1.659	0.581	2.390	# 1.675	0.083	0.000	0.000	125.861	2.098	2.241	0.410	1.352	0.093	0.012	0.010	0.0002	0.249	0.212
Number of Points Used*		218	218	218	218	218	218	218	218	218	218	218	0	218	218	218	218	218	218	218	218	218	218	218	218	218	218	218	218
	* Backpulse points in box are not included																												

Figure F2-4: Wash run after the last steady state test run (1.29) of AN-102R2, batch 3B, insoluble solids concentration of 19 wt% - Raw & Calculated Data

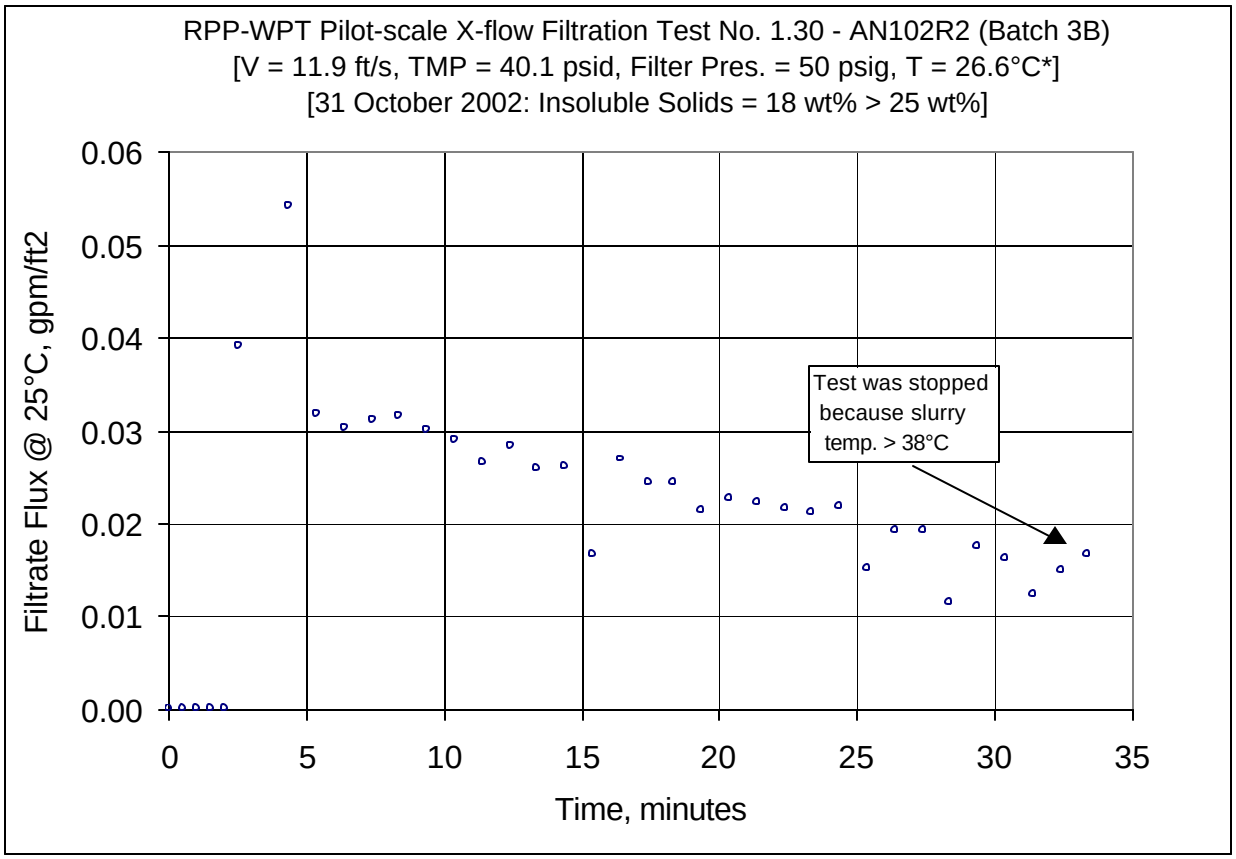

Figure F3: Concentrating washed slurry to maximum possible. It turned out that neither the slurry volume, nor a filter pluggage limited concentration. It was the slurry temperature. After the 26th minute to slurry properties changed such that the active cooling was less and less effective. The exponential temperature increase forced termination. When the temperature passed 38°C, and increasing at 2.2°C/min, the test was stopped to avoid pump damage. The thermal momentum caused the temperature to reach 46°C before it could be controlled. Approximately 20 liters of the approximate 75 liters of washed slurry were removed. The insoluble solids concentration increased from 19 to 25 wt%.

		<<<<<<<<< Temperature Measurements >>					<<<<<<<<<<<<< Pressure Measurements >>>>>>>>						<<<<<<<<< Flow Measurements >>>				<<<<<<<<<<<<<<<<<<< Calculated From Raw Data >>>>>>>>>>>>>>>>>>>										
DATE	TIME	Filtrate	Cleaning	Slurry	Hi Amb.	Lo Amb.	BotTMP	Filter	Filter dP	TopTMP	Filtrate	Pulsepot	Slurry	Filtrate	Hi Filtate	Backpulse										
		deg C	deg C	deg C	deg C	deg C	psid	psig	psid	psid	psig	psig	gpm	gpm	gpm	gpm										
		T2	T3	T1	T4	T5	dP2	P1	dP1	dP3	P2	P3	Q1	Q2	Q3	Qbp										
Zeros																										
10/31/2002	7:40:03 AM	20.304	19.817	17.419	19.7	19.142	-0.122	-0.013	-0.041	0.065	-0.369	0.375	-0.22	0.001	0.001	0.001			Filter Surface	6.707	FT2					
10/31/2002	7:40:29 AM	20.304	19.817	17.419	19.7	19.142	-0.122	-0.013	-0.041	0.065	-0.369	0.375	-0.22	0.001	0.001	0.001			Conversion	851	m3/m2/day/barg / gpm/ft2/barg					
10/31/2002	7:40:30 AM	20.305	19.817	17.42	19.736	19.147	-0.122	-0.014	-0.042	0.065	-0.375	0.372	-0.216	0.001	0.001	0.001										
10/31/2002	7:40:31 AM	20.305	19.827	17.42	19.731	19.147	-0.122	-0.013	-0.042	0.065	-0.375	0.369	-0.218	0.001	0.001	0.001			Note: Gauge Pressure P1 is approximately 1.4 psig							
10/31/2002	7:40:32 AM	20.294	19.807	17.399	19.705	19.142	-0.12	-0.014	-0.042	0.063	-0.375	0.369	-0.216	0.001	0.001	0										
10/31/2002	7:40:33 AM	20.289	19.807	17.394	19.7	19.142	-0.122	-0.014	-0.042	0.063	-0.375	0.369	-0.22	0.001	0.001	0.001			Pressure P1is corrected for 40.88 inches of water tubing							
10/31/2002	7:40:34 AM	20.295	19.812	17.399	19.706	19.147	-0.122	-0.013	-0.042	0.063	-0.372	0.372	-0.216	0.001	0.001	0			VVVV			< Filtrate Flux << PERMIABILITY >>				
10/31/2002	7:40:35 AM	20.295	19.817	17.404	19.706	19.147	-0.12	-0.014	-0.042	0.061	-0.375	0.369	-0.22	0.001	0.001	0							at 25C		x 1000	
																	Time	Time	Press.	Vel.	TMP	TMP	gpm	gpm	gpm	gpm	meter
Data - Per Minute																	Min.	Hour	psig	ft/s	psi	bar	/ft2	ft2	ft2/psi	ft2/psi	day/bar
10/31/2002	1:38:24 PM	27.051	23.402	26.985	24.871	23.284	6.478	47.158	9.354	-2.676	35.279	87.651	47.646	0.001	0.001	0	0	0	45.7	11.7	1.9	0.131	0.000	0.000	0.0001	0.074	0.06
10/31/2002	1:38:54 PM	27.002	23.408	26.846	24.917	23.294	6.754	47.312	9.378	-2.287	35.29	86.657	48.477	0.001	0.001	0	0.50	0.00833	45.8	11.9	2.2	0.154	0.000	0.000	0.0001	0.063	0.05
10/31/2002	1:39:24 PM	26.609	23.414	26.847	24.969	23.311	5.561	46.581	7.498	-1.781	35.657	48.587	49.998	0.001	0.001	0	1.00	0.01667	45.1	12.3	1.9	0.130	0.000	0.000	0.0001	0.075	0.06
10/31/2002	1:39:54 PM	26.559	23.41	26.898	24.989	23.321	19.637	46.732	7.72	12.094	22.139	0.461	49.199	0.391	0.001	0	1.50	0.025	45.3	12.1	15.9	1.094	0.000	0.000	0.0000	0.009	0.01
10/31/2002	1:40:24 PM	26.946	23.432	26.775	25.041	23.349	40.35	47.163	9.475	31.2	1.51	0.54	48.192	0.361	0.001	0	2.00	0.03333	45.7	11.8	35.8	2.467	0.000	0.000	0.0000	0.004	0.00
10/31/2002	1:40:54 PM	27.052	23.434	26.736	25.058	23.375	41.166	47.605	10.456	30.944	0.949	0.58	47.934	0.276	0.001	0	2.50	0.04167	46.1	11.7	36.1	2.486	0.041	0.039	0.0011	1.087	0.93
10/31/2002	1:42:46 PM	27.102	23.454	26.457	25.193	23.481	44.607	47.973	11.528	33.37	-1.288	-3.563	46.367	0.379	0.001	0	4.37	0.07278	46.5	11.4	39.0	2.688	0.057	0.054	0.0014	1.391	1.18
10/31/2002	1:43:46 PM	26.986	23.462	26.031	25.377	23.544	46.143	48.425	12.775	33.638	-1.291	-5.06	48.913	0.221	0.001	0	5.37	0.08944	47.0	12.0	39.9	2.750	0.033	0.032	0.0008	0.802	0.68
10/31/2002	1:44:46 PM	26.931	23.497	26.02	25.422	23.599	46.947	49.331	12.738	34.533	-1.288	-5.092	49.066	0.21	0.001	0	6.37	0.10611	47.9	12.0	40.7	2.809	0.031	0.030	0.0007	0.747	0.64
10/31/2002	1:45:46 PM	26.849	23.486	25.719	25.44	23.628	46.469	49.006	13.113	33.561	-1.288	-4.982	49.53	0.214	0.001	0	7.37	0.12278	47.5	12.1	40.0	2.759	0.032	0.031	0.0008	0.781	0.66
10/31/2002	1:46:46 PM	26.777	23.518	25.466	25.543	23.641	46.73	48.946	13.116	33.896	-1.285	-4.947	47.42	0.215	0.001	0	8.37	0.13944	47.5	11.6	40.3	2.779	0.032	0.032	0.0008	0.785	0.67
10/31/2002	1:47:46 PM	26.664	23.51	25.018	25.53	23.648	46.877	49.302	13.37	33.796	-1.288	-5.141	47.863	0.203	0.001	0	9.37	0.15611	47.8	11.7	40.3	2.781	0.030	0.030	0.0007	0.750	0.64
10/31/2002	1:48:46 PM	26.528	23.519	24.992	25.468	23.661	47.517	50.115	14.254	33.436	-1.288	-5.127	49.144	0.195	0.001	0	10.37	0.17278	48.6	12.0	40.5	2.791	0.029	0.029	0.0007	0.718	0.61
10/31/2002	1:49:46 PM	26.384	23.52	24.727	25.485	23.658	47.541	50.073	14.724	33.053	-1.288	-5.031	49.402	0.177	0.001	0	11.37	0.18944	48.6	12.1	40.3	2.778	0.026	0.027	0.0007	0.660	0.56
10/31/2002	1:50:46 PM	26.246	23.537	24.8	25.422	23.675	47.657	50.253	14.741	33.229	-1.288	-5.046	48.8	0.19	0.001	0	12.37	0.20611	48.8	12.0	40.4	2.788	0.028	0.028	0.0007	0.704	0.60
10/31/2002	1:51:46 PM	26.122	23.549	24.651	25.353	23.706	47.622	50.322	15.038	32.828	-1.291	-5.26	48.12	0.172	0.001	0	13.37	0.22278	48.8	11.8	40.2	2.773	0.026	0.026	0.0006	0.644	0.55
10/31/2002	1:52:46 PM	26.024	23.561	24.683	25.39	23.753	47.831	50.464	16.026	31.98	-1.288	-5.246	48.532	0.174	0.001	0	14.37	0.23944	49.0	11.9	39.9	2.751	0.026	0.026	0.0007	0.656	0.56
10/31/2002	1:53:46 PM	25.937	23.574	24.791	25.433	23.796	47.442	50.808	16.085	31.606	-1.291	-3.557	48.588	0.112	0.001	0	15.37	0.25611	49.3	11.9	39.5	2.725	0.017	0.017	0.0004	0.425	0.36
10/31/2002	1:54:46 PM	25.866	23.597	24.679	25.507	23.855	48.328	50.975	16.653	31.868	-1.288	-4.84	48.741	0.18	0.001	0	16.37	0.27278	49.5	11.9	40.1	2.765	0.027	0.027	0.0007	0.675	0.57
10/31/2002	1:55:46 PM	25.8	23.611	24.894	25.511	23.899	48.888	50.911	17.399	31.868	-1.291	-5.127	49.194	0.163	0.001	0	17.37	0.28944	49.4	12.1	40.4	2.784	0.024	0.024	0.0006	0.604	0.51
10/31/2002	1:56:46 PM	25.728	23.605	24.862	25.599	23.948	49.014	51.459	17.494	31.718	-1.288	-5.159	48.328	0.163	0.001	0	18.37	0.30611	50.0	11.8	40.4	2.783	0.024	0.024	0.0006	0.604	0.51
10/31/2002	1:57:46 PM	25.747	23.649	25.056	25.613	23.992	49.116	51.366	18.336	31.198	-1.288	-4.921	49.389	0.144	0.001	0	19.37	0.32278	49.9	12.1	40.2	2.769	0.021	0.021	0.0005	0.534	0.45
10/31/2002	1:58:46 PM	25.737	23.654	25.267	25.653	24.047	48.693	51.372	18.27	30.719	-1.285	-4.31	48.756	0.154	0.001	0	20.37	0.33944	49.9	11.9	39.7	2.738	0.023	0.023	0.0006	0.574	0.49
10/31/2002	1:59:46 PM	25.751	23.668	25.27	25.722	24.096	49.772	51.815	19.306	30.619	-1.288	-5.144	48.825	0.151	0.001	0	21.37	0.35611	50.3	12.0	40.2	2.771	0.023	0.022	0.0006	0.556	0.47
10/31/2002	2:00:46 PM	25.78	23.677	25.219	25.916	24.145	49.979	52.026	20.272	29.992	-1.291	-5.269	50.168	0.146	0.001	0	22.37	0.37278	50.6	12.3	40.0	2.757	0.022	0.022	0.0005	0.541	0.46
10/31/2002	2:01:46 PM	25.795	23.703	25.115	25.937	24.201	50.25	52.221	19.839	30.791	-1.291	-5.312	48.823	0.143	0.001	0	23.37	0.38944	50.7	12.0	40.5	2.794	0.021	0.021	0.0005	0.524	0.45
10/31/2002	2:02:46 PM	25.82	23.722	25.054	26.046	24.26	49.61	51.772	20.494	29.415	-1.291	-4.95	49.196	0.147	0.001	0	24.37	0.40611	50.3	12.1	39.5	2.724	0.022	0.022	0.0006	0.554	0.47
10/31/2002	2:03:46 PM	25.835	23.742	25.009	26.126	24.31	49.271	51.786	20.488	28.94	-1.288	-5.095	47.508	0.102	0.001	0	25.37	0.42278	50.3	11.6	39.1	2.696	0.015	0.015	0.0004	0.389	0.33
10/31/2002	2:04:46 PM	25.841	23.768	25.561	26.142	24.367	51.414	53.476	21.424	30.234	-1.288	-5.428	47.204	0.132	0.001	0	26.37	0.43944	52.0	11.6	40.8	2.815	0.020	0.019	0.0005	0.475	0.40
10/31/2002	2:05:46 PM	25.871	23.788	26.236	26.087	24.417	52.293	54.945	22.524	29.845	-1.285	-5.162	48.565	0.134	0.001	0	27.37	0.45611	53.5	11.9	41.1	2.832	0.020	0.019	0.0005	0.470	0.40
10/31/2002	2:06:46 PM	25.976	23.798	27.833	26.157	24.467	51.686	54.06	24.119	27.966	-1.291	-4.319	51.99	0.084	0.001	0	28.37	0.47278	52.6	12.7	39.8	2.746	0.013	0.012	0.0003	0.291	0.25
10/31/2002	2:07:46 PM	26.193	23.84	29.288	26.184	24.519	51.508	53.845	22.85	28.584	-1.285	-5.361	49.4	0.132	0.001	0	29.37	0.48944	52.4	12.1	40.0	2.761	0.020	0.017	0.0004	0.436	0.37
10/31/2002	2:08:46 PM	26.558	23.846	30.889	26.154	24.57	51.698	54.13	23.353	28.506	-1.291	-5.46	48.71	0.129	0.001	0	30.37	0.50611	52.7	11.9	40.1	2.765	0.019	0.016	0.0004	0.408	0.35
10/31/2002	2:09:46 PM	27.078	23.877	32.783	26.16	24.62	51.735	54.465	23.866	27.996	-1.288	-5.078	47.894	0.104	0.001	0	31.37	0.52278	53.0	11.7	39.9	2.749	0.016	0.013	0.0003	0.314	0.27
10/31/2002	2:10:46 PM	27.667	23.892	34.823	26.185	24.666	52.769	55.045	24.499	28.387	-1.291	-5.115	47.712	0.131	0.001	0	32.37	0.53944	53.6	11.7	40.6	2.798	0.020	0.015	0.0004	0.368	0.31
10/31/2002	2:11:46 PM	28.461	23.918	37.001	26.246	24.702	51.663	54.571	24.681	27.04	-1.291	-4.869	46.935	0.156	0.001	0	33.37	0.55611	53.1	11.5	39.4	2.713	0.023	0.017	0.0004	0.427	0.36
	Averages	26.3	23.7	26.6	25.7	24.0	49.0	51.5	18.1	31.2	-1.3	-5.0	48.6	0.2	0.0	0.0	18.9	0.3	50.0	11.9	40.1	2.764	0.025	0.024	0.0006	0.594	0.505
	Maximum	28.5	23.9	37.0	26.2	24.7	52.8	55.0	24.7	34.5	-1.3	-3.6	52.0	0.4	0.0	0.0	33.4	0.6	53.6	12.7	41.1	2.832	0.057	0.054	0.0014	1.391	1.184
	Median	26.1	23.6	25.2	25.6	24.0	49.0	51.4	17.9	31.4	-1.3	-5.1	48.7	0.2	0.0	0.0	18.9	0.3	49.9	11.9	40.1	2.767	0.023	0.023	0.0006	0.565	0.481
	Minimum	25.7	23.5	24.7	25.2	23.5	44.6	48.0	11.5	27.0	-1.3	-5.5	46.4	0.1	0.0	0.0	4.4	0.1	46.5	11.4	39.0	2.688	0.013	0.012	0.0003	0.291	0.247
	2 x Std Dev	1.307	0.275	6.243	0.656	0.752	4.162	3.998	8.048	4.191	0.004	0.902	2.086	0.106	0.000	0.000	17.311	0.289	3.999	0.511	0.945	0.065	0.016	0.016	0.0004	0.411	0.350
Number of Points Used*		30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	* Backpulse points in box are not included																									

Figure F4-1: Test run no. 1.30: Concentration of washed AN-102R2, batch 3B, insoluble solids concentration of 18 wt% 25 wt%- Raw & Calculated Data

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APPENDIX G

ANALYTICAL, RHEOLOGICAL, AND PARTICAL-SIZE DATA

Appendix Contents

1. List of all samples taken during test: Table G1.
2. Notes to Table G2.
3. Table G2 contains all of the analytical data as well as some rheological and particle-size data.
4. Slurry Rheology
5. Particle-size Distribution data

Note on measurement uncertainties of the included data:

There are no measurement uncertainties listed because the measurement uncertainties for analytical data are beyond the scope and control of this task. There is reason to believe that all analytical data can be at least 15% accurate but no quantitative data are given to this effect. Density, filtrate viscosity, turbidity are the only simulant property data that were obtained at the test rig location and the uncertainty of those data can be stated as:

Density: ± 0.5% of reading by calibration
Viscosity: ± 0.34 % of reading by manufacturer's statement.
Turbidity: ± 0.04 NTU

Related Test	When Sample was Taken		Sample	EDL	ADS or ITS	Analysis
	Date	Time	Size (mL)	Sample #	Sample #	Requested
AN-102 Batch 3C						
1.16-3C	1-Oct-02	before test	250	rpp-pxu-filtrate-pre1.16-turbidity	none-by EDL/EDS/SRTC	turb, dens, visc
1.16-3C	1-Oct-02	before test	250	rpp-pxu-filtrate-pre1.16-archive	none	none-archive
1.16-3C	1-Oct-02	before test	15	rpp-pxu-filtrate-pre1.16-archive	none	none-archive
1.16-3C	1-Oct-02	before test	15	rpp-pxu-filtrate-pre1.16-table1	300188154	ICPES, IC An, TIC/TOC
1.16-3C	1-Oct-02	before test	15	rpp-pxu-filtrate-pre1.16-solids	300186654	TS, dens
1.16-3C	1-Oct-02	before test	250	rpp-pxu-slurry-pre1.16-rheology	none-by PDH/ITS/SRTC	rheology
1.16-3C	1-Oct-02	before test	250	rpp-pxu-slurry-pre1.16-archive	none	none-archive
1.16-3C	1-Oct-02	before test	15	rpp-pxu-slurry-pre1.16-solids1	300186655	TS, SS, dens
1.16-3C	1-Oct-02	before test	15	rpp-pxu-slurry-pre1.16-solids2	300186656	TS, SS, dens
1.16-3C	1-Oct-02	before test	15	rpp-pxu-slurry-pre1.16-psd	300188111	microtrac
1.16-3C	1-Oct-02	before test	15	rpp-pxu-slurry-pre1.16-archive	none	none-archive
1.16-3C	3-Oct-02	test end	15	rpp-pxu-filtrate-mid1.16-table1	300188155	ICPES, IC An, TIC/TOC, turb
1.16-3C	3-Oct-02	test end	15	rpp-pxu-filtrate-mid1.16-solids	no number, used for >	acquous for next 2 samples
1.16-3C	3-Oct-02	test end	15	rpp-pxu-slurry-mid1.16-solids1	300186909	TS, SS, dens
1.16-3C	3-Oct-02	test end	15	rpp-pxu-slurry-mid1.16-solids2	300186910	TS, SS, dens
1.16-3C	3-Oct-02	test end	15	rpp-pxu-slurry-mid1.16-psd	300188112	microtrac
1.16-3C	3-Oct-02	test end	250	rpp-pxu-slurry-mid1.16-archive	none	none-archive
AN-102 Batch 3B						
1.16-3B	22-Oct-02	before test	250	Pre1.16-batch 3B - P. Townson	sent to Hanford	none
1.16-3B	22-Oct-02	before test	250	rpp-pxu-slu-pre1.16-3b-rheology	none-by PDH/ITS/SRTC	rheology
1.16-3B	22-Oct-02	before test	250	rpp-pxu-slu-pre1.16-3b-archive	none	none-archive
1.16-3B	22-Oct-02	before test	15	rpp-pxu-slu-pre1.16-3b-solids1	300187815	TS, SS, dens
1.16-3B	22-Oct-02	before test	15	rpp-pxu-slu-pre1.16-3b-solids2	300187816	TS, SS, dens
1.16-3B	22-Oct-02	before test	15	rpp-pxu-slu-pre1.16-3b-psd	300188109	microtrac
1.16-3B	22-Oct-02	before test	15	rpp-pxu-slu-pre1.16-3b-archive	none	none-archive
1.16-3B	22-Oct-02	1 hr into test	250	rpp-pxu-filt-pre1.16-3b-turbidity	none-by EDL/EDS/SRTC	turb, dens, visc
1.16-3B	22-Oct-02	1 hr into test	15	rpp-pxu-filt-pre1.16-3b-archive	none	none-archive
1.16-3B	22-Oct-02	1 hr into test	15	rpp-pxu-filt-pre1.16-3b-table1	300188150	ICPES, IC An, TIC/TOC
1.16-3B	23-Oct-02	test end/02:56	250	rpp-pxu-filt-end1.16-3b-solids	for archive	none
1.16-3B	23-Oct-02	test end/02:56	15	rpp-pxu-filt-end1.16-3b-solids	no number	none
1.16-3B	23-Oct-02	test end/02:56	15	rpp-pxu-slu-end1.16-3b-solids1	300187825	TS, SS, dens
1.16-3B	23-Oct-02	test end/02:56	15	rpp-pxu-slu-end1.16-3b-solids2	300187826	TS, SS, dens
1.16-3B	23-Oct-02	test end/19:00	250	rpp-pxu-filt-final1.16-3b-archive	none	none-archive
1.16-3B	23-Oct-02	test end/19:00	15	rpp-pxu-filt-final1.16-3b-solids	no number, used for >	acquous for next solids1&2
1.16-3B	23-Oct-02	test end/19:00	15	rpp-pxu-filt-final1.16-3b-table1	300188152	ICPES, IC An, TIC/TOC, turb
1.16-3B	23-Oct-02	test end/19:00	250	Final1.16-batch 3B - P. Townson	sent to Hanford	none
1.16-3B	23-Oct-02	test end/19:00	250	rpp-pxu-slu-final1.16-3b-rheology	none-by PDH/ITS/SRTC	rheology
1.16-3B	23-Oct-02	test end/19:00	250	rpp-pxu-slu-final1.16-3b-archive	none	none-archive
1.16-3B	23-Oct-02	test end/19:00	15	rpp-pxu-slu-final1.16-3b-solids1	300187857	TS, SS, dens
1.16-3B	23-Oct-02	test end/19:00	15	rpp-pxu-slu-final1.16-3b-solids2	300187858	TS, SS, dens
1.16-3B	23-Oct-02	test end/19:00	15	rpp-pxu-slu-final1.16-3b-psd	300188110	microtrac
Wash-3B	30-Oct-02	PreWash22wt%	250	rpp-pxu-filt22%-prewash-3b-archive	none	none-archive
Wash-3B	30-Oct-02	PreWash22wt%	250	rpp-pxu-slu22%-prewash-3b-rheology	none-by PDH/ITS/SRTC	rheology
Wash-3B	30-Oct-02	PreWash22wt%	250	rpp-pxu-slu22%-prewash-3b-archive	none	none-archive
Wash-3B	30-Oct-02	PreWash20wt%	250	rpp-pxu-filt20%-prewash-3b-archive	none	none-archive
Wash-3B	30-Oct-02	PreWash20wt%	250	rpp-pxu-slu20%-prewash-3b-rheology	none-by PDH/ITS/SRTC	rheology
Wash-3B	30-Oct-02	PreWash20wt%	250	rpp-pxu-slu20%-prewash-3b-archive	none	none-archive
Wash-3B	30-Oct-02	PreWash20wt%	15	rpp-pxu-filt20%-prewash-3b-table1	300189078	ICPES, IC An, TIC/TOC
Wash-3B	30-Oct-02	PreWash20wt%	15	rpp-pxu-filt20%-prewash-3b-solids	300189087	TS, dens
Wash-3B	30-Oct-02	PreWash20wt%	15	rpp-pxu-slu20%-prewash-3b-solids	300189088	TS, SS, dens
Wash-3B	30-Oct-02	PreWash20wt%	15	rpp-pxu-slu20%-prewash-3b-psd	300189271	microtrac
Wash-3B	30-Oct-02	Wash	15	rpp-pxu-filt-wash-5-3b	300189083	ICPES
Wash-3B	30-Oct-02	Wash	15	rpp-pxu-filt-wash-10-3b	300189084	ICPES
Wash-3B	30-Oct-02	Wash	15	rpp-pxu-filt-wash-15-3b	300189085	ICPES
Wash-3B	30-Oct-02	PostWash	250	rpp-pxu-filt-postwash-3b-archive	none	none-archive
Wash-3B	30-Oct-02	PostWash	250	rpp-pxu-slu-postwash-3b-rheology	none-by PDH/ITS/SRTC	rheology
Wash-3B	30-Oct-02	PostWash	250	rpp-pxu-slu-postwash-3b-archive	none	none-archive
Wash-3B	30-Oct-02	PostWash	15	rpp-pxu-filt-postwash-3b-table1	300189079	ICPES, IC An, TIC/TOC
Wash-3B	30-Oct-02	PostWash	15	rpp-pxu-filt-postwash-3b-solids	300189089	TS, dens
Wash-3B	30-Oct-02	PostWash	15	rpp-pxu-slu-postwash-3b-solids	300189090	TS, SS, dens
Wash-3B	30-Oct-02	PostWash	15	rpp-pxu-slu-postwash-3b-psd	300189272	microtrac
130-3B	31-Oct-02	Test End	250	rpp-pxu-filt-end1.30-3b-archive	none	none-archive
130-3B	31-Oct-02	Test End	15	rpp-pxu-filt-end1.30-3b-solids	300189091	TS, dens
130-3B	31-Oct-02	Test End	15	rpp-pxu-filt-end1.30-3b-table1	300189080	TS, SS, dens
130-3B	31-Oct-02	Test End	250	rpp-pxu-slu-end1.30-3b-rheology	none-by PDH/ITS/SRTC	rheology
130-3B	31-Oct-02	Test End	250	rpp-pxu-slu-end1.30-3b-archive	none	none-archive
130-3B	31-Oct-02	Test End	15	rpp-pxu-slu-end1.30-3b-table1	300189086	ICPES, IC An, TIC/TOC
130-3B	31-Oct-02	Test End	~50 in 125	rpp-pxu-slu-end1.30-3b-solids	300189092	TS, SS, dens

Table G1:All Samples taken during AN-102 Testing, Page 1

AN-102 Batch 3A						
1.16-3A	6-Nov-02	1 hr into test	250	rpp-pxu-filt-pre1.16-3a-turbidity	none-by EDL/EDS/SRTC	turb, dens, visc
1.16-3A	6-Nov-02	1 hr into test	15	rpp-pxu-filt-pre1.16-3a-table1	300189081	ICPES, IC An, TIC/TOC
1.16-3A	6-Nov-02	before test	250	rpp-pxu-slu-pre1.16-3a-rheology	none-by PDH/ITS/SRTC	rheology
1.16-3A	6-Nov-02	before test	250	rpp-pxu-slu-pre1.16-3a-archive	none	none-archive
1.16-3A	6-Nov-02	before test	15	rpp-pxu-slu-pre1.16-3a-solids1	300188474	TS, SS, dens
1.16-3A	6-Nov-02	before test	15	rpp-pxu-slu-pre1.16-3a-solids2	300188475	TS, SS, dens
1.16-3A	6-Nov-02	before test	15	rpp-pxu-slu-pre1.16-3a-psd	300189273	microtrac
1.16-3A	6-Nov-02	After 230 liters	30	midA1.16-batch 3A-P.Townson	sent to Hanford	none
1.16-3A	6-Nov-02	After 430 liters	30	midB1.16-batch 3A-P.Townson	sent to Hanford	none
1.16-3A	7-Nov-02	After 630 liters	30	midC1.16-batch 3A-P.Townson	sent to Hanford	none
1.16-3A	7-Nov-02	14 wt%/15:00	250	rpp-pxu-filt-end1.16-3a-turbidity	none-by EDL/EDS/SRTC	turb, dens, visc
1.16-3A	7-Nov-02	14 wt%/15:00	15	rpp-pxu-filt-end1.16-3a-solids	none	TS, dens
1.16-3A	7-Nov-02	14 wt%/15:00	250	rpp-pxu-filt-end1.16-3a-rheology	none-by PDH/ITS/SRTC	rheology
1.16-3A	7-Nov-02	14 wt%/15:00	250	rpp-pxu-filt-end1.16-3a-archive	none	none-archive
1.16-3A	7-Nov-02	14 wt%/15:00	15	rpp-pxu-slu-end1.16-3a-solids1	300188585	TS, SS, dens
1.16-3A	7-Nov-02	14 wt%/15:00	15	rpp-pxu-slu-end1.16-3a-solids2	300188586	TS, SS, dens
1.16-3A	7-Nov-02	14 wt%/15:00	15	rpp-pxu-filt-end1.16-3a-psd	300189274	microtrac
1.16-3A	11-Nov-02	25 wt%/11:30	250	rpp-pxu-filt-final1.16-3a-turbidity	none-by EDL/EDS/SRTC	turb, dens, visc
1.16-3A	11-Nov-02	25 wt%/11:30	15	rpp-pxu-filt-final1.16-3a-solids	none	TS, dens
1.16-3A	11-Nov-02	25 wt%/11:30	16	rpp-pxu-filt-final1.16-3a-table1	300189082	ICPES, IC An, TIC/TOC
1.16-3A	11-Nov-02	25 wt%/11:30	250	rpp-pxu-filt-final1.16-3a-rheology	none-by PDH/ITS/SRTC	rheology
1.16-3A	11-Nov-02	25 wt%/11:30	250	rpp-pxu-filt-final1.16-3a-archive	none	none-archive
1.16-3A	11-Nov-02	25 wt%/11:30	15	rpp-pxu-slu-final1.16-3a-solids1	300188587	TS, SS, dens
1.16-3A	11-Nov-02	25 wt%/11:30	15	rpp-pxu-slu-final1.16-3a-solids2	300188588	TS, SS, dens
1.16-3A	11-Nov-02	25 wt%/11:30	15	rpp-pxu-filt-finall1.16-3a-psd	300189275	microtrac
AN-102 Batch 4A						
1.16-4A	12-Mar-03	before test	250	rpp-pxu-slu-pre1.16-4a-rheology	none-by PDH/ITS/SRTC	rheology
1.16-4A	12-Mar-03	before test	250	rpp-pxu-slu-pre1.16-4a-archive	none	none-archive
1.16-4A	12-Mar-03	before test	15	rpp-pxu-slu-pre1.16-4a-solids1	300192924	TS, SS, dens
1.16-4A	12-Mar-03	before test	15	rpp-pxu-slu-pre1.16-4a-solids2	300192925	TS, SS, dens
1.16-4A	12-Mar-03	before test	15	rpp-pxu-slu-pre1.16-4a-psd	300192929	microtrac
1.16-4A	12-Mar-03	1 hr into test	250	rpp-pxu-filt-pre1.16-3a-turbidity	none-by EDL/EDS/SRTC	turb, dens, visc
1.16-4A	12-Mar-03	1 hr into test	15	rpp-pxu-filt-pre1.16-4a-table1a	300192931	ICPES
1.16-4A	12-Mar-03	1 hr into test	15	rpp-pxu-filt-pre1.16-4a-table1b	300192932	TIC/TOC
1.16-4A	12-Mar-03	1 hr into test	15	rpp-pxu-filt-pre1.16-4a-table1c	300192933	IC An
1.16-4A	13-Mar-03	18 wt%/04:11	250	rpp-pxu-filt-end1.16-4a-turbidity	none-by EDL/EDS/SRTC	turb, dens, visc
1.16-4A	13-Mar-03	18 wt%/04:11	15	rpp-pxu-filt-end1.16-4a-solids	300192928	TS, dens
1.16-4A	13-Mar-03	18 wt%/04:11	250	rpp-pxu-slu-end1.16-4a-archive	none-by PDH/ITS/SRTC	rheology
1.16-4A	13-Mar-03	18 wt%/04:11	15	rpp-pxu-slu-end1.16-4a-solids1	300192926	TS, SS, dens
1.16-4A	13-Mar-03	18 wt%/04:11	15	rpp-pxu-slu-end1.16-4a-solids2	300192927	TS, SS, dens
1.16-4A	13-Mar-03	18 wt%/04:11	15	rpp-pxu-slu-end1.16-4a-psd	300192930	microtrac
Nomenclature - Organizations						
ANS = Analytical Section of the Savannah River Technology Center						
EDL/EDS/SRTC = Engineering Development Laboratory of the Engineering Development Section of the Savannah Technology Center						
PDH/ITS/SRTC = Process Development - Hanford RPP Group of the Immobilization Technology Section of the Savannah River Technology Center						
RPP-PXU = (DOE) River Protection Project - Pilot-scale X-flow Ultrafiltration						
Nomenclature - ANS, EDL, and PDH Measurements						
IC AN = Ion Chromatography Anions						
ICPES = Inductively Coupled Plasma Emission Spectroscopy						
TIC/TOC = Total Inorganic Carbon / Total Organic Carbon						
TS = Total Solids						
SS = Suspended Solids (or Insoluble Solids)						
dens = density						
visc = kinematic vicosity						
microtrac = Particle Size Analysis by a laser technique						
turb = turbidity = measurement of opacity of a solution						
rheology = concentric cylinder rheometer is used to determine viscosity/consistency and shear stress versus shear rate relationship						

Table G1:All Samples taken during AN-102 Testing, Page 2

Notes to Table G2

2. The units listed are used for the data in each row except where otherwise noted.
3. See the sample page, which precedes this table for the nomeclature.
4. Turbidity was checked periodically: on 10/2/02 it was 0.28 NTU, on 10/3/02 it was 0.28 NTUon 10/9/02 it was 1.01 NTU. This turbidity increase may be due to exposure to light because another sample was taken from a filtrate batch that was created on 10/1/02, but it was kept from light. It's turbidity was 0.16 NTU;the same as the orginal sample taken on 10/1/02.
5. Testing with batch 3C was stopped because of poor filterability and a dedicated slurry sample was not taken for rheological measurements as part of the filtration task. However, sample was not taken as part of the precipitation task. The results of sample RPP-WTP-PREC3C-3SL are in memo: SRTC-PDH-2002-00005 of 8-Oct-2002: 9.68cP and 9.50 cP; Yield=1.47 Pa and 1.79 Pa
6. The slurry sample was taken AFTER the filtrate sample was take. Approximately 0.75 liters of filtrate was removed from the slurry and the remaining slurry was approximately 60 liters. Therefore the solids concentration of 18.71 wt% of the slurry sample was slightly higher than the slurry at the end of the experiment and the actual insoluble solids contents was approximately 18.3 wt%.

	A	B	C	D	E	F	G	H
1	Test Run ----------->>			1.16-3C	1.16-3C	1.16-3C	1.16-3C	1.16-3C
2	Sample Taken Date ----------->>			October 1, 2002	October 1, 2002	October 1, 2002	October 1, 2002	October 1, 2002
3	Sample Taken Time ----------->>			before test	before test	before test	before test	before test
4	Sample ID (Prefix = rpp-pxu-) ->>			filtrate-pre1.16-turbidity	filtrate-pre1.16-table1	filtrate-pre1.16-solids	slurry-pre1.16-rheology	slurry-pre1.16-solids1
5	ADS Sample ID ----------->>			none	300188154	300186654	none	300186655
6	Type Sample ----------->>			filtrate	filtrate	filtrate	slurry	slurry
7	Sample Size (mL) ----------->>			250	15	15	250	15
8	Item Measured	Units*	Method/Analyst Org					
9	Al	ug/mL	ICP-ES / ADS		7840			
10	B	ug/mL	ICP-ES / ADS		24.9			
11	Ba	ug/mL	ICP-ES / ADS		<0.024			
12	Ca	ug/mL	ICP-ES / ADS		78.8			
13	Cd	ug/mL	ICP-ES / ADS		35.2			
14	Ce	ug/mL	ICP-ES / ADS		6.9			
15	Cl	ug/mL	IC Anions / ADS		3410			
16	Co	ug/mL	ICP-ES / ADS		<1.0			
17	Cr	ug/mL	ICP-ES / ADS		146			
18	Cu	ug/mL	ICP-ES / ADS		<0.25			
19	Fe	ug/mL	ICP-ES / ADS		1.5			
20	K	ug/mL	ICP-ES / ADS		1740			
21	La	ug/mL	ICP-ES / ADS		4.2			
22	Mg	ug/mL	ICP-ES / ADS		<0.168			
23	Mn	ug/mL	ICP-ES / ADS		4.7			
24	Mo	ug/mL	ICP-ES / ADS		29.6			
25	Na	ug/mL	ICP-ES / ADS		123000			
26	Nd	ug/mL	ICP-ES / ADS		11.4			
27	Ni	ug/mL	ICP-ES / ADS		240			
28	NO3 (Nitrate)	ug/mL	IC Anions / ADS		135000			
29	P	ug/mL	ICP-ES / ADS		681			
30	PO4 (Phosphate)	ug/mL	IC Anions / ADS		3140			
31	Pb	ug/mL	ICP-ES / ADS		20.3			
32	S	ug/mL	ICP-ES / ADS		2840			
33	Si	ug/mL	ICP-ES / ADS		21.6			
34	Sn	ug/mL	ICP-ES / ADS		0.7			
35	SO4 (Sulfate)	ug/mL	IC Anions / ADS		8890			
36	Sr	ug/mL	ICP-ES / ADS		30.5			
37	W	ug/mL	ICP-ES / ADS		107			
38	Zn	ug/mL	ICP-ES / ADS		1.2			
39	Zr	ug/mL	ICP-ES / ADS		2.4			
40	Total Organic Carbon	ug/mL	TIC-TOC / ADS		10000			
41	Total Inorganic Carbon	ug/mL	TIC-TOC / ADS		6990			
42	Suspended Solids	wt%	Gravimetric / ADS					1.00
43	Total Solids	wt%	Gravimetric / ADS			33.08		33.70
44	Particle Size by Volume	micron	Microtrac / ADS					
45	Particle Size by Number	micron	Microtrac / ADS					
46	Kin. Viscosity	cSt	CONE/ITS-CAPILLARY/EDL	2.16			2.8	
47	Dyn. Visc./Consistency	cP	Kin. Visc. x Density	2.67			3.6	
48	Yield Stress	Pa					0.0	
49	Density	g/mL	Gravimetric / EDL	1.238			1.279	
50	Density	g/mL	Gravimetric / ADS			1.250		1.330
51	Turbidity	NTU	/ EDL	0.18 (on 10/1)				
52	Comment - Note (1)	Note (2)	Note (3)	Note (4)			Note (5)	
53	Note (1) - See notes on page preceding this table.							

Table G2:AN-102 simulant analytical and other data, Page 1

	I	J	K	L	M	N	O	P	Q
1	Test Run ----------->>		1.16-3C	1.16-3C	1.16-3C	1.16-3C	1.16-3C	1.16-3C	
2	Sample Taken Date ----------->>		October 1, 2002	October 1, 2002	October 3, 2002	October 3, 2002	October 3, 2002	October 3, 2002	
3	Sample Taken Time ----------->>		before test	before test	test end	test end	test end	test end	
4	Sample ID (Prefix = rpp-pxu-) ->>		slurry-pre1.16-solids2	slurry-pre1.16-psd	filtrate-mid1.16-table1	slurry-mid1.16-solids1	slurry-mid1.16-solids2	slurry-mid1.16-psd	
5	ADS Sample ID ----------->>		300186656	300188111	300188155	300186909	300186910	300188112	
6	Type Sample ----------->>		slurry	slurry	filtrate	slurry	slurry	slurry	
7	Sample Size (mL) ----------->>		15	15	15	15	15	15	
8	Item Measured	Units*							
9	Al	ug/mL			8480				
10	B	ug/mL			27.5				
11	Ba	ug/mL			<0.024				
12	Ca	ug/mL			102.0				
13	Cd	ug/mL			38.4				
14	Ce	ug/mL			5.6				
15	Cl^-	ug/mL			3610				
16	Co	ug/mL			<1.0				
17	Cr	ug/mL			160				
18	Cu	ug/mL			<0.25				
19	Fe	ug/mL			0.9				
20	K	ug/mL			1940				
21	La	ug/mL			2.5				
22	Mg	ug/mL			<0.168				
23	Mn	ug/mL			5.4				
24	Mo	ug/mL			31.8				
25	Na	ug/mL			133000				
26	Nd	ug/mL			6.9				
27	Ni	ug/mL			254				
28	NO3 (Nitrate)	ug/mL			132000				
29	P	ug/mL			669				
30	PO4 (Phosphate)	ug/mL			3220				
31	Pb	ug/mL			35.2				
32	S	ug/mL			3120				
33	Si	ug/mL			24.4				
34	Sn	ug/mL			0.8				
35	SO4 (Sulfate)	ug/mL			9380				
36	Sr	ug/mL			10.9				
37	W	ug/mL			120				
38	Zn	ug/mL			1.4				
39	Zr	ug/mL			2.4				
40	Total Organic Carbon	ug/mL			10900				
41	Total Inorganic Carbon	ug/mL			7820				
42	Suspended Solids	wt%	0.68			8.51	8.30		
43	Total Solids	wt%	33.49			38.71	38.56		
44	Particle Size by Volume	micron		2.56(32%), 8.59(68%)				2.47(49%), 6.75(51%)	
45	Particle Size by Number	micron		2.08 (100%)				1.91	
46	Kin. Viscosity	cSt						7.5	
47	Dyn. Visc./Consistency	cP						9.8	
48	Yield Stress	Pa						1.7	
49	Density	g/mL							
50	Density	g/mL	1.310			1.276	1.306		
51	Turbidity	NTU			0.14				
52	Comment - Note (1)	Note (2)		bimodal by volume				bimodal by volume	
53	Note(1)-Notes precede this table								

Table G2:AN-102 simulant analytical and other data, Page 2

	R	S	T	U	V	W	X	Y
1	Test Run ----------->>		1.16-3B	1.16-3B	1.16-3B	1.16-3B	1.16-3B	1.16-3B
2	Sample Taken Date ----------->>		October 22, 2002	October 22, 2002	October 22, 2002	October 22, 2002	October 22, 2002	October 22, 2002
3	Sample Taken Time ----------->>		before test	before test	before test	before test	1 hr into test	1 hr into test
4	Sample ID (Prefix = rpp-pxu-) ->>		slu-pre1.16-3b-rheology	slu-pre1.16-3b-solids1	slu-pre1.16-3b-solids2	slu-pre1.16-3b-psd	filt-pre1.16-3b-turbidity	filt-pre1.16-3b-table1
5	ADS Sample ID ----------->>		none	300187815	300187816	300188109	none	300188150
6	Type Sample ----------->>		slurry	slurry	slurry	slurry	filtrate	filtrate
7	Sample Size (mL) ----------->>		250	15	15	15	250	15
8	Item Measured	Units*						
9	Al	ug/mL						7970
10	B	ug/mL						25.2
11	Ba	ug/mL						<0.024
12	Ca	ug/mL						56.2
13	Cd	ug/mL						36.1
14	Ce	ug/mL						2.3
15	Cl	ug/mL						3510
16	Co	ug/mL						<1.0
17	Cr	ug/mL						134
18	Cu	ug/mL						<0.25
19	Fe	ug/mL						1.1
20	K	ug/mL						1790
21	La	ug/mL						<1.4
22	Mg	ug/mL						<0.168
23	Mn	ug/mL						8.3
24	Mo	ug/mL						31.4
25	Na	ug/mL						140000
26	Nd	ug/mL						3.9
27	Ni	ug/mL						229
28	NO3 (Nitrate)	ug/mL						135000
29	P	ug/mL						1130
30	PO4 (Phosphate)	ug/mL						4090
31	Pb	ug/mL						36.4
32	S	ug/mL						2900
33	Si	ug/mL						23.2
34	Sn	ug/mL						0.6
35	SO4 (Sulfate)	ug/mL						8680
36	Sr	ug/mL						40.6
37	W	ug/mL						115
38	Zn	ug/mL						3.2
39	Zr	ug/mL						1.0
40	Total Organic Carbon	ug/mL						9620
41	Total Inorganic Carbon	ug/mL						6480
42	Suspended Solids	wt%		1.30	1.12			
43	Total Solids	wt%		32.72	32.71			
44	Particle Size by Volume	micron				2.25(52%), 8.55(48%)		
45	Particle Size by Number	micron				1.94		
46	Kin. Viscosity	cSt	3.1				2.8	
47	Dyn. Visc./Consistency	cP	4.0				3.6	
48	Yield Stress	Pa	0.0					
49	Density	g/mL	1.285				1.279	
50	Density	g/mL		1.314	1.265			
51	Turbidity	NTU					0.13	
52	Comment - Note (1)	Note (2)				bimodal by volume		
53	Note(1)-Notes precede this table							

Table G2:AN-102 simulant analytical and other data, Page 3

	Z	AA	AB	AC	AD	AE	AF	AG
1	Test Run ----------->>		1.16-3B	1.16-3B	1.16-3B	1.16-3B	1.16-3B	1.16-3B
2	Sample Taken Date ----------->>		October 23, 2002	October 23, 2002	October 23, 2002	October 23, 2002	October 23, 2002	October 23, 2002
3	Sample Taken Time ----------->>		test end / 02:56 A.M.	test end / 02:56 A.M.	test end / 02:56 A.M.	test end / 19:00	test end / 19:00	test end / 19:00
4	Sample ID (Prefix = rpp-pxu-) ->>		filt-end1.16-3b-solids	slu-end1.16-3b-solids1	slu-end1.16-3b-solids2	filt-final1.16-3b-solids	filt-final1.16-3b-table1	slu-final1.16-3b-rheology
5	ADS Sample ID ----------->>		none	300187825	300187826	none	300188152	none
6	Type Sample ----------->>		filtrate	slurry	slurry	filtrate	filtrate	slurry
7	Sample Size (mL) ----------->>		15	15	15	15	15	250
8	Item Measured	Units*						
9	Al	ug/mL					8150	
10	B	ug/mL					25.6	
11	Ba	ug/mL					<0.024	
12	Ca	ug/mL					69.3	
13	Cd	ug/mL					36.3	
14	Ce	ug/mL					1.8	
15	Cl-	ug/mL					3360	
16	Co	ug/mL					<1.0	
17	Cr	ug/mL					134	
18	Cu	ug/mL					<0.25	
19	Fe	ug/mL					1.2	
20	K	ug/mL					1840	
21	La	ug/mL					<1.4	
22	Mg	ug/mL					<0.168	
23	Mn	ug/mL					6.2	
24	Mo	ug/mL					31.4	
25	Na	ug/mL					141000	
26	Nd	ug/mL					2.8	
27	Ni	ug/mL					228	
28	NO3 (Nitrate)	ug/mL					122000	
29	P	ug/mL					716	
30	PO4 (Phosphate)	ug/mL					2570	
31	Pb	ug/mL					32.0	
32	S	ug/mL					2910	
33	Si	ug/mL					24.0	
34	Sn	ug/mL					0.9	
35	SO4 (Sulfate)	ug/mL					7900	
36	Sr	ug/mL					35.5	
37	W	ug/mL					112	
38	Zn	ug/mL					3.2	
39	Zr	ug/mL					1.0	
40	Total Organic Carbon	ug/mL					9830	
41	Total Inorganic Carbon	ug/mL					6470	
42	Suspended Solids	wt%		14.44	14.47			
43	Total Solids	wt%		41.83	41.85			
44	Particle Size by Volume	micron						
45	Particle Size by Number	micron						
46	Kin. Viscosity	cSt				2.9		15
47	Dyn. Visc./Consistency	cP				3.7		21
48	Yield Stress	Pa						8.8
49	Density	g/mL				1.283		1.423
50	Density	g/mL	1.277	1.345	1.404	1.288		
51	Turbidity	NTU					0.28	
52	Comment - Note (1)	Note (2)						
53	Note(1)-Notes precede this table							

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	AH	AI	AJ	AK	AL	AM	AN	AO
1	Test Run ---------->>		1.16-3B	1.16-3B	1.16-3B	Wash-3B	Wash-3B	Wash-3B
2	Sample Taken Date ---------->>		October 23, 2002	October 23, 2002	October 23, 2002	October 30, 2002	October 30, 2002	October 30, 2002
3	Sample Taken Time ---------->>		test end / 19:00	test end / 19:00	test end / 19:00	prewash 22 wt%	prewash 20 wt%	prewash 20 wt%
4	Sample ID (Prefix = rpp-pxu-) ->>		slu-final1.16-3b-solids1	slu-final1.16-3b-solids2	slu-final1.16-3b-psd	slu22%-prewash-3b-rheology	slu20%-prewash-3b-rheology	filt20%-prewash-3b-table1
5	ADS Sample ID ---------->>		300187857	300187858	300188110	none	none	300189078
6	Type Sample ---------->>		slurry	slurry	slurry	slurry	slurry	filtrate
7	Sample Size (mL) ---------->>		15	15	15	250	250	15
8	Item Measured	Units*						
9	Al	ug/mL						7950
10	B	ug/mL						n/a
11	Ba	ug/mL						n/a
12	Ca	ug/mL						82.3
13	Cd	ug/mL						38
14	Ce	ug/mL						n/a
15	Cl^-	ug/mL						3260
16	Co	ug/mL						n/a
17	Cr	ug/mL						84.6
18	Cu	ug/mL						4
19	Fe	ug/mL						1.2
20	K	ug/mL						1640
21	La	ug/mL						n/a
22	Mg	ug/mL						n/a
23	Mn	ug/mL						5.5
24	Mo	ug/mL						n/a
25	Na	ug/mL						146000
26	Nd	ug/mL						2.6
27	Ni	ug/mL						222
28	NO3 (Nitrate)	ug/mL						130000
29	P	ug/mL						590
30	PO4 (Phosphate)	ug/mL						2280
31	Pb	ug/mL						29.1
32	S	ug/mL						2960
33	Si	ug/mL						n/a
34	Sn	ug/mL						n/a
35	SO4 (Sulfate)	ug/mL						9030
36	Sr	ug/mL						19.2
37	W	ug/mL						n/a
38	Zn	ug/mL						2.9
39	Zr	ug/mL						n/a
40	Total Organic Carbon	ug/mL						9380
41	Total Inorganic Carbon	ug/mL						6820
42	Suspended Solids	wt%	21.69	21.65				
43	Total Solids	wt%	47.19	47.17				
44	Particle Size by Volume	micron			0.86(87%), 8.22(13%)			
45	Particle Size by Number	micron			0.80			
46	Kin. Viscosity	cSt				12	11	
47	Dyn. Visc./Consistency	cP				17	16	
48	Yield Stress	Pa				12	7.6	
49	Density	g/mL						
50	Density	g/mL	n/a	1.430				
51	Turbidity	NTU						
52	Comment - Note (1)	Note (2)			bimodal by volume			
53	Note(1)-Notes precede this table							

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	AP	AQ	AR	AS	AT	AU	AV	AW
1	Test Run ----------->>		Wash-3B	Wash-3B	Wash-3B	Wash-3B	Wash-3B	Wash-3B
2	Sample Taken Date ----------->>		October 30, 2002	October 30, 2002	October 30, 2002	October 30, 2002	October 30, 2002	October 30, 2002
3	Sample Taken Time ----------->>		prewash 20 wt%	prewash 20 wt%	prewash 20 wt%	wash cycle 5	wash cycle 10	wash cycle 15
4	Sample ID (Prefix = rpp-pxu-) ->>		filt20%-prewash-3b-solids	slu20%-prewash-3b-solids	slu20%-prewash-3b-psd	filt20%-wash-5-3b-ICPES	filt20%-wash-10-3b-ICPES	filt20%-wash-15-3b-ICPES
5	ADS Sample ID ----------->>		300189087	300189088	300189271	300189083	300189084	300189085
6	Type Sample ----------->>		filtrate	slurry	slurry	filtrate	filtrate	filtrate
7	Sample Size (mL) ----------->>		15	15	15	15	15	15
8	Item Measured	Units*						
9	Al	ug/mL				6620	4940	3460
10	B	ug/mL						
11	Ba	ug/mL						
12	Ca	ug/mL				72.6	57.1	42.9
13	Cd	ug/mL				32.1	24.7	17.6
14	Ce	ug/mL						
15	Cl^-	ug/mL						
16	Co	ug/mL						
17	Cr	ug/mL				70	53	38
18	Cu	ug/mL				3.8	2.9	2.0
19	Fe	ug/mL				1.0	0.6	0.3
20	K	ug/mL				1410	1030	714
21	La	ug/mL						
22	Mg	ug/mL						
23	Mn	ug/mL				4.5	2.7	1.2
24	Mo	ug/mL						
25	Na	ug/mL				123000	95000	68900
26	Nd	ug/mL				1.4	1.1	<0.52
27	Ni	ug/mL				188	140	101
28	NO3 (Nitrate)	ug/mL						
29	P	ug/mL				900	1190	1630
30	PO4 (Phosphate)	ug/mL						
31	Pb	ug/mL				21.2	13.7	8.3
32	S	ug/mL				2530	1920	1390
33	Si	ug/mL						
34	Sn	ug/mL						
35	SO4 (Sulfate)	ug/mL						
36	Sr	ug/mL				16.9	15.2	5.0
37	W	ug/mL						
38	Zn	ug/mL				2.2	1.4	0.9
39	Zr	ug/mL						
40	Total Organic Carbon	ug/mL						
41	Total Inorganic Carbon	ug/mL						
42	Suspended Solids	wt%		18.95				
43	Total Solids	wt%	32.66	45.42				
44	Particle Size by Volume	micron			1.34(98%), 5.89(2%)			
45	Particle Size by Number	micron			1.21			
46	Kin. Viscosity	cSt						
47	Dyn. Visc./Consistency	cP						
48	Yield Stress	Pa						
49	Density	g/mL						
50	Density	g/mL	1.280	1.355				
51	Turbidity	NTU						
52	Comment - Note (1)	Note (2)			bimodal by volume			
53	Note(1)-Notes precede this table							

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	AX	AY	AZ	BA	BB	BC	BD	BE
1	Test Run ----------->>		Wash-3B	Wash-3B	Wash-3B	Wash-3B	Wash-3B	130-3B
2	Sample Taken Date ----------->>		October 30, 2002	October 30, 2002	October 30, 2002	October 30, 2002	October 30, 2002	October 31, 2002
3	Sample Taken Time ----------->>		postwash	postwash	postwash	postwash	postwash	test end
4	Sample ID (Prefix = rpp-pxu-) ->>		slu-postwash-3b-rheology	filt-postwash-3b-table1	filt-postwash-3b-solids	slu-postwash-3b-solids	slu-postwash-3b-psd	filt-end1.30-3b-solids
5	ADS Sample ID ----------->>		none	300189079	300189089	300189090	300189272	300189091
6	Type Sample ----------->>		slurry	filtrate	filtrate	slurry	slurry	filtrate
7	Sample Size (mL) ----------->>		250	15	15	15	15	15
8	Item Measured	Units*						
9	Al	ug/mL		2230				
10	B	ug/mL		n/a				
11	Ba	ug/mL		n/a				
12	Ca	ug/mL		30.7				
13	Cd	ug/mL		10.4				
14	Ce	ug/mL		n/a				
15	Cl^-	ug/mL		945				
16	Co	ug/mL		n/a				
17	Cr	ug/mL		25				
18	Cu	ug/mL		1.3				
19	Fe	ug/mL		0.2				
20	K	ug/mL		438				
21	La	ug/mL		n/a				
22	Mg	ug/mL		n/a				
23	Mn	ug/mL		1.0				
24	Mo	ug/mL		n/a				
25	Na	ug/mL		45500				
26	Nd	ug/mL		<0.52				
27	Ni	ug/mL		66				
28	NO3 (Nitrate)	ug/mL		33700				
29	P	ug/mL		792				
30	PO4 (Phosphate)	ug/mL		2390				
31	Pb	ug/mL		5.5				
32	S	ug/mL		894				
33	Si	ug/mL		n/a				
34	Sn	ug/mL		n/a				
35	SO4 (Sulfate)	ug/mL		2460				
36	Sr	ug/mL		12.4				
37	W	ug/mL		n/a				
38	Zn	ug/mL		<0.74				
39	Zr	ug/mL		n/a				
40	Total Organic Carbon	ug/mL		2910				
41	Total Inorganic Carbon	ug/mL		2470				
42	Suspended Solids	wt%				18.83		
43	Total Solids	wt%			11.91	28.50		10.07
44	Particle Size by Volume	micron					1.48(93%), 6.89(7%)	
45	Particle Size by Number	micron					1.25	
46	Kin. Viscosity	cSt	6.2					
47	Dyn. Visc./Consistency	cP	7.1					
48	Yield Stress	Pa	14					
49	Density	g/mL						
50	Density	g/mL			1.090	1.150		1.070
51	Turbidity	NTU						
52	Comment - Note (1)	Note (2)					bimodal by volume	
53	Note(1)-Notes precede this table							

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	BF	BG	BH	BI	BJ	BK	BL	BM	BN
1	Test Run ---------->>		130-3B	130-3B	130-3B	130-3B		1.16-3A	1.16-3A
2	Sample Taken Date ---------->>		October 31, 2002	October 31, 2002	October 31, 2002	October 31, 2002		November 6, 2002	November 6, 2002
3	Sample Taken Time ---------->>		test end	test end	test end	test end		before test	before test
4	Sample ID (Prefix = rpp-pxu-) ->>		filt-end1.30-3b-table1	slu-end1.30-3b-rheology	slu-end1.30-3b-table1	slu-end1.30-3b-solids		slu-pre1.16-3a-rheology	slu-pre1.16-3a-solids1
5	ADS Sample ID ---------->>		300189080	none	300189086	300189092		none	300188474
6	Type Sample ---------->>		filtrate	slurry	**slurry (units=ug/g)**	slurry		slurry	slurry
7	Sample Size (mL) ---------->>		15	250	15	15		250	15
8	Item Measured	Units*							
9	Al	ug/mL	1850		2970				
10	B	ug/mL	n/a		n/a				
11	Ba	ug/mL	n/a		590.0				
12	Ca	ug/mL	27.6		3590.0				
13	Cd	ug/mL	6.9		n/a				
14	Ce	ug/mL	n/a		410.0				
15	Cl^-	ug/mL	782		557				
16	Co	ug/mL	n/a		n/a				
17	Cr	ug/mL	22		155				
18	Cu	ug/mL	0.8		193.0				
19	Fe	ug/mL	0.2		607.0				
20	K	ug/mL	359		335				
21	La	ug/mL	n/a		346.0				
22	Mg	ug/mL	n/a		209.0				
23	Mn	ug/mL	0.5		37700.0				
24	Mo	ug/mL	n/a		n/a				
25	Na	ug/mL	38400		39000				
26	Nd	ug/mL	<0.52		668.0				
27	Ni	ug/mL	55		663				
28	NO3 (Nitrate)	ug/mL	28200		21400				
29	P	ug/mL	208		1880				
30	PO4 (Phosphate)	ug/mL	736		1140				
31	Pb	ug/mL	2.8		1260.0				
32	S	ug/mL	751		742				
33	Si	ug/mL	n/a		49.0				
34	Sn	ug/mL	n/a		<6.0				
35	SO4 (Sulfate)	ug/mL	2070		1700				
36	Sr	ug/mL	6.4		88700.0				
37	W	ug/mL	n/a		n/a				
38	Zn	ug/mL	<0.74		27.8				
39	Zr	ug/mL	n/a		84.5				
40	Total Organic Carbon	ug/mL	2570		3450				
41	Total Inorganic Carbon	ug/mL	2340		3960				
42	Suspended Solids	wt%				25.25			1.56
43	Total Solids	wt%				33.06			33.02
44	Particle Size by Volume	micron							
45	Particle Size by Number	micron							
46	Kin. Viscosity	cSt		11				3.2	
47	Dyn. Visc./Consistency	cP		14				4.1	
48	Yield Stress	Pa		44				0.0	
49	Density	g/mL						1.286	
50	Density	g/mL				1.250			1.280
51	Turbidity	NTU							
52	Comment - Note (1)	Note (2)							
53	Note(1)-Notes precede this table								

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	BO	BP	BQ	BR	BS	BT	BU	BV	BW
1	Test Run ---------->>		1.16-3A	1.16-3A	1.16-3A	1.16-3A	1.16-3A	1.16-3A	1.16-3A
2	Sample Taken Date ---------->>		November 6, 2002	November 6, 2002	November 6, 2002	November 6, 2002	November 7, 2002	November 7, 2002	November 7, 2002
3	Sample Taken Time ---------->>		before test	before test	1 hr into test	1 hr into test	14 wt% / 15:00 hours	14 wt% / 15:00 hours	14 wt% / 15:00 hours
4	Sample ID (Prefix = rpp-pxu-) ->>		slu-pre1.16-3a-solids2	slu-pre1.16-3a-psd	filt-pre1.16-3a-turbidity	filt-pre1.16-3a-table1	filt-end1.16-3a-turbidity	filt-end1.16-3a-solids	filt-end1.16-3a-rheology
5	ADS Sample ID ---------->>		300188475	300189273	none	300189081	none	none	none
6	Type Sample ---------->>		slurry	slurry	filtrate	filtrate	filtrate	filtrate	slurry
7	Sample Size (mL) ---------->>		15	15	15	15	250	15	250
8	Item Measured	Units*							
9	Al	ug/mL				7880			
10	B	ug/mL				n/a			
11	Ba	ug/mL				n/a			
12	Ca	ug/mL				51.8			
13	Cd	ug/mL				32.9			
14	Ce	ug/mL				n/a			
15	Cl⁻	ug/mL				2830			
16	Co	ug/mL				n/a			
17	Cr	ug/mL				128			
18	Cu	ug/mL				0.6			
19	Fe	ug/mL				2.5			
20	K	ug/mL				1610			
21	La	ug/mL				n/a			
22	Mg	ug/mL				n/a			
23	Mn	ug/mL				5.3			
24	Mo	ug/mL				n/a			
25	Na	ug/mL				137000			
26	Nd	ug/mL				10.1			
27	Ni	ug/mL				221			
28	NO3 (Nitrate)	ug/mL				117000			
29	P	ug/mL				675			
30	PO4 (Phosphate)	ug/mL				2000			
31	Pb	ug/mL				16.5			
32	S	ug/mL				2860			
33	Si	ug/mL				n/a			
34	Sn	ug/mL				n/a			
35	SO4 (Sulfate)	ug/mL				7680			
36	Sr	ug/mL				89.5			
37	W	ug/mL				n/a			
38	Zn	ug/mL				2.9			
39	Zr	ug/mL				n/a			
40	Total Organic Carbon	ug/mL				9280			
41	Total Inorganic Carbon	ug/mL				6320			
42	Suspended Solids	wt%	1.62						
43	Total Solids	wt%	33.04						
44	Particle Size by Volume	micron		2.82(58%), 9.79(42%)					
45	Particle Size by Number	micron		1.98					
46	Kin. Viscosity	cSt			2.9		3.0		7.9
47	Dyn. Visc./Consistency	cP			3.7		3.8		11.0
48	Yield Stress	Pa							2.1
49	Density	g/mL			1.276		1.280		1.386
50	Density	g/mL	1.300					1.280	
51	Turbidity	NTU			0.18		0.13		
52	Comment - Note (1)	Note (2)		bimodal by volume					
53	Note(1)-Notes precede this table								

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	BX	BY	BZ	CA	CB	CC	CD	CE
1	Test Run ---------->>		1.16-3A	1.16-3A	1.16-3A	1.16-3A	1.16-3A	1.16-3A
2	Sample Taken Date ---------->>		November 7, 2002	November 7, 2002	November 7, 2002	November 11, 2002	November 11, 2002	November 11, 2002
3	Sample Taken Time ---------->>		14 wt% / 15:00 hours	14 wt% / 15:00 hours	14 wt% / 15:00 hours	25 wt% / 11:30 hours	25 wt% / 11:30 hours	25 wt% / 11:30 hours
4	Sample ID (Prefix = rpp-pxu-) ->>		slu-end1.16-3a-solids1	slu-end1.16-3a-solids2	slu-end1.16-3a-psd	filt-final1.16-3a-turbidity	filt-final1.16-3a-solids	slu-final1.16-3a-rheology
5	ADS Sample ID ---------->>		300188585	300188586	300189274	none	none	none
6	Type Sample ---------->>		slurry	slurry	slurry	filtrate	filtrate	slurry
7	Sample Size (mL) ---------->>		15	15	15	250	15	250
8	Item Measured	Units*						
9	Al	ug/mL						
10	B	ug/mL						
11	Ba	ug/mL						
12	Ca	ug/mL						
13	Cd	ug/mL						
14	Ce	ug/mL						
15	Cl^-	ug/mL						
16	Co	ug/mL						
17	Cr	ug/mL						
18	Cu	ug/mL						
19	Fe	ug/mL						
20	K	ug/mL						
21	La	ug/mL						
22	Mg	ug/mL						
23	Mn	ug/mL						
24	Mo	ug/mL						
25	Na	ug/mL						
26	Nd	ug/mL						
27	Ni	ug/mL						
28	NO3 (Nitrate)	ug/mL						
29	P	ug/mL						
30	PO4 (Phosphate)	ug/mL						
31	Pb	ug/mL						
32	S	ug/mL						
33	Si	ug/mL						
34	Sn	ug/mL						
35	SO4 (Sulfate)	ug/mL						
36	Sr	ug/mL						
37	W	ug/mL						
38	Zn	ug/mL						
39	Zr	ug/mL						
40	Total Organic Carbon	ug/mL						
41	Total Inorganic Carbon	ug/mL						
42	Suspended Solids	wt%	14.14	13.97				
43	Total Solids	wt%	41.67	41.55				
44	Particle Size by Volume	micron			2.79			
45	Particle Size by Number	micron			1.79			
46	Kin. Viscosity	cSt				3.5		17
47	Dyn. Visc./Consistency	cP				4.5		24
48	Yield Stress	Pa						24
49	Density	g/mL				1.283		1.469
50	Density	g/mL	1.3 (too low?)	1.26 (too low?)			1.270	
51	Turbidity	NTU				0.23		
52	Comment - Note (1)	Note (2)						
53	Note(1)-Notes precede this table							

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	CG	CH	CI	CJ	CK	CL	CM	CN	CO
1	Test Run ----------->>		1.16-3A	1.16-3A	1.16-3A		1.16-4A	1.16-4A	1.16-4A
2	Sample Taken Date ----------->>		November 11, 2002	November 11, 2002	November 11, 2002		March 12, 2003	March 12, 2003	March 12, 2003
3	Sample Taken Time ----------->>		25 wt% / 11:30 hours	25 wt% / 11:30 hours	25 wt% / 11:30 hours		before test	before test	before test
4	Sample ID (Prefix = rpp-pxu-) ->>		slu-final1.16-3a-solids1	slu-final1.16-3a-solids2	slu-final1.16-3a-psd		slu-pre1.16-4a-rheology	slu-pre1.16-4a-archive	slu-pre1.16-4a-solids1
5	ADS Sample ID ----------->>		300188587	300188588	300189275		none	none	300192924
6	Type Sample ----------->>		slurry	slurry	filtrate		slurry	slurry	slurry
7	Sample Size (mL) ----------->>		15	15	15		250	250	15
8	Item Measured	Units*							
9	Al	ug/mL							
10	B	ug/mL							
11	Ba	ug/mL							
12	Ca	ug/mL							
13	Cd	ug/mL							
14	Ce	ug/mL							
15	Cl	ug/mL							
16	Co	ug/mL							
17	Cr	ug/mL							
18	Cu	ug/mL							
19	Fe	ug/mL							
20	K	ug/mL							
21	La	ug/mL							
22	Mg	ug/mL							
23	Mn	ug/mL							
24	Mo	ug/mL							
25	Na	ug/mL							
26	Nd	ug/mL							
27	Ni	ug/mL							
28	NO3 (Nitrate)	ug/mL							
29	P	ug/mL							
30	PO4 (Phosphate)	ug/mL							
31	Pb	ug/mL							
32	S	ug/mL							
33	Si	ug/mL							
34	Sn	ug/mL							
35	SO4 (Sulfate)	ug/mL							
36	Sr	ug/mL							
37	W	ug/mL							
38	Zn	ug/mL							
39	Zr	ug/mL							
40	Total Organic Carbon	ug/mL							
41	Total Inorganic Carbon	ug/mL							
42	Suspended Solids	wt%	25.24	25.39					1.40
43	Total Solids	wt%	49.27	49.37					33.34
44	Particle Size by Volume	micron			2.53				
45	Particle Size by Number	micron			1.83				
46	Kin. Viscosity	cSt					3.3		
47	Dyn. Visc./Consistency	cP					4.2		
48	Yield Stress	Pa					0.0		
49	Density	g/mL						1.289	
50	Density	g/mL	1.470	1.430					
51	Turbidity	NTU							
52	Comment - Note (1)	Note (2)							
53	Note(1)-Notes precede this table								

Table G2:AN-102 simulant analytical and other data, Page 11

	CP	CQ	CR	CS	CT	CU	CV	CW	CX
1	Test Run ----------->>		1.16-4A	1.16-4A	1.16-4A	1.16-4A	1.16-4A	1.16-4A	1.16-4A
2	Sample Taken Date ----------->>		March 12, 2003	March 12, 2003	March 12, 2003	March 12, 2003	March 12, 2003	March 12, 2003	March 13, 2003
3	Sample Taken Time ----------->>		before test	before test	1 hr into test	1 hr into test	1 hr into test	1 hr into test	18 wt% / 04:11 hours
4	Sample ID (Prefix = rpp-pxu-) ->>		slu-pre1.16-4a-solids2	slu-pre1.16-4a-psd	filt-pre1.16-4a-turbidity	filt-pre1.16-4a-table1a	filt-pre1.16-4a-table1b	filt-pre1.16-4a-table1c	filt-end1.16-4a-turbidity
5	ADS Sample ID ----------->>		300192925	300192929	none	300192931	300192932	300192933	none
6	Type Sample ----------->>		slurry	slurry	filtrate	filtrate	filtrate	filtrate	filtrate
7	Sample Size (mL) ----------->>		15	15	250	15	15	15	250
8	Item Measured	Units*							
9	Al	ug/mL				7648			
10	B	ug/mL				n/a			
11	Ba	ug/mL				n/a			
12	Ca	ug/mL				60.6			
13	Cd	ug/mL				n/a			
14	Ce	ug/mL				n/a			
15	Cl	ug/mL						3280	
16	Co	ug/mL				n/a			
17	Cr	ug/mL				135			
18	Cu	ug/mL				5.3			
19	Fe	ug/mL				1.8			
20	K	ug/mL				1453			
21	La	ug/mL				<1.4			
22	Mg	ug/mL				<0.17			
23	Mn	ug/mL				9.7			
24	Mo	ug/mL				n/a			
25	Na	ug/mL				132512			
26	Nd	ug/mL				3.4			
27	Ni	ug/mL				229			
28	NO3 (Nitrate)	ug/mL						119000	
29	P	ug/mL				n/a			
30	PO4 (Phosphate)	ug/mL						3550	
31	Pb	ug/mL				66.5			
32	S	ug/mL				n/a			
33	Si	ug/mL				n/a			
34	Sn	ug/mL				n/a			
35	SO4 (Sulfate)	ug/mL						8890	
36	Sr	ug/mL				27.6			
37	W	ug/mL				n/a			
38	Zn	ug/mL				3.4			
39	Zr	ug/mL				n/a			
40	Total Organic Carbon	ug/mL					9470		
41	Total Inorganic Carbon	ug/mL					7030		
42	Suspended Solids	wt%	1.61						
43	Total Solids	wt%	33.35						
44	Particle Size by Volume	micron		2.67					
45	Particle Size by Number	micron		1.79					
46	Kin. Viscosity	cSt			2.9				3.0
47	Dyn. Visc./Consistency	cP			3.7				3.8
48	Yield Stress	Pa							
49	Density	g/mL			1.278				
50	Density	g/mL				1.273			
51	Turbidity	NTU			0.06				0.18
52	Comment - Note (1)	Note (2)				density at start			
53	Note(1)-Notes precede this table								

Table G2:AN-102 simulant analytical and other data, Page 12

	CY	CZ	DA	DB	DC	DD	DE	DF
1	Test Run ---------->>		1.16-4A	1.16-4A	1.16-4A	1.16-4A	1.16-4A	
2	Sample Taken Date ---------->>		March 13, 2003	March 13, 2003	March 13, 2003	March 13, 2003	March 13, 2003	
3	Sample Taken Time ---------->>		18 wt% / 04:11 hours	18 wt% / 04:11 hours	18 wt% / 04:11 hours	18 wt% / 04:11 hours	18 wt% / 04:11 hours	
4	Sample ID (Prefix = rpp-pxu-) ->>		filt-end1.16-4a-solids	slu-end1.16-4a-archive	slu-end1.16-4a-solids1	slu-end1.16-4a-solids2	slu-end1.16-3a-psd	
5	ADS Sample ID ---------->>		300192928	none	300192926	300192927	300192930	
6	Type Sample ---------->>		filtrate	filtrate	slurry	slurry	slurry	
7	Sample Size (mL) ---------->>		15	250	15	15	15	
8	Item Measured	Units*						
9	Al	ug/mL						
10	B	ug/mL						
11	Ba	ug/mL						
12	Ca	ug/mL						
13	Cd	ug/mL						
14	Ce	ug/mL						
15	Cl^-	ug/mL						
16	Co	ug/mL						
17	Cr	ug/mL						
18	Cu	ug/mL						
19	Fe	ug/mL						
20	K	ug/mL						
21	La	ug/mL						
22	Mg	ug/mL						
23	Mn	ug/mL						
24	Mo	ug/mL						
25	Na	ug/mL						
26	Nd	ug/mL						
27	Ni	ug/mL						
28	NO3 (Nitrate)	ug/mL						
29	P	ug/mL						
30	PO4 (Phosphate)	ug/mL						
31	Pb	ug/mL						
32	S	ug/mL						
33	Si	ug/mL						
34	Sn	ug/mL						
35	SO4 (Sulfate)	ug/mL						
36	Sr	ug/mL						
37	W	ug/mL						
38	Zn	ug/mL						
39	Zr	ug/mL						
40	Total Organic Carbon	ug/mL						
41	Total Inorganic Carbon	ug/mL						
42	Suspended Solids	wt%			18.71	18.71		
43	Total Solids	wt%	33.31		45.79	45.82		
44	Particle Size by Volume	micron					2.13	
45	Particle Size by Number	micron					1.76	
46	Kin. Viscosity	cSt		11				
47	Dyn. Visc./Consistency	cP		15				
48	Yield Stress	Pa		7.6				
49	Density	g/mL		1.315				
50	Density	g/mL	1.270		1.320	1.330		
51	Turbidity	NTU						
52	Comment - Note (1)	Note (2)		submitted for rheology	Note (6)	Note (6)		
53	Note(1)-Notes precede this table							

Table G2:AN-102 simulant analytical and other data, Page 13

Rheology

At the beginning and the end (and at other points) of each pilot-scale cross-flow ultrafiltration test with AN-102 simulant slurry, samples were taken to measure some rheological properties, like shear stress versus shear rate, viscosity, or if non-Newtonian, consistency. The preceding table lists the viscosity, or consistency and yield shear stress, for each of the samples. This section shows graphical representation of the data used to determine those number.

Those simulant slurry samples at 25°C are: (Consistency, cP; Yield Stress, Pa)

Fig.G_

1. AN-102R2, Batch 3C at 0.8 wt% insoluble solids (3.6; 0.0)
2. AN-102R2, Batch 3C at 8.4 wt% insoluble solids (9.8; 1.7)
3. AN-102R2, Batch 3B at 1.2 wt% insoluble solids (4.0; 0.0)
4. AN-102R2, Batch 3B at 22 wt% insoluble solids (21; 8.8)
5. AN-102R2, Batch 3B at 19 wt% insoluble solids: (16, 7.6)
6. AN-102R2, Batch 3B (post-washed) at 18 wt% insoluble solids: (7.1; 14)
7. AN-102R2, Batch 3B (post-washed) at 25 wt% insoluble solids: (14; 44)
8. AN-102R2, Batch 3A at 1.6 wt% insoluble solids: (4.1; 0.0)
9. AN-102R2, Batch 3A at 14 wt% insoluble solids: (11; 2.1)
10. AN-102R2, Batch 3A at 25 wt% insoluble solids: (24; 24)
11. AN-102R2, Batch 4A at 1.5 wt% insoluble solids: (4.2; 0.0)
12. AN-102R2, Batch 4A at 18 wt% isoluble solids: (15; 7.6)

Note on rheological character of the AN-102R2 slurry simulant

As will be seen in the flowing shear stress verus shear strain curves the simulants do not generally produce a straight line. The slurries are actually a time dependent pseudoplastics (a thixotropic,like ink and some paints). However, when the insoluble solids concentration is low (e.g., < 2 wt%) the stress versus strain curves are approximately straight (see the next note) there is not significant shear stress at zero shear strain. That is, they behave like Newtonian fluids for which the concept viscosity is defined and are listed above when the yield stress is zero. When the concentration of the insoluble solids increases the non-Newtonian nature of the slurries becomes evident. However, for engineering purposes the slurries can be fit to a Bingham-type fluid model where over more of the strain range the stress is close to a straight line except that as the strain approaches zero there remains a finite stress, which is referred to as the Yield stress. This is the stress that must be overcome for the slurry to begin to flow; its yield point.

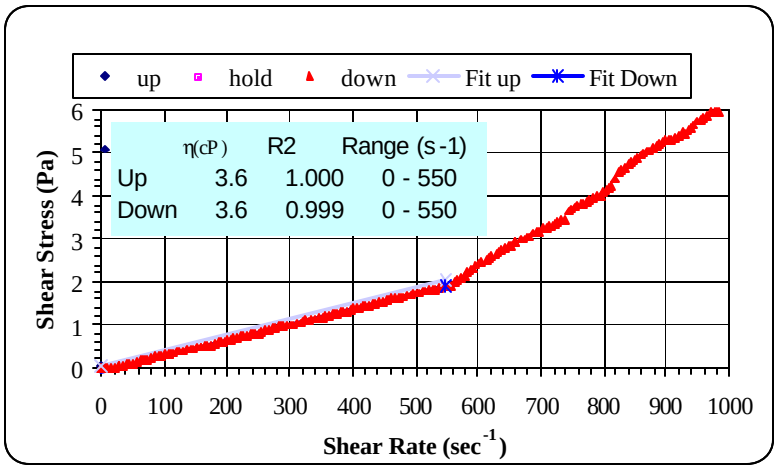
Note on the less viscous slurry solutions: Taylor Vorticies

The straight line for the lowest viscosity simulants is limited by the type of viscometer used. For the simulants with the lowest viscosities, i.e., less than 5 cP, the shear stress versus shear strain curves show a knee somewhere between a shear strain of 550 and 650 sec^{-1}. The data for shear strains above the knee are not used in calculating slurry viscosity because the measurement is being affected by Taylor vorticies. The type of

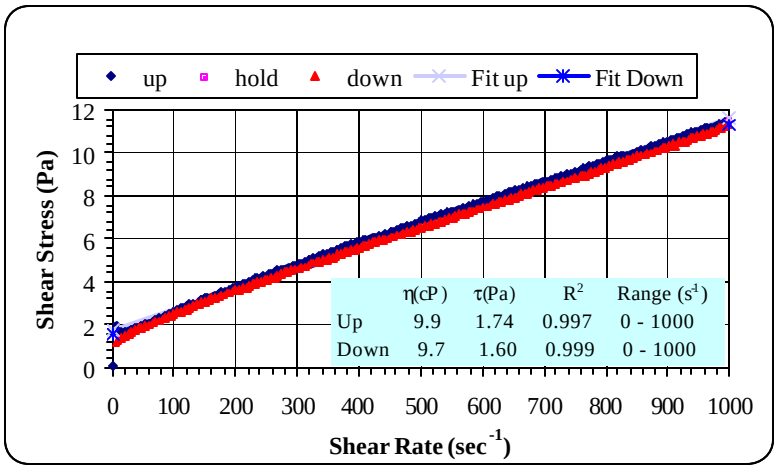
viscometer used for this work utilizes concentric cylinders. The solution to be measured filled the annular gap between two cylinder; the outer cylinder is stationary while the inner one rotates. As the inner cylinder increases with speed it imparts a centrifigul force on the solution through shear and the closer the solution to the cylinder the larger the force. That is, the solution closest to the inner cyclinder feels a larger force to move away from the inner surface than the liquid further away. This secondary flow causes what is called Taylor vorticies and at some point they affect and corrupt the rheological measurement. That point is evidenced by the knee in the data as seen in Figs. G1, G3, G8, and G11. This knee is not seen for the high viscosity solutions because it would occur beyond the shear strains measure for this work. To illustrate the Taylor vorticies see Fig. G11. The shear stress caused by the Taylor vorticies has been calculated and while the stress is below the inherent shear stress of the solution itself the solution viscosity is unaffected. However, when the shear stress of the Taylor vorticies is on the same order of magnitude or large, then the rheometer measures this larger shear field, thus the knee and steeper slope of the data. If the Taylor vorticies were not present the shear stress versus shear stain slope would be unaffected.

Note on choice of data included

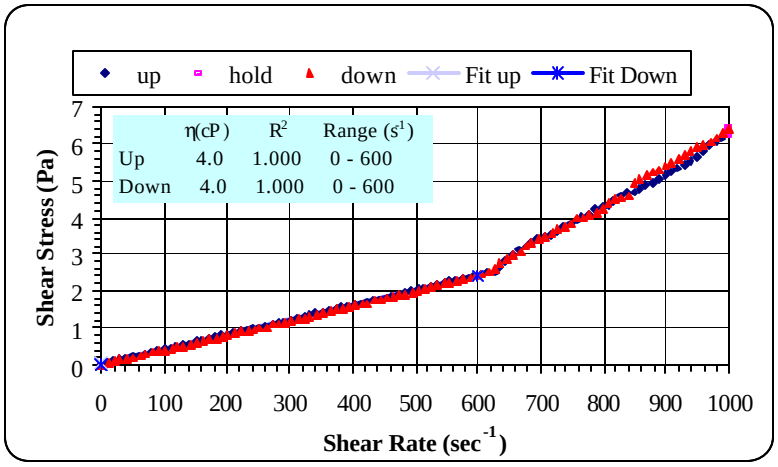
For each slurry the rheological measurements were done at least twice. However, only one graph for each data set is included since the extra data do not add more information. None of the repeated measurements showed significant differences from those shown in this sections.



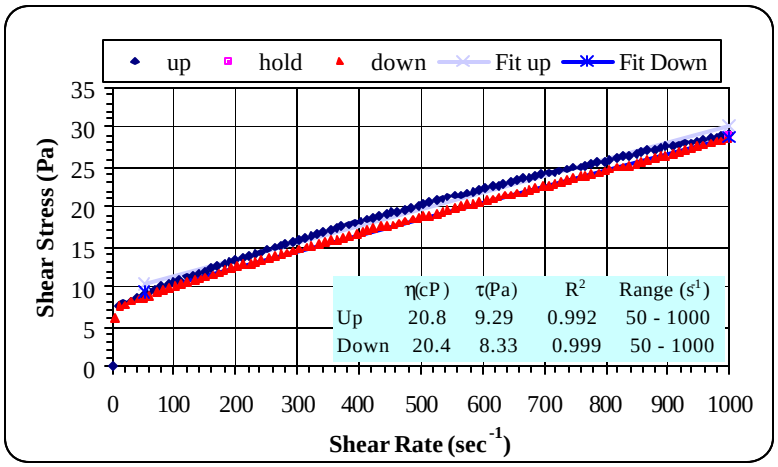
G1. AN-102R2, Batch 3C at 0.8 wt% I.S. at 25°C (Consistency = 3.6 cP; Yield Stress = 0.0 Pa)



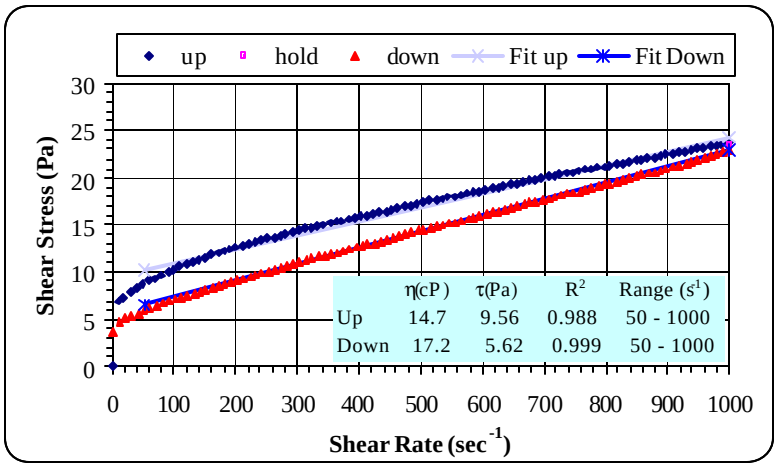
G2. AN-102R2, Batch 3C at 8.4 wt% I.S. at 25°C (Consistency = 9.8 cP; Yield Stress = 1.7 Pa)



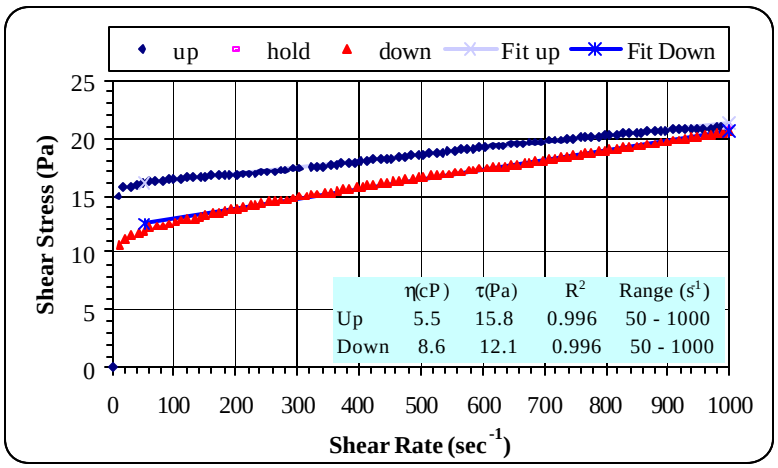
G3. AN-102R2, Batch 3B at 1.2 wt% I.S. at 25°C (Consistency = 4.0 cP; Yield Stress = 0.0 Pa)



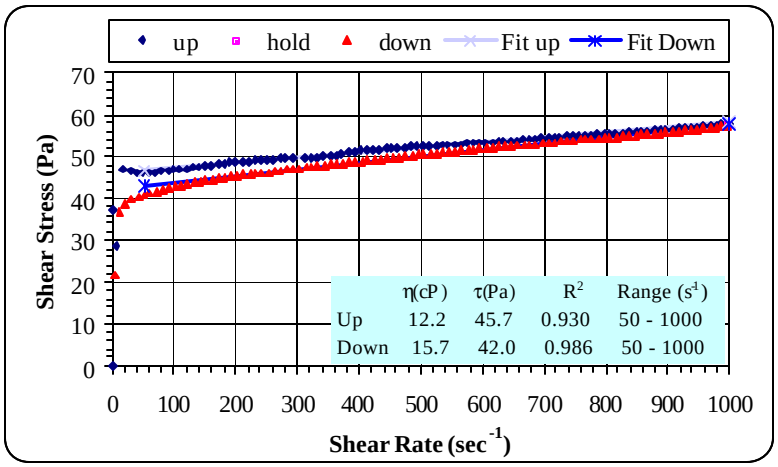
G4. AN-102R2, Batch 3B at 22 wt% I.S. at 25°C (Consistency = 21 cP; Yield Stress = 8.8 Pa)



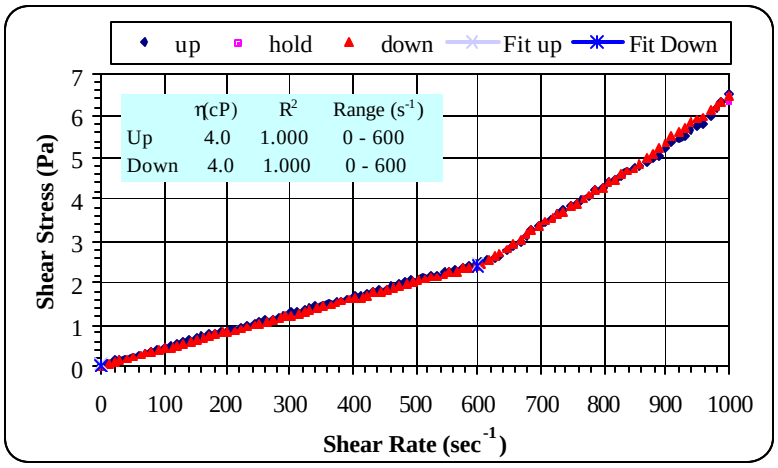
G5. AN-102R2, Batch 3B at 19 wt% I.S. at 25°C (Consistency = 16 cP; Yield Stress = 7.6 Pa)



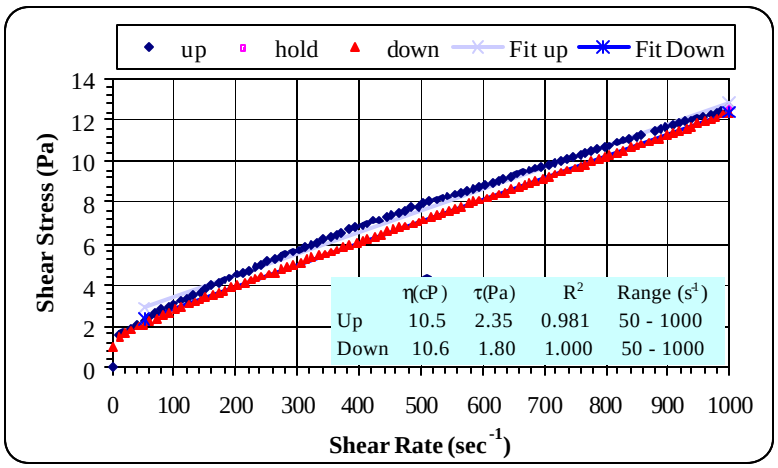
G6. AN-102R2, Batch 3B (washed) at 18 wt% I.S. at 25°C (Consistency = 7.1 cP; Yield Stress = 14 Pa)



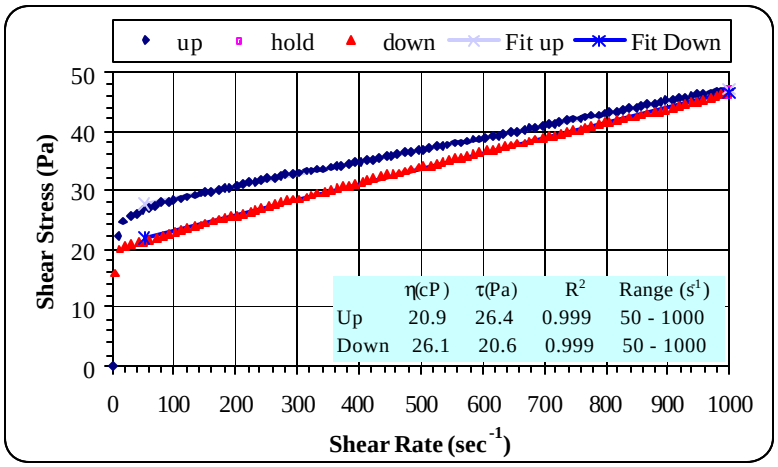
G7. AN-102R2, Batch 3B (washed) at 25 wt% I.S. at 25°C (Consistency = 14 cP; Yield Stress = 44 Pa)



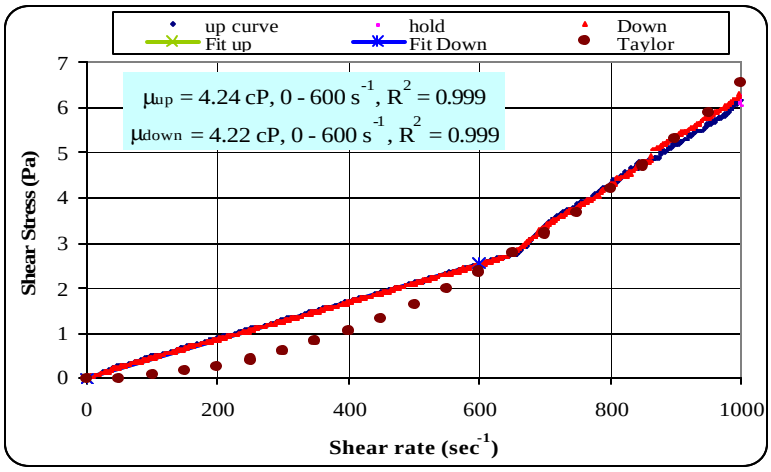
G8. AN-102R2, Batch 3A at 1.6 wt% I.S. at 25°C (Consistency = 4.0 cP; Yield Stress = 0.0 Pa)



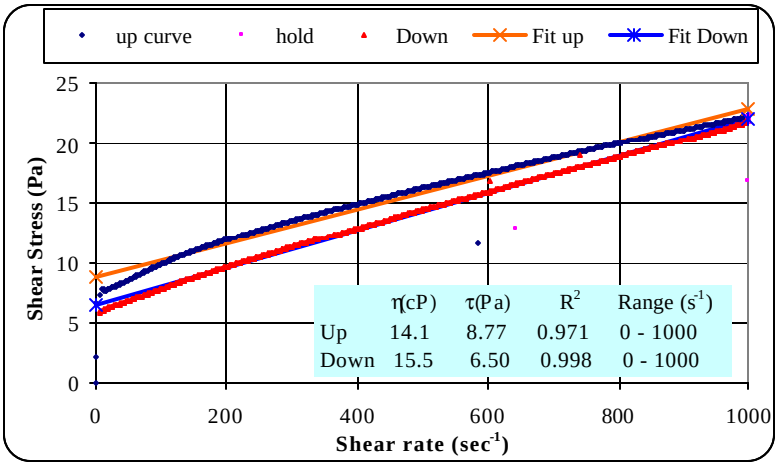
G9. AN-102R2, Batch 3A at 14 wt% I.S. at 25°C (Consistency = 11 cP; Yield Stress = 2.1 Pa)



G10. AN-102R2, Batch 3A at 25 wt% I.S. at 25°C (Consistency = 24 cP; Yield Stress = 24 Pa)



G11. AN-102R2, Batch 4A at 1.5 wt% I.S. at 25°C (Consistency = 4.2 cP; Yield Stress = 0.0 Pa)



G12. AN-102R2, Batch 4A at 18 wt% I.S. at 25°C (Consistency = 15 cP; Yield Stress = 7.6 Pa)

Particle Size Distribution

Samples were taken at the beginning and the end (and at other points) of each pilot-scale cross-flow ultrafiltration test with AN-102 simulant slurry, to measure some rheological properties, like shear stress versus shear rate, viscosity, or if non-Newtonian, consistency. The preceding table lists the viscosity, or consistency and yield shear stress, for each of the samples. This section shows graphical representation of the data used to determine those number.

Those simulant slurry samples at 25°C are:

Fig.G_
13. AN-102R2, Batch 3C at 0.8 wt% insoluble solids: Volume Distribution
14. AN-102R2, Batch 3C at 0.8 wt% insoluble solids: Number Distribution
15. AN-102R2, Batch 3C at 8.4 wt% insoluble solids: Volume Distribution
16. AN-102R2, Batch 3C at 8.4 wt% insoluble solids: Number Distribution
17. AN-102R2, Batch 3B at 1.2 wt% insoluble solids: Volume Distribution
18. AN-102R2, Batch 3B at 1.2 wt% insoluble solids: Number Distribution
19. AN-102R2, Batch 3B at 22 wt% insoluble solids: Volume Distribution
20. AN-102R2, Batch 3B at 22 wt% insoluble solids: Number Distribution
21. AN-102R2, Batch 3B at 19 wt% insoluble solids: Volume Distribution
22. AN-102R2, Batch 3B at 19 wt% insoluble solids: Number Distribution
23. AN-102R2, Batch 3B (post-washed) at 18 wt% insoluble solids: Volume Distribution
24. AN-102R2, Batch 3B (post-washed) at 18 wt% insoluble solids: Number Distribution
25. AN-102R2, Batch 3A at 1.6 wt% insoluble solids: Volume Distribution
26. AN-102R2, Batch 3A at 1.6 wt% insoluble solids: Number Distribution
27. AN-102R2, Batch 3A at 14 wt% insoluble solids: Volume Distribution
28. AN-102R2, Batch 3A at 14 wt% insoluble solids: Number Distribution
29. AN-102R2, Batch 3A at 25 wt% insoluble solids: Volume Distribution
30. AN-102R2, Batch 3A at 25 wt% insoluble solids: Number Distribution
31. AN-102R2, Batch 4A at 1.5 wt% insoluble solids: Volume Distribution
32. AN-102R2, Batch 4A at 1.5 wt% insoluble solids: Number Distribution
33. AN-102R2, Batch 4A at 18 wt% isoluble solids: Volume Distribution
34. AN-102R2, Batch 4A at 18 wt% isoluble solids: Number Distribution

Note on Particle Size Distribution Method
Three of the methods available at the Savannah River Site to evaluate the particle size distribution (PSD) are performed by equipment made by Microtrac. They are:

Mono-laser diffraction analysis:
a. SRA150 standard range, 20 channels: 0.7 to 700 microns
b. SRA150 extended range, 40 channels: 0.2 to 700 microns
Tri-laser diffraction analysis
a. X100 high resolution, 40 channels: 0.04 to 700 microns

Each method has its strong and weak points.

SRA150 standard range
Strong point: No knowledge of particle transparency is needed and gives immediate results.
Weak point: There is not enough resolution to discern between particle sizes and is on the threshold of the minimum particle size of interest.

SRA150 extended range
Strong point: It covers the range of particle size of interest
Weak point: Some knowledge of particle transparency is needed for submicron particles, however, the apparatus will make an educated guess if not known.

X100 high resolution
Strong point: Can measure to very small sizes
Weak point: The accuracy of the results is highly dependent on knowledge of particle transparency and the index of refraction of the fluid. The measurement is very sensitive and much more prone to measurement uncertainty without a detailed knowledge of the slurry's and solids'optical characteristics.

Because particle transparencies and simulants' index of refractions were not known the SRA150 extended range method was chosen. It covered the expected range of particle sizes and gave very consistent results with minimal input. On testing the first slurry, batch 3C, tests were done by choosing all three particle transparencies options, i.e., transparent, absorbtive (opaque), or reflective. For the tests with one slurry sample all three choices gave very similar results and within the significance of measurement the difference were not important. That is, a particle size averages did not vary more that 15% amongst themselves and distribution characteristics remain the same, e.g., a bimodal distribution was obtain independent of the transparency. Table G3 shows ther results of the sample, AN-102R2, Batch 3C, at 0.8 wt% insoluble solids. (Figs. G13 and G14 are the full Microtrac results of the absorptive PSDs.)

Particle Transparency	Reflective	Transparent	Absorptive	Reflective	Transparent	Absorptive
Type Distribution	Volume	Volume	Volume	Number	Number	Number
Distribution Characteristic	Bimodal	Bimodal	Bimodal	Single	Single	Single
Large Average Particle Size	8.5 microns	8.6 microns	8.6 microns	2.3 microns	2.4 microns	2.1 microns
% of Particles in Average	69%	71%	68%	100%	100%	100%
Small Average Particle Size	2.6 microns	2.7 microns	2.6 microns	not applicable	not applicable	not applicable
% of Particles in Average	31%	29%	32%	not applicable	not applicable	not applicable
Particle Range (microns)	1.6 to 74	1.6 to 74	1.0 to 74	1.6 to 22	1.6 to 22	1.0 to 22

Table G3. Comparing particle transparency results using Microtrac SRA150 extended range with a simulant sample from AN-102R2, Batch 3C (No. 300188111)

All the following PSD analyses were done with an absorptive particle transparency because that method seemed to indicate slightly smaller particle than the other methods.

Minimum size for SRA150 extended range
The stated range for this method, as given above, is 0.2 to 700 micron. However, as seen in the following Microtrac data sheets is appears that the lower setting was set at

0.688 micron for an unknown reason. While the smaller size was intended, a scan of the data show that for all but a few of the samples measured the PSD data tails smoothly taper off for the smallest particles, which implies that most, if not all, particle sizes were measured. However, there are a few exceptions like for the sample of Batch 3B at its highest concentration of 22 wt%, i.e., Figs 19 and 20. In most cases, the 0.688 micron cutoff was sufficient.

Note on Sample Preparation to preform a Microtrac Evaluation

Besides the methods to choose in evaluating sample it is also important to prepare the sample properly to obtain accurate results.

Diluent

The slurry sample is suspended in a large volume (~0.3 liter) of dilute. The standard diluent is distilled water but due to the neutral pH and the solubility of solids in water the slurry sample were suspended in it respective filtrate. Filtrate was usually optically transparent and free of solids was used.

Sonication

In the past the insoluble solids in slurry samples that sat while waiting for process tended to clump and give falsely large particle measurements. To minimize this each sample was mildly agitated with sonic waves to break up such clumps. For this task the samples were sonicated four times at 15 seconds each at a power setting of 30 watts. All samples received the same treatment.

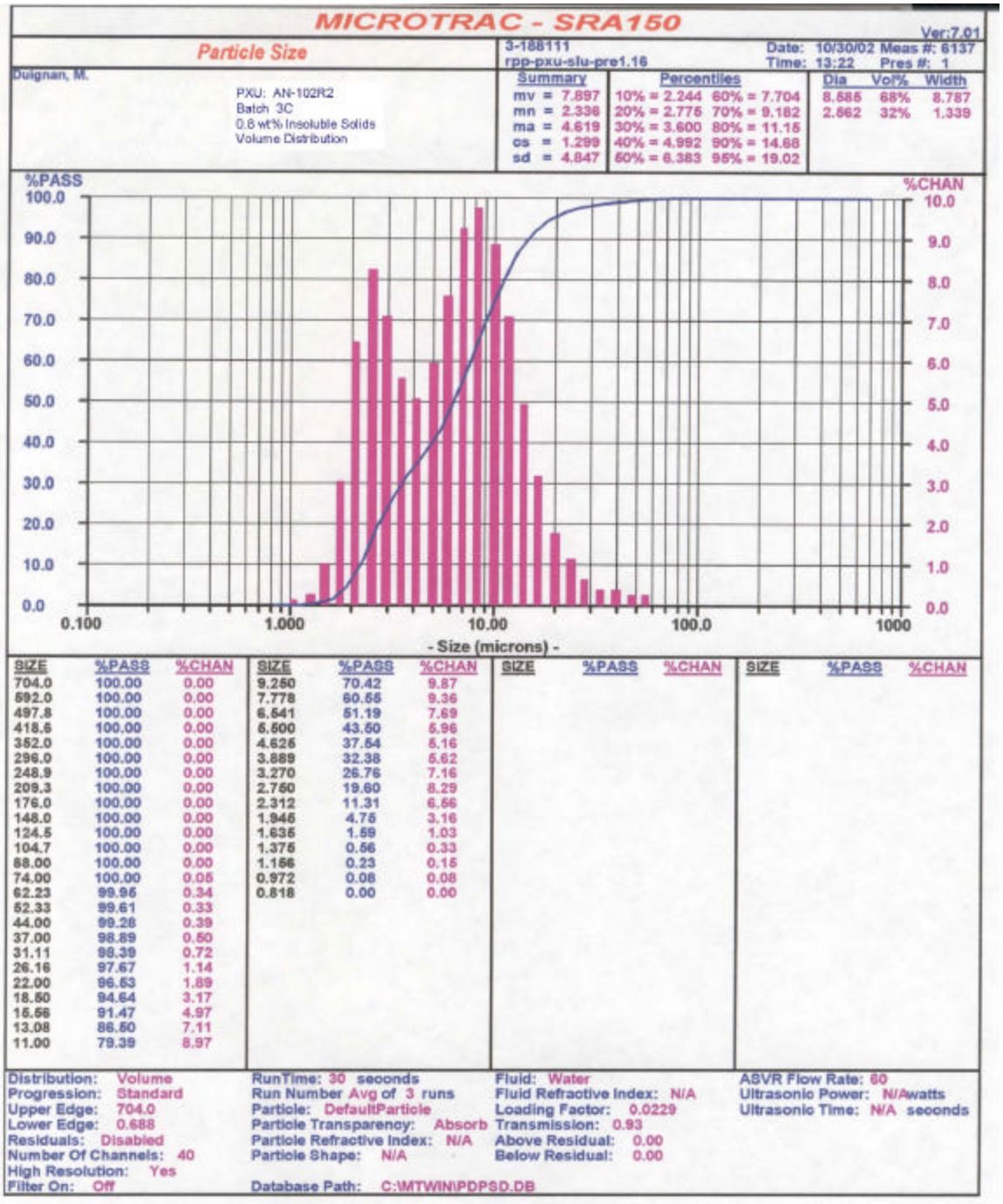


Figure G13. At start of Batch 3C dewatering: 0.8 wt% Insoluble Solids (VOLUME Distribution)

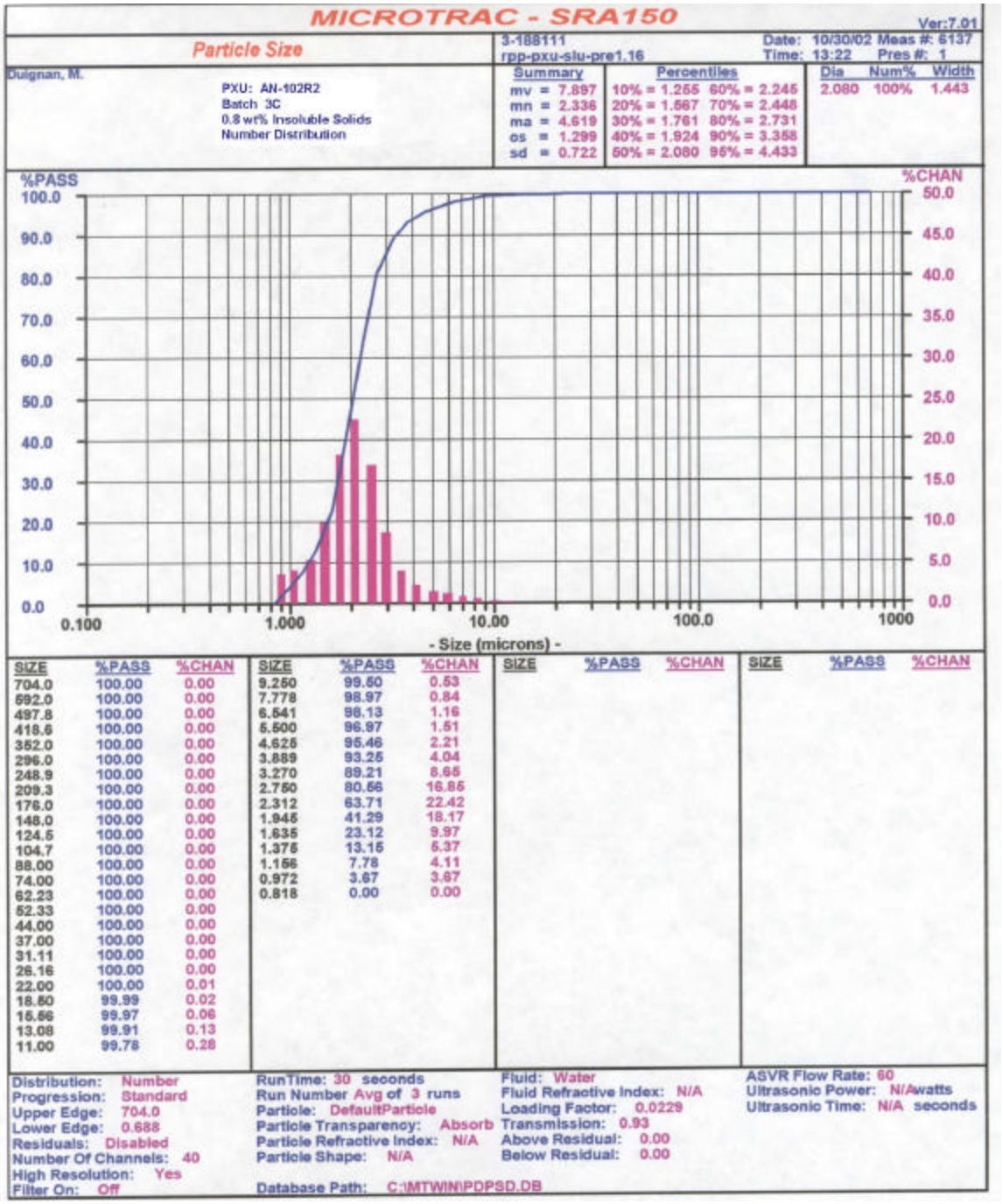


Figure G14. At start of Batch 3C dewatering: 0.8 wt% Insoluble Solids (NUMBER Distribution)

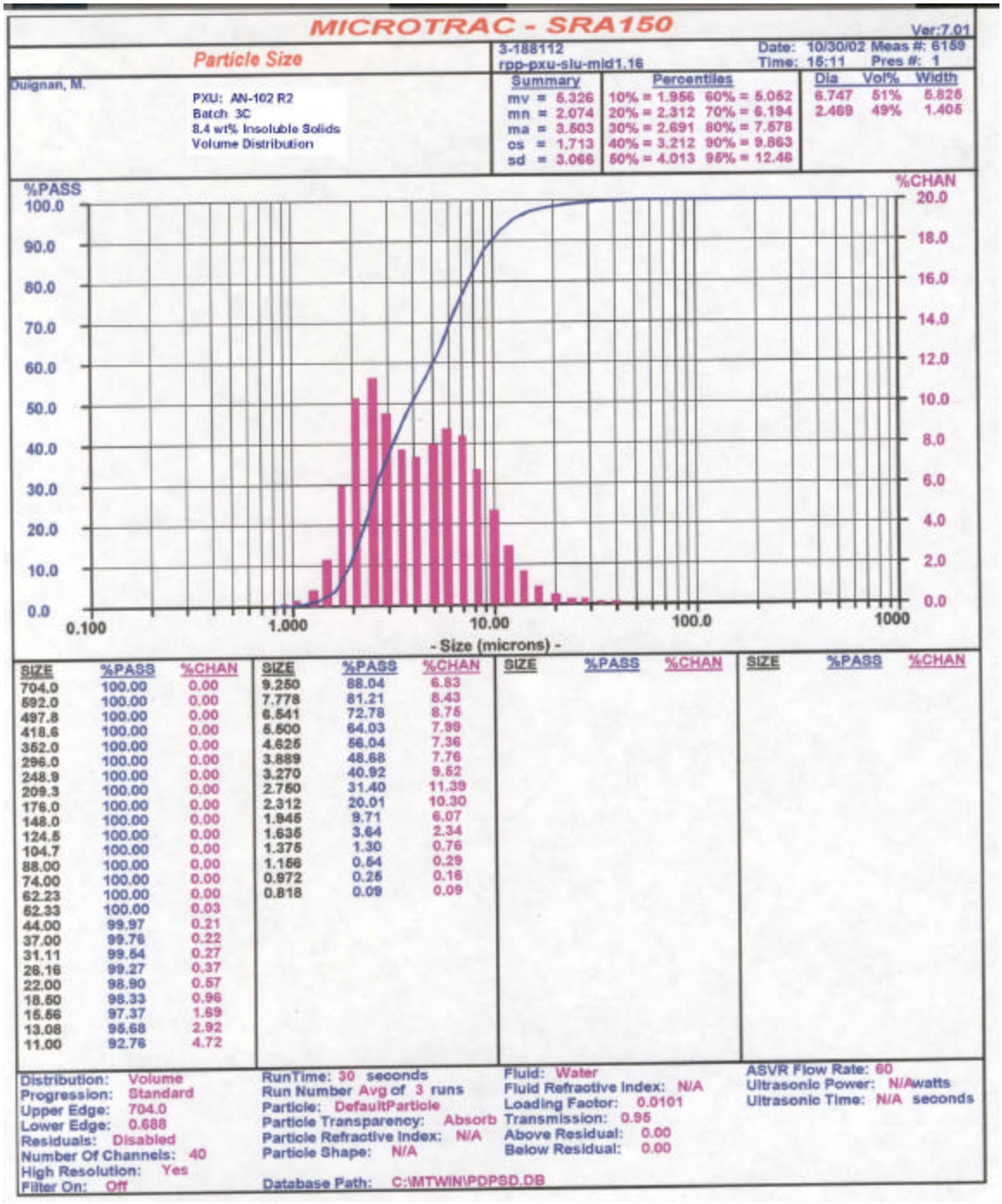


Figure G15. After 45 hours of Batch 3C dewatering: 8.4 wt% Insoluble Solids (VOLUME Distribution)

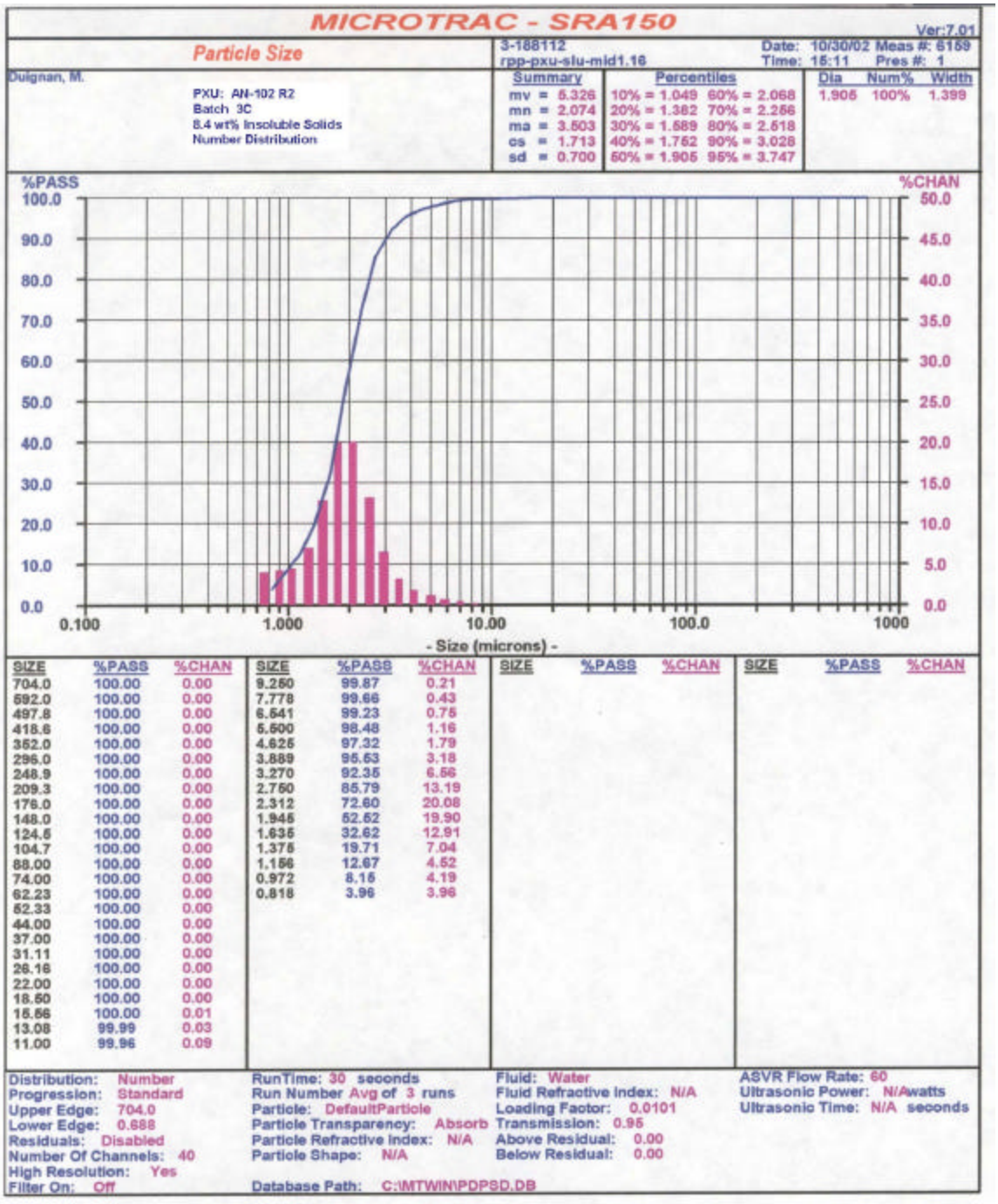


Figure G16. After 45 hours of Batch 3C dewatering: 8.4 wt% Insoluble Solids (NUMBER Distribution)

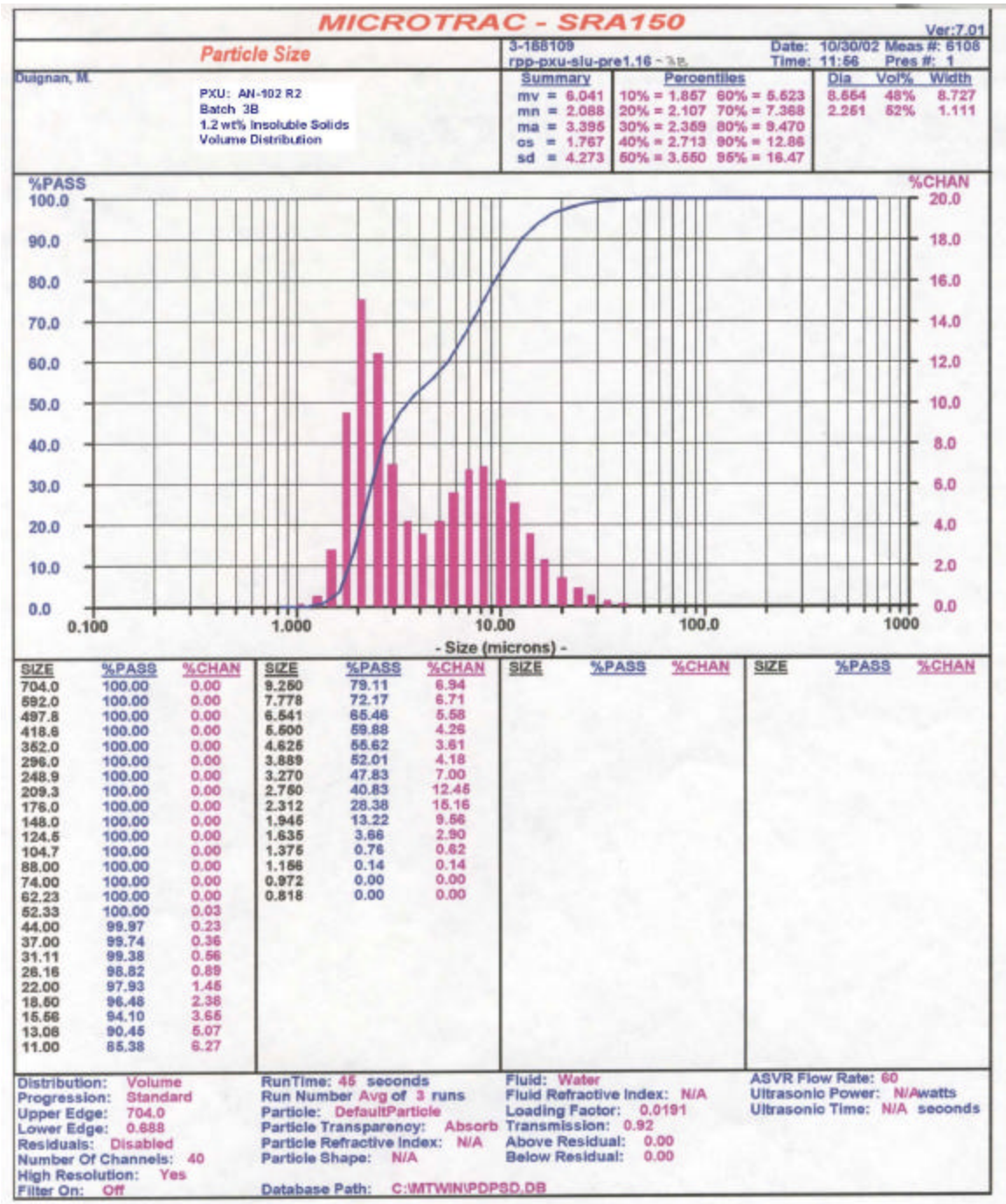


Figure G17. At start of Batch 3B dewatering: 1.2 wt% Insoluble Solids (VOLUME Distribution)

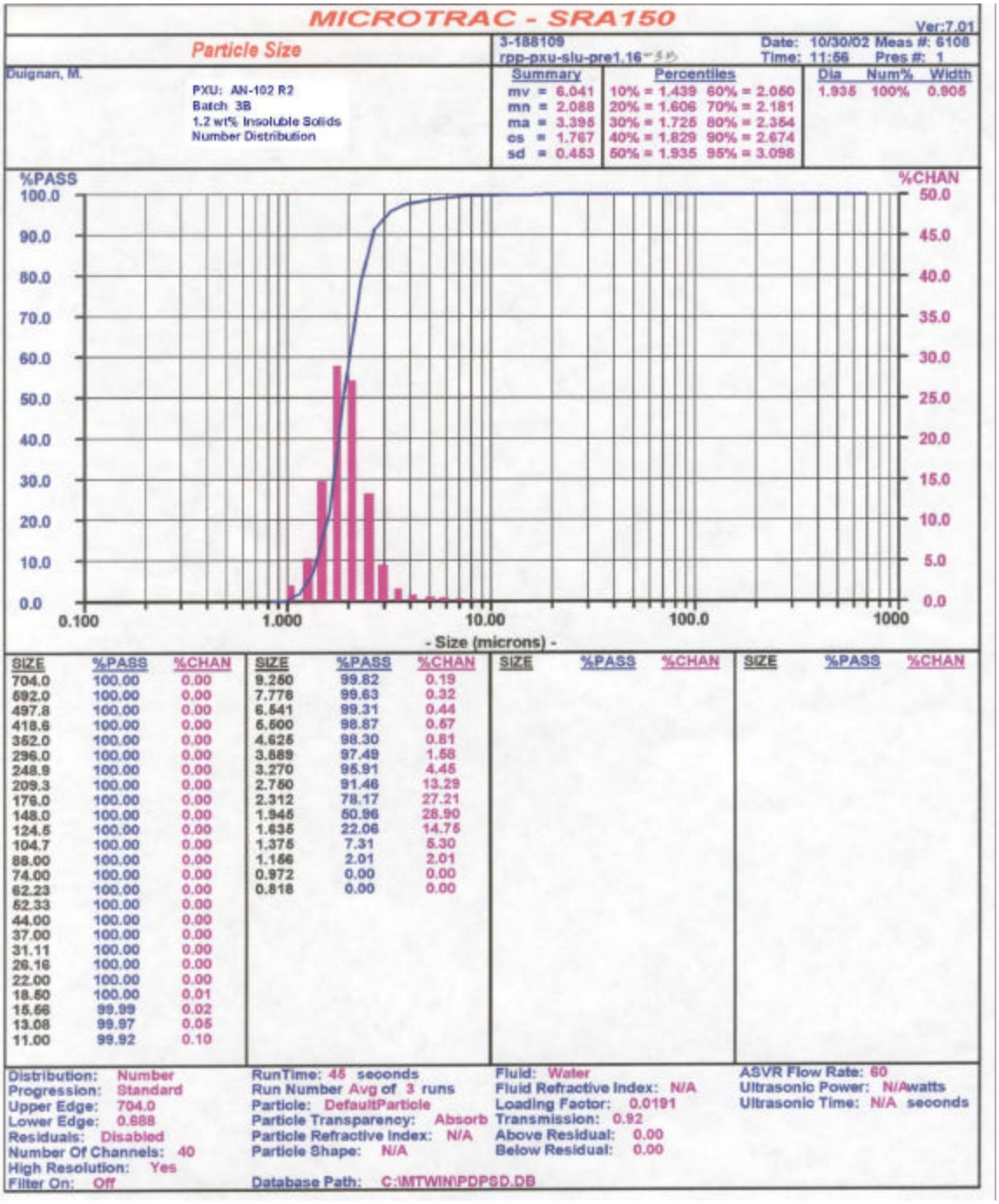


Figure G18. At start of Batch 3B dewatering: 1.2 wt% Insoluble Solids (NUMBER Distribution)

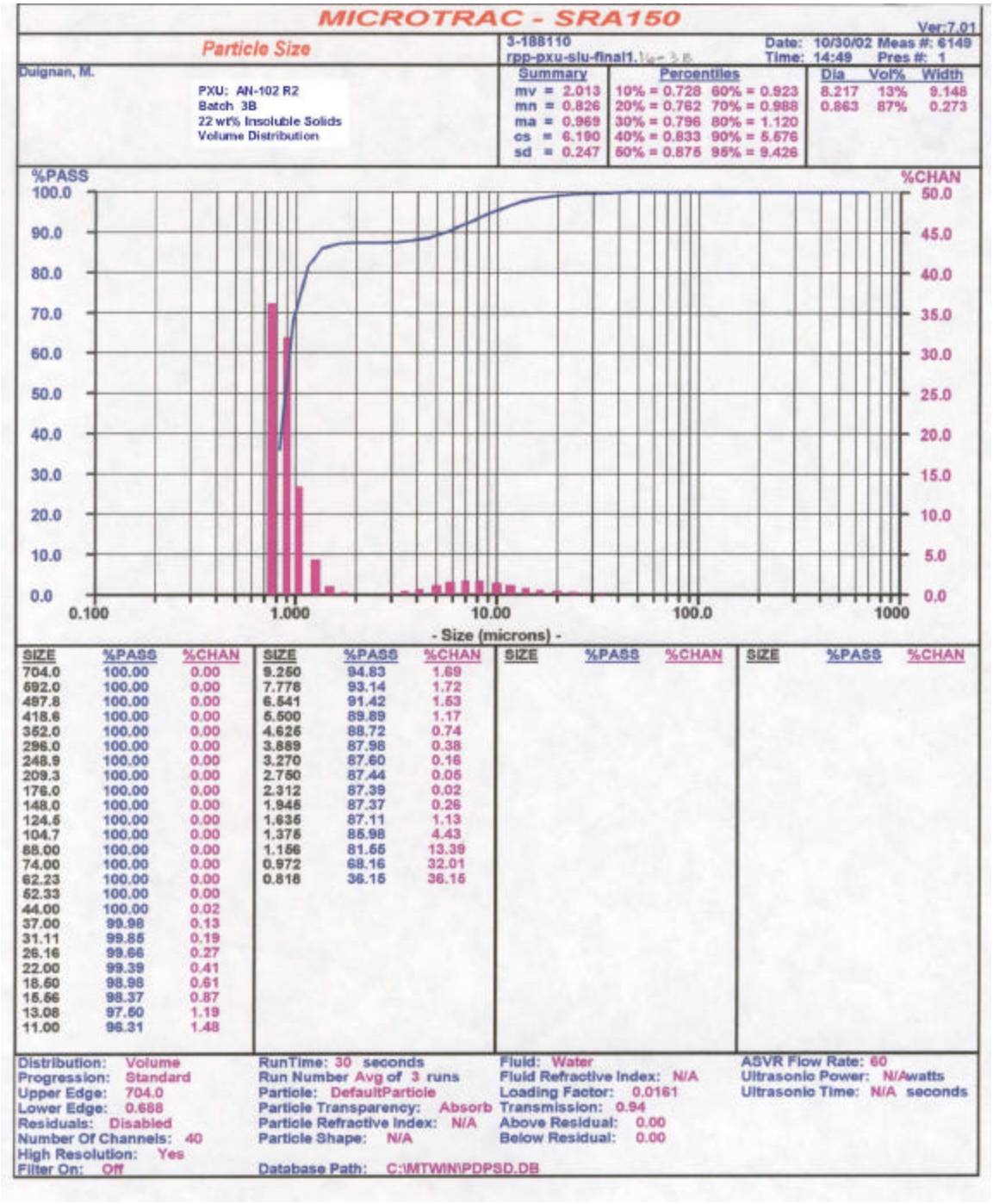


Figure G19. After 12 hours of Batch 3B dewatering: 22 wt% Insoluble Solids (VOLUME Distribution)

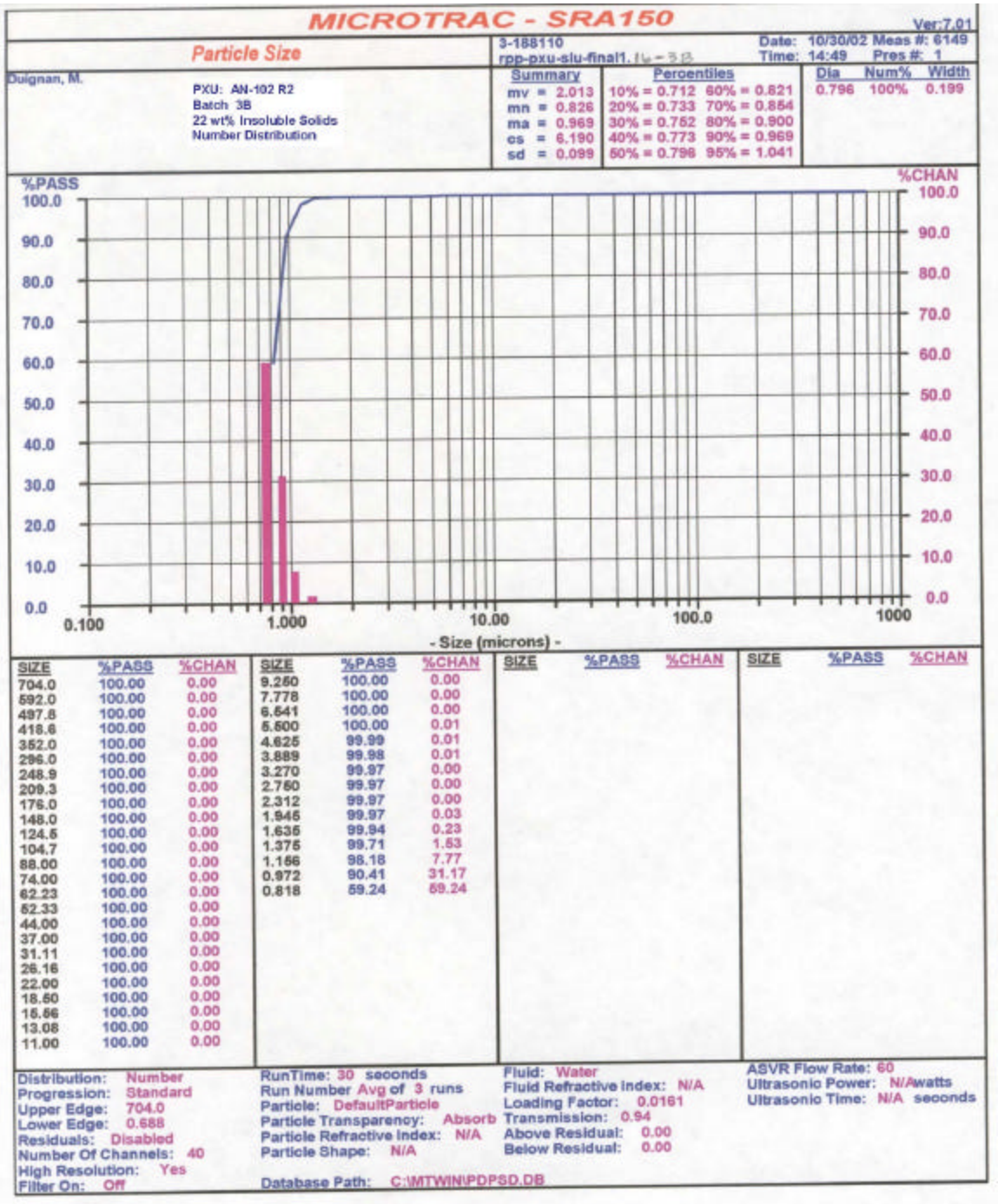


Figure G20. After 12 hours of Batch 3B dewatering: 22 wt% Insoluble Solids (NUMBER Distribution)

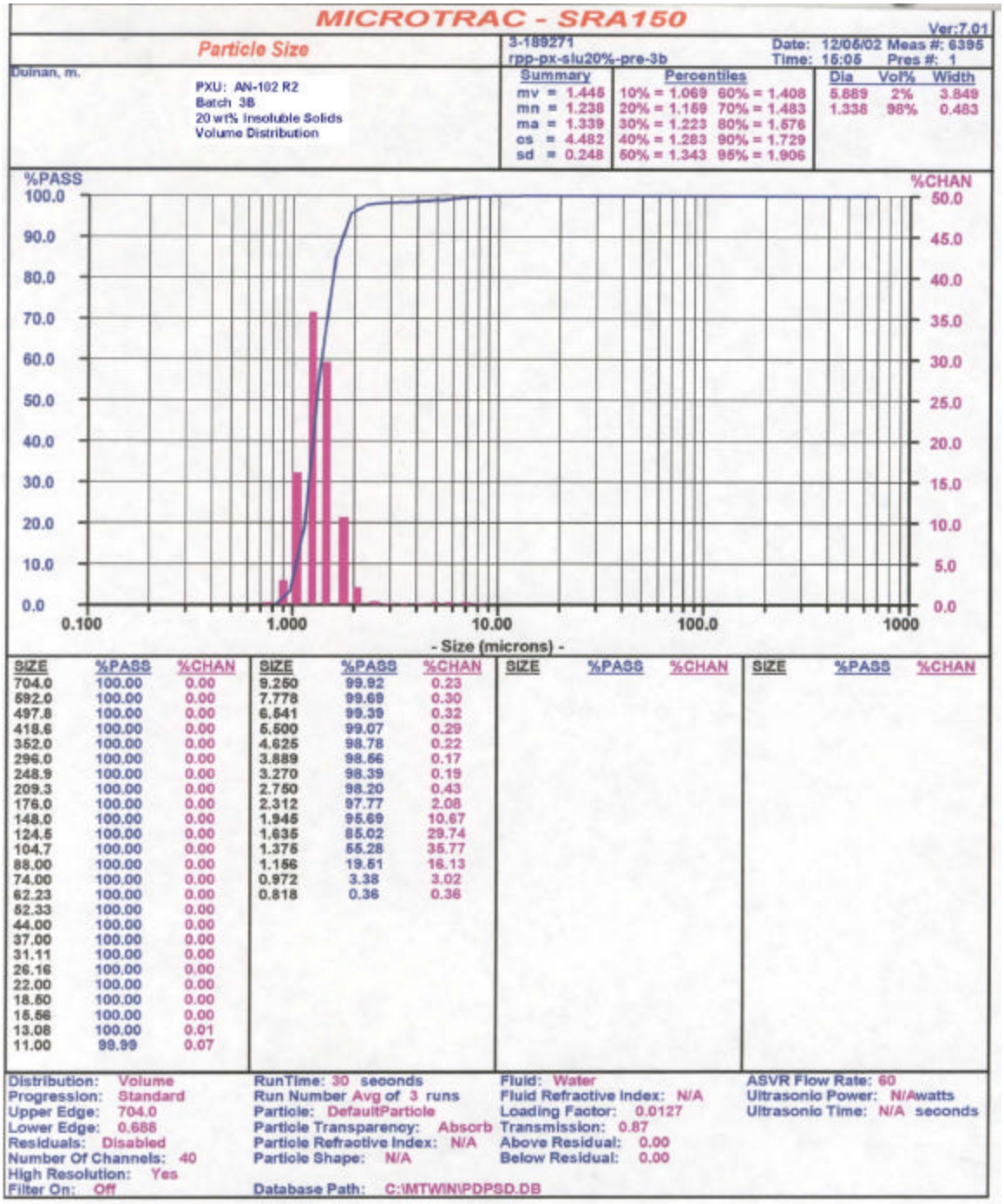


Figure G21. After 12 hours of Batch 3B dewatering: 19 wt% Insoluble Solids (VOLUME Distribution) – Diluted with filtrate to prepare for washing

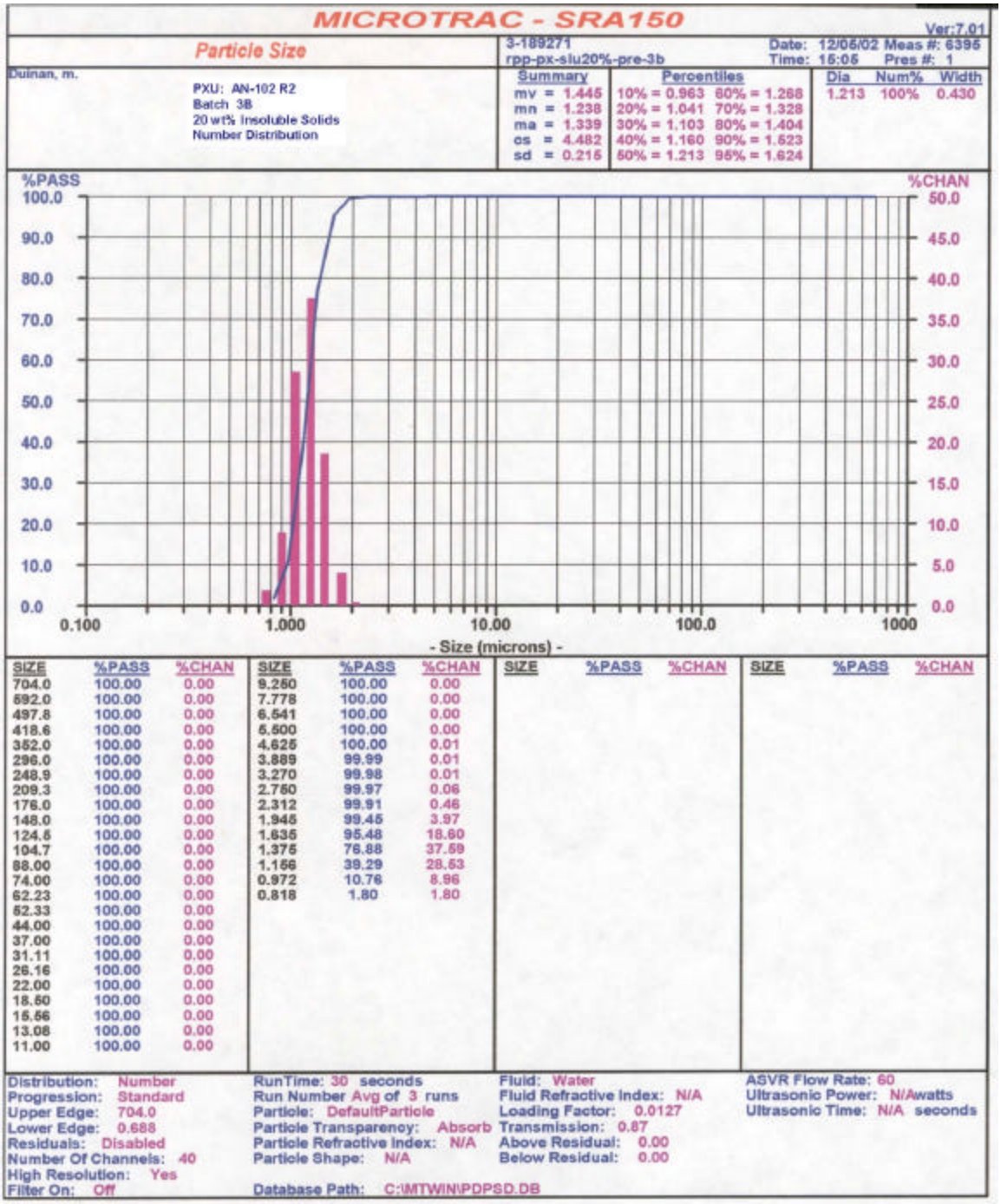


Figure G22. After 12 hours of Batch 3B dewatering: 19 wt% Insoluble Solids (NUMBER Distribution) – Diluted with filtrate to prepare for washing

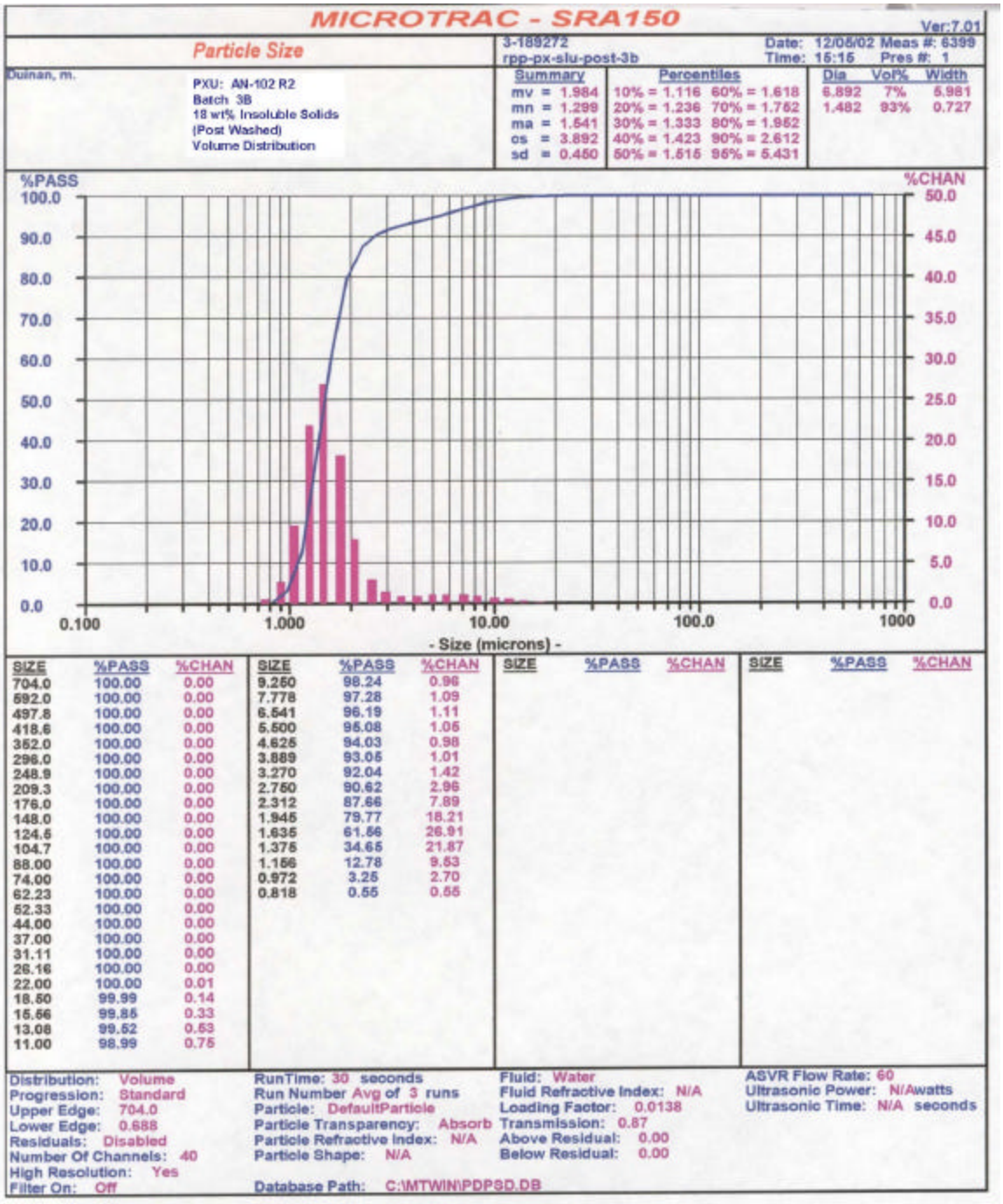


Figure G23. After washing of Batch 3B: 18 wt% Insoluble Solids
(VOLUME Distribution)

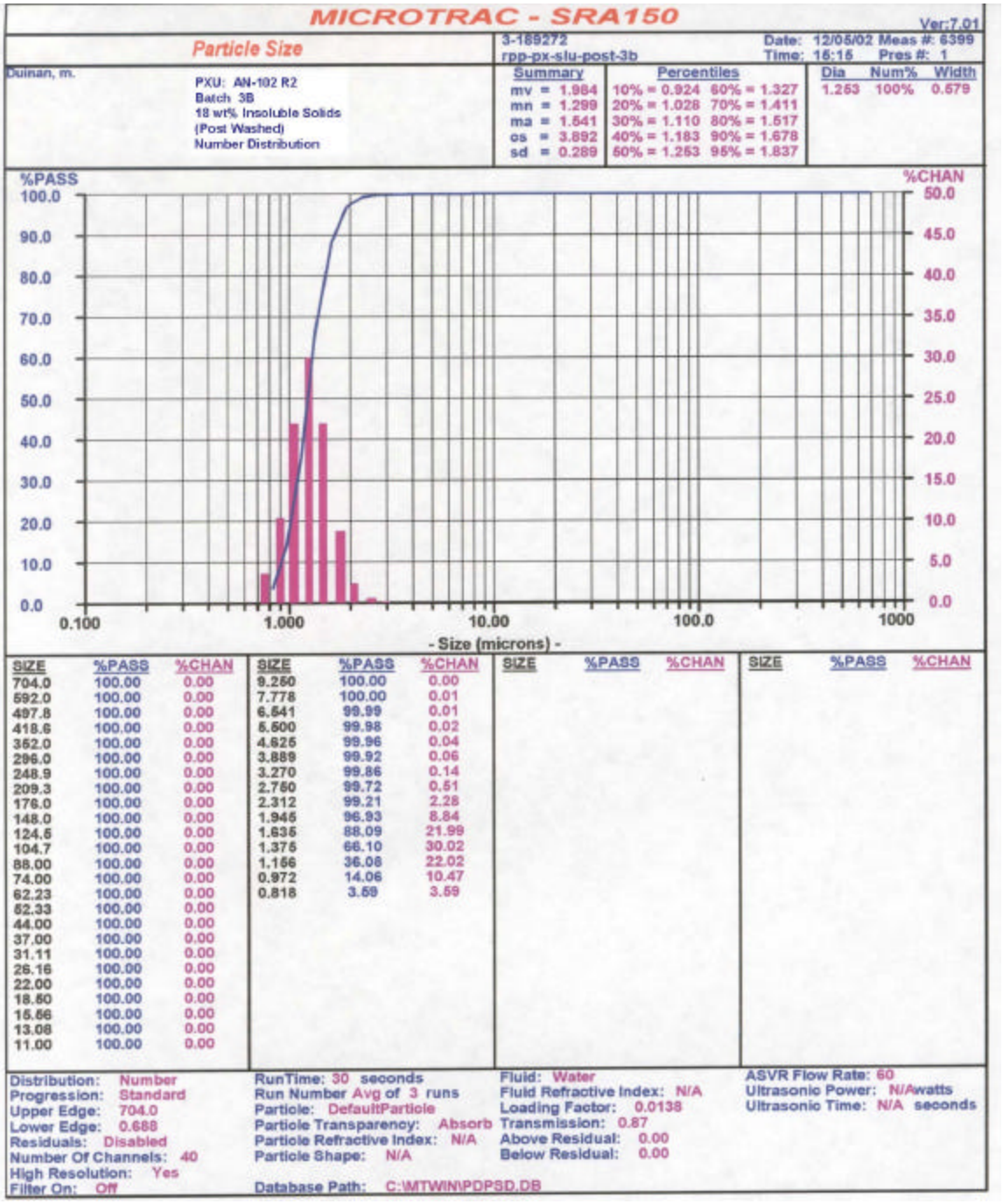


Figure G24. After washing of Batch 3B: 18 wt% Insoluble Solids
(NUMBER Distribution)

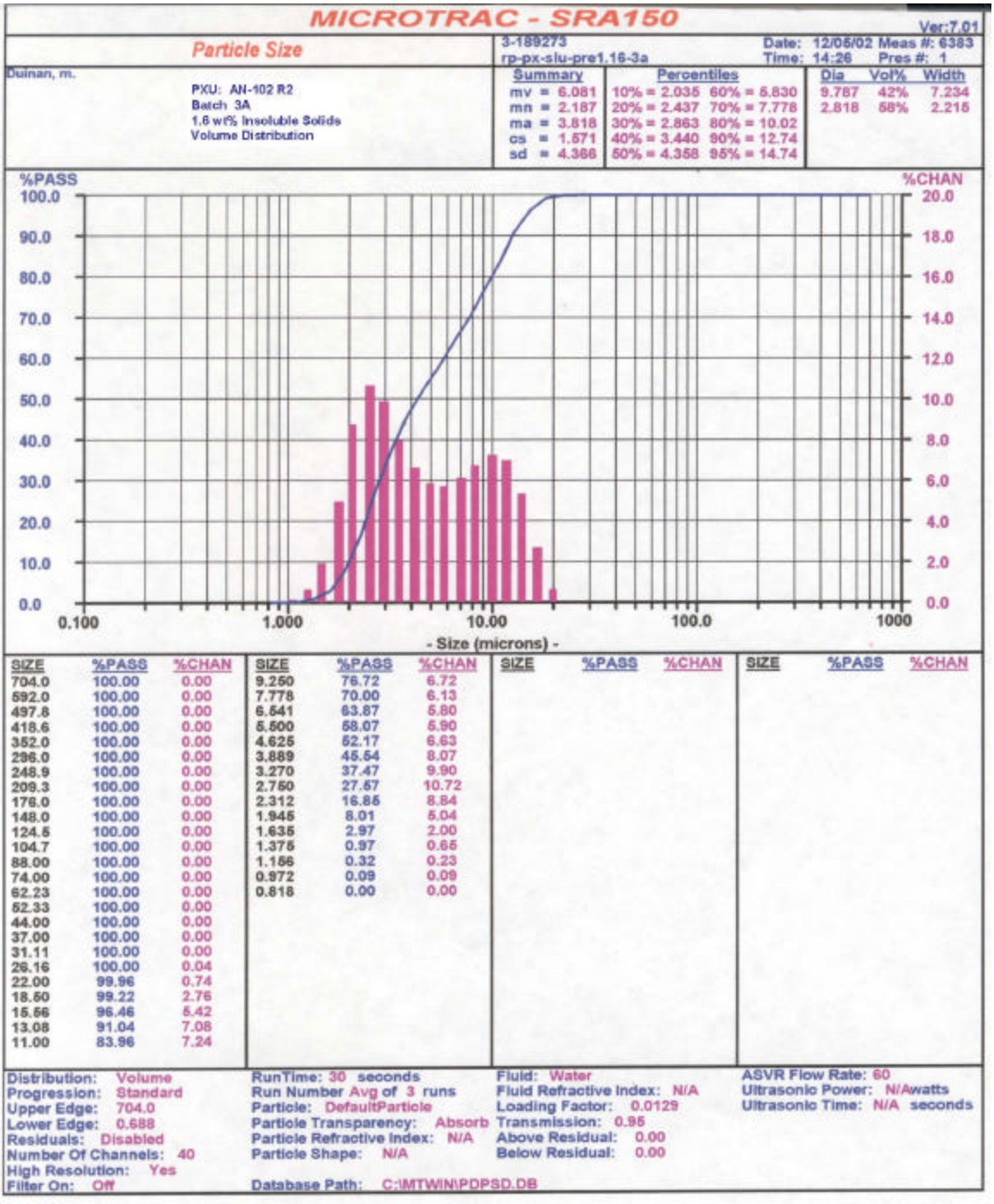


Figure G25. At start of Batch 3A dewatering: 1.6 wt% Insoluble Solids (VOLUME Distribution)

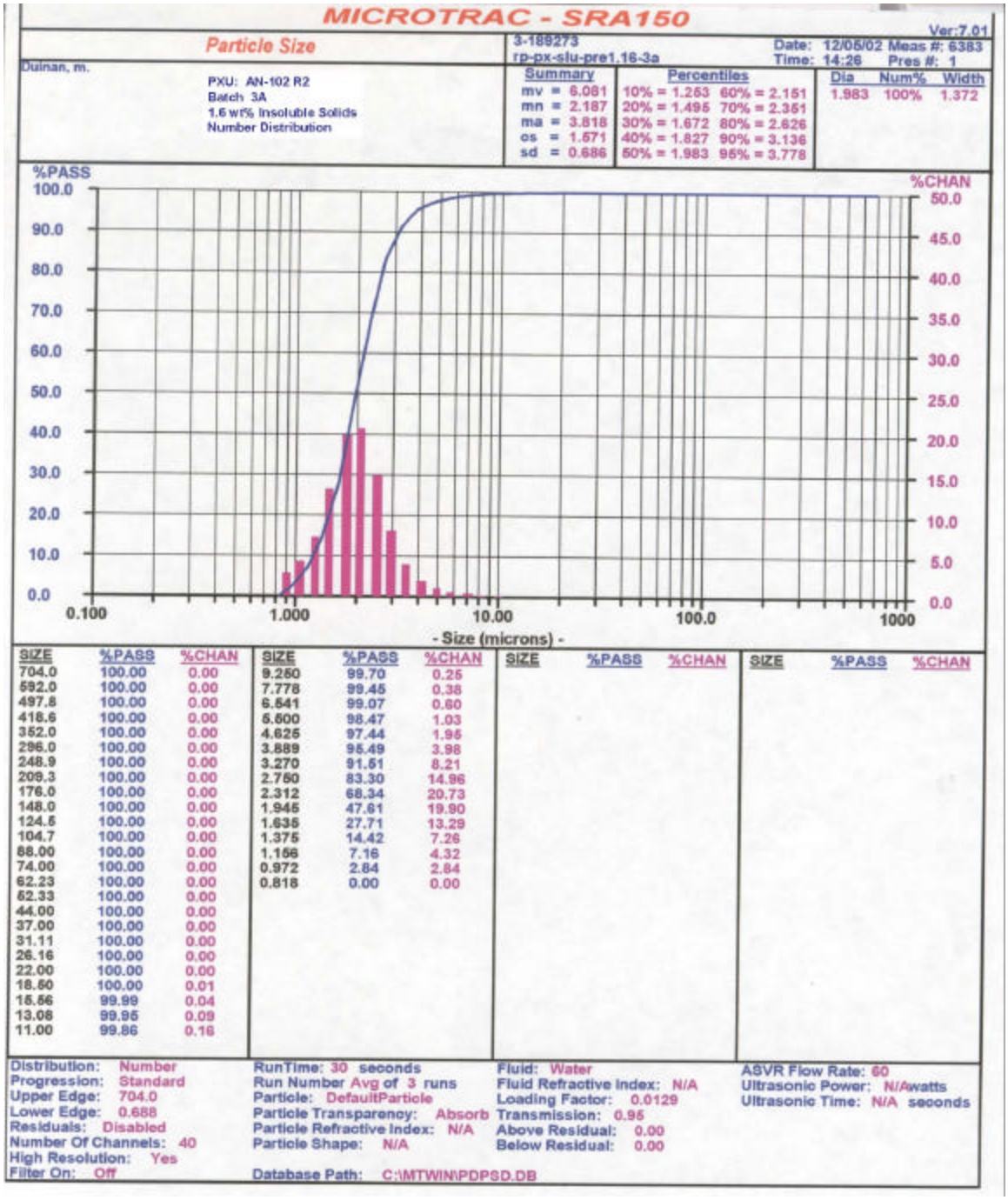


Figure G26. At start of Batch 3A: 1.6 wt% Insoluble Solids
(NUMBER Distribution)

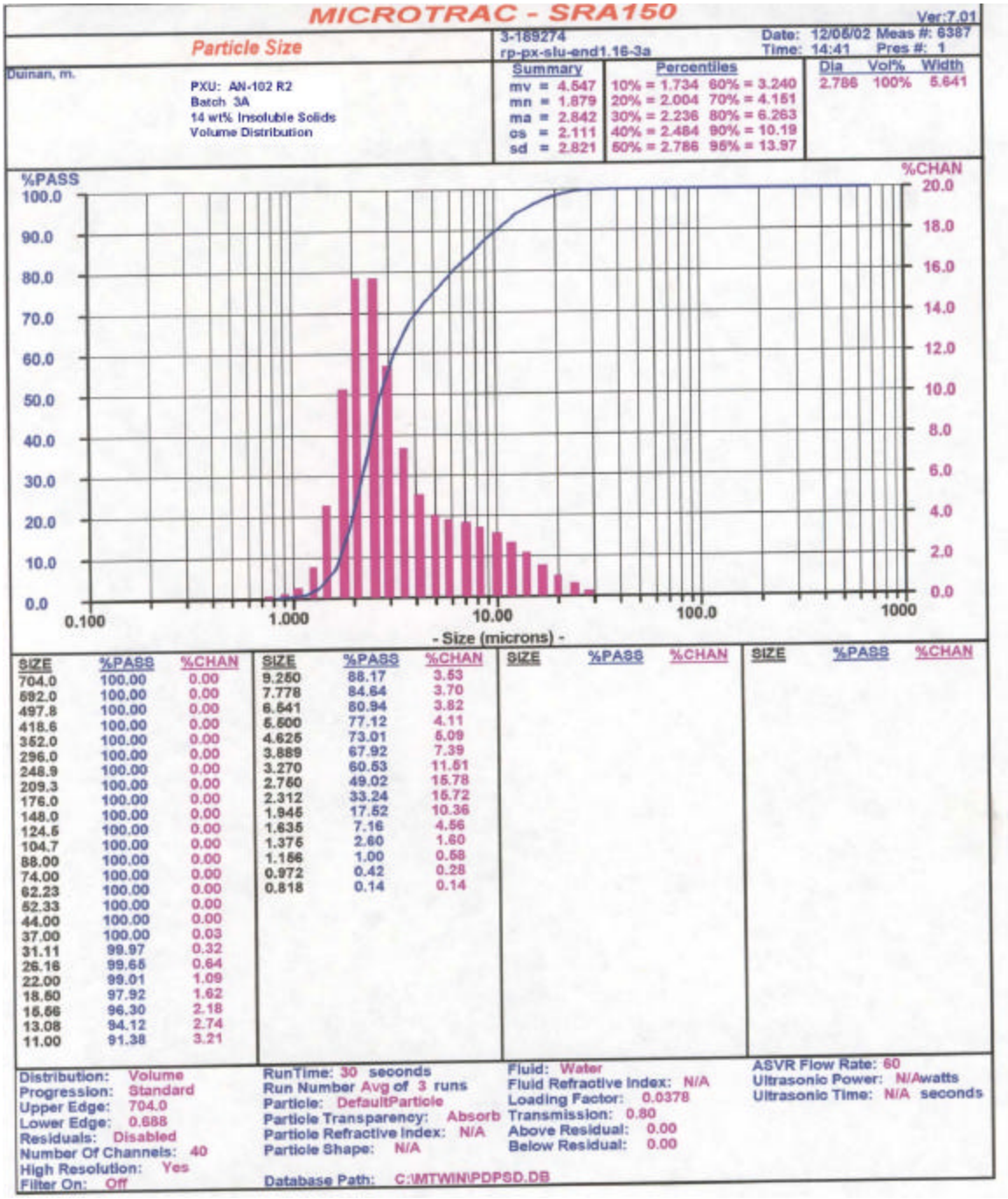


Figure G27. After 26 hours of Batch 3A dewatering: 14 wt% Insoluble Solids (VOLUME Distribution)

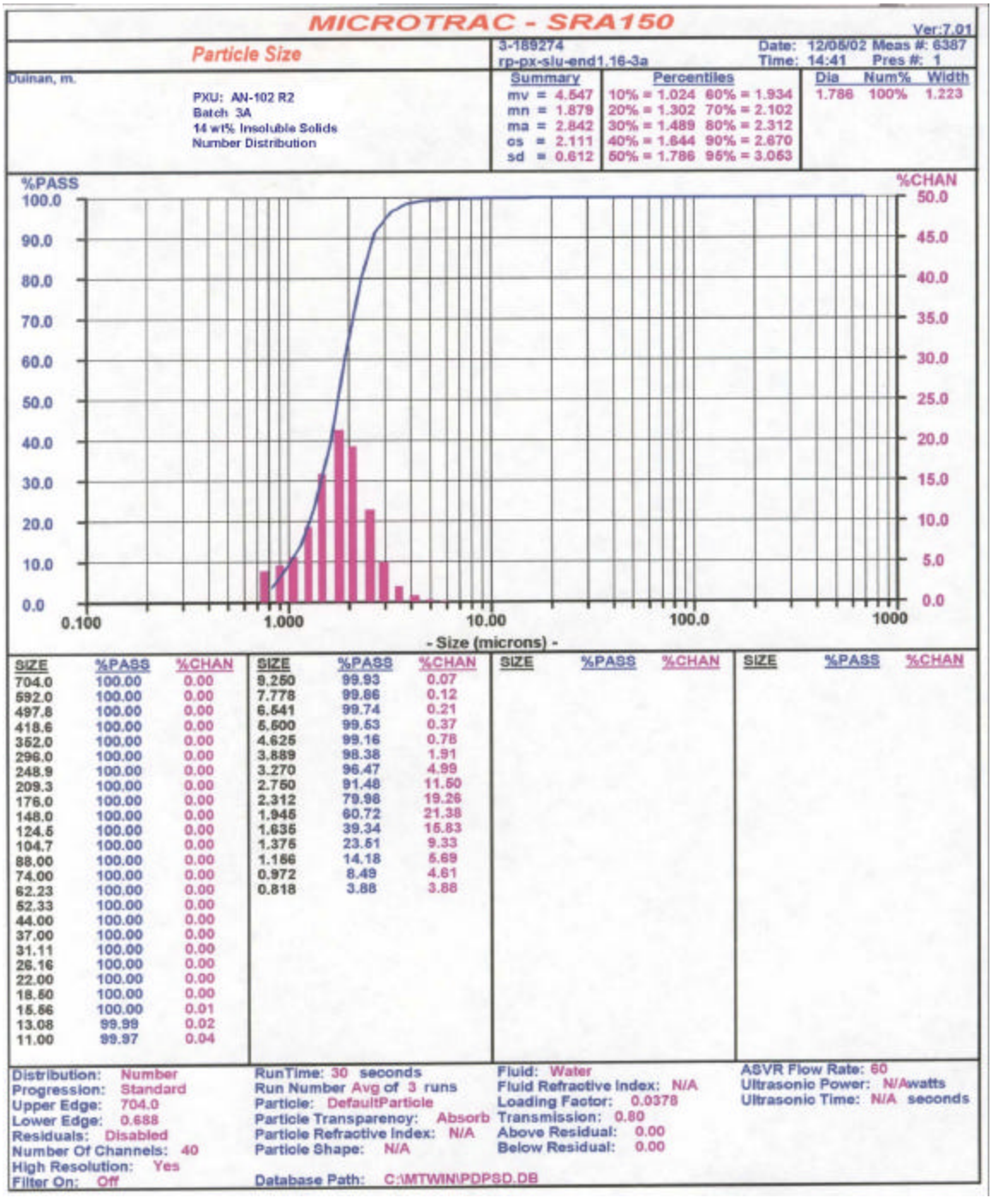


Figure G28. After 26 hours of Batch 3A: 14 wt% Insoluble Solids (NUMBER Distribution)

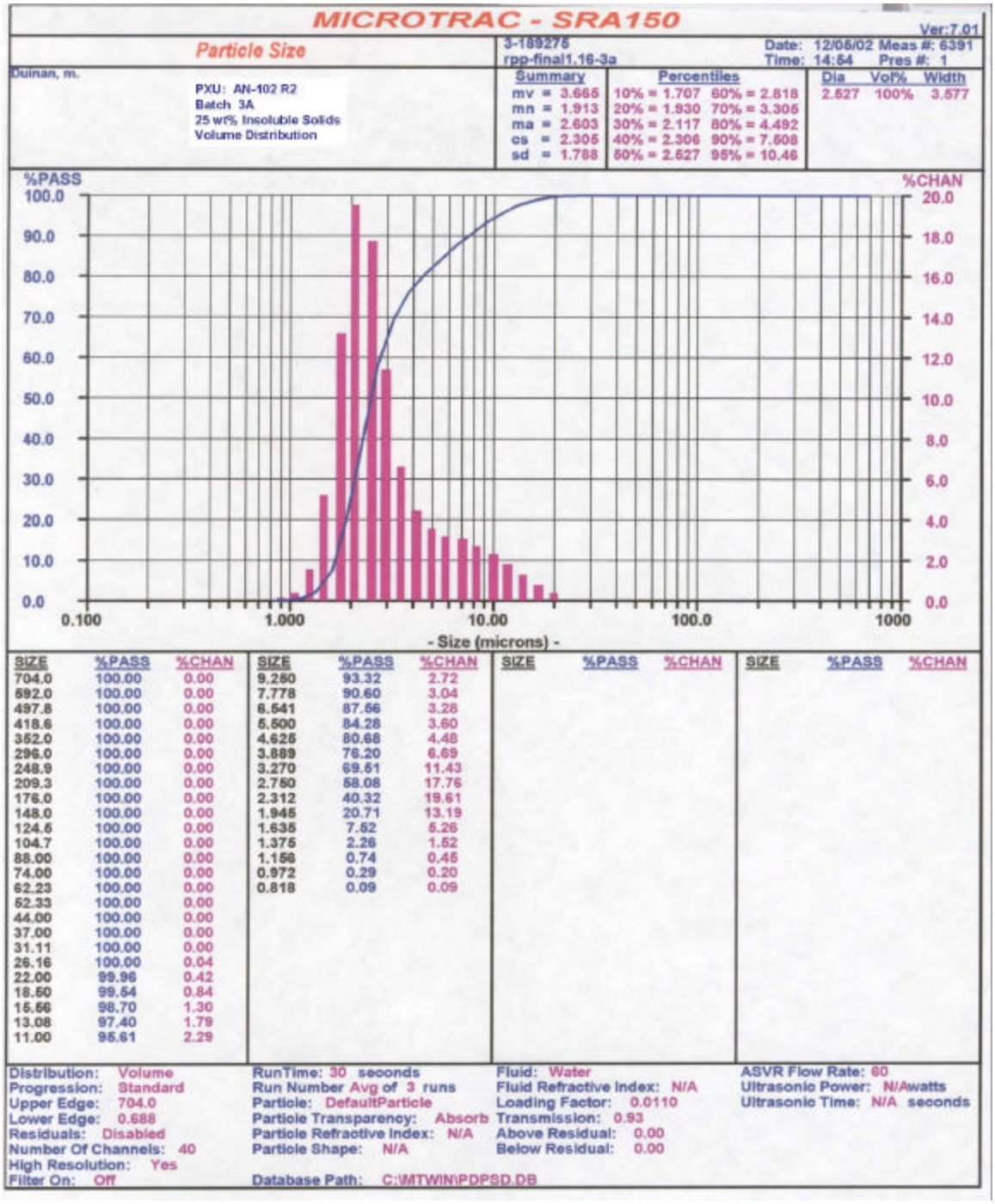


Figure G29. After 29 hours of Batch 3A dewatering: 25 wt% Insoluble Solids (VOLUME Distribution)

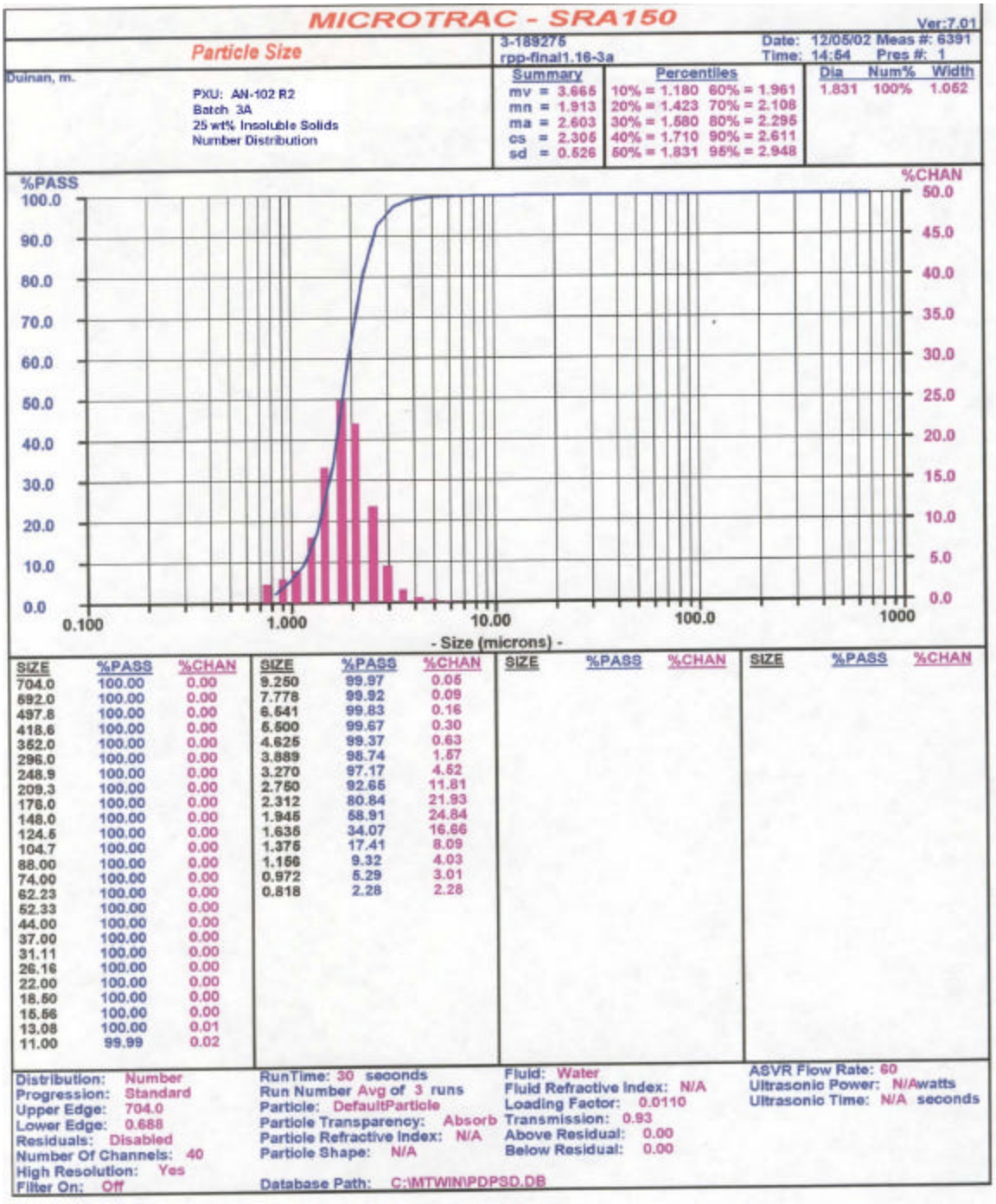


Figure G30. After 29 hours of Batch 3A: 25 wt% Insoluble Solids (NUMBER Distribution)

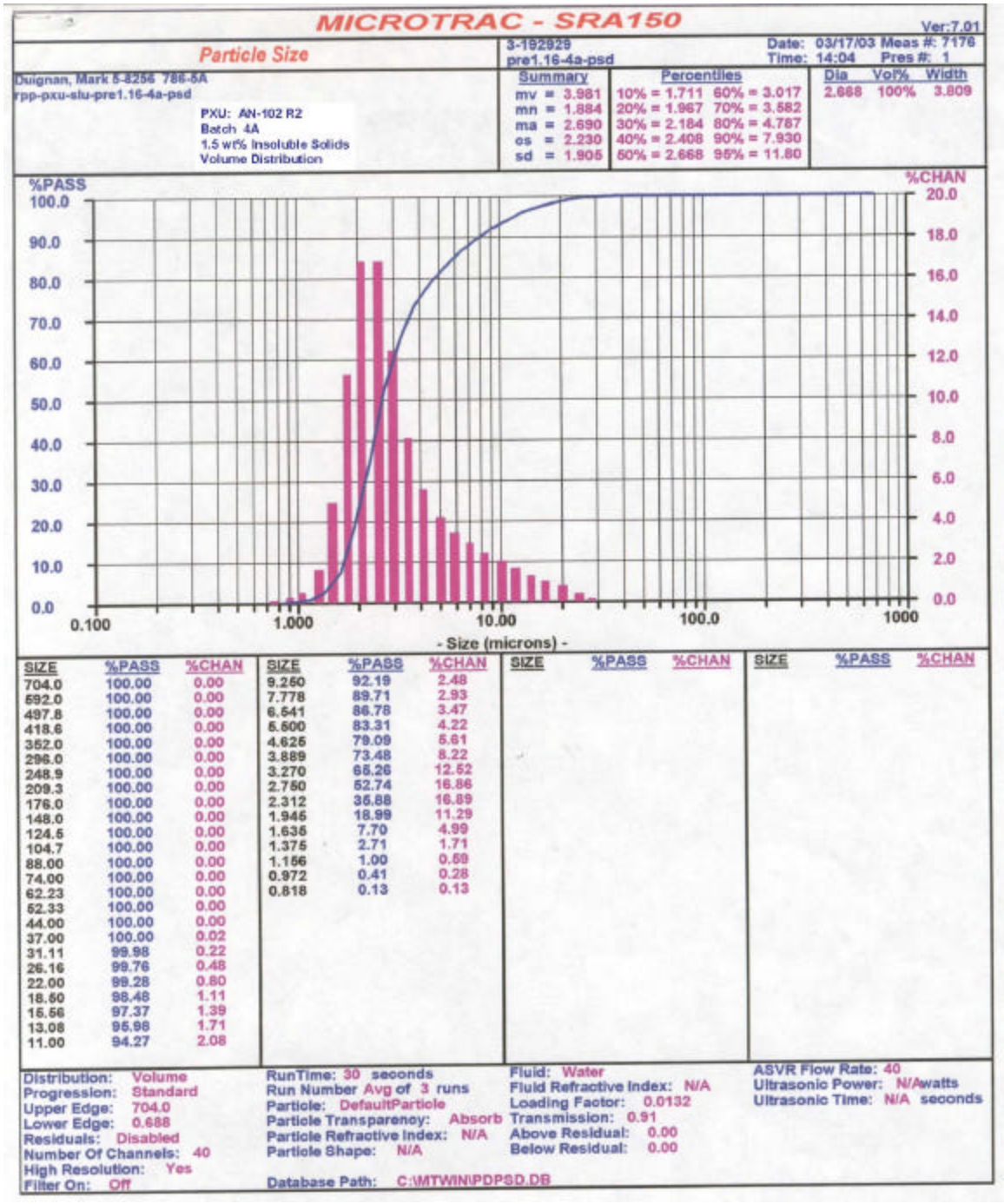


Figure G31. At start of Batch 4A dewatering: 1.5 wt% Insoluble Solids (VOLUME Distribution)

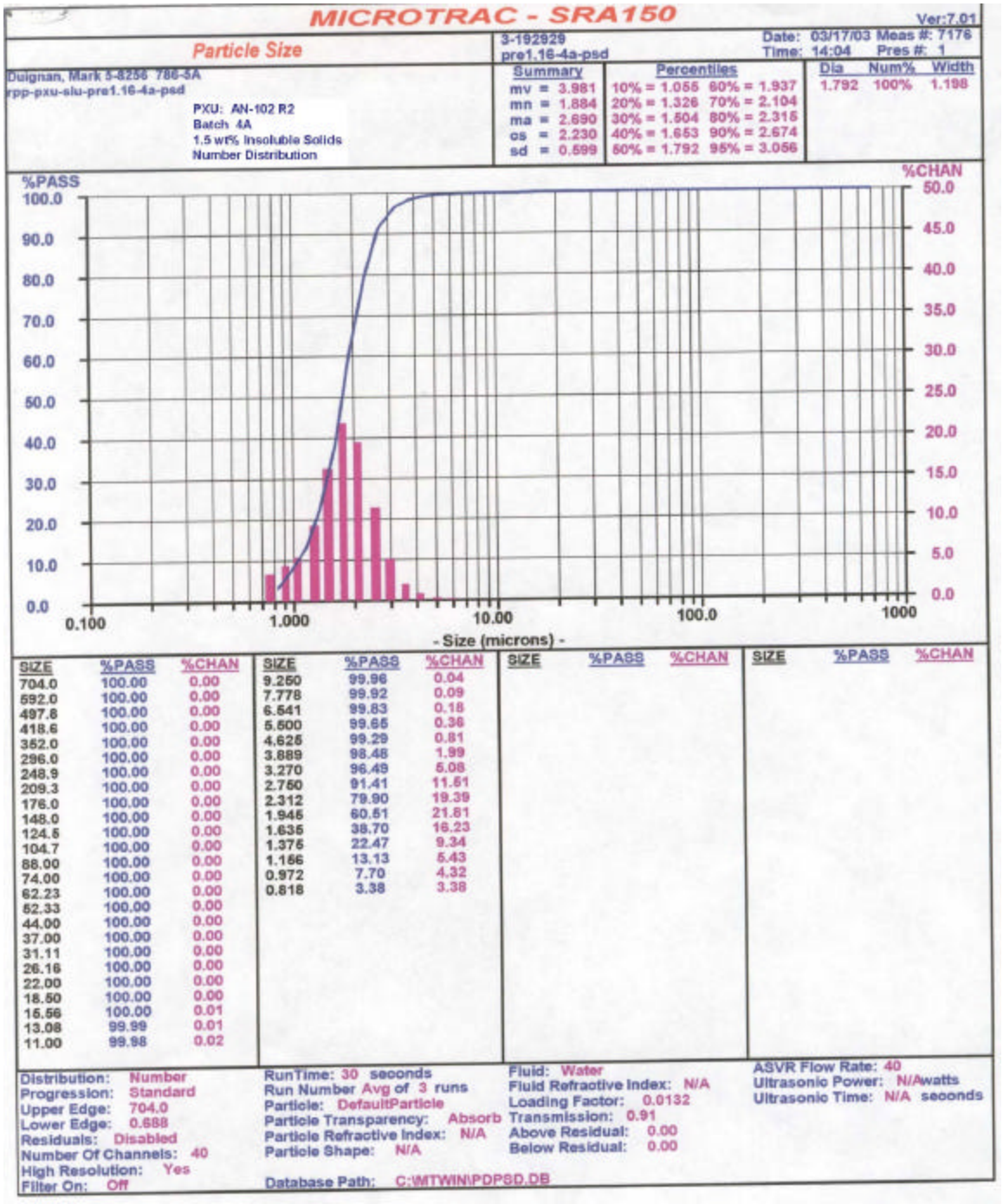


Figure G32. At start of Batch 4A: 1.5 wt% Insoluble Solids
(NUMBER Distribution)

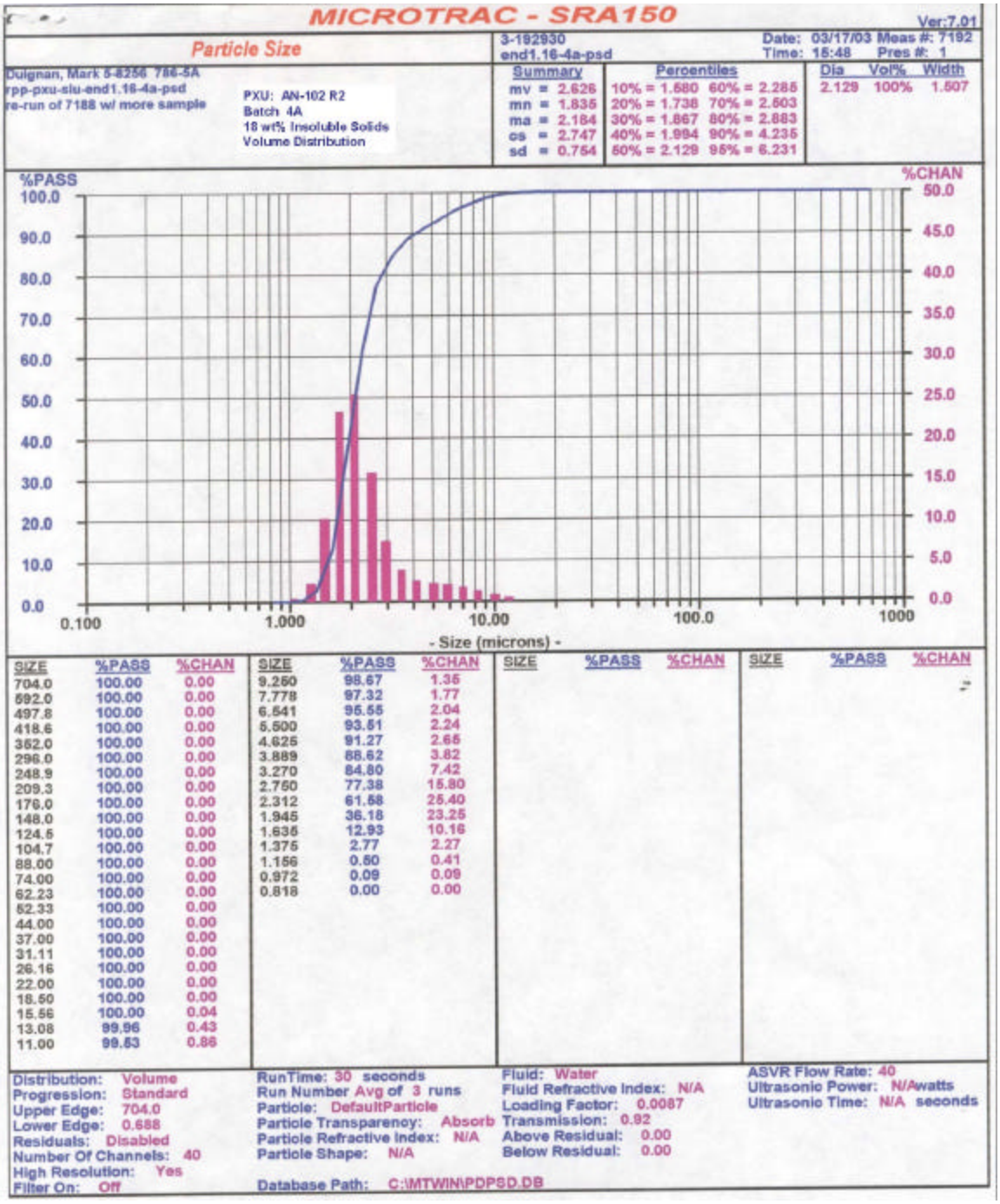


Figure G33. After 20 hours of Batch 4A dewatering: 18 wt% Insoluble Solids (VOLUME Distribution)

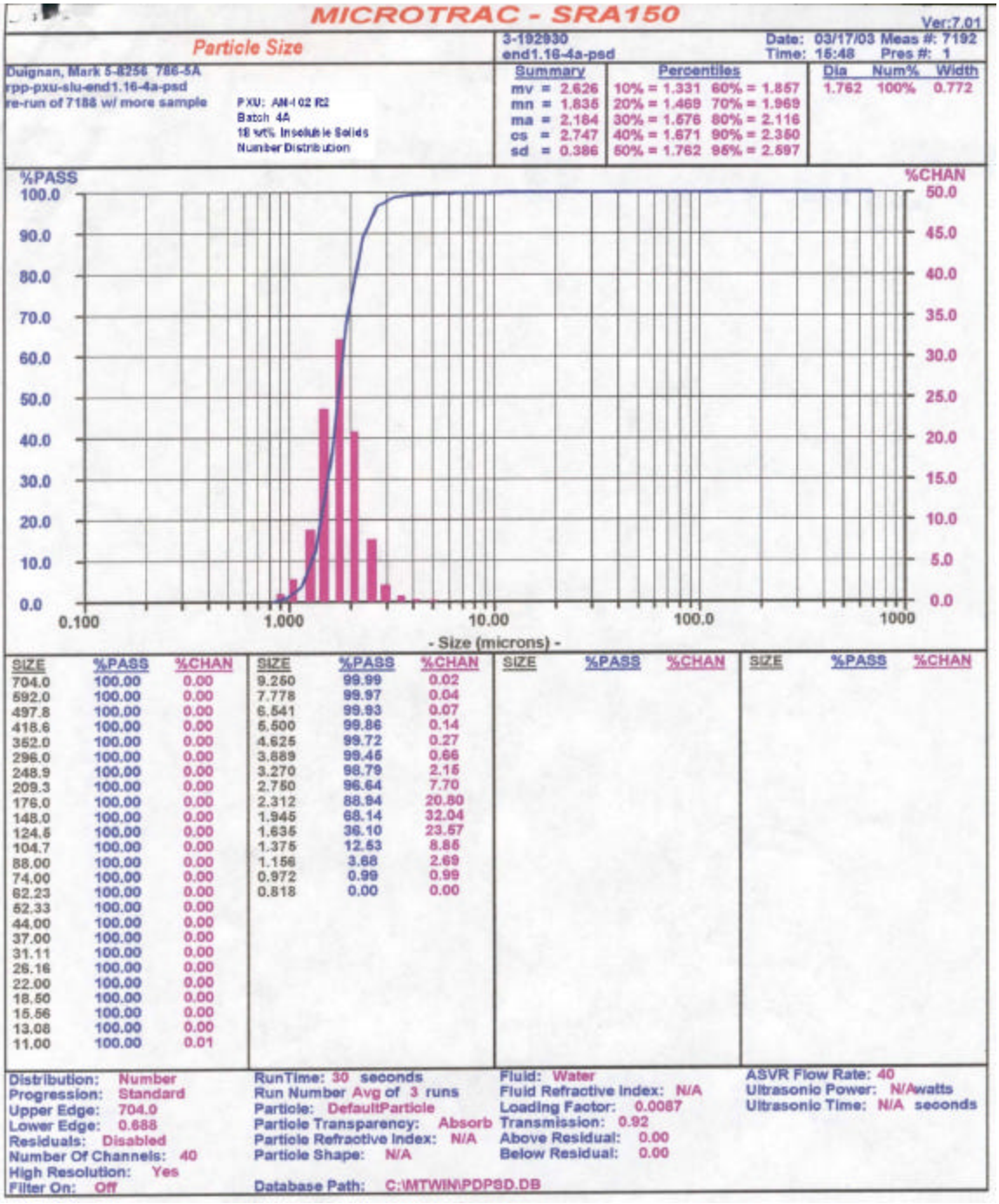


Figure G34. After 20 hours of Batch 4A: 18 wt% Insoluble Solids
(NUMBER Distribution)

APPENDIX H

INSTRUMENTATION AND MEASUREMENT UNCERTAINTY

Appendix Contents

Special Note:
As mentioned in Appendix F, there are no measurement uncertainties listed for the analytical data because those uncertainties are beyond the scope and control of this task. There is reason to believe that all analytical data can be at least 15% accurate, but no quantitative data are given to this effect.

[†] To save space the post-test calibration sheets have not been included. They show no more information than what is shown on the pre-test sheets. Moreover, the transfer functions for the pre-test calibration were used through the testing; therefore it is more appropriate to include those calibrations. However, the top table in Fig. H1 shows the measurement uncertainties for both calibrations and the resulting uncertainty used for this task.

EXPERIMENTAL MEASUREMENT UNCERTAINTY

As always, any measurement made has an attributed error which must be known before a level of confidence can be attained for the results obtained. This error may come from one or all of the following: the measurement instrument, the way an instrument is set up to make a measurement in relation to the experimental phenomenon to be measured, and the person using the instrument. It is not the purpose of this section to exhaust all possible avenues of measurement uncertainty, but rather to illustrate the level of measurement uncertainty in the results presented in Appendices A, B, C, D, E. (Outside of density and capillary-viscometer measurements taken, the measurement uncertainty of the analytical data in Appendix F is beyond the scope of this task.) In general, the measurement uncertainties present here are for a reading or calculation at any instant. That is, the fluctuations that occur during experimentation are not addressed here. The magnitude of measurement fluctuations with time that occur during an experimental run can be seen at the bottom of each data table from the preceding appendices. Each column of data includes the average value of those data and their standard deviation.

In all the data sheets included in Appendices A, B, C, D, E there are raw data columns (for instruments, five thermocouples: T1-T5, six pressure transducers: dP1-dP3 and P1-P3, and four flow meters: Q1-Q3, and Qbp) and there are calculated data columns (all columns to the right Column Qbp). The uncertainty of a raw data measurement is the calibrated uncertainty of the individual instrument to a 95% confidence level, Figs. H3 to H17.

Example to find the measurement uncertainty of a raw data point:

1. Find the data column entitled, T1, any Appendix A through E.
2. Look up Thermocouple T1 on Fig. H1 in this Appendix to see that the calibrated uncertainty is 1.2°C (95% confidence level*). If a closer look on how that specific systematic error was obtained is desired, then check the appropriate calibration sheet. Thermocouple T2 is shown as Fig. H4. (The calibration sheets are in order of the fifteen instruments that are listed in Fig. H1, with the first instrument T1 shown in Fig. H3 and the last instrument Q4 (or Qbp) shown in Fig. H17.)
   [*The confidence level comes from the Student's *t* distribution function used in determining an instrument uncertainty.]
3. The magnitude of the random error can be obtained from the standard deviation shown at the bottom of each column of raw data. (The values shown are twice the magnitude of the standard deviation of the data which represents a 95% confidence level. The standard deviation from the average value, obtained from a specific instrument for a specific test run, will be a good indication of random error for all but the filtrate flowrates, Q2, Q3, Qbp. Temperatures, pressures, and slurry flowrates were maintained constant, therefore the fluctuations around the mean should be normally distributed. The filtrate flowrates decreased with time, due to the nature of the experiment. Therefore, the random error for Q2 and Q3 should only be obtained when the filtrate flowrates reach some asymptote. (In some cases, for a thick slurry the temperature could not be held constant, but increased with time. In these cases the standard deviation will not properly represent random fluctuations. To facilitate

the evaluation of such occurrences each column of data also has the maximum, minimum, and median values along with 2 x the standard deviation. Note that the number of points used to determine these values is also given. Extreme points, like when backpulsing occurs were excluded.). Finally, the backpulse flowrate, Qbp, was never in steady state, as per design, therefore the standard deviation means nothing.

Measurement uncertainties for the calculated results can be obtained by the general method of the Law of Propagation of Errors (section 4.7 of Mandel, 1964). The derivation will not be given here and the following is just one example for one type of relation, albeit a common relation.

For example, a calculated entity has an uncertainty of δa. The entity a is a function of three measured quantities: b, c, and d by the following relationship: a = b x c / d and these quantities have measurement uncertainties of δb, δc, and δd, respectively. The uncertainty can be shown as:

$$(\delta a)^2 = [(\partial a/\partial b)\delta b]^2 + [(\partial a/\partial c)\delta c]^2 + [(\partial a/\partial d)\delta d]^2,$$

if the error terms are independent and symmetrical. The term δa is squared to capture both the negative and positive error terms.

Then for the relation a = bc/d the relative uncertainty can be shown to be:

$$\delta a/a = [(\delta b/b)^2 + (\delta c/c)^2 + (\delta d/d)^2]^{1/2}. \qquad (1)$$

Using the above the relation (1) an uncertainty for velocity, transmembrane pressure, filtrate flux, and permeability are determined. The method of determining the measurement uncertainty of any of the calculated results will the same as the following analyses. However, only one example of each calculated result is shown below. To show an example, any specific calculated quantity is sufficient. An arbitrary choice (but having a low TMP to obtain a bounding high uncertainty) of a representative group of results is: Run 1.01A at the 10.70^{th} minute [The data for Run 1.01A can be found in Appendix B in the Fig. B18 and the 10.70^{th} minute is row 23^{rd} row from the top or 8^{th} from sub-table "Data – Per Minute.]

The measurement uncertainty for the following values will be shown:

V, ft/s	TMP, psi	Fc (at 25°C*), gpm/ft^2,	P, gpm/ft^2/psi
11.6	10.4	0.028	0.003

*actual temperature was 25.1°C but was adjusted to 25.0°C as per the customer specification, Ref. 3, therefore Fc means the corrected filtrate flux.

The results of the measurement uncertainties found below at the 95% confidence level are:

Slurry Velocity = **V** ± **6.3 %**

Transmembrane Pressure	=	**TMP**	**± 2.2 %**
Temperature Corrected Filtrate Flux	=	**Fc**	**± 5.4 %**
Permeability	=	**P**	**± 5.8%**

H.1 Velocity [V = Q1 / $A_{cross\text{-}section}$]

This uncertainty is combination of the instrument, Q1, uncertainty and from the lack of knowledge of the exact inside diameters of the filter tubes. The instrument uncertainty is obtained for that instrument's calibrated uncertainty. An accurate measurement of the average inside diameter of the filtrate tubes was impossible since it may vary down the length for each filter tube and may vary from tube to tube. Even measuring the diameter at the filter tube ends is difficult because of the weldments to the tube sheets. For a Mott 1/2-inch tube the diameter was measured to be 0.488 inch and the tolerances were measured at +0.002 inch and -0.003 inch. The diameter could only be measured at the tube ends and the vendor stated tolerences for the overall tubes are +0.025 and –0.005 and the diameter of the filter tubes can presumably vary anywhere between those tolerances therefore for this task the diameter uncertainty will be taken as the average tolerance, i.e., ±0.015 inch.

The measurement uncertainty estimate:

Calibrated uncertainty (Figs. H1 and H14): $\delta Q1 = \pm 0.5$ gpm
Slurry flow rate: Q1 = 47.23 gpm [Run 1.01A, Row 23, Q1 Column: Appendix B]
Filter tube inside diameter: $\delta d = \pm 0.015$ inch
Filter tube inside diameter: d = 0.488 inch

$V = Q / A = Q1 / (\pi d^2/2)$

In the form of Eq. (1): $\delta V/V = [(\delta Q1/Q1)^2 + 4(\delta d/d)^2]^{1/2}$

[Note the multiplier 4. This results from the derivation $\partial V/\partial d$ because of the exponent]

Therefore, $[(0.5/47.23)^2 + 4(0.015/0.488)^2]^{1/2} \times 100\% = \pm$**6.24 %**

The uncertainty of the example **V** is: **11.5 ±0.7 ft/s**

[since 11.5 x 0.0624 ~ 0.72]

H.2 Transme mbrane Pressure [TMP = (dP2 + dP3) / 2]

This uncertainty will come from two instruments, dP2 and dP3. Also, there is another uncertainty due to location of the pressure taps. As seen in Figs. H1 and H2, dP2 is located at the bottom to the filter housing (upstream to the filter) and dP3 is located at the top of the filter housing (downstream to the filter). Due to fluid being in the pressure lines (water) a liquid-filled system will give approximately* the correct pressure drops,

however, the slurry pressures lost upstream to the filter and gained downstream of the filter are not symmetrical and therefore do not cancel out. With this said, this addition to the uncertainty is small compared to the assumption that true TMP is represented by the average of two pressures at the ends of a filter. Because the filter is oriented perpendicular to gravity and the flow causes a pressure and concentration gradient along the entire tube wall it is not clear what TMP would be representative of the entire filter unit. On the other hand, the way measurements were taken probably will be similar to the field use of this filter and therefore a good measurement for design purposes. The uncertainty is actually the uncertainty of two measurement devices, and nothing more. Finally, the Law of Propogation of Errors by Eq. (1) does not lend itself to additive contributions to uncertainties. Fortunately, the two quantities are similar in magnitude and calibrated uncertainty. Equation (1) will be used as long as it gives an uncertainty larger than the largest calibrated uncertainty for the two pressure transducers.
[*The correct pressure drop, for any dP, is obtained when the test liquid is the same as the liquid in the pressure lines. Since the slurry was more dense than the water the readings are affected accordingly. For instance, the pressure lines to obtained dP3 are lines 3 and 4, Fig. H2, and their heights were 139.63 inches and 131.88 inches, respectively. With NO flow in a completely water-filled system, then dP3 = 0, (that is, the two water columns cancel each other) but with a different density fluid in the test rig there is a differential pressure $dP3 = P_{line3}-P_{line4}$=(139.63-131.88)x(density difference). In the worst case the slurry density was approximately 1.4 g/cc, therefore the offset could be a maximum of 7.75 inches x 0.4 = 3.1 inches H_2O or 0.11 psid. However, the actual magnitude of the offest was probably smaller because the differential height, 7.8 inches, was a combination of slurry and filtrate, which had a lower density. Combining this complication of obtaining the true contribution to the overall uncertainty, along with the measurement fluctuations and other factors, then this quantity to the uncertainty was neglected.]

The measurement uncertainty estimate:

Calibrated uncertainty (Figs. H1 and H12): $\delta dP2 = \pm 0.11$ psi
Pressure drop: dP2 = 12.669 psid [Run 1.01A, Row 23, dP2 Column: Appendix B]
Calibrated uncertainty (Figs. H1 and H13): $\delta dP3 = \pm 0.16$ psi
Pressure drop: dP3 = 8.23 psid [Run 1.01A, Row 23, dP3 Column: Appendix B]

$TMP = (dP2 + dP3) / 2$

In the form of Eq. (1): $\delta TMP/TMP = [(\delta dP2/dP2)^2 + (\delta dP3/dP3)^2]^{1/2}$

Therefore, $[(0.11/12.67)^2 + (0.16/8.23)^2]^{1/2}$ x 100% = ±**2.13 %**

The uncertainty of the example **TMP** is: **10.5 ±0.3 psid**

[since TMP = (12.669 + 8.23) /2 = 10.45 psid and 10.45 x 0.0213 ~ 0.223]

H.3 Filtrate Flux [F = Q2 / $A_{inner\text{-}surface}$]

This uncertainty is combination of the instrument, Q2, uncertainty and from the lack of knowledge of the exact inside diameters and length of the filter tubes. The instrument uncertainty is obtained for that instrument's calibrated uncertainty. The uncertainty of the inside diameter of the filter tubes has already been addressed in section H.1 and it was estimated at 0.015 inch from the manufacturer's stated tolerance. The uncertainty of the length of the filter tubes was estimate from in-house measurements. The requested tube length from the manufacturer was 90 inches. Because of the center weldments (the 90-inch length was made of four 22.5-inch tube sections) the active length measured closer to 89 5/8 inches; take the each of the three central weldments to by 1/8 inch long. Due to bowing and weldment variations an overall length uncertainty will be taken as the length of one weldment, i.e., 1/8-inch.

The measurement uncertainty estimate:

Calibrated uncertainty (Figs. H1 and H15): $\delta Q2 = \pm 0.005$ gpm
Filtrate flow rate: Q2 = 0.186 gpm [Run 1.01A, Row 23, Q2 Column: Appendix B]
Tube inside diameter uncertainty: $\delta d = \pm 0.015$ inch (from manufacturer)
Tube inside diameter: d = 0.488 inch
Tube length uncertainty: $\delta L = \pm 0.125$ inch
Tube length: L = 89.625 inches

$F = Q/A = Q2 / \pi d L$

In the form of Eq. (1): $\delta F/F = [(\delta Q2/dQ2)^2 + (\delta d/d)^2 + (\delta L/L)^2]^{1/2}$

Therefore, $[(0.005/0.186)^2 + (0.015/0.488)^2 + (0.125/89.625)^2]^{1/2} \times 100\% = \pm$**4.09 %**

The uncertainty of the example **F** is: **0.19 ±0.008 gpm/ft^2**

[since 0.186 x 0.0409 ~ 0.0076]

H.3.1 Effect of Temperature on the Measurement Uncertainty on F

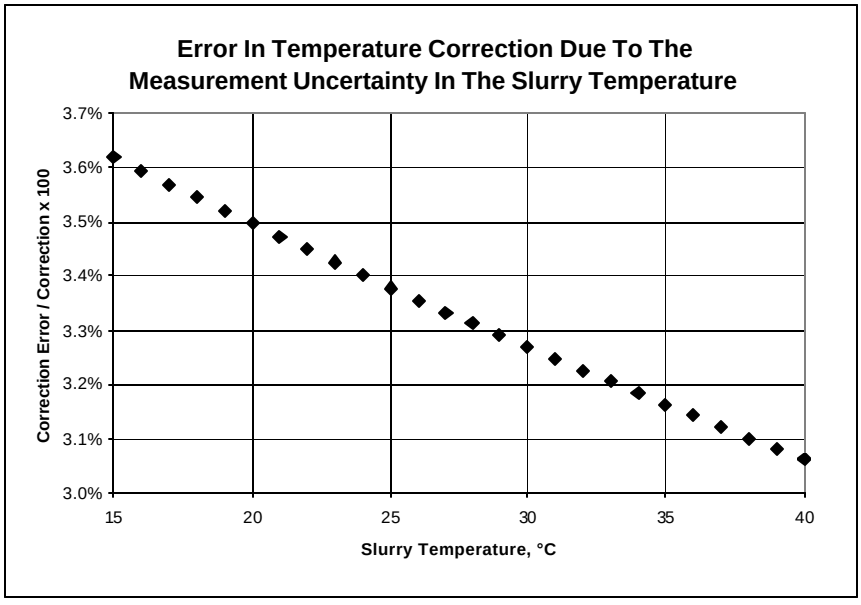
As per the customer specification the filtrate flux was to adjusted such that it would give a result at 25°C. The equation as was stated is:

F = Q2(Temperature) / Area = Q2 x Correction Factor /Area

$$CF = e^{[2500((1/273+\text{Slurry Temperature}))-(1/298))]}$$

Only the correction factor's effect on measurement uncertainty is dealt with here. The equation is accepted as error free, i.e., method, constants, etc. Only the uncertainty of the temperature measurement, which leads to the correction, will be addressed.

Generally, the adjustment to filtrate flux, **F**, is small because, whenever possible, the slurry's operational temperature was maintained at 25°C, which would result in a zero adjustment. However, the example chosen to show measurement uncertainty had a temperature difference of 0.2°C. That is, for Run 1.01A at the 20th minute the slurry temperature was 25.076°C. Unfortunately, the fact that a temperature correction is applied means the temperature uncertainty will effect the calculated result at any temperature. That is, even if the slurry temperature were exactly 25°C, which would make the correction = 1.0, the uncertainty of that temperature and thereby the correction, leads to an inherent uncertainty of value that is being corrected, i.e, **F**. For this task the slurry temperature was measured with thermocouple T1, which had a calibrated measurement uncertainty of ±1.2°C [see Fig. H1]. If at 25°C the temperature has an uncertainty of ±1.2°C, then the correction can be either 0.9669 to 1.0345, or approximately ±3.38% [i.e., ((1-0.9669)+(1.0345-1))/2 / 1.00 = 0.0338]. To show the measurement uncertainty mathematically from the correction equation is beyond the scope of this task, however it can be shown graphically. For a range of slurry temperatures from 15°C to 40°C, then the correction can be shown to change from 1.34 to 0.65, respectively. However, with a measurement uncertainty of ±1.2°C this factor can be in error from approximately 3.62% to 3.06%, respectively, see the Figure below:



Therefore, for the sake of this example the relative uncertainty of the correction factor due to the temperature will be assumed to be 3.4%, since most of the data were obtained at 25°C. Using this constant value is not a bad assumption because between 20°C and 30°C this uncertainty only fluctuates by approximately 0.1%.

This increased uncertainty to the filtrate flux is then a combination of two uncertainties already calculated above for **F** (section H.3) and the correction factor. The analyses still follows Eq. (1) therefore:

The measurement uncertainty estimate:

Filtrate flux relative uncertainty: $\delta F/F = \pm 4.09\%$ [section H.3]
Correction factor relative uncertainty: $\delta CF/CF = \pm 3.38\%$ [section H.3.1]

Fc = Fcorrected = F x CF

In the form of Eq. (1): $\delta Fc/Fc = [(\delta F/F)^2 + (\delta CF/CF)^2]^{1/2}$

Therefore, $[(4.09\%)^2 + (3.38\%)^2]^{1/2}$ = **±5.31 %**

The uncertainty of the example **Fc** is: **0.186 ±0.010 gpm/ft^2**

[since 0.186 x 0.0531 ~ 0..0099]

H.4 Permeability [P = Fc / TMP]

This uncertainty is combination of two uncertainties already calculated above, in sections H.2 and H.3. The analyses still follows Eq. (1) therefore:

The measurement uncertainty estimate:

Filtrate flux relative uncertainty: $\delta Fc/Fc = \pm 5.31\%$ [section H.3.1]
TMP relative uncertainty: $\delta TMP/TMP = \pm 2.13\%$ [section H.2]

P = Fc / TMP

In the form of Eq. (1): $\delta P/P = [(\delta Fc/Fc)^2 + (\delta TMP/TMP)^2]^{1/2}$

Therefore, $[(5.31\%)^2 + (2.13\%)^2]^{1/2}$ = **±5.72 %**

The uncertainty of the example **P** is: **0.003 ±0.0002 gpm/ft^2/psi**

[since 0.003 x 0.0572 ~ 0.00017]

H.5 Second-Order Effects to Measurement Uncertainty

There were other effects on the measurement uncertainty, which are not included because they are thought to be of second order. For example, since the test rig was very tall, approximately 30 feet, it was subjected an ambient temperature gradient. Ambient temperatures at the bottom of the rig were usually less than at the top. For the example used in this section, [Run 1.01A, Row 23, T4 and T5 Columns: Appendix B], the temperatures were 24.9°C and 22.8°C, respectively. This gradient varied hourly and daily for several reasons. Most importantly, the 2.1°C temperature variation shown in this example is on the same order of magnitude as the calibrated uncertainties for the thermocouples. Further, the slurry in the loop generally flowed fast, so the residence time in any one section of the rig was small. For Run 1.01A the flow rate was, Q1 = 47.3 gpm. The loop volume was approximately 6 gallons so a fluid particle traversed the loop every 6/47.3 x 60 ~ 7.6 seconds. [Note that the slurry flow rate for Run 1.01A was typical of most test runs.] In this example, the slurry temperature was measured to be 25.1°C, from one thermocouple located in the suction line of the pumps. While it is certain that the ambient temperatures had an effect on the slurry temperature it was small, and at steady state the effect is incorporated in the slurry temperature. The same is true for the ambient temperature gradient but to a lesser extent and therefore not considered.

INSTRUMENTS USED ON THE RPP-WTP PILOT-SCALE CROSS-FLOW FILTRATION TEST									
(Printed: April 17, 2003)									
DAS Chan.	Test Rig No.	Instrument	M&TE #	Make	Model / Serial	Calibrated Range	Uncertainty (pre-test)	Uncertainty (post-test)	Uncertainty Average
0	T2	Thermocouple	TR-02927	OMEGA	TJ36-CXSS-18U-6-SB-OST-M / None	0 to 100C	1.3°C	0.7°C	1.0
1	T3	Thermocouple	TR-02930	OMEGA	TJ36-CXSS-18U-6-SB-OST-M / None	0 to 100C	1.4°C	0.6°C	1.0
2	T1	Thermocouple	TR-02929	OMEGA	TJ36-CXSS-18U-6-SB-OST-M / None	0 to 100C	1.2°C	0.6°C	0.9
3	T4	Thermocouple	TR-02925	OMEGA	TJ36-CXSS-18U-6-SB-OST-M / None	0 to 100C	1.4°C	0.6°C	1.0
4	T5	Thermocouple	TR-02926	OMEGA	TJ36-CXSS-18U-6-SB-OST-M / None	0 to 100C	1.5°C	0.5°C	1.0
6	dP2	Pres. Transducer	TR-03553	Rosemount	1151DP6E22 / 1368962	0 to 101 PSID	0.11 PSIG	0.10 PSIG	0.11
7	P1	Pres. Transducer	TR-02917	Rosemount	1151GP6 / 409543	0 to 101 PSIG	0.10 PSIG	0.10 PSIG	0.10
8	dP1	Pres. Transducer	TR-03495	Rosemount	1151DP5E22 / 1368952	0 to 26 PSID	0.044 PSID	0.046 PSID	0.045
9	dP3	Pres. Transducer	TR-03109	Rosemount	1151DP6E22 / 1368963	-11 to 91 PSID	0.16 PSIG	0.12 PSIG	0.14
10	P2	Pres. Transducer	TR-03115	Rosemount	1151DP7E22M3B1 / 402987	0 to 151 PSIG	0.36 PSIG	0.41 PSIG	0.39
11	P3(backpulse)	Pres. Transducer	TR-00532	Rosemount	1151DP7E22M3B1P1 / 1038513	0 to 151 PSIG	0.15 PSIG	0.20 PSIG	0.18
12	Q2	Mag. Flowmeter	TR-20353	Fischer-Porter	10D1475EN01PF29KW12CAC1 / 93W011793	0 to 1.2 GPM	0.005 GPM	0.005 GPM	0.005
13	Q1	Mag. Flowmeter	TR-20350	Fischer-Porter	10D1475DK11PL29KD11CAC / 90W007609	0 TO 100 GPM	0.5 GPM	0.5 GPM	0.5
14	Q3	Mag. Flowmeter	TR-03562	Fischer-Porter	10D1475CDBC11BBL1 / 8710A0242A3	0 to 5 GPM	0.02 GPM	0.02 GPM	0.02
15	Q4 = Qbackpulse	Mag. Flowmeter	TR-03276	Fischer-Porter	10D1475EN06PL29KD11CAC1 / 92W446636	0 to 5 GPM	0.02 GPM	0.02 GPM	0.02
				DAS Calibration		Transfer Functions for DAS (Conversion from mA to Volts)			
	DAS Channel	Instrument		Slope (V/mA)	Intercept (V)	Output	Slope (unit/V)		Intercept (unit)
	6	dP2		0.4975	0.0000	Pressure (psid)	12.6673	x V +	-25.1790
	7	P1		0.4975	0.0000	Pressure (psig)	12.6814	x V +	-25.1980
	8	dP1		0.4988	0.0030	Pressure (psid)	3.2562	x V +	-6.5230
	9	dP3		0.4983	0.0050	Pressure (psid)	12.8077	x V +	-36.5748
	10	P2		0.4983	0.0050	Pressure (psig)	18.9324	x V +	-37.9977
	11	P3		0.4975	0.0000	Pressure (psig)	18.9688	x V +	-37.7140
	12	Q2		0.4975	0.0100	Flow (gpm)	0.1487	x V +	-0.2955
	13	Q1		0.4990	0.0020	Flow (gpm)	12.5210	x V +	-25.0350
	14	Q3		0.4993	-0.0030	Flow (gpm)	0.6249	x V +	-1.2381
	15	Q4 = Qbackpulse		0.4988	0.0070	Flow (gpm)	0.6195	x V +	-1.2373

(PRINTED: July 31, 2002) - (Calibration check of all DAS channels was done on 23 July 2002)

	Thermocouples									
Temperature	Channel 0	Channel 0	Channel 1	Channel 1	Channel 2	Channel 2	Channel 3	Channel 3	Channel 4	Channel 4
°C	T, applied	T, reading	T, applied	T, reading	T, applied	T, reading	T, applied	T, reading	T, applied	T, reading
0	0.00	0.25	0.00	0.55	0.00	0.23	0.00	-0.04	0.00	0.07
25	25.00	25.23	25.00	25.51	25.00	25.20	25.00	24.98	25.00	25.07
50	50.00	50.21	50.00	50.48	50.00	50.20	50.00	49.94	50.00	50.04
75	75.00	75.19	75.00	75.47	75.00	75.18	75.00	74.94	75.00	75.04
100	100.00	100.19	100.00	100.46	100.00	100.16	100.00	99.93	100.00	100.07

Current	Channel 6	Channel 6	Channel 7	Channel 7	Channel 8	Channel 8	Channel 9	Channel 9	Channel 10	Channel 10
mA	V, meas.	V, calc.	V, meas.	V, calc.	V, meas.	V, calc.	V, meas.	V, calc.	V, meas.	V, calc.
4	1.99	1.99	2.00	2.00	1.99	1.99	2.00	2.00	1.99	1.99
8	3.98	3.98	3.99	3.99	3.98	3.98	3.99	3.99	3.98	3.98
12	5.97	5.97	5.98	5.98	5.97	5.97	5.99	5.99	5.97	5.97
16	7.96	7.96	7.98	7.98	7.96	7.96	7.98	7.98	7.96	7.96
20	9.95	9.95	9.97	9.97	9.95	9.95	9.98	9.98	9.95	9.95

Current	Channel 11	Channel 11	Channel 12	Channel 12	Channel 13	Channel 13	Channel 14	Channel 14	Channel 15	Channel 15
mA	V, meas.	V, calc.	V, meas.	V, calc.	V, meas.	V, calc.	V, meas.	V, calc.	V, meas.	V, calc.
4	2	2.00	2	2.00	2	2.00	2	1.99	2	2.00
8	3.99	3.99	3.99	3.99	3.99	3.99	3.99	3.99	4	4.00
12	5.98	5.98	5.99	5.99	5.98	5.98	5.98	5.99	5.99	5.99
16	7.98	7.98	7.99	7.99	7.97	7.97	7.98	7.99	7.99	7.99
20	9.97	9.97	9.98	9.98	9.96	9.96	9.99	9.98	9.98	9.98

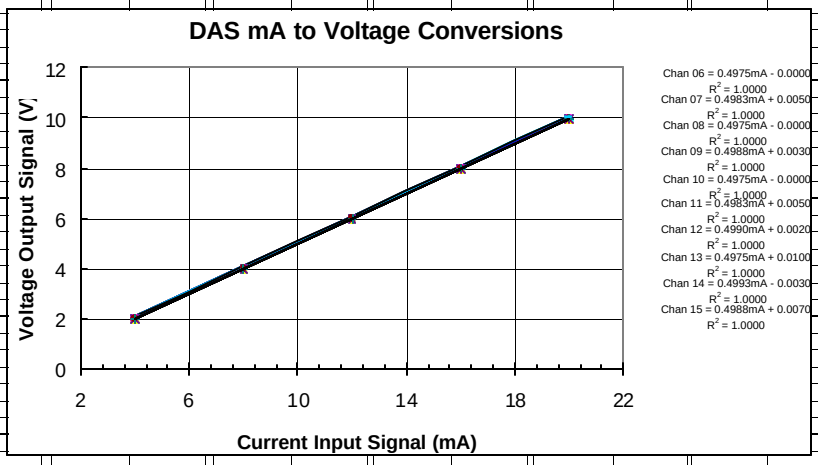


Figure H1. Instrumentation Used with their Transfer Functions

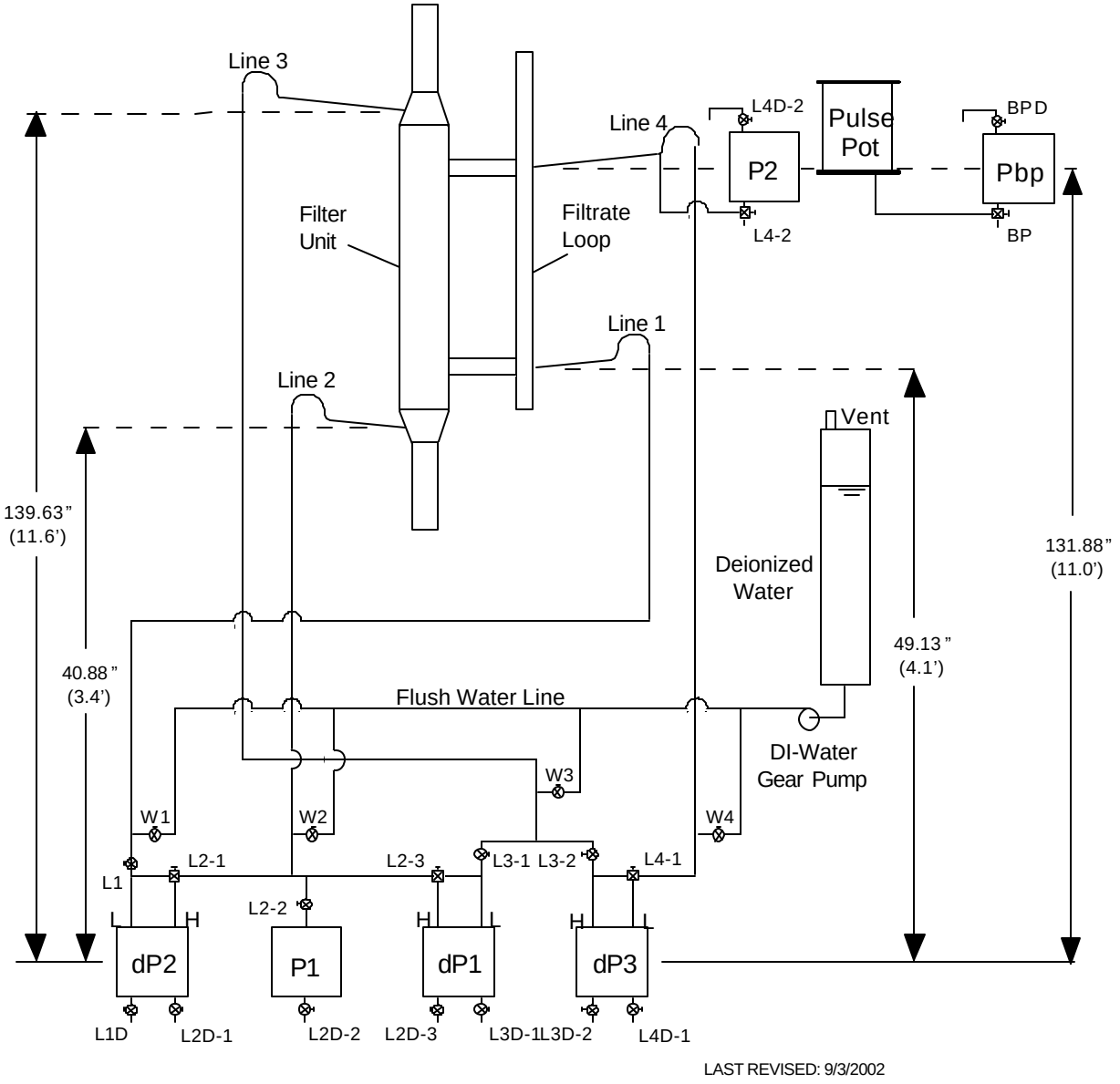


Figure H2. Pressure Transducer Locations

UNCERTAINTY ANALYSIS **TR-2929**
REF. WSRC-TR-91-106

cal date: 16 April 2001

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

Calibration Data

Temperature Medium	Standard Temp (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.010	-0.17	-0.2
Ice Point	0.00	-0.025	-0.42	-0.4
Ice Point	0.00	-0.025	-0.42	-0.4
Ice Point	0.00	-0.025	-0.42	-0.4
Room Temp	22.79	1.313	22.00	-0.8
Room Temp	23.23	1.439	24.08	0.8
Room Temp	24.58	1.435	24.01	-0.6
Room Temp	24.07	1.421	23.78	-0.3
Boiling Water	99.53	6.330	100.16	0.6
Boiling Water	99.53	6.330	100.16	0.6
Boiling Water	99.44	6.317	99.97	0.5
Boiling Water	99.45	6.317	99.97	0.5

T (C) =0.00483 + 17.040918*mV - 0.224284*mV^2 + 0.005038*mV^3 (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards:

Temperature Curve Fit: +/-	0.010	C			
Thermometer: +/-	0.40	C			
Ice Bath: +/-	0.10	C			
Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)	
= +/-	0.012	C @	6.33	mV	

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.39	1.01	12.00	2.228	41.05	21610.7	1.660	0.1660

Calculated Uncertainties:

standard uncertainty (C)	curve-fit uncertainty (C)	fixed uncertainty (C)	total uncertainty (C)
0.41	1.00	0.57	1.2

PASS CALIBRATION? **YES**

Figure H3. Pre-test Calibration Data of Thermocouple T1

UNCERTAINTY ANALYSIS **TR-2927**
REF. WSRC-TR-91-106

cal date: 16 April 2001

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

Calibration Data

Temperature Medium	Standard Temp (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.009	-0.15	-0.1
Ice Point	0.00	-0.014	-0.23	-0.2
Ice Point	0.00	-0.015	-0.25	-0.3
Ice Point	0.00	-0.012	-0.20	-0.2
Room Temp	22.79	1.315	22.04	-0.8
Room Temp	23.23	1.438	24.06	0.8
Room Temp	24.58	1.450	24.26	-0.3
Room Temp	24.07	1.449	24.24	0.2
Boiling Water	99.53	6.344	100.37	0.8
Boiling Water	99.53	6.345	100.39	0.9
Boiling Water	99.46	6.328	100.14	0.7
Boiling Water	99.48	6.329	100.15	0.7

T (C) =0.00483 + 17.040918*mV - 0.224284*mV^2 + 0.005038*mV^3 (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards:

Temperature Curve Fit: +/-	0.010	C			
Thermometer: +/-	0.40	C			
Ice Bath: +/-	0.10	C			
Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)	
= +/-	0.012	C @	6.35	mV	

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.23	1.01	12.00	2.228	41.06	21616.6	1.429	0.1429

Calculated Uncertainties:

standard uncertainty (C)	curve-fit uncertainty (C)	fixed uncertainty (C)	total uncertainty (C)
0.41	0.93	0.75	1.3

PASS CALIBRATION? **YES**

Figure H4. Pre-test Calibration Data of Thermocouple T2

UNCERTAINTY ANALYSIS **TR-2930**
REF. WSRC-TR-91-106

cal date: 17 April 2001

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

	Calibration Data		Calculated	
Temperature Medium	Standard Temp (C)	Voltage Output (mV)	Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.016	-0.27	-0.3
Ice Point	0.00	-0.015	-0.25	-0.3
Ice Point	0.00	-0.015	-0.25	-0.3
Ice Point	0.00	-0.015	-0.25	-0.3
Room Temp	21.33	1.222	20.50	-0.8
Room Temp	20.42	1.210	20.30	-0.1
Room Temp	21.66	1.268	21.26	-0.4
Room Temp	21.71	1.367	22.89	1.2
Boiling Water	99.54	6.336	100.25	0.7
Boiling Water	99.51	6.334	100.22	0.7
Boiling Water	99.80	6.343	100.36	0.6
Boiling Water	99.80	6.343	100.36	0.6

T (C) =0.00483 + 17.040918*mV - 0.224284*mV^2 + 0.005038*mV^3 (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards:

Temperature Curve Fit: +/-	0.010	C			
Thermometer: +/-	0.40	C			
Ice Bath: +/-	0.10	C			
Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)	
= +/-	0.012	C @	6.34	mV	

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.24	1.01	12.00	2.228	40.31	22040.2	2.270	0.2270

Calculated Uncertainties:

standard uncertainty (C)	curve-fit uncertainty (C)	fixed uncertainty (C)	total uncertainty (C)
0.41	1.17	0.63	1.4

PASS CALIBRATION? **YES**

Figure H5. Pre-test Calibration Data of Thermocouple T3

UNCERTAINTY ANALYSIS **TR-2925**
REF. WSRC-TR-91-106 cal date: 12 April 2001

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

Calibration Data

Temperature Medium	Standard Temp (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.013	-0.22	-0.2
Ice Point	0.00	-0.009	-0.15	-0.1
Ice Point	0.00	-0.009	-0.15	-0.1
Ice Point	0.00	-0.009	-0.15	-0.1
Room Temp	23.30	1.384	23.17	-0.1
Room Temp	24.99	1.400	23.44	-1.6
Room Temp	23.48	1.356	22.71	-0.8
Room Temp	25.57	1.500	25.08	-0.5
Boiling Water	99.94	6.342	100.34	0.4
Boiling Water	99.94	6.345	100.39	0.4
Boiling Water	99.70	6.338	100.28	0.6
Boiling Water	99.71	6.339	100.30	0.6

T (C) =0.00483 + 17.040918*mV - 0.224284*mV^2 + 0.005038*mV^3 (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards:

Temperature Curve Fit: +/-	0.010	C			
Thermometer: +/-	0.40	C			
Ice Bath: +/-	0.10	C			
Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)	
= +/-	0.012	C @	6.35	mV	

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.50	1.01	12.00	2.228	41.39	21677.3	2.464	0.2464

Calculated Uncertainties:

standard uncertainty (C)	curve-fit uncertainty (C)	fixed uncertainty (C)	total uncertainty (C)
0.41	1.22	0.50	1.4

PASS CALIBRATION? **YES**

Figure H6. Pre-test Calibration Data of Thermocouple T4

UNCERTAINTY ANALYSIS **TR-2926**
REF. WSRC-TR-91-106 cal date: 18 July 2001

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

Calibration Data

Temperature Medium	Standard Temp (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.017	-0.28	-0.3
Ice Point	0.00	-0.015	-0.25	-0.3
Ice Point	0.00	-0.015	-0.25	-0.3
Ice Point	0.00	-0.016	-0.27	-0.3
Room Temp	24.37	1.402	23.47	-0.9
Room Temp	24.33	1.401	23.45	-0.9
Room Temp	24.43	1.367	22.89	-1.5
Room Temp	21.54	1.308	21.92	0.4
Boiling Water	100.20	6.344	100.37	0.2
Boiling Water	100.20	6.344	100.37	0.2
Boiling Water	100.10	6.345	100.39	0.3
Boiling Water	100.10	6.343	100.36	0.3

T (C) =0.00483 + 17.040918*mV - 0.224284*mV^2 + 0.005038*mV^3 (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards:

Temperature Curve Fit: +/-	0.010	C			
Thermometer: +/-	0.40	C			
Ice Bath: +/-	0.10	C			
Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)	
= +/-	0.012	C @	6.35	mV	

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.53	1.01	12.00	2.228	41.27	21925.7	2.825	0.2825

Calculated Uncertainties:

standard uncertainty (C)	curve-fit uncertainty (C)	fixed uncertainty (C)	total uncertainty (C)
0.41	1.31	0.53	1.5

PASS CALIBRATION? **YES**

Figure H7. Pre-test Calibration Data of Thermocouple T5

UNCERTAINTY ANALYSIS **TR-02917**
REF. WSRC-TR-91-106, REV. 0 cal. date: 22 April 2001

Calibration Data

Nominal Pressure (psig)	Applied Pressure (psig)	Gage Reading (mADC)	Curve Fit (mADC)	Error (mADC)	Error (psig)
0.00	0.00	4.00	3.99	-0.006	-0.04
21.00	21.00	7.32	7.32	0.003	0.02
41.00	41.00	10.49	10.49	0.003	0.02
61.00	61.00	13.66	13.66	0.003	0.02
81.00	81.00	16.83	16.83	0.003	0.02
101.00	101.00	20.01	20.00	-0.006	-0.04
0.00	0.00	4.00	3.99	-0.006	-0.04
21.00	21.00	7.32	7.32	0.003	0.02
41.00	41.00	10.49	10.49	0.003	0.02
61.00	61.00	13.66	13.66	0.003	0.02
81.00	81.00	16.83	16.83	0.003	0.02
101.00	101.00	20.01	20.00	-0.006	-0.04
0.00	0.00	4.00	3.99	-0.006	-0.04
21.00	21.00	7.32	7.32	0.003	0.02
41.00	41.00	10.49	10.49	0.003	0.02
61.00	61.00	13.66	13.66	0.003	0.02
81.00	81.00	16.83	16.83	0.003	0.02
101.00	101.00	20.01	20.00	-0.006	-0.04
0.00	0.00	4.00	3.99	-0.006	-0.04
21.00	21.00	7.32	7.32	0.003	0.02
41.00	41.00	10.49	10.49	0.003	0.02
61.00	61.00	13.66	13.66	0.003	0.02
81.00	81.00	16.83	16.83	0.003	0.02
101.00	101.00	20.01	20.00	-0.006	-0.04

Standard Uncertainties: Multimeter: +/- (0.04 % RDG + 0.001 mADC)
Dead Weight Tester: +/-(0.03 % RDG + 0.03 psig)

Statistical Info:

a	b	n	T	Xbar psig	Sxx $psig^2$	SEE $mADC^2$	MSE $mADC^2$
3.9941	0.1585	24.00	2.07	50.83	28403.33	0.0005	0.0000

Calculated Uncertainties:

σ_C psig	σ_E psig	σ_F psig	Total Uncertainty σ_T psig
0.08	0.06	0.00	0.10

Accepted Tolerance: +/- 2 psig

PASS CALIBRATION? YES
TRANSFER EQUATION PSIG = 6.309 *mA -25.198

Figure H8. Pre-test Calibration Data of Gauge Pressure Transducer P1

UNCERTAINTY ANALYSIS **TR-03115**
REF. WSRC-TR-91-106, REV. 0 cal. date: 27 August 2002

Calibration Data

Nominal Pressure (psig)	Applied Pressure (psig)	Gage Reading (mADC)	Curve Fit (mADC)	Error (mADC)	Error (psig)
0	0.00	4.00	4.02	0.018	0.17
31	31.00	7.30	7.30	0.003	0.03
61	61.00	10.50	10.48	-0.017	-0.16
91	91.00	13.68	13.66	-0.017	-0.16
121	121.00	16.85	16.84	-0.007	-0.07
151	151.00	20.00	20.02	0.023	0.21
0	0.00	4.00	4.02	0.018	0.17
31	31.00	7.30	7.30	0.003	0.03
61	61.00	10.50	10.48	-0.017	-0.16
91	91.00	13.68	13.66	-0.017	-0.16
121	121.00	16.85	16.84	-0.007	-0.07
151	151.00	20.00	20.02	0.023	0.21
0	0.00	4.00	4.02	0.018	0.17
31	31.00	7.30	7.30	0.003	0.03
61	61.00	10.50	10.48	-0.017	-0.16
91	91.00	13.68	13.66	-0.017	-0.16
121	121.00	16.85	16.84	-0.007	-0.07
151	151.00	20.00	20.02	0.023	0.21
0	0.00	4.00	4.02	0.018	0.17
31	31.00	7.31	7.30	-0.007	-0.06
61	61.00	10.50	10.48	-0.017	-0.16
91	91.00	13.68	13.66	-0.017	-0.16
121	121.00	16.85	16.84	-0.007	-0.07
151	151.00	20.00	20.02	0.023	0.21

Standard Uncertainties: Multimeter: +/- (0.04 % RDG + 0.001 mADC)
Dead Weight Tester: +/-(0.03 % RDG + 0.03 psig)

Statistical Info:

a	b	n	T	Xbar psig	Sxx $psig^2$	SEE $mADC^2$	MSE $mADC^2$
4.0175	0.1060	24.00	2.07	75.83	63603.33	0.0059	0.0003

Calculated Uncertainties:

σ_C	σ_E	σ_F	Total Uncertainty σ_T
psig	psig	psig	psig
0.11	0.34	0.00	0.36

Accepted Tolerance: +/- 1.5 psig

PASS CALIBRATION? YES
TRANSFER EQUATION PSIG = 9.434 *mA -37.903

Figure H9. Pre-test Calibration Data of Gauge Pressure Transducer P2

UNCERTAINTY ANALYSIS **TR-00532**
REF. WSRC-TR-91-106, REV. 0 cal. date: 23 May 2002

Calibration Data

Nominal Pressure (psig)	Applied Pressure (psig)	Gage Reading (mADC)	Curve Fit (mADC)	Error (mADC)	Error (psig)
0.00	0.00	4.00	4.00	-0.004	-0.04
31.00	31.00	7.28	7.28	0.001	0.01
61.00	61.00	10.46	10.46	0.000	0.00
91.00	91.00	13.63	13.64	0.009	0.08
121.00	121.00	16.82	16.82	-0.002	-0.02
151.00	151.00	20.00	20.00	-0.004	-0.03
0.00	0.00	4.00	4.00	-0.004	-0.04
31.00	31.00	7.28	7.28	0.001	0.01
61.00	61.00	10.46	10.46	0.000	0.00
91.00	91.00	13.63	13.64	0.009	0.08
121.00	121.00	16.82	16.82	-0.002	-0.02
151.00	151.00	20.00	20.00	-0.004	-0.03
0.00	0.00	4.00	4.00	-0.004	-0.04
31.00	31.00	7.28	7.28	0.001	0.01
61.00	61.00	10.46	10.46	0.000	0.00
91.00	91.00	13.63	13.64	0.009	0.08
121.00	121.00	16.82	16.82	-0.002	-0.02
151.00	151.00	20.00	20.00	-0.004	-0.03
0.00	0.00	4.00	4.00	-0.004	-0.04
31.00	31.00	7.28	7.28	0.001	0.01
61.00	61.00	10.46	10.46	0.000	0.00
91.00	91.00	13.63	13.64	0.009	0.08
121.00	121.00	16.82	16.82	-0.002	-0.02
151.00	151.00	20.00	20.00	-0.004	-0.03

Standard Uncertainties: Multimeter: +/- (0.04 % RDG + 0.001 mADC)
Dead Weight Tester: +/-(0.03 % RDG + 0.03 psig)

Statistical Info:

a	b	n	T	Xbar psig	Sxx $psig^2$	SEE $mADC^2$	MSE $mADC^2$
3.9962	0.1060	24.00	2.07	75.83	63603.33	0.0004	0.0000

Calculated Uncertainties:

σ_C psig	σ_E psig	σ_F psig	Total Uncertainty σ_T psig
0.11	0.09	0.00	0.15

Accepted Tolerance: +/- 1.5 psig

PASS CALIBRATION? YES
TRANSFER EQUATION PSIG = 9.437 *mA -37.714

Figure H10. Pre-test Calibration Data of Gauge Pressure Transducer P3

UNCERTAINTY ANALYSIS **TR-03495**
REF. WSRC-TR-91-106, REV. 0 cal. date: 22 April 2001

Calibration Data

Nominal Pressure (psid)	Applied Pressure (psid)	Gage Reading (mADC)	Curve Fit (mADC)	Error (mADC)	Error (psid)
0.00	0.00	4.02	4.01	-0.010	-0.02
6.00	6.00	7.70	7.70	0.004	0.01
11.00	11.00	10.78	10.78	0.003	0.00
16.00	16.00	13.86	13.86	0.001	0.00
21.00	21.00	16.94	16.94	-0.001	0.00
26.00	26.00	20.02	20.02	-0.002	0.00
0.00	0.00	4.02	4.01	-0.010	-0.02
6.00	6.00	7.70	7.70	0.004	0.01
11.00	11.00	10.78	10.78	0.003	0.00
16.00	16.00	13.86	13.86	0.001	0.00
21.00	21.00	16.94	16.94	-0.001	0.00
26.00	26.00	20.02	20.02	-0.002	0.00
0.00	0.00	4.02	4.01	-0.010	-0.02
6.00	6.00	7.70	7.70	0.004	0.01
11.00	11.00	10.78	10.78	0.003	0.00
16.00	16.00	13.86	13.86	0.001	0.00
21.00	21.00	16.94	16.94	-0.001	0.00
26.00	26.00	20.02	20.02	-0.002	0.00
0.00	0.00	4.00	4.01	0.010	0.02
6.00	6.00	7.70	7.70	0.004	0.01
11.00	11.00	10.78	10.78	0.003	0.00
16.00	16.00	13.86	13.86	0.001	0.00
21.00	21.00	16.94	16.94	-0.001	0.00
26.00	26.00	20.02	20.02	-0.002	0.00

Standard Uncertainties: Multimeter: +/- (0.04 % RDG + 0.001 mADC)
Dead Weight Tester: +/-(0.03 % RDG + 0.03 psi)

Statistical Info:

a	b	n	T	Xbar psid	Sxx psid^2	SEE mADC^2	MSE mADC^2
4.0101	0.6157	24.00	2.07	13.33	1853.33	0.0005	0.0000

Calculated Uncertainties:

σ_C psid	σ_E psid	σ_F psid	Total Uncertainty σ_T psid
0.041	0.017	0.000	0.044

Accepted Tolerance: +/- 0.500 psid

PASS CALIBRATION? YES

TRANSFER EQUATION: PSID = 1.6242 *mA -6.5132

Figure H11. Pre-test Calibration Data of Differential Pressure Transducer dP1

UNCERTAINTY ANALYSIS **TR-03553**
REF. WSRC-TR-91-106, REV. 0 cal. date: 22 May 2002

Calibration Data

Nominal Pressure (psid)	Applied Pressure (psid)	Gage Reading (mADC)	Curve Fit (mADC)	Error (mADC)	Error (psid)
0.00	0.00	4.00	4.00	-0.005	-0.03
21.00	21.00	7.32	7.33	0.008	0.05
41.00	41.00	10.50	10.50	0.001	0.01
61.00	61.00	13.68	13.67	-0.005	-0.03
81.00	81.00	16.85	16.85	-0.001	-0.01
101.00	101.00	20.02	20.02	0.002	0.01
0.00	0.00	4.00	4.00	-0.005	-0.03
21.00	21.00	7.32	7.33	0.008	0.05
41.00	41.00	10.50	10.50	0.001	0.01
61.00	61.00	13.68	13.67	-0.005	-0.03
81.00	81.00	16.85	16.85	-0.001	-0.01
101.00	101.00	20.02	20.02	0.002	0.01
0.00	0.00	4.00	4.00	-0.005	-0.03
21.00	21.00	7.32	7.33	0.008	0.05
41.00	41.00	10.50	10.50	0.001	0.01
61.00	61.00	13.68	13.67	-0.005	-0.03
81.00	81.00	16.85	16.85	-0.001	-0.01
101.00	101.00	20.02	20.02	0.002	0.01
0.00	0.00	4.00	4.00	-0.005	-0.03
21.00	21.00	7.32	7.33	0.008	0.05
41.00	41.00	10.50	10.50	0.001	0.01
61.00	61.00	13.68	13.67	-0.005	-0.03
81.00	81.00	16.85	16.85	-0.001	-0.01
101.00	101.00	20.02	20.02	0.002	0.01

Standard Uncertainties: Multimeter: +/- (0.04 % RDG + 0.001 mADC)
Dead Weight Tester: +/-(0.03 % RDG + 0.03 psi)

Statistical Info:

a	b	n	T	Xbar psid	Sxx psid^2	SEE mADC^2	MSE mADC^2
3.9954	0.1587	24.00	2.07	50.83	28403.33	0.0005	0.0000

Calculated Uncertainties:

σ_C psid	σ_E psid	σ_F psid	Total Uncertainty σ_T psid
0.083	0.064	0.000	0.104

Accepted Tolerance: +/- 1.000 psid

PASS CALIBRATION? YES

TRANSFER EQUATION: PSID = 6.3020 *mA -25.1790

Figure H12. Pre-test Calibration Data of Differential Pressure Transducer dP2

UNCERTAINTY ANALYSIS **TR-03109**
REF. WSRC-TR-91-106, REV. 0 cal. date: 22 April 2001

Calibration Data

Nominal Pressure (psid)	Applied Pressure (psid)	Gage Reading (mADC)	Curve Fit (mADC)	Error (mADC)	Error (psid)
-11.00	-11.00	4.00	4.00	-0.003	-0.02
0.00	0.00	5.73	5.72	-0.009	-0.06
16.00	16.00	8.23	8.23	-0.002	-0.01
31.00	31.00	10.57	10.58	0.008	0.05
46.00	46.00	12.92	12.93	0.008	0.05
61.00	61.00	15.27	15.28	0.009	0.06
76.00	76.00	17.62	17.63	0.009	0.06
91.00	91.00	20.00	19.98	-0.021	-0.13
-11.00	-11.00	4.00	4.00	-0.003	-0.02
0.00	0.00	5.73	5.72	-0.009	-0.06
16.00	16.00	8.23	8.23	-0.002	-0.01
31.00	31.00	10.57	10.58	0.008	0.05
46.00	46.00	12.92	12.93	0.008	0.05
61.00	61.00	15.27	15.28	0.009	0.06
76.00	76.00	17.62	17.63	0.009	0.06
91.00	91.00	20.00	19.98	-0.021	-0.13
-11.00	-11.00	4.00	4.00	-0.003	-0.02
0.00	0.00	5.73	5.72	-0.009	-0.06
16.00	16.00	8.23	8.23	-0.002	-0.01
31.00	31.00	10.57	10.58	0.008	0.05
46.00	46.00	12.92	12.93	0.008	0.05
61.00	61.00	15.27	15.28	0.009	0.06
76.00	76.00	17.62	17.63	0.009	0.06
91.00	91.00	20.00	19.98	-0.021	-0.13
-11.00	-11.00	4.00	4.00	-0.003	-0.02
0.00	0.00	5.73	5.72	-0.009	-0.06
16.00	16.00	8.23	8.23	-0.002	-0.01
31.00	31.00	10.57	10.58	0.008	0.05
46.00	46.00	12.92	12.93	0.008	0.05
61.00	61.00	15.27	15.28	0.009	0.06
76.00	76.00	17.62	17.63	0.009	0.06
91.00	91.00	20.00	19.98	-0.021	-0.13

Standard Uncertainties: Multimeter: +/- (0.04 % RDG + 0.001 mADC)
Dead Weight Tester: +/-(0.03 % RDG + 0.03 psi)

Statistical Info:

a	b	n	T	Xbar psid	Sxx psid^2	SEE mADC^2	MSE mADC^2
5.7208	0.1567	32.00	1.96	38.75	36878.00	0.0033	0.0001

Calculated Uncertainties:

σ_C psid	σ_E psid	σ_F psid	Total Uncertainty σ_T psid
0.069	0.137	0.000	0.154

Accepted Tolerance: +/- 0.500 psid

PASS CALIBRATION? YES

TRANSFER EQUATION: PSID = 6.3821 *mA -36.5108

Figure H13. Pre-test Calibration Data of Differential Pressure Transducer dP3

UNCERTAINTY ANALYSIS **TR-20350** page ____ of ____
REF. WSRC-TR-91-106 calibration date: 29 April 2001

Calibration Data

Calculated Data

Meter Output (mA)	Water Temp (C)	Water Weight (lbs)	Time Duration (min)	Mass Flow (lbs/mir	Water Density (lb/ft^3)	Volume Flow (ft^3/min)	Volume Flow (GPM)	Curve Fit Ouput (mA)	Error (mA)	Error (GPM)
4.00	26.20	0.00	0.001	0.00	62.22	0.00	0.00	4.00	0.00	0.030
7.27	27.06	1020	6.01	169.72	62.21	2.73	20.41	7.27	0.00	-0.005
10.43	27.53	1336	4.00	334.00	62.20	5.37	40.17	10.43	0.00	0.010
13.63	27.49	1501	3.01	498.67	62.20	8.02	59.97	13.60	-0.03	-0.181
16.86	26.07	2006	3.01	666.45	62.22	10.71	80.12	16.83	-0.03	-0.214
19.98	26.50	2493	3.01	828.24	62.22	13.31	99.58	19.94	-0.04	-0.248
7.20	26.90	1005	6.01	167.22	62.21	2.69	20.11	7.22	0.02	0.131
10.49	26.64	1345	4.00	336.25	62.22	5.40	40.43	10.47	-0.02	-0.103
13.65	26.11	1505	3.00	501.67	62.22	8.06	60.31	13.66	0.01	0.033
16.88	25.90	2010	3.00	670.00	62.23	10.77	80.54	16.89	0.01	0.085
20.05	25.48	2507	3.00	835.67	62.23	13.43	100.45	20.08	0.03	0.183
7.23	24.91	1010	6.01	168.05	62.24	2.70	20.20	7.24	0.01	0.034
10.45	23.17	1340	4.00	335.00	62.27	5.38	40.25	10.44	-0.01	-0.036
13.70	25.21	1512	3.00	504.00	62.24	8.10	60.58	13.70	0.00	-0.012
16.80	25.76	1997	3.00	665.67	62.23	10.70	80.02	16.81	0.01	0.061
20.06	28.33	2508	3.00	836.00	62.19	13.44	100.56	20.10	0.04	0.232

Water Density: $\rho = 62.441 - 1.374E\text{-}3*T - 271.818E\text{-}6*T^2 + 194.093E\text{-}9*T^3$
7.4805 gallons = 1 ft^3

Uncertainty of the Standards:

Weight:+/-	7.0	lbs			
Temperature: +/-	0.40	C			
Density: +/-	0.06	lbm/ft^3			
Time: +/- (	0.20	sec +	500.00	µsec/sec)	
Multimeter: +/-(	0.04	% RDG +	0.001	mADC	

Accepted Tolerance: +/- 0.5 GPM

Statistical Info. a	b	n	T	Xbar (GPM)	Sxx (GPM^2)	SEE (mA^2)	MSE (mA^2)
4.003	0.160	16.00	2.145	56.48	15387.47	0.0069	0.0005

Calculated Uncertainties:	standard uncertainty (GPM)	curve-fit uncertainty (GPM)	fixed uncertainty (GPM)	total uncertainty (GPM)
	0.336	0.336	0.000	0.475

PASS CALIBRATION? **YES**

TRANSFER EQUATION: GPM = 6.248 mA -25.010

Figure H14. Pre-test Calibration Data of Magnetic Flowmeter Q1

UNCERTAINTY ANALYSIS **TR-20353** page ____ of ____
REF. WSRC-TR-91-106 calibration date: 29 April 2001

Calibration Data / Calculated Data

Meter Output (mA)	Water Temp (C)	Water Weight (lbs)	Time Duration (min)	Mass Flow (lbs/min)	Water Density (lb/ft^3)	Volume Flow (ft^3/min)	Volume Flow (GPM)	Curve Fit Ouput (mA)	Error (mA)	Error (GPM)
4.00	21.64	0.00	0.001	0.00	62.29	0.00	0.00	3.96	-0.04	-0.003
7.23	20.92	10.12	5.00	2.02	62.30	0.03	0.24	7.23	0.00	0.000
10.48	21.24	12.09	3.00	4.03	62.29	0.06	0.48	10.48	0.00	0.000
13.65	21.38	17.97	3.00	5.99	62.29	0.10	0.72	13.66	0.01	0.000
16.78	21.57	19.76	2.50	7.90	62.29	0.13	0.95	16.75	-0.03	-0.002
20.05	21.60	19.86	2.00	9.93	62.29	0.16	1.19	20.03	-0.02	-0.001
7.17	21.39	9.95	5.01	1.99	62.29	0.03	0.24	7.17	0.00	0.000
10.43	21.77	12.11	3.01	4.02	62.28	0.06	0.48	10.47	0.04	0.003
13.61	21.42	17.93	3.01	5.96	62.29	0.10	0.72	13.60	-0.01	-0.001
16.79	21.77	19.83	2.50	7.93	62.28	0.13	0.95	16.80	0.01	0.001
20.03	21.93	19.86	2.00	9.93	62.28	0.16	1.19	20.03	0.00	0.000
7.17	21.81	9.96	5.01	1.99	62.28	0.03	0.24	7.18	0.01	0.001
10.44	22.01	12.07	3.01	4.01	62.28	0.06	0.48	10.45	0.01	0.001
13.65	22.14	17.98	3.00	5.99	62.28	0.10	0.72	13.66	0.01	0.001
16.86	22.02	19.93	2.50	7.97	62.28	0.13	0.96	16.87	0.01	0.000
19.96	21.61	19.77	2.00	9.89	62.29	0.16	1.19	19.96	0.00	0.000

Water Density: $\rho = 62.441 - 1.374E\text{-}3*T - 271.818E\text{-}6*T^2 + 194.093E\text{-}9*T^3$
7.4805 gallons = 1 ft^3

Uncertainty of the Standards:					
Weight:	+/-	0.02	lbs		
Temperature:	+/-	0.40	C		
Density:	+/-	0.06	lbm/ft^3		
Time:	+/- (	0.20	sec +	500.00	µsec/sec)
Multimeter:	+/-(	0.04	% RDG +	0.00	mADC)

Accepted Tolerance: +/- 0.500 GPM

Statistical Info. a	b	n	T	Xbar (GPM)	Sxx (GPM^2)	SEE (mA^2)	MSE (mA^2)
3.958	13.480	16.00	2.145	0.67	2.17	0.0050	0.0004

Calculated Uncertainties:	standard uncertainty (GPM)	curve-fit uncertainty (GPM)	fixed uncertainty (GPM)	total uncertainty (GPM)
	0.0031	0.0034	0.0000	0.0046

PASS CALIBRATION? **YES**

TRANSFER EQUATION:	**GPM =**	**0.074**	**mA**	**-0.294**

Figure H15. Pre-test Calibration Data of Magnetic Flowmeter Q2

UNCERTAINTY ANALYSIS **TR-03562** page ____ of ____
REF. WSRC-TR-91-106 calibration date: 07 May 2001

Calibration Data / Calculated Data

Meter Output (mA)	Water Temp (C)	Water Weight (lbs)	Time Duration (min)	Mass Flow (lbs/min	Water Density (lb/ft^3)	Volume Flow (ft^3/min)	Volume Flow (GPM)	Curve Fit Ouput (mA)	Error (mA)	Error (GPM)
4.00	21.65	0.00	0.001	0.00	62.29	0.00	0.00	3.98	-0.02	-0.006
7.24	22.09	50.91	6.00	8.49	62.28	0.14	1.02	7.25	0.01	0.003
10.37	22.13	66.34	4.00	16.59	62.28	0.27	1.99	10.37	0.00	0.001
13.18	22.08	71.69	3.00	23.90	62.28	0.38	2.87	13.19	0.01	0.003
16.77	22.14	99.58	3.01	33.08	62.28	0.53	3.97	16.73	-0.04	-0.012
19.87	22.59	123.73	3.00	41.24	62.27	0.66	4.95	19.88	0.01	0.003
7.30	21.19	51.43	6.00	8.57	62.29	0.14	1.03	7.28	-0.02	-0.005
10.42	21.71	66.84	4.00	16.71	62.29	0.27	2.01	10.42	0.00	0.000
13.75	21.65	76.15	3.00	25.38	62.29	0.41	3.05	13.76	0.01	0.004
16.77	21.32	99.71	3.01	33.13	62.29	0.53	3.98	16.75	-0.02	-0.007
19.97	20.89	124.55	3.00	41.52	62.30	0.67	4.99	19.98	0.01	0.003
7.20	21.01	50.55	6.01	8.41	62.29	0.14	1.01	7.22	0.02	0.006
10.40	20.61	66.80	4.00	16.70	62.30	0.27	2.01	10.41	0.01	0.005
13.61	21.71	74.95	3.00	24.98	62.29	0.40	3.00	13.61	0.00	0.000
16.82	21.03	100.01	3.00	33.34	62.29	0.54	4.00	16.83	0.01	0.002
20.07	22.59	125.23	3.00	41.74	62.27	0.67	5.01	20.07	0.00	0.001

Water Density: $\rho = 62.441 - 1.374E\text{-}3*T - 271.818E\text{-}6*T^2 + 194.093E\text{-}9*T^3$
7.4805 gallons = 1 ft^3

Uncertainty of the Standards:					
Weight:	+/-	0.2	lbs		
Temperature:	+/-	0.40	C		
Density:	+/-	0.06	lbm/ft^3		
Time:	+/- (	0.20	sec +	500.00	µsec/sec)
Multimeter:	+/-(	0.04	% RDG +	0.001	mADC)

Accepted Tolerance: +/- 0.10 GPM

Statistical Info. a	b	n	T	Xbar (GPM)	Sxx (GPM^2)	SEE (mA^2)	MSE (mA^2)
3.979	3.209	16.00	2.145	2.81	37.90	0.0039	0.0003

Calculated Uncertainties:	standard uncertainty (GPM)	curve-fit uncertainty (GPM)	fixed uncertainty (GPM)	total uncertainty (GPM)
	0.012	0.013	0.000	0.018

PASS CALIBRATION? **YES**

TRANSFER EQUATION: GPM = 0.312 mA -1.240

Figure H16. Pre-test Calibration Data of Magnetic Flowmeter Q3

UNCERTAINTY ANALYSIS **TR-03276** page ____of _____
REF. WSRC-TR-91-106 calibration date: 21 May 2002

Calibration Data				Calculated Data						
Meter Output (mA)	Water Temp (C)	Water Weight (lbs)	Time Duration (min)	Mass Flow (lbs/min	Water Density (lb/ft^3)	Volume Flow (ft^3/min)	Volume Flow (GPM)	Curve Fit Ouput (mA)	Error (mA)	Error (GPM)
4.00	20.70	0.00	0.001	0.00	62.30	0.00	0.00	3.99	-0.01	-0.002
7.27	18.90	84.35	10.005	8.43	62.32	0.14	1.01	7.27	0.00	-0.001
10.42	19.20	82.87	5.004	16.56	62.32	0.27	1.99	10.43	0.01	0.002
13.66	20.60	99.50	4.003	24.86	62.30	0.40	2.98	13.65	-0.01	-0.003
16.78	21.30	98.82	3.004	32.90	62.29	0.53	3.95	16.78	0.00	0.000
20.04	21.30	123.96	3.002	41.29	62.29	0.66	4.96	20.04	0.00	0.000
7.25	21.10	84.00	10.002	8.40	62.29	0.13	1.01	7.26	0.01	0.002
10.40	21.10	82.66	5.001	16.53	62.29	0.27	1.98	10.42	0.02	0.005
13.69	21.40	99.77	4.009	24.89	62.29	0.40	2.99	13.66	-0.03	-0.008
16.80	21.50	98.99	3.002	32.98	62.29	0.53	3.96	16.81	0.01	0.003
20.05	21.50	124.17	3.006	41.30	62.29	0.66	4.96	20.05	0.00	-0.001
7.26	20.80	84.11	10.001	8.41	62.30	0.13	1.01	7.26	0.00	0.000
10.41	20.70	82.72	5.004	16.53	62.30	0.27	1.98	10.42	0.01	0.002
13.65	19.80	99.49	4.005	24.84	62.31	0.40	2.98	13.64	-0.01	-0.002
16.85	19.20	99.37	3.002	33.10	62.32	0.53	3.97	16.85	0.00	0.001
20.05	22.10	124.13	3.004	41.33	62.28	0.66	4.96	20.06	0.01	0.002

Water Density: ρ = 62.441-1.374E-3*T - 271.818E-6*T^2 + 194.093E-9*T^3
7.4805 gallons = 1 ft^3

Uncertainty of the Standards:					
Weight:	+/-	0.2	lbs		
Temperature:	+/-	0.20	C		
Density:	+/-	0.06	lbm/ft^3		
Time:	+/- (	0.20	sec +	500.00	µsec/sec)
Multimeter:	+/-(	0.04	% RDG +	0.001	mADC

Accepted Tolerance: +/- 0.025 GPM

Statistical Info.				Xbar	Sxx	SEE	MSE
a	b	n	T	(GPM)	(GPM^2)	(mA^2)	(mA^2)
3.992	3.236	15.00	2.160	2.79	37.60	0.0013	0.0001

Calculated Uncertainties:	standard uncertainty (GPM)	curve-fit uncertainty (GPM)	fixed uncertainty (GPM)	total uncertainty (GPM)
	0.012	0.008	0.000	0.014

PASS CALIBRATION? **YES**

TRANSFER EQUATION:	**GPM =**	**0.309**	**mA**	**-1.233**

Figure H17. Pre-test Calibration Data of Magnetic Flowmeter Q4 or Qbp