Acceptable Knowledge Summary Report for Waste Stream: SR-T001-221F-HET/Drums

by

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DOE Contract No. **DE-AC09-96SR18500**

DISCLAIMER

Savannah River Site
Waste Isolation Pilot Plant Disposal Program

Acceptable Knowledge Summary Report
For Waste Stream:
SR-T001-221F-HET/Drums

Date: October 8, 1998
Revision 0

Facility: 221-F, FB-Line

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

Since beginning operations in 1954, the Savannah River Site FB-Line produced Weapons Grade Plutonium for the United States National Defense Program. The facility mission was mainly to process dilute plutonium solution received from the 221-F Canyon into highly purified plutonium metal. As a result of various activities (maintenance, repair, clean up, etc.) in support of the mission, the facility generated a transuranic heterogeneous debris waste stream. Prior to January 25, 1990, the waste stream was considered suspect mixed transuranic waste (based on potential for inclusion of F-Listed solvent rags/wipes) and is not included in this characterization. Beginning January 25, 1990, Savannah River Site began segregation of rags and wipes containing F-Listed solvents thus creating a mixed transuranic waste stream and a non-mixed transuranic waste stream. This characterization addresses the non-mixed transuranic waste stream packaged in 55-gallon drums after January 25, 1990.

Characterization of the waste stream was achieved using knowledge of process operations, facility safety basis documentation, facility specific waste management procedures and storage / disposal records. The report is fully responsive to the requirements of Section 4.0 "Acceptable Knowledge" from the *WIPP Transuranic Waste Characterization Quality Assurance Plan*, CAO-94-1010, and provides a sound, (and auditable) characterization that satisfies the WIPP criteria for Acceptable Knowledge.

2.0 WASTE STREAM IDENTIFICATION

Waste Stream Identification Number: SR-T001-221F-HET/Drum

Site Where TRU Waste Was Generated: Savannah River Site, Post Office Box 616, Aiken, South Carolina, 29802

Facility Where TRU Waste Was Generated: 221-F, FB-Line

Facility Mission: The 221-F, FB-Line is a defense related material production facility where dilute plutonium solutions are concentrated and purified into plutonium metal.

Waste Stream Description: **This stream is** contact-handled transuranic waste resulting from glove box operations, decontamination activities, housekeeping, and maintenance. The waste is heterogeneous and non-hazardous consisting mainly of dry organic debris such as personnel protective equipment (i.e. shoe covers, lab coats, plastic suits), floor sweepings, rags, lab ware, plastics, wood, paper and other incidental job control type waste. Some fraction of the waste is inorganic debris consisting of metal components (i.e. hand tools, small equipment), glass and absorbent (i.e. diatomaceous earth).

Waste Parameter Category: S5440

Waste Matrix Constituent Codes:

- S5111 - metal equipment
- S5390 - organic debris
- S5319 - plastic job control waste

Waste Material Parameters:

- iron-based metal/alloy
- other inorganics
- cellulosics
- rubber
- plastics

TRUPACT-II Content Code (TRUCON): SR225G

Hazardous Waste Code(s): None

Waste stream volume and time of generation: As of October 28, 1997, 519 drums [68] were stored at the Solid Waste storage facility from this waste stream. This waste stream continues to be generated from the FB-Line facility. Waste Forecasting[67] projects approximately 246 drums (1720 cubic feet) to be generated during fiscal year 1998 and approximately 217 drums (1516 cubic feet) each fiscal year 1999 through 2007.

3.0 ACCEPTABLE KNOWLEDGE DATA AND INFORMATION

Transuranic waste destined for disposal at the Waste Isolation Pilot Plant must be characterized prior to shipment. The Transuranic Waste Characterization Quality Assurance Program Plan[2] permits use of knowledge of the materials and processes that generate and control the waste provided a clear and convincing argument about the characteristics of the waste is achieved. This acceptable knowledge characterization is fully responsive to the requirements of the Quality Assurance Program Planand was achieved as outlined in Part D.4.0 of the Savannah River Site WIPP Disposal Program Plan[3] and implemented via the Solid Waste Division "Acceptable Knowledge" procedure[4].

This waste stream was characterized using acceptable knowledge stemming from a variety of sources. Primarily, controlled FB-Line facility documentation effective during the period of waste generation was used as the basis for this characterization. Examples include facility specific Authorization Basis documents, facility-operating procedures, waste package data sheets, and completed burial ground records. Specific revisions of controlling documentation in effect during generation and processing of waste from this stream were obtained and used. All documentation used to derive this characterization is denoted through out by superscript numerals (e.g.[69]) which correlate to the Reference listing shown in Attachment 2.

4.0 DATA AND INFORMATION DISCUSSION

Specific information (as required by the Transuranic Waste Characterization Quality Assurance Program Plan[2]) pertaining to the FB-Line transuranic waste program and waste stream is presented below in Sections 4.1 and 4.2. These sections present and/or discuss information gleaned from referenced source documents. A correlation between data fields necessary to prepare and validate characterization and transportation documentation for shipment of waste to the WIPP is included as Attachment 3 – "Acceptable Knowledge Data / Information Matrix". This matrix links required information to the information source and where it is eventually recorded (i.e. WIPP Waste Information System, Waste Stream Profile Form, Payload Container Transportation Certification Document –Test, etc.).

Documentation completed in accordance with procedures and signed by generating facility personnel to attest to the accuracy of information about the waste was viewed with more priority than others sources.

Limitation: Although every attempt has been made to accurately characterize this waste stream using objective evidence and knowledge of facility operations and material inputs, it should be noted that some variability as to accuracy is expected. There is the possibility that prohibited items/materials or items/materials that are not part of this waste stream were inadvertently place in waste containers. The characterization validation activities (Radiography, Head Space Gas Sampling, Visual Examination) will serve as mitigating actions to ensure accurate characterization and proper documentation of every transuranic waste drum prior to shipping to the WIPP.

4.1 REQUIRED PROGRAM INFORMATION

4.1.1 Facility Location, Description and Mission

LOCATION:[6,7,8,9,10] The Savannah River Site is located in South Carolina on approximately 300 square miles. It is bounded on the southwest by the Savannah River and occupies parts of Aiken, Barnwell and Allendale counties. The FB-Line facility is located inside the 221-F Canyon building in the 200-F Separations Area of the Savannah River Site. Maps[5] denoting the location of the Site, the 200-F Separations Area within the site boundary and the waste generating facility within F-Area are included as Attachment 1.

DESCRIPTION:[6,7,8,9,10] The original facility was constructed in 1951-1953 and later upgraded during 1957-1958. The 221-F Canyon building is a large reinforced concrete structure approximately 850 feet long, 122 feet wide and 66 feet tall. FB-Line occupies five sections and five levels inside the canyon facility. Processing equipment in the facility is enclosed in either cabinets or glove boxes to prevent radiological contamination of operating areas.

MISSION:[6,7,8,9,10] Since beginning operations in 1954, the FB-Line produced Weapons Grade Plutonium for the United States National Defense Program. The facility has two main functions: 1) to dilute plutonium solution received from the 221-F Canyon into highly purified Pu metal; 2) to recover Pu from various solid and liquid wastes which are produced while operating FB-Line or which are received from offsite. Process operations were discontinued in January 1990 for routine maintenance and project upgrades. During the shutdown, a program was initiated to inspect exhaust ducts and clean them of any plutonium accumulation. Process operations were not restarted until November 1995 when the facility's mission became the processing of existing inventories of plutonium and plutonium containing materials to achieve a suitable form for long term storage.

4.1.2 Description of Waste Generating Operations [6,7,8,9,10]

This waste stream was generated as a result of maintenance and facility upgrades that took place between 1990 and November 1995 and after that from plutonium production operations. Dilute plutonium solution is received from the 221-F Canyon and further processed into highly purified Pu metal. The five general process areas in the FB-Line facility are: Cation Exchange, Precipitation and Filtration, Mechanical Line, Recovery and Special Recovery. A more detailed discussion of each of the general areas is presented below.

Cation Exchange – The cation exchange process couples the F-Canyon separation process to the FB-Line metal conversion process. Dilute product solution from the 221-F Canyon is selectively sorbed on cation resin. A cation resin eluant removes plutonium from the resin as a concentrated solution necessary for subsequent operations to convert the plutonium solution to metal form. Main system components, in addition to the cation exchange columns, are two feed receipt tanks, four feed filters, two column head tanks, four product run tanks, and two product hold tanks.

Precipitation and Filtration – Plutonium trifluoride cake is precipitated from the concentrated solution received from the cation exchange process. By combining hydrofluoric acid with the concentrated solution in the first stage precipitator, large trifluoride crystals are formed. The slurry overflows to the second stage precipitator and is vacuum filtered to form a cake. Main system components include two each; concentrate feed tanks, first and second stage precipitators, filter stations, filtrate catch tanks filtrate neutralization tanks; a boat flush station and a boat flush run tank.

Mechanical Line – The filter boat containing plutonium trifluoride cake is removed from the filtration station, monitored with a neutron probe for plutonium content and transported to the mechanical line air drying station. Here, warm air is drawn through the filter cake to remove residual moisture. After completion of the drying process, filter boats are emptied into roasting pans and subsequently placed in a roasting furnace. In the furnace the material is converted to a mixture of plutonium tetrafluoride and plutonium dioxide. The mixture is combined with metallic calcium in a reduction vessel and heated in an induction furnace to produce plutonium metal. The plutonium metal is then pickled in nitric acid and finally sampled, weighed and packaged for storage. Main system components are four air drying stations, two conversion furnaces, two reduction furnaces, a pickling station and a sampling station.

Recovery – Plutonium (from both onsite and off-site) in solid scrap form and miscellaneous solutions from the FB-Line are recovered and transferred to the 221-F Canyon for recycle through the solvent extraction process. Mechanical line glove box sweepings, slag and crucible, and metal turnings are dissolved in nitric acid in a slab tank. Both dissolved plutonium scrap and plutonium-bearing solutions are prepared for sorption of plutonium on anion exchange resin. The purified plutonium solution eluted from the anion exchange resin is diluted and transferred to the 221-F canyon. Main system components are two filtrate hold tanks, a recycle feed tank, a slag and crucible dissolver, a filtrate run tank, two anion exchange columns, one waste tank and a product run tank.

Special Recovery - The purpose of the special recovery operation is to recover plutonium from solids that are not suitable for processing in the recovery dissolver. In addition, Special Recovery was used to process miscellaneous plutonium-bearing solutions that could not be prepared for anion exchange processing by adjustment in the anion feed tank. Two special recovery processing lines (i.e. glove boxes), one for metal dissolution and one for oxide dissolution, were used to dissolve plutonium-containing metals or compounds unacceptable for processing in the recovery dissolver. This process has been shut down. As of this writing, there are no intentions to further run/use the Special Recovery process in the FB-Line.

4.1.3 Waste Identification / Characterization Schemes

Management of transuranic waste from the FB-Line facility is achieved as directed by procedures[11-64] designed to ensure accurate characterization and identification of the waste. The procedures direct facility personnel actions to ensure storage in accordance with the Savannah River Site Solid Waste Division[65] and WIPP Waste Acceptance Criteria[66] in effect at the time of waste packaging. Waste is examined for physical content against criterion listed in the procedure(s) to determine and assign the appropriate "local" waste category code (i.e. 001-Job Control, 002-Sludge, 003-Resin, 004-Filters, etc). Facility personnel also determine whether or not the waste is hazardous under the Resource Conservation and Recovery Act [Ref.: 40 CFR 261, Subpart C & D]. Based on the identified waste category and applicable hazardous / non-hazardous determination, a "Waste ID Slip" is completed for each waste cut in accordance with instructions in the procedure. The "Waste ID Slip is an internal worksheet that captures information necessary to complete forms "TRU Waste Package Data" (OSR 7-872)[65] and "Radioactive Solid Waste Burial Ground Record" (OSR 7-375A)[65]. At the time the waste is placed in a drum liner / drum these forms are completed. These forms (which contain a statement attesting to the accuracy of the information) accompany waste containers (i.e. drums) when transported from the FB-Line to the Solid Waste

Division storage facility. Waste drums are labeled (paint stenciled) to reflect information as to whether they are WIPP certifiable (i.e.001-Job Control waste containing no sludge, resin or filters) and whether they contained hazardous constituents. Each drum is traceable to the generating facility and characterization information contained on the "OSR" forms described above via a unique File Sequence Number (FSN). This number, which appears on each of the OSR forms, is also applied to each waste drum and inner liner with a stainless steel tag die stamped with the respective unique FSN number.

4.1.4 Types and Quantities of Waste Generated

Waste type: Contact handled transuranic waste resulting from glove box operations, decontamination activities, housekeeping, and maintenance. The waste is heterogeneous and non-hazardous consisting mainly of dry organic debris such as personnel protective equipment (i.e. shoe covers, lab coats, plastic suits), floor sweepings, rags, lab ware, plastics, wood, paper and other incidental job control type waste. Some fraction of the waste is inorganic debris consisting of metal components (i.e. hand tools, small equipment), glass and absorbent (i.e. diatomaceous earth).

Quantities: As of October 28, 1997 five hundred nineteen drums [68] were stored at the Solid Waste storage facility from this waste stream. This waste stream continues to be generated from the FB-Line facility. Waste Forecasting[67] projects approximately 246 drums (1720 cubic feet) to be generated during fiscal year 1998 and approximately 217 drums (1516 cubic feet) each fiscal year 1999 through 2007.

4.1.5 Correlation of Waste Streams Generated From the Same Building and Process

Waste stream SR-T001-221F-HET is the non-mixed counterpart of waste streamsSR-W026-221F-HET and SR-W027-221F-HET. Waste stream SR-T001-221F-HET was generated after January 25, 1990 which is the date of implementation for a program to segregate waste containing F-listed solvents and cleaning agents such as trichloroethylene, methylene chloride, and carbon tetrachloride. In short, waste stream SR-T001-221F-HET resulted when the solvent rag segregation program was implemented. The correlation between waste streams with regard to time of generation, waste processing, and site specific facilities are delineated in the Savannah River Site chapter of the Transuranic Waste Baseline Inventory Report[1] (TWBIR). This delineation is based on a technical report titled: *SRS Data Preparation For The 1995 TRU Waste Baseline Inventory Report, Mixed Waste Inventory Report, and Integrated Database*[69]. The TWBIR contains 47 SRS generator specific waste streams: 29 mixed-TRU and 18 TRU. For example, waste stream number SR-T001-221F-HET was created from TWBIR Site Waste Stream Number SR-T001 and Building 221F at SRS. The "HET" indicates that the final waste form consists of heterogeneous debris.

Waste generated before 1/25/90 is managed under RCRA as F-Listed solvent waste[70]. The drummed TRU portion of SRS solvent-debris waste is captured in waste stream SR-W027-221F-HET. The Savannah River Site decision to manage waste stream SR-W027-221F-HET under RCRA as F-Listed solvent waste was based on the rationale that containers holding solvent rags were not identifiable, and therefore by default were assumed to be F-listed waste.

Drums are traceable to the generating facility and corresponding characterization via a unique File Sequence Number (FSN). This number appears on each of the OSR forms (See 4.1.3 above) and on a die stamped stainless steel tag wire attached to each drum.

4.1.6 Waste Certification Procedures

Over the period of waste generation as discussed in Section 4.2.2, FB-Line personnel used procedures listed below to package, identify and document transuranic waste. Through accurate completion of the procedures, personnel ensured that waste contents are known, documented and that the container was labeled accordingly. Waste containers were identified as "certifiable" or "non-certifiable" in accordance with previous versions of WIPP Waste Acceptance Criteria (i.e. revisions 3&4). The designation of "certifiable" denoted that the waste/container was "job control waste" that contained no WIPP prohibited items/materials and that the waste was suitable for later shipment to the WIPP. The procedures provided personnel with specific information and instructions concerning hazardous materials that may be encountered, WIPP prohibited items/materials and acceptable methods for absorption of liquids and neutralization of acids and bases. Each "TRU Waste Package Data" (OSR 7-872)[65] contains a statement signed by the generator such that the waste has been verified to be "certifiable" or "non-certifiable" in accordance with WIPP Waste Acceptance Criteria in place at the time.

- DPSOL 221-FB-2502, *Packaging General and Cabinet Waste Into Red Pails*[11-21]
- DPSOL 221-FB-2504, *Drumming Red Waste Pails and Shipment to the Burial Ground*[22-32]
- SOP 221-FB-2505, *Packaging TRU (Process Cabinet) Waste Into A Drum Liner*[33-47]
- DPSOL 221-FB-2506, *Packaging TRU Waste (Excluding Process Cabinet Waste) Into A Drum Liner*[48-64]

4.2 REQUIRED WASTE STREAM INFORMATION

4.2.1 Area and Building From Which the Waste Stream Was Generated

All waste from this stream is generated from the FB-Line facility located inside the 221-F Separations canyon building. As discussed in Section 4.1.1 above, the FB-Line occupies five levels and five sections of the canyon building. Waste may be generated from contamination areas or glove boxes/process enclosures from any section or level within the facility.

4.2.2 Waste Stream Volume and Time Period of Generation

This waste stream has been generated since January 25, 1990 (See 4.1.4 above). Generation of this stream will continue into the foreseeable future pending process shift or mission change of the FB-Line. As of October 28, 1997 five hundred nineteen drums were shipped to the Solid Waste Division storage facility. Current waste forecasting information projects approximately 246 drums to be generated during fiscal year 1998 and approximately 217 drums each fiscal year 1999 through 2007.

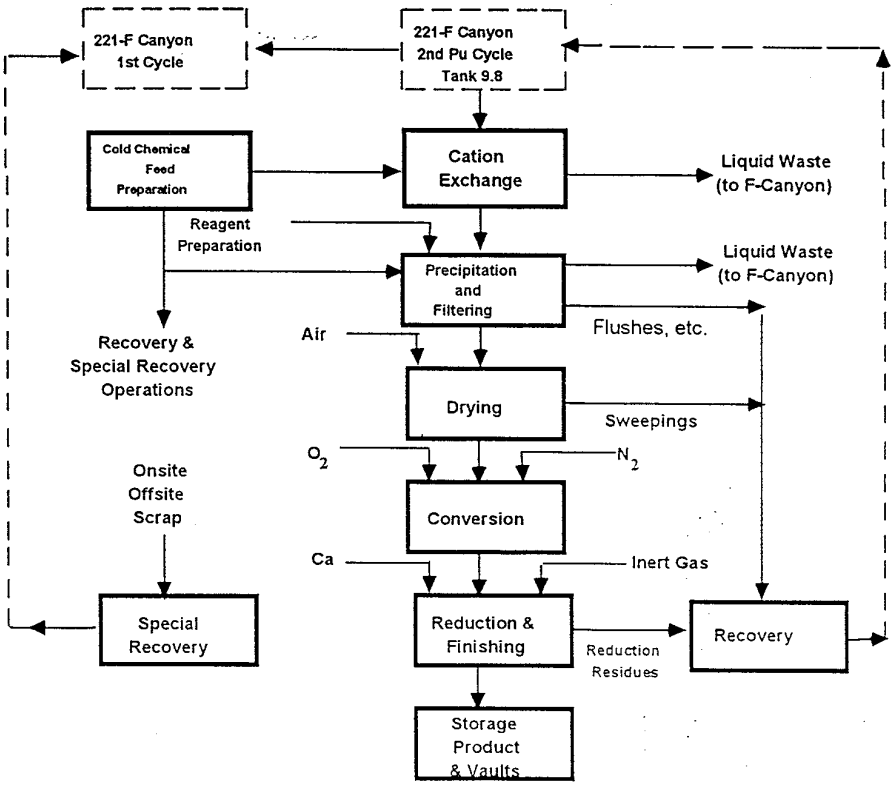
4.2.3 Waste Generating Process Description

Waste materials and items contained in this stream result from various activities. Routine operational activities (surveillance rounds, process equipment adjustments, radiological surveys, etc) and preventive and corrective maintenance were the major contributors to the waste stream. Other contributing activities included facility modifications, decontamination and housekeeping (i.e. cleanup) tasks. Much of the work performed in FB-Line takes place within radiologically contaminated areas requiring personnel protective equipment in addition to tools and materials necessary to complete a given scope of work.

Examples of activities resulting in waste other than used personal protective equipment include; absorption of liquids; neutralization of acids/bases; glove replacement on process cabinets / glove boxes, various mechanical and electrical repairs, maintenance, or change outs.

4.2.4 Process Flow Diagram [71,72,73]

The following is a general process flow of the FB-Line Facility operation. Dashed lines indicate processing outside the FB-Line Material Access Area.



4.2.5 Material Inputs Related to Physical Form, Chemical and Radiological Waste Characteristics

Physical Form: The following listing of materials / items are included in FB-Line procedures as "Job Control Waste" which were shipped to the Solid Waste storage facility as "certifiable" transuranic waste. Some of the items / materials shown are hazardous and as such were identified and transported to the storage facility as "certifiable" mixed transuranic waste. Mixed transuranic waste is not included in this waste stream.

"Certifiable" "Job Control Waste" described in FB-Line Waste Procedures[11-64]

"Organic: BH-38 cleaner, bleach, breathing-air hose, carboy bottles, cartons, celite®, cloth, craft paper, crucibles, drum liners, dry box gloves, electricians tape, firebrick, fresh-air hoods, glassware, gloves, hut plastic, isoclean®, leather, masking tape, miscellaneous rubber, miscellaneous wood, mop heads, nylon-filled tape, oil, paint, paper, plastic film, plastic tape, plastic shoe covers, plastic suits, Plexiglas®, poly bags, PVC bags, rags, sheeting, sponges, spray, surgeons gloves, tape, uniforms, welder's jacket, swipes, etc."

"Inorganic: agitator motors, agitators, button cans, cadmium sheet, calcium, ceramics, glass, hot plates, instruments, lab ware, leaded aprons, lead bricks, mercury thermometers, metal and glass beakers, metal hardware, metal tubing and fittings, miscellaneous metal cans, motors, scales, off-plant oxide containers, oxide cans, pipe, slag and crucible cans, shipping containers, spray cans, tools, valves, valve handles, etc."

The waste consists of a heterogeneous mixture of:

- Plastics; e.g. bags and sheeting for contamination containment and control, personal protective equipment
- Cellulose / cellulose based; e.g. paper wipes, rags, laboratory coats, coveralls
- Ferrous and non-ferrous metals; e.g. containers, tools, piping, valves
- Rubber products; e.g. gloves, gaskets, seals
- Absorbent materials; e.g. diatomaceous earth (i.e. Celite®)
- Absorbed liquids; flush water, neutralized acid / caustic solutions

Job control waste at SRS equates to TWBIR Matrix Category Code S5440, Predominantly Organic Debris.

Radiological Characterization

In July 1994, an extensive radioisotope characterization[74] (based on Process Knowledge) of Low-Level waste from the FB-Line was completed. Results of the characterization were later validated[75] (November 1995) through laboratory analysis of smear samples[76] obtained from various locations throughout the FB-Line facility. Since the source of the radioactive contamination is the same for any waste generated in the FB-Line facility, this work addressing Low-Level waste is applicable to this transuranic waste stream.

Greater than 99.99% of the radioactivity in the waste stream is contributed by plutonium isotopes and americium-241. This one isotopic distribution (shown below) is applicable to all transuranic and low-level waste generated in the facility.

221FB-Line WG Pu Isotopic Distribution

[*Assumes ~ 10 year age]

Isotope	*Wt %
^{238}Pu	0.1
^{239}Pu	93.5
^{240}Pu	5.8
^{241}Pu	0.4
^{242}Pu	0.03
^{241}Am	0.28

Although some "fuel grade" material was produced in the FB-Line, it represented such a small portion of the overall radionuclide matrix that it is negligible. A detailed discussion concerning this topic is contained in WSRC-TR-94-0288, *Radioisotope Characterization of FB-Line Low-Level Waste*[74].

Chemical Content Identification

Since 1990, the procurement and use of chemicals containing hazardous constituents (under the RCRA) have been administratively controlled by procedure[77-78]. Under this procedure, blue circular labels ("blue dots") are affixed to chemical containers which if disposed in an untreated or non-empty condition could constitute hazardous or mixed (if radiologically contaminated) waste. A listing of all chemicals used in the FB-Line is maintained along with the facility Material Safety Data Sheet and denotes which chemicals are "blue dot" and which are not. The blue dot serves to alert facility personnel that if a chemical is no longer needed, it may require treatment prior to disposal or may be required to be disposed as hazardous/mixed mixed waste as appropriate.

F-Listed Solvents

Transuranic waste generated prior to January 25, 1990 is managed as mixed transuranic waste for F-Listed solvent[70]. As stated in Section 2.0 above, the subject waste stream was generated after January 24, 1990. After this date, Savannah River Site generators segregated F-Listed debris (i.e. solvent contaminated rags and wipes) from other non-solvent debris waste.

Ignitables, Reactives, and Corrosives

The TRU Waste Package Data Form for each drum was reviewed prior to inclusion on the candidate drum list to ensure that the FB-Line generator documented that the waste matrix does not contain ignitable, reactive, and corrosive waste. The TRU Waste Package Data Form is completed according to SOP 221-FB-2504-NS[22-32]. FB-Line operating procedures direct that residual acids/caustics in TRU waste are neutralized, and any corrosive, ignitable, or reactive characteristics are removed (through absorption or neutralization) before waste is packaged and transported to the solid waste storage facility.

Explosive:

Two potential explosives, "resin in the nitrate state, and squibs from fire detectors"[40], were recognized during compilation of acceptable knowledge information. Resin is identified by a different Waste Description Code on the TRU Waste Data Package Form and is not a constituent of this waste stream. Squibs are electrical discharge plugs used in Halex® fire suppression cylinders[6]. Each consists of a small smokeless powder sealed in a copper thimble that is electrically connected to fire detection sensors. The TRU Waste Package Data Form for each drum is reviewed to ensure that the FB-Line generator documented that waste matrix does not contain explosives in the waste and that the Waste Description Code is for "Job Control Waste" only.

Free Liquid:

The TRU Waste Package Data Form for each drum was reviewed by the Acceptable Knowledge Investigator to ensure that the FB-Line generator documented that waste matrix does not contain free liquids. FB-Line operating procedures direct that free liquid not to be placed in transuranic waste containers.

Pyrophoric:

The TRU Waste Package Data Form for each drum was reviewed by the Acceptable Knowledge Investigator to ensure that the FB-Line generator documented that waste matrix does not contain pyrophoric material other than radionuclides. FB-Line operating procedures direct that pyrophoric materials not be placed in transuranic waste containers.

Chelating Agents and Complexants

The waste stream does not contain chelating agents/complexants. The 221 F-Canyon separation processes use chelating agents in the separation of plutonium from irradiated uranium and other materials. For example, tri-butyl phosphate (TBP) is the complexing agent used in the Savannah River Site's PUREX process and many other laboratory processes. Other agents such as tri-octyl phosphine oxide (TOPO) and tri-iso octylamine (TiOA) have been used or investigated through the years. Nevertheless, none of these chelating agents/complexants is known to have entered the FB-Line transuranic waste stream. The complexants are dissolved in organic solvents for use as liquid/liquid extractants in the separation process. The solvents are recycled until depleted and then discarded to solvent waste tanks in the Waste Disposal Facility.

Polychlorinated Biphenyl (PCB)

Only one potential source of PCB contamination of this waste stream was identified during the Acceptable Knowledge investigation. In 1981, the Savannah

River Site PCB Committee identified several capacitors containing PCBs inside the FB-Line facility[91]. Extensive efforts were undertaken during the early to mid 1980s to replace or retrofill electrical equipment containing PCB material[92]. Although the precise history of the six FB-Line capacitors is unknown, the annual PCB Inventory Change Report[93] for calendar year 1984 stated that no Large Capacitors were in service. It is assumed therefore that by the end of 1984 the potential for PCB contamination of transuranic waste from the FB-Line no longer existed. Since this waste stream was generated after January 25, 1990, there is no potential for PCB contamination.

4.2.6 Waste Packaging

Drum Liner: All waste from this waste stream is packaged in a 90 mil (thickness) high-density polyethylene drum liner with a lid providing a tight snap fit. All liner lids are either vented using the same stainless steel filter vent as used for drums (see below) or with a minimum 0.3 inch diameter through hole. The stainless steel filter vent was used on all liners closed prior to August 19, 1997. After this date, liners are vented with a simple 0.3 inch (or greater) hole open to the interior of the drum. Effective December 31, 1997, the Savannah River Site Waste Acceptance Criteria for transuranic waste [65] no longer required waste generators to install drum liners. Therefore, after this date drums of transuranic waste may (or may not) have liners installed. Drum liners were procured in accordance with Savannah River Site procurement specification[79] NMP-WMG-910067 (prior to December 19, 1991) and specification[80-81] M-SPS-G-00003 thereafter.

Drum: Drum liners are contained in 55-gallon drums fabricated from 16 gauge (0.0598-inch nominal thickness) low carbon steel with a fully removable head. Drum finish (inside and out) is either galvanize or two coats of high bake phenolic epoxy coating. All drums were designed, fabricated, inspected, tested, accepted as Department of Transportation Shipping Container Specification 17-C in

accordance with Savannah River Site procurement specification NMP-WMG-910067 (prior to December 19, 1991) and specification[82-86] M-SPS-G-00002 thereafter.

Filter Vents: All transuranic waste drums and liners (prior to August 1997) are vented through a low density porous carbon/carbon composite filter media housed in a threaded cylindrical 304 stainless steel housing. Filter Vents were procured in accordance with Savannah River Site procurement specification NMP-WMG-910067 (prior to December 19, 1991) and specification[87-90] M-SPS-G-00004 thereafter.

Layers of Confinement: Records documenting the number of layers of confinement within a given drum is not available. Because of this lack of detailed knowledge, the Savannah River Site will conservatively assume five layers of confinement and therefore use waste content code III.1A5 to comply with Section 8, Appendix 1.3.7 of the TRUPACT-II SAR. This equates to a maximum of 0.0164 watts/ drum or 0.2296 watts/TRUPACT-II.

4.2.7 Applicable EPA Waste Codes

This waste stream is non-hazardous therefore no EPA Waste Codes are assigned.

4.3 SUPPLEMENTAL WASTE STREAM INFORMATION

None.

4.4 CONTAINER SPECIFIC INFORMATION

A listing of candidate containers from this waste stream includes 519 drums. Since this is an ongoing waste stream the list has not been included in this report. The list is maintained in the WIPP Records Center in building 724-8E at the Savannah River Site. The listing is updated yearly, or more frequently as directed by the Site Project Manager. Specific information for each individual container will be assembled from this characterization report and from characterization validation results obtained when the respective drums

undergo, assay, radiography, headspace gas sampling, and visual examination (as applicable).

4.5 INFORMATION NOT APPLICABLE TO THIS WASTE STREAM

The following fields from the Acceptable Knowledge Data / Information Matrix (Attachment 3) do not apply to this waste stream. Field 32,79,80,81 and 153 apply only to mixed transuranic waste streams. This stream is non-mixed.

Field Number	Field Name	Reason Not Applicable
32	"Hazardous ID Code"	Applies to Mixed Transuranic Waste Only
79	"Solid Waste Metals: Concentration"	Applies to Mixed Transuranic Waste Only
80	"Solid Waste Metals: Date Analyzed"	Applies to Mixed Transuranic Waste Only
81	"Solid Waste Metals: Date Sampled"	Applies to Mixed Transuranic Waste Only
153	"Applicable EPA Hazardous Waste Codes"	Applies to Mixed Transuranic Waste Only
255	Non-vented Container	All drums are vented.

5.0 ATTACHMENTS

ATTACHMENT 1: SITE / AREA / FACILITY MAPS -- 3 SHEETS

ATTACHMENT 2: REFERENCES

ATTACHMENT 3: ACCEPTABLE KNOWLEDGE DATA / INFORMATION MATRIX

5.1 ATTACHMENT 1

MAPS

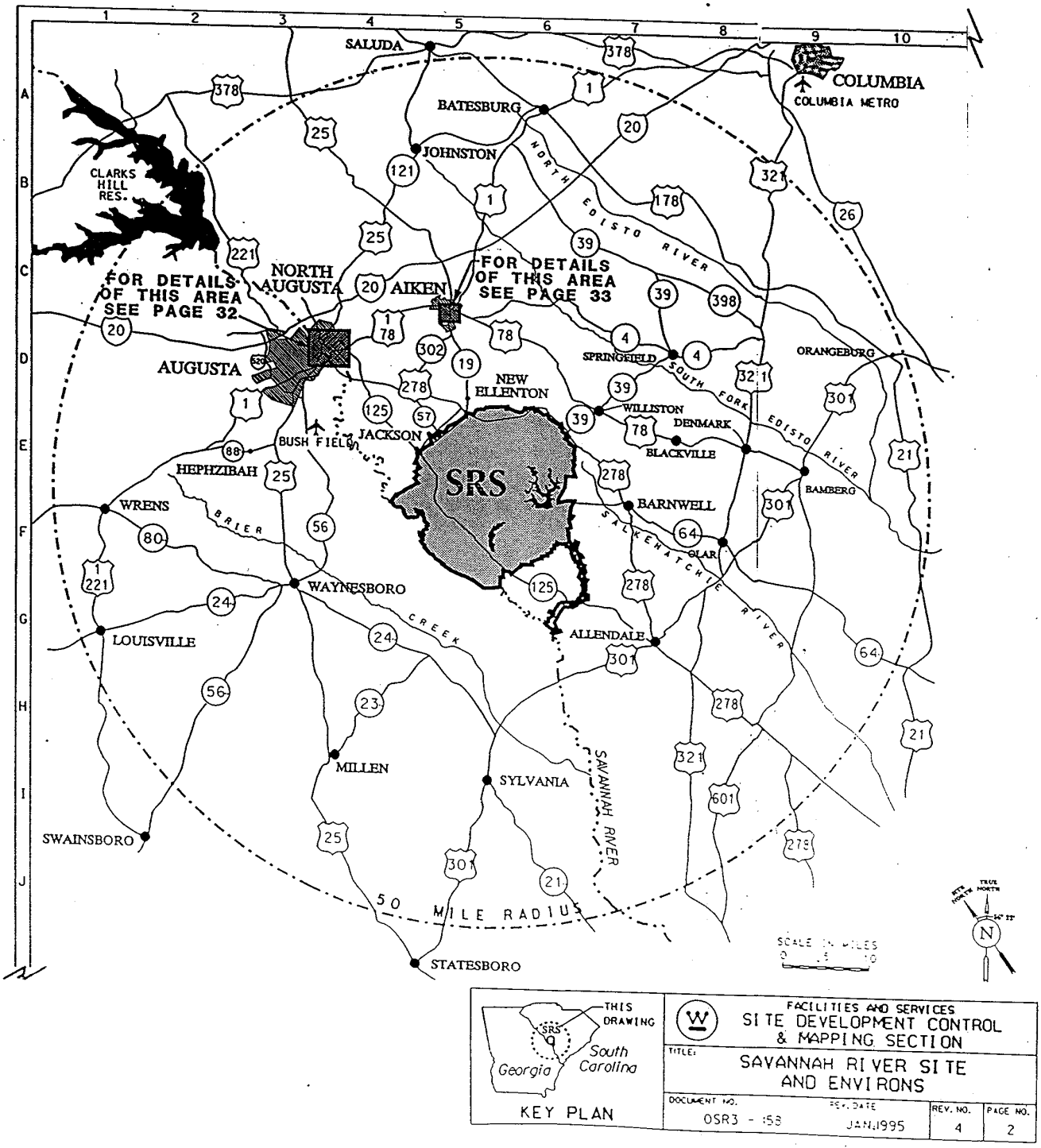
SHEET 1 ------ SAVANNAH RIVER SITE (SRS) GEOGRAPHIC LOCATION

SHEET 2 ------ SAVANNAH RIVER SITE (SRS) INTER-AREA MAP

SHEET 3 ------ SAVANNAH RIVER SITE (SRS) INTRA-AREA (F-AREA) MAP

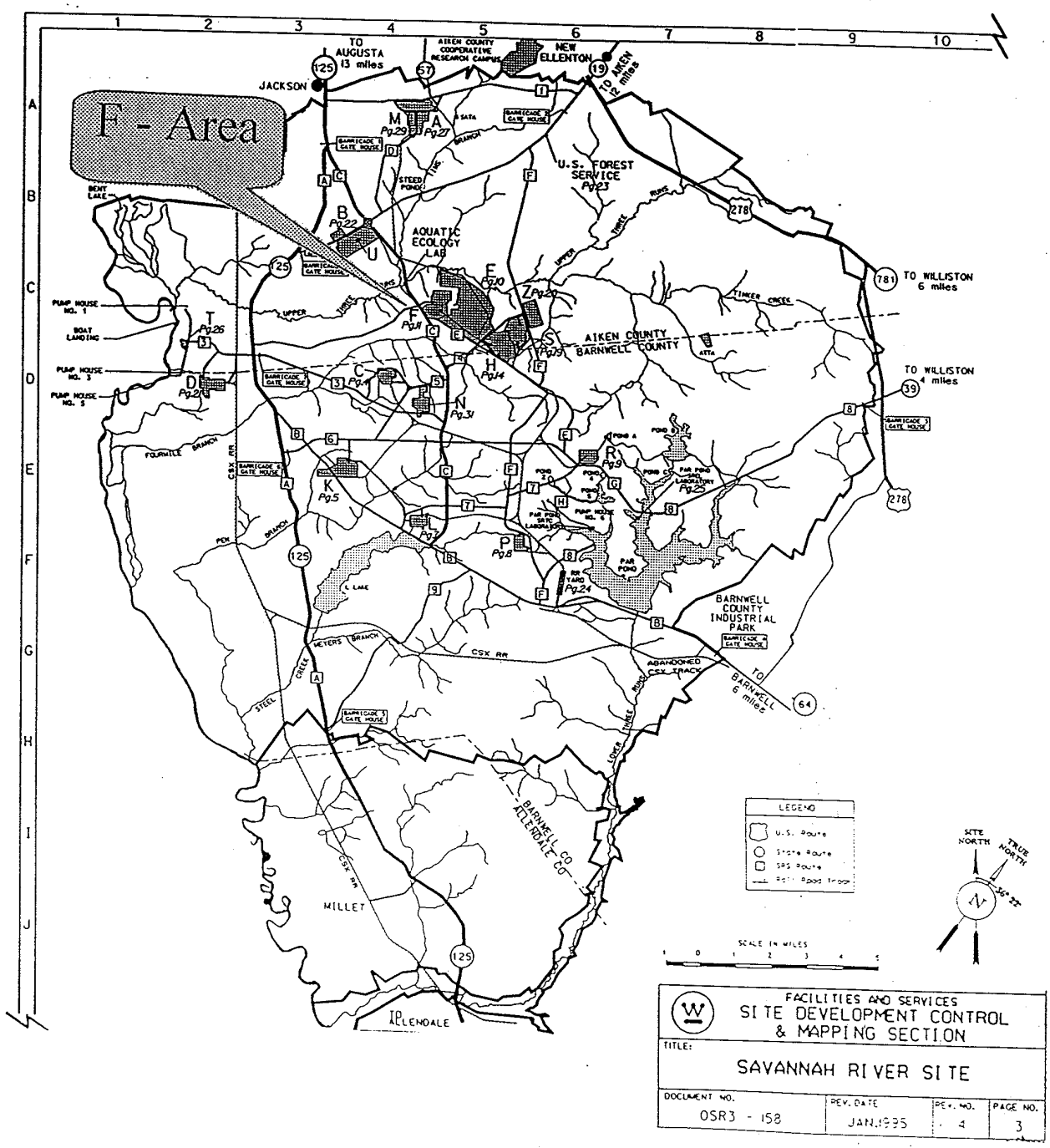
Attachment 1; Sheet 1 of 3

SAVANNAH RIVER SITE (SRS) GEOGRAPHIC LOCATION



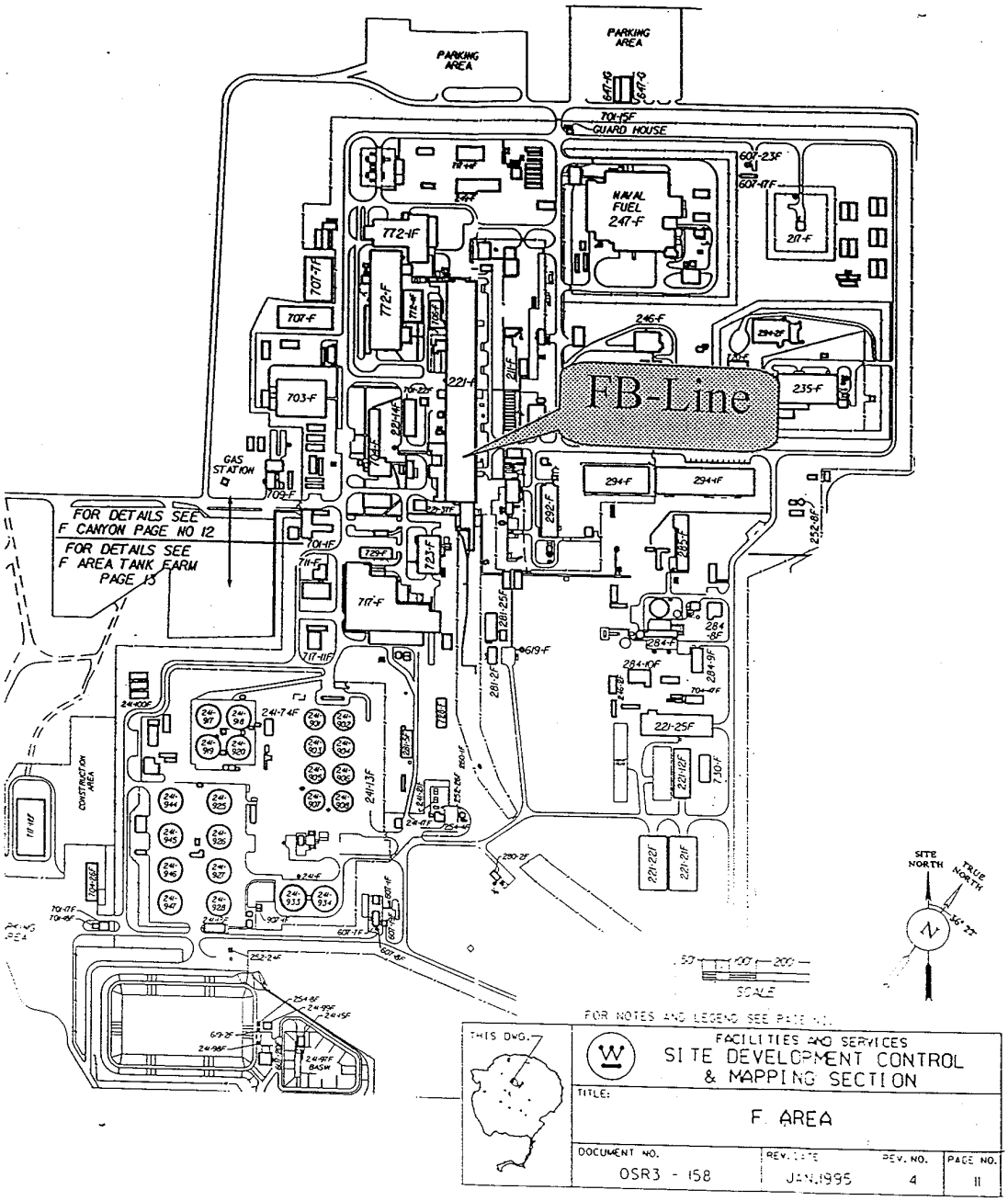
Attachment 1; Sheet 2 of 3

SAVANNAH RIVER SITE (SRS) INTER-AREA MAP



Attachment 1; Sheet 3 of 3

SAVANNAH RIVER SITE (SRS) INTRA-AREA (F-Area) MAP



5.2 ATTACHMENT 2

REFERENCES

1. Carlsbad Area Office Technical Assistance Contractor, *Technical Waste Baseline Inventory Report*, DOE/CAO-95-1121, Revision 2, December 1995.

2. U.S. Department of Energy, Carlsbad Area Office, *Transuranic Waste Characterization Quality Assurance Plan*, CAO-94-1010, Interim Change, November 15, 1996.

3. Westinghouse Savannah River Company, *Savannah River Site WIPP Disposal Program Plan*, WSRC-RP-97-0769, March 5, 1998.

4. Westinghouse Savannah River Company Solid Waste Division, Procedure Manual SW-18, Procedure WP-AP-0002, *Acceptable Knowledge*, Revision 0, August 20, 1998.

5. Savannah River Site Development Control and Mapping Section, *Savannah River Site Atlas*, OSR3-158, Revision 4, January 1995.

6. Science Applications International Corporation, *Safety Analysis-200 Area Savannah River Plant FB-Line Operations*, DPSTSA-200-10, SUPP-9, April 1988.

7. Savannah River Site, H.S. Smiley, *FB-Line Basis for Interim Operation*, WSRC-RP-93-01102, Revisions 0, September 1994.

8. Savannah River Site, H.S. Smiley, *FB-Line Basis for Interim Operation*, WSRC-RP-93-01102, Revisions 1, September 1995.

9. Savannah River Site, H.S. Smiley, *FB-Line Basis for Interim Operation*, WSRC-RP-93-01102, Revisions 2, November 1996

10. Savannah River Site, H.S. Smiley, *FB-Line Basis for Interim Operation*, WSRC-RP-93-01102, Revisions 3, April 1998.

11. Savannah River Site Separations Department, *Packaging General and Cabinet Waste Into Red Pails*, DPSOL 221-FB-2502-NS, Revision 4, August 1989.

12. Savannah River Site Separations Department, *Packaging General and Cabinet Waste Into Red Pails*, DPSOL 221-FB-2502-A-NS, Revision 0, March 26, 1992.

13. Savannah River Site Separations Department, *Packaging General and Cabinet Waste Into Red Pails*, DPSOL 221-FB-2502-A-NS, Revision 1, April 6, 1992.

14. Savannah River Site Separations Department, *Packaging General and Cabinet Waste Into Red Pails*, DPSOL 221-FB-2502-A-NS, Revision 2, January 7, 1993.

15. Savannah River Site Separations Department, *Packaging General and Cabinet Waste Into Red Pails*, DPSOL 221-FB-2502-A-NS, Revision 3, March 9, 1993.

16. Savannah River Site Separations Department, *Packaging General and Cabinet Waste Into Red Pails*, DPSOL 221-FB-2502-A-NS, Revision 4, April 4, 1994.

17. Savannah River Site Separations Department, *Packaging General and Cabinet Waste Into Red Pails*, DPSOL 221-FB-2502-A-NS, Revision 5, April 8, 1994.

18. Savannah River Site Separations Department, *Packaging General and Cabinet Waste Into Red Pails*, DPSOL 221-FB-2502-A-NS, Revision 6, September 20, 1994.

19. Savannah River Site Separations Department, *Packaging General and Cabinet Waste Into Red Pails*, DPSOL 221-FB-2502-A-NS, Revision 7, December 8, 1994.

20. Savannah River Site Separations Department, *Packaging General and Cabinet Waste Into Red Pails*, DPSOL 221-FB-2502-A-NS, Revision 8, February 14, 1997.

21. Savannah River Site Separations Department, *Packaging General and Cabinet Waste Into Red Pails*, DPSOL 221-FB-2502-A-NS, Revision 9, March 13, 1998.

22. Savannah River Site Separations Department, *Drumming Red Waste Pails and Shipment To Burial Ground*, DPSOL 221-FB-2504-NS, Revision 4, August 1989.

23. Savannah River Site Separations Department, *Drumming Red Waste Pails and Shipment To Burial Ground*, SOP 221-FB-2504-NS, Revision 5, May 30, 1991.

24. Savannah River Site Separations Department, *Drumming Red – Pail Waste For Shipment To Solid Waste Disposal Facility*, SOP 221-FB-2504-NS, Revision 6, February 21, 1992.

25. Savannah River Site Separations Department, *Drumming Red – Pail Waste For Shipment To Solid Waste Disposal Facility*, SOP 221-FB-2504-NS, Revision 7, May 13, 1993.

26. Savannah River Site Separations Department, *Drumming Red – Pail Waste For Shipment To Solid Waste Disposal Facility*, SOP 221-FB-2504-NS, Revision 8, May 19, 1993.

27. Savannah River Site Separations Department, *Drumming Red – Pail Waste For Shipment To Solid Waste Disposal Facility*, SOP 221-FB-2504-NS, Revision 11, July 1, 1994.

28. Savannah River Site Separations Department, *Drumming Red – Pail Waste For Shipment To Solid Waste Disposal Facility*, SOP 221-FB-2504-NS, Revision 12, May 25, 1995.

29. Savannah River Site Separations Department, *Drumming Red – Pail Waste For Shipment To Solid Waste Disposal Facility,* SOP 221-FB-2504-NS, Revision 13, June 29,1995.

30. Savannah River Site Separations Department, *Drumming Red – Pail Waste For Shipment To Solid Waste Disposal Facility,* SOP 221-FB-2504-NS, Revision 14, August 17, 1995.

31. Savannah River Site Separations Department, *Drumming Red – Pail Waste For Shipment To Solid Waste Disposal Facility,* SOP 221-FB-2504-NS, Revision 15, September 11,1995.

32. Savannah River Site Separations Department, *Drumming Red – Pail Waste For Shipment To Solid Waste Disposal Facility,* SOP 221-FB-2504-NS, Revision 16, June 26, 1996.

33. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 0, August 14, 1991.

34. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 1, January 24, 1992.

35. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 2, June 28, 1992.

36. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 3, January 6,1993.

37. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 4, June 30, 1993.

38. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 5, October 13, 1993.

39. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 6, April 13, 1994.

40. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 8, May 19, 1995.

41. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 9, August 23, 1995.

42. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 10, August 26, 1995.

43. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 11, August 31, 1995.

44. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 12, September 9, 1996.

45. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 13, October 22, 1996.

46. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 14, August 19, 1997.

47. Savannah River Site Separations Department, *Packaging TRU (Process Cabinet) Waste Into A TRU Drum Liner,* SOP 221-FB-2505-NS, Revision 15, March 13,1998.

48. Savannah River Site Separations Department, *Packaging TRU (Excluding Process Cabinet Waste) Into A TRU Drum Liner,* DPSOL 221-FB-2506-NS, Revision 5, September 1989.

49. Savannah River Site Separations Department, *Packaging TRU (Excluding Process Cabinet Waste) Into A TRU Drum Liner,* SOP 221-FB-2506-NS, Revision 6.

50. Savannah River Site Separations Department, *Packaging TRU (Excluding Process Cabinet Waste) Into A TRU Drum Liner,* SOP 221-FB-2506-NS, Revision 7, July 24, 1991.

51. Savannah River Site Separations Department, *Packaging TRU (Excluding Process Cabinet Waste) Into A TRU Drum Liner,* SOP 221-FB-2506-NS, Revision 8, April 30, 1992.

52. Savannah River Site Separations Department, *Packaging TRU Hut Waste (Excluding Process Cabinet Waste) Into A TRU Drum Liner,* SOP 221-FB-2506-NS, Revision 9, July 24, 1992.

53. Savannah River Site Separations Department, *Packaging TRU Hut Waste (Excluding Process Cabinet Waste) Into A TRU Drum Liner,* SOP 221-FB-2506-NS, Revision 10, June 30,1993.

54. Savannah River Site Separations Department, *Packaging TRU Hut Waste (Excluding Process Cabinet Waste) Into A TRU Drum Liner,* SOP 221-FB-2506-NS, Revision 11, April 13, 1994.

55. Savannah River Site Separations Department, *Packaging TRU Hut Waste (Excluding Process Cabinet Waste) Into A TRU Drum Liner,* SOP 221-FB-2506-NS, Revision 12, May 27, 1994.

56. Savannah River Site Separations Department, *Packaging TRU Hut Waste (Excluding Process Cabinet Waste) and TRU Decontamination Waste Into A TRU Drum Liner,* SOP 221-FB-2506-NS, Revision 13, June 2, 1994.

57. Savannah River Site Separations Department, *Packaging TRU Hut Waste (Excluding Process Cabinet Waste) and TRU Decontamination Waste Into A TRU Drum Liner*, SOP 221-FB-2506-NS, Revision 14, January 27, 1995.

58. Savannah River Site Separations Department, *Packaging TRU Hut Waste (Excluding Process Cabinet Waste) and TRU Decontamination Waste Into A TRU Drum Liner*, SOP 221-FB-2506-NS, Revision 15, May 27, 1995.

59. Savannah River Site Separations Department, *Packaging TRU Hut Waste (Excluding Process Cabinet Waste) and TRU Decontamination Waste Into A TRU Drum Liner*, SOP 221-FB-2506-NS, Revision 16, July 13, 1995.

60. Savannah River Site Separations Department, *Packaging TRU Hut Waste (Excluding Process Cabinet Waste) and TRU Decontamination Waste Into A TRU Drum Liner*, SOP 221-FB-2506-NS, Revision 17, May 17, 1996.

61. Savannah River Site Separations Department, *Packaging TRU Hut Waste (Excluding Process Cabinet Waste) and TRU Decontamination Waste Into A TRU Drum Liner*, SOP 221-FB-2506-NS, Revision 18, June 6, 1996.

62. Savannah River Site Separations Department, *Packaging TRU Hut Waste (Excluding Process Cabinet Waste) and TRU Decontamination Waste Into A TRU Drum Liner*, SOP 221-FB-2506-NS, Revision 19, December 12, 1996.

63. Savannah River Site Separations Department, *Packaging TRU Hut Waste (Excluding Process Cabinet Waste) and TRU Decontamination Waste Into A TRU Drum Liner*, SOP 221-FB-2506-NS, Revision 20, October 31, 1997.

64. Savannah River Site Separations Department, *Packaging TRU Hut Waste (Excluding Process Cabinet Waste) and TRU Decontamination Waste Into A TRU Drum Liner*, SOP 221-FB-2506-NS, Revision 21, February 13, 1998.

65. Savannah River Site Solid Waste Division, *Savannah River Site Waste Acceptance Criteria Manual-1S, E-Area TRU Pads-Transuranic Waste Acceptance Criteria*. WAC 3.06

66. U.S. Department of Energy, Carlsbad Area Office, *Waste Acceptance Criteria for the Waste Isolation Pilot Plant*, DOE/WIPP-069, Revision 5, April 1996.

67. John Harley, Electronic Mail Message, *FB-Line TRU Waste Forecast*. September 3, 1998

68. J.A. D'Amelio to J.A. Blankenhorn, Inter-Office Memorandum, *Preliminary List of Candidate Drums for the SRS WIPP Disposal Program*, SWD-TRU-97-0014, October 28, 1997

69. L.Williams, et al, *SRS Data Preparation for the 1995 WIPP TRU Waste Baseline Inventory Report, Mixed Waste Inventory Report, and Integrated Database*, WSRC-RP-95-884, Revision 0, August 4, 1995.

70. J.V. Odum to Distribution, Inter-Office Memorandum, *Supplemental Guidance On Solvent Rags and Wipes (ESG-FSG-900021)*, ESH-FSG-900054, January 24, 1990.

71. K.D. Steeg, *Separations FB-Line Facility Low-Level / Mixed Waste Certification and Minimization Plan*, NMP-SBO-93-0009, Revision 4, August 1994.

72. K.D. Steeg, *Separations FB-Line Facility Low-Level / Mixed Waste Certification and Minimization Plan*, NMP-SBO-93-0009, Revision 5, April 1995.

73. K.D. Steeg, *Separations FB-Line Facility Low-Level / Mixed Waste Certification and Minimization Plan*, NMP-SBO-93-0009, Revision 6, May 1996.

74. R.S. Thomason, *Radioisotope Characterization of FB-Line Low-Level Waste*, WSRC-TR-94-0288, Revision 0, July 14, 1994.

75. R.S. Thomason, et al, *FB-Line Low-Level Waste Smear Analysis Results Evaluation*, NMP-SBO-95-0275, November 13, 1995.

76. E.F. Kay, *FB-Line Radioisotopic Sampling Plan*, NMP-STE-94-00068, Revision 1, June 27, 1994.

77. Savannah River Site Separations Department, *Controlled Procurement and Handling of Chemical and Blue Dot (Hazardous) Products*, SOP 221-FB-2544, Revision 0, October 17, 1990.

78. Savannah River Site Separations Department, *Chemical Control Program In FB-Line Facilities*, Procedure Manual S1-1-1, Item 7.02, Revision 1, January 2, 1996.

79. J.R. Shappell, *Specification for Procurement of TRU Waste Storage Drums*, NMP-WMG-910067, Revision 1, May 17, 1991.

80. J.R. Shappell, *Procurement Specification for 90 MIL Polyethylene Drum Liner / Lid*, M-SPS-G-00003, Revision 0, November 26, 1991.

81. J.R. Shappell, *Procurement Specification for 90 MIL Polyethylene Drum Liner / Lid*, M-SPS-G-00003, Revision 1, February 14, 1992.

82. J.A. Caudill, *Procurement Specification for 55 Gallon Painted Steel Drum*, M-SPS-G-00002, Revision 0, December 12, 1991.

83. J.A. Caudill, *Procurement Specification for 55 Gallon Painted Steel Drum*, M-SPS-G-00002, Revision 1, February 14, 1992.

84. J.A. Caudill, *Procurement Specification for 55 Gallon Painted Steel Drum*, M-SPS-G-00002, Revision 2, March 18, 1992.

85. J.A. Caudill, *Procurement Specification for 55 Gallon Painted Steel Drum*, M-SPS-G-00002, Revision 3, August 18, 1993.

86. J.A. Caudill, *Procurement Specification for 55 Gallon Painted Steel Drum*, M-SPS-G-00002, Revision 4, October 21, 1996.

87. J.A. Caudill, *Procurement Specification for ¾ Inch Diameter Drum Filter Vents*, M-SPS-G-00004, Revision 0, November 26, 1991.

88. J.A. Caudill, *Procurement Specification for ¾ Inch Diameter Drum Filter Vents*, M-SPS-G-00004, Revision 1, February 14, 1992.

89. J.A. Caudill, *Procurement Specification for ¾ Inch Diameter Drum Filter Vents*, M-SPS-G-00004, Revision 2, January 25, 1993.

90. J.A. Caudill, *Procurement Specification for ¾ Inch Diameter Drum Filter Vents*, M-SPS-G-00004, Revision 3, March 15, 1993.

91. Internal Correspondence, *PCB Committee: Meeting No. 1*, circa June 1981.

92. T. Hendrick to M.J. Spires, *Polychlorinated Biphenyls (PCPs) Used In Electrical Equipment*, May 12, 1982.

93. J.S. Roberts to R.P. Whitfield, *PCB Inventory Changes During Calendar Year 1984*", June 28, 1985.

5.3 ATTACHMENT 3

ACCEPTABLE KNOWLEDGE DATA / INFORMATION ROADMAP ------ 6 SHEETS

ATTACHMENT 3
ACCEPTABLE KNOWLEDGE DATA / INFORMATION MATRIX
(Waste Stream: SR-T001-221F-HET)

FIELD #	FIELD NAME	APPLICABILITY	DATA RECORDED ON:	Data Field Source (WAC QAPP QAPD)	ACCEPTABLE DATA RANGE & APPLICABLE COMMENTS	DATA GROUP (Packaging, Matrix, or Administrative)	CHAR PROCESS SUPPORTING AK	AK DATA OBTAINED: SWD, 221FBL or BOTH	DATE AK REVIEW COMPLETED (month/date/year)	ACCEPTABLE KNOWLEDGE DATA	ROADMAP (ACCEPTABLE KNOWLEDGE DATA)
1	Aspiration Method	WS	WWIS PCTCD-A	None	Option 1, 2, or 3	Administrative	N/A	SWD	TBD	N/A	**(1)** Verify using **OSR 7-872** drum & liner were vented at generation (liner may contain a 0.3 inch hole) & record vent numbers. **(2) Verify Spec: M-SPS-G-00002 (91-03014 Du Pont)** - filter vent & **M-SPS-G-0003**-liner. Refer: SARP Sect. 3.6.11 & 1.3.7 - 70.
2	Aspiration Period	CS	WWIS WCS PCTCD-A	WAC 3.5.4	Minimum: Type I and IV - 225 days; Type II and III - 142 days	Administrative	N/A	SWD	TBD	N/A	Verify using **OSR 7-872** drum contains a filter vent and liner contains a filter vent or at least a 0.3 inch diameter hole. *Note: drum and liner were vented when waste was generated.*
6	Characterization Methods	WS	WWIS	None	Select for Look-Up Table 9-2 of QAPP	Administrative	N/A	SWD	TBD	(1) Neutron Generator Differential Die-Away Counter and (2) Segmented Gamma-Ray Scanner	**QAPP, Table 9-2**, NDA Methods for Potential Use for TRU Waste Assay
12	Contact Phone	WS	WWIS WSPF	None	Includes: area code + prefix + number	Administrative	N/A	SWD	TBD	(803) 557-6311 (TRU Waste Business Manager)	Obtain **letter designating technical point of contact (POC),** including phone number.
13	Container Closure Date	CS	WWIS	None	Date drum closed	Packaging	N/A	SWD	TBD	TBD	Obtain closure date from **OSR 7-872.**
14	Container Identification Number	CS	WWIS WCS WDCS PCTCD-A PCTCD -Test	None	Unique Number (SR + FSN)	Packaging	Drum Selection	SWD	TBD	TBD	Obtain container ID from **SWD-TRU-97-0014** (Preliminary List of Candidate drums for Shipment to WIPP) and verify using **OSR 7-872** and/or **OSR 7-375A.**
15	Container Liner Punctured	CS	WWIS WCS PCTCD-A PCTCD -Test	None	Liner punctured or HEPA filter installed (Yes or No)	Packaging	N/A	221-FBL	TBD	Yes	(1) Verify using **OSR 7-872** liner was vented at generation (liner may contain a hole) and record vent number if applicable (2) Verify purchase specifications for filter vent and **Spec M-SPS-G-0003** requires a 0.3" diameter or greater hole in liner.
16	Container Liner Type	CS	WWIS	None	Confirm presence of 90 mil HDPE Liner	Packaging	Radiography	SWD	TBD	Rigid Liner (90 mil-HDPE)	Review procurement spec **M-SPS-G-0003** to confirm liner type.
17	Container Type Code	CS	WWIS WCS PCTCD-A PCTCD -Test	WAC 3.2.1.1	3-digit container type code (001 - Drum; 002 - SWB; 003 - TDOP)	Packaging	N/A	SWD	TBD	1	Review procurement **Spec M-SPS-G-00002 (91-03014 DuPont)** to verify drums were purchased as DOT-Type A, Spec 17C or UN1A 55 gallon drums.
26	EPA ID		WWIS WSPF	None	EPA number for the waste site shipping the waste	Administrative	N/A	SWD	TBD	SCI890008989	Obtain EPA ID from **Form 8700.**
27	Filter Install Date	CS	WWIS WCS	WAC 3.2.6.4	Date	Packaging	N/A	221-FBL	TBD	TBD	Use drum closure date from **OSR 7-872.**
28	Filter Model	CS	WWIS WCS PCTCD-A PCTCD -Test	WAC 3.2.6	Approved HEPA filter and meets Appendix 1.3.5 of TRUPACT-II SAR	Packaging	N/A	221-FBL	TBD	Spec# M-SPS-G-00004	Obtain procurement **Spec M-SPS-G-0004** for approved model.
47	Hazardous ID Code	CS	WWIS WCS	None	Mixed-waste ID codes: F001 - 5; D004 - 11, D0018, 19, 21, 22, 26, 27, 28, 29, 30, 32, 34, 35, 36, 37, 38, 39, 40, 43, and P0015	Waste Matrix	N/A	221-FBL	TBD	Not applicable to this waste stream	Obtain **documentation** supporting no hazardous ID codes for this waste stream.
48	Item Description Code	WS	WWIS PCTCD-Test	None	Look Up Table	Waste Matrix	Visual Examination	221-FBL	TBD	001	Obtain IDC from **OSR 7-375A.** Verify using **DOE/WIPP-89-004, Rev. 10.**
49	Layers of Packaging	WS	WWIS WCS	WAC 3.5.6	Up to 6 Layers	Packaging	Visual Examination	221-FBL	TBD	Up to 6 layers	Obtain **records showing compliance to Sec. 8.0, Appendix 1.3.7 of the TRUPACT-II SAR.** Default is 6 layers of confinement. Verify using **DOE/WIPP-89-004, Rev. 10.** Obtain 221FB Line waste packaging procedure(s).

ATTACHMENT 3

ACCEPTABLE KNOWLEDGE DATA / INFORMATION MATRIX
(Waste Stream: SR-T001-221F-HET)

FIELD #	FIELD NAME	APPLICABILITY	DATA RECORDED ON:	Data Field Source (WAC QAPP QAPD)	ACCEPTABLE DATA RANGE & APPLICABLE COMMENTS	DATA GROUP (Packaging, Matrix, or Administrative)	CHAR. PROCESS SUPPORTING AK	AK DATA OBTAINED: SWD, 221FBL or BOTH	DATE AK REVIEW COMPLETED (month/date/year)	ACCEPTABLE KNOWLEDGE DATA	ROADMAP (ACCEPTABLE KNOWLEDGE DATA)
53	PCB Concentration	CS	WWIS WCS	WAC 3.4.6	≤ 50 ppm	Waste Matrix	N/A	221-FBL	TBD	≤ 50 ppm	Obtain documentation identifying site-wide compliance to **TSCA requirements.**
69	Radionuclides Symbols	WS	WWIS		Standard Weapons Grade (WG) Pu Composition	Waste Matrix	N/A	BOTH	TBD	Pu-239, Pu-238, Pu-240, Pu-241, Am-241, and Others	Extract applicable radionucilide symbols from WRSC-TR 94-0288 and compare to symbols reported in the TWBIR.
75	Shipping Category	PT	WCS WWIS PATCD PATCD-Test	WAC 3.5.5	Category which content code is shipped: Less than or equal to 0.0136 watts/drum or 0.1904 watts/TRUPACT-II	Packaging	Radioassay	SWD	TBD	III.1A6	Obtain code from **TRUPACT-II SAR, Table 1.2.3.3.1 of DOE/WIPP 89-004, Rev. 15** (less than or equal to 0.0136 watts/drum or 0.1904 watts/TRUPACT-II)
76	Site Address	WS	WWIS	None	Address of site	Administrative	N/A	SWD	TBD	Savannah River Site, P.O. Box 616, Aiken, SC 29802	Obtain **letter designating site address.**
77	Site Name	WS	WWIS WSPF	None	Site name	Administrative	N/A	SWD	TBD	Savannah River Site (SRS)	Obtain **letter designating site name.**
78	Solid Waste Metals: Analyte Name	CS	WWIS WCS	None	Characterization per QAPP, Limited to EPA Waste Codes listed in WAC, Target analytes and TICs reported per QAPP	Waste Matrix	N/A	SWD	N/A	N/A	Obtain documents showing waste is debris waste
79	Solid Waste Metals: Concentration	CS	WWIS	None	Concentration of waste metals	Waste Matrix	N/A	SWD	N/A	Not applicable to this waste stream	Obtain documents showing waste is debris waste
80	Solid Waste Metals: Date Analyzed	CS	WWIS	None	Date	Waste Matrix	N/A	SWD	N/A	Not applicable to this waste stream	Obtain documents showing waste is debris waste
81	Solid Waste Metals: Date Sampled	CS	WWIS	None	Date	Waste Matrix	N/A	SWD	N/A	Not applicable to this waste stream	Obtain documents showing waste is debris waste
92	Technical Contact	WS	WWIS WSPF	None	Technical contact for site	Administrative	N/A	SWD	TBD	J. A. D'Amelio, Westinghouse Savannah River Site, P.O. Box 616, Building 705-3C, Aiken, SC 29802	Obtain **letter designating technical contact.**
105	TRUCON Content Code	CS	WWIS PCTCD-A PCTCD -Test	None	TRUCON describing contents of drum based on IDC	Administrative	N/A	SWD	TBD	SR125A	Obtain TRUCON Code from **TRUPACT-II SAR, DOE/WIPP-89-004, Rev. 15.**
108	Vent/Puncture Date	CS	WWIS	None	Date drum vented	Packaging	Drum Selection	221-FBL	TBD	TBD	Obtain ship date from **OSR 7-872** and use as date punctured.
113	WAC Certification Site	WS	WWIS PCTCD -Test	None	Site certifying waste using 2-character code. See look-up table	Administrative	Certification	SWD	TBD	SR (Savannah River Site)	Refer to approved **SRS WIPP Disposal Program Plan (WSRC-RP-97-0769).**
115	WAC revision number to which waste was certified	CS	WWIS	Page 5 of WIPP-WAC	≥ Rev 4	Administrative	N/A	SWD	TBD	Revision 5	Refer to **WIPP-WAC, DOE/WIPP-069, Rev 5.**

ATTACHMENT 3
ACCEPTABLE KNOWLEDGE DATA / INFORMATION MATRIX
(Waste Stream: SR-T001-221F-HET)

FIELD #	FIELD NAME	APPLICABILITY	DATA RECORDED ON:	Data Field Source (WAC QAPP QAPD)	ACCEPTABLE DATA RANGE & APPLICABLE COMMENTS	DATA GROUP (Packaging, Matrix, or Administrative)	CHAR. PROCESS SUPPORTING AK	AK DATA OBTAINED SWD, 221FBL or BOTH	DATE AK REVIEW COMPLETED (month/date/year)	ACCEPTABLE KNOWLEDGE DATA	ROADMAP (ACCEPTABLE KNOWLEDGE DATA)
118	Waste Material Parameter (Kg/m3)	WS	WWIS	None	Waste materials having impact on performance assessment	Waste Matrix	Radiography/Visual Examination	SWD	TBD	Iron - 79.06(Avg.) and 309.61 (Upper); Other Inorganic - 0.32 (Avg.) and 1.23 (Upper); Cellulosics - 132.31(Avg.) and 160.9 (Upper); Rubber - 3.12 (Avg.) and 13.43 (Upper); Plastics - 9.27 (Avg.) and 23.49 (Upper)	Extract from **TWBIR, Rev. 3, Sect. 8.5.3.** Verify using **OSR 7-872 and other applicable documents.**
119	Waste Matrix Code	WS	WWIS	None	Codes used to classify mixed waste; Look-up table of waste matrix codes	Administrative	Radiography/Visual Examination	SWD	TBD	One or more of the following: S3211 - Organic Resins; S3129 - Inorganic Sludges; S5111 - Metal Equipment; S5113 - Metal Debris; S5319 - Plastic Job Control Waste; S5390 - Organic Debris; L2190 - Organic Liquids	Extract from **TWBIR, Rev. 3, Sect.3.3.1.** Verify using **OSR 7-872** and other applicable documents.
120	Waste Matrix Code Date	WS	WWIS WSPF	None	Date the site Project reviews the	Administrative	N/A	SWD	TBD	TBD	Date the site Project reviews AK data using approved procedures with checklist
121	Waste Matrix Code Group	WS	WWIS	None	Taken from the BIR	Administrative	Radiography	SWD	TBD	S5440	Extract from **TWBIR, Rev. 3, Sect. 3.3.2.1.** Verify using **DOE/LLW-217, Rev. 0 and other applicable documents.**
122	Waste Stream MWIR ID	WS	WWIS	None	MWIR identification number	Administrative	Radiography	SWD	TBD	SR-W074	Extract from **TWBIR, Rev. 3, Sect. 2.1.2**
123	Waste Stream Profile Form Number	WS	WWIS	None	See look-up table	Administrative	N/A	SWD	TBD	TBD	Obtained from look-up table at Project Level (approved waste stream profile form numbers).
124	Waste Stream WIPP ID	WS	WWIS WSPF	None	WIPP identification number	Administrative	N/A	SWD	TBD	SR-T001-221F-HET	Extract from **TWBIR, Rev. 3, Sect 8.2.2.**
125	Waste Type Code	WS	WWIS	None	TRU or MTRU	Administrative	N/A	221-FBL	TBD	TRU	Obtain results of past waste assay, including other applicable documents supporting TRU waste determination -vs- mixed TRU.
126	Weight (empty container, liner, and shielding)	CS	WWIS	None	Drum weight	Packaging	Radioassay	SWD	TBD	TBD	Report to be created by H. Coleman. H. Coleman to weigh drums (galvanized and painted) for assay equipment calibration.
134	Weight Uncertainty (empty container, liner, and shielding)	CS	WWIS PCTCD Test	None	Drum weight uncertainty; Tied to 127	Packaging	Radioassay	SWD	TBD	TBD	Report to be created by H. Coleman. H. Coleman to weigh drums (galvanized and painted) for assay equipment calibration.
136	Waste Stream Profile Number	WS	WSPF	None	None	Administrative	Certification	SWD	TBD	TBD	Obtained from look-up table at Project Level (approved waste stream profile form numbers).
137	Date site certified by CAO	WS	WSPF	None	Date	Administrative	Certification	SWD	TBD	TBD	Date SW obtains certification.
141	Title, version number, and date of documents used for WAC certification	WS	WSPF	None	None	Administrative	Certification	SWD	TBD	TBD	List program documentation such as **QAPJP, TRAMPAC, Certification Plan, and WAC** which waste certification authority was based.
142	Did your facility generate this waste	WS	WSPF	None	Y/N answer	Administrative	N/A	221-FBL	TBD	Area : FB Line Process and Building: 221-FBL	Obtain from **AK Summary Report** supported by **NMP-SBO-93-0009, Revision 5, and WSRC-TR-94-0288, Revision 0.**
144	Summary Category Group	WS	WSPF	None	Selected from BIR	Administrative	N/A	SWD	TBD	Predominantly Organic Debris	Extract from **TWBIR, Rev. 3, Sect 3.3.2.2.** Verify using **DOE/LLW-217, Rev. 0, DOE Waste Treatability Group Guidance.**
145	Waste Matrix Code Group	WS	WSPF	None	Selected from BIR	Administrative	N/A	SWD	TBD	Contact Handled TRU Waste	Extract from **TWBIR, Rev. 3, Sect 3.2.1** Verify at drum selection and at waste assay.
146	Waste Stream Name	WS	WSPF	None	Selected from BIR	Administrative	N/A	SWD	TBD	SR-T001-221F-HET	TWBIR (list other applicable documents)

ATTACHMENT 3
ACCEPTABLE KNOWLEDGE DATA / INFORMATION MATRIX
(Waste Stream: SR-T001-221F-HET)

FIELD #	FIELD NAME	APPLICABILITY	DATA RECORDED ON:	Data Field Source (WAC QAPP QAPD)	ACCEPTABLE DATA RANGE & APPLICABLE COMMENTS	DATA GROUP (Packaging, Matrix, or Administrative)	CHAR. PROCESS SUPPORTING AK	AK DATA OBTAINED: SWD, 221FBL or BOTH	DATE AK REVIEW COMPLETED (month/date/year)	ACCEPTABLE KNOWLEDGE DATA	ROADMAP (ACCEPTABLE KNOWLEDGE DATA)
147	Description from the TWBIR	WS	WSPF	None	See BIR	Administrative	N/A	SWD	TBD	This waste stream was produced in 221FB-Line, a Separations facility for production of WG Pu-239. The stream includes glove box, decontamination, contaminated hut waste, and waste that tends to concentrate radionuclides.	Extract from **TWBIR, Rev. 3, Sect 8.2.9.1.** Verify drums generated by 221FB Line at drum selection.
148	Check: CH or RH	WS	WSPF	None	Check CH or RH on form	Waste Matrix	Drum Selection	BOTH	TBD	CH	To be determined at drum selection by **RCO.**
149	Number of SWBs	WS	WSPF	None	N/A	Administrative	N/A	N/A	N/A	N/A	N/A
150	Number of Drums	WS	WSPF	None	Total drum shipped	Administrative	Waste Shipment	SWD	TBD	14 drums per TRUPACT-II	Obtain and verify at shipment
151	Number of Canisters	WS	WSPF	None	N/A	Administrative	N/A	N/A	N/A	N/A	N/A
152	Data package numbers supporting this waste stream characterization	WS	WSPF	None	None	Administrative	N/A	SWD	TBD	TBD	TRU waste packaging report number assigned by site to data reports containing raw characterization data which supports waste stream certification
153	List applicable EPA Hazardous Waste Codes	WS	WSPF	None	See BIR listing (if applicable)	Waste Matrix	N/A	BOTH	TBD	Not applicable to this waste stream	List all EPA codes in the waste stream. **See Table 3.4.2.3-2 of WIPP-WAC.** Obtain documentation showing non-mixed waste.
154	Applicable TRUCON Content Codes	WS	WSPF	None	Selected from approved SRS TRUCON codes	Administrative	N/A	SWD	TBD	SR125A	Obtained from **DOE/WIPP-89-004, TRUPACT-II SAR**
155	Map of site	WS	WSPF	None	Current site map	Administrative	N/A	SWD	TBD	To be obtained	Referenced map: **OSR 3-158**
156	Facility mission description	WS	WSPF	None	Facility mission description	Administrative	N/A	221-FBL	TBD	Production of defense related materials, including weapons grade plutonium and stabilization of liquid plutonium products	Obtain from **NMP-SBO-93-0009, Revision 5, and WSRC-TR-94-0288, Revision 0**
157	Description of operations that generate waste	WS	WSPF	None	Description of operation	Administrative	N/A	221-FBL	TBD	"See Summary Report"	Obtain from AK Summary Report supported by **NMP-SBO-93-0009, Revision 5, and WSRC-TR-94-0288, Revision 0**
158	Waste identification / categorization schemes	WS	WSPF	None	Item description codes, content codes, etc	Administrative	N/A	221-FBL	TBD	"See Summary Report"	Waste identification / categorization schemes used at the 221FB Line Facility (e.g., item description codes and content codes)
159	Types and quantities of waste generated	WS	WSPF	None	Selected from BIR	Waste Matrix	N/A	SWD	TBD	Contact-Handled - TRU Heterogeneous Debris - 188 m3 ; Projected: - 74 m3 per year (Ref. 1995 TWBIR).	Extract from **TWBIR, Rev. 3, Sect 8.2.9.1.** Verify waste type using OSR 7-872.
160	Correlation of waste stream generated from the same building and process	WS	WSPF	None	May include sludges, combustibles, metals, and glass	Administrative	N/A	221-FBL	TBD	TBD	See **AK Summary Report** (e.g., sludges, combustibles, metals, and glass).
161	Waste certification procedures	WS	WSPF	None	All certification procedures	Administrative	N/A	BOTH	TBD	TBD	**Waste stream certification procedures** waste sent to WIPP.
162	Area(s) and buildings from which the waste stream was generated	WS	WSPF	None	ID waste generator	Administrative	N/A	221-FBL	TBD	Area : FB Line Process and Building: 221-FBL	Obtain from **AK Summary Report supported by NMP-SBO-93-0009, Revision 5, and WSRC-TR-94-0288, Revision 0.**
163	Waste stream volume and time period of generation	WS	WSPF	None	Selected from BIR	Administrative	N/A	SWD	TBD	Existing volume (1/25/90 through 12/31/95) - 188 m3 or 949 drum equivalents	Obtain from **AK Summary Report supported by NMP-SBO-93-0009, Revision 5, and WSRC-TR-94-0288, Revision 0.**
164	Waste generating process description for each building	WS	WSPF	None	Define WS	Administrative	N/A	221-FBL	TBD	Batch waste stream generated during production of defense related materials	Obtain from **AK Summary Report supported by NMP-SBO-93-0009, Revision 5, and WSRC-TR-94-0288, Revision 0.**
165	Process flow diagrams	WS	WSPF	None	None	Administrative	N/A	BOTH	TBD	TBD	Obtain 221FB Line process flow diagrams.

FIELD #	FIELD NAME	APPLICABILITY	DATA RECORDED ON:	Data Field Source (WAC QAPP QAPD)	ACCEPTABLE DATA RANGE & APPLICABLE COMMENTS	DATA GROUP (Packaging, Matrix, or Administrative)	CHAR. PROCESS SUPPORTING AK	AK DATA OBTAINED: SWD, 221FBL or BOTH	DATE AK REVIEW COMPLETED (month/date/year)	ACCEPTABLE KNOWLEDGE DATA	ROADMAP (ACCEPTABLE KNOWLEDGE DATA)
166	Material inputs or other information identifying chemical/radionuclide content and physical waste form	WS	WSPF	None	None	Administrative	N/A	221-FBL	TBD	Supplemental	AK Supplemental documentation
167	Process design documents	WS	WSPF	None	None	Administrative	N/A	BOTH	TBD	Supplemental	Supplemental AK documentation (e.g., Title II Design)
168	Standard operating procedures	WS	WSPF	None	None	Administrative	N/A	BOTH	TBD	Supplemental	AK Supplemental documentation: (may include a list of raw material or reagents, a description of the process or experiment generating the waste, and a description of waste generated and how the waste is managed a point of generation)
169	Safety Analysis Reports	WS	WSPF	None	Most recent	Administrative	N/A	BOTH	TBD	Supplemental 221FB Line SAR(s)	AK Supplemental: 221FB Line SAR(s) and technical safety requirements
170	Waste packaging logs	WS	WSPF	None	All applicable	Administrative	N/A	BOTH	TBD	Supplemental	AK Supplemental: 221-FBL
171	Test plans / research project plans	WS	WSPF	None	None	Administrative	N/A	BOTH	TBD	Supplemental	AK Supplemental: Test plan or research project reports describing reagent and the raw materials used in experiments
172	Site databases	WS	WSPF	None	None	Administrative	N/A	BOTH	TBD	Supplemental	AK Supplemental: chemical inventory database for Superfund Amendments and Reauthorization Act Title III requirements
173	Information from site personnel	WS	WSPF	None	None	Administrative	N/A	BOTH	TBD	Supplemental	AK Supplemental: documented interviews
174	Standard industry documents	WS	WSPF	None	None	Administrative	N/A	BOTH	TBD	Supplemental	AK Supplemental: vendor information
175	Previous analytical data	WS	WSPF	None	None	Administrative	N/A	221-FBL	TBD	Supplemental	AK Supplemental: results from fingerprint analysis, spot checks, or routine verification sampling
176	Material Safety Data Sheets	WS	WSPF	None	All MSDS starting 1/25/90	Administrative	N/A	221-FBL	TBD	Supplemental	AK Supplemental: Material Safety Data Sheets, product labels, or other product package information
177	Sampling and analysis data from comparable / surrogate waste	WS	WSPF	None	None	Administrative	N/A	221-FBL	TBD	Supplemental	AK Supplemental: equivalent non-radioactive materials
178	Laboratory notebooks	WS	WSPF	None	None	Administrative	N/A	221FBL	TBD	Supplemental	AK Supplemental: Lab notebooks that detail the research processes and raw materials used in an experiment
190	Waste Stream Profile Form certification (signature, name, date)	WS	WSPF	None	None	Administrative	Certification	SWD	TBD	Name and signature of Site Project Manager, and date signed	Completed and signed Waste Stream Profile Form (WSPF) by Site Project Manager.
237	Pyrophoric Materials	CS	WCS PCTCD-A PCTCD -Test	WAC 3.4.1	< 1 % Radionuclide pyrophorics, No non-rad pyrophorics	Waste Matrix	N/A	221-FBL	TBD	None	Acceptable knowledge: Records of procedures, processes, or evidence showing no pyrophorics: OSR 7-872
238	Chemical Compatibility	CS	WCS	WAC 3.4.3	Chemicals allowed by the CH-TRAMPAC	Waste Matrix	N/A	221-FBL	TBD	None	Records showing chemical constituents listed per CH-TRUCON content codes and chemical lists: OSR 7-872

ATTACHMENT 3
ACCEPTABLE KNOWLEDGE DATA / INFORMATION MATRIX
(Waste Stream: SR-T001-221F-HET)

FIELD #	FIELD NAME	APPLICABILITY	DATA RECORDED ON:	Data Field Source (WAC QAPP QAPD)	ACCEPTABLE DATA RANGE & APPLICABLE COMMENTS	DATA GROUP (Packaging, Matrix, or Administrative)	CHAR. PROCESS SUPPORTING AK	AK DATA OBTAINED: SWD, 221FBL or BOTH	DATE AK REVIEW COMPLETED (month/date/year)	ACCEPTABLE KNOWLEDGE DATA	ROADMAP (ACCEPTABLE KNOWLEDGE DATA)
239	Explosives	CS	WCS PCTCD-A PCTCD -Test	WAC 3.4.5	None Present	Waste Matrix	N/A	221-FBL	TBD	None	Radiography records, visual examination records or AK documentation. 221FB Line policies/procedures (SOPs) prohibiting items in wastes or treatment to eliminate the characteristic
240	Corrosives	CS	WCS PCTCD-A PCTCD -Test	WAC 3.4.5	None Present	Waste Matrix	N/A	221-FBL	TBD	None	Radiography records, visual examination records or AK documentation. 221FB Line policies/procedures (SOPs) prohibiting items in wastes or treatment to eliminate the characteristic
241	Compressed Gases	CS	WCS PCTCD-A PCTCD -Test	WAC 3.4.5	None Present	Waste Matrix	Radiography/Visual Examination	221-FBL	TBD	None	Radiography records, visual examination records or AK documentation. 221FB Line policies/procedures (SOPs) prohibiting items in wastes or treatment to eliminate the characteristic
242	Confinement Layers	CS	WCS	WAC 3.5.6	Bags closed by approved methods; liner punctured/vented	Packaging	Visual Examination	221-FBL	TBD	Up to 5	Acceptable knowledge: Records showing compliance with Section 8.0, Appendix 1.3.7 of the TRUPACT-II SARP. **Default is 5 layers of confinement.**
246	RCRA Data	CS	WCS	WAC 3.6.2	WSPF; uniform hazardous waste manifest; LDR notification	Matrix/Packaging	N/A	221-FBL	TBD	Not applicable to this waste stream	Waste Stream Profile Form generated by site and accepted by WIPP; Uniform Hazardous Waste Manifest; and Land Disposal Restriction notification generated, including OSR 7-872
252	Filter Serial Numbers/Model Numbers	PT	PCTCD - Analytical PCTCD -Test	None	None	Packaging	Drum Selection	BOTH	TBD	Obtained at drum selection	Obtain from **OSR 7-872.**
255	Unvented Container Period	PT	PCTCD - Analytical	None	None	Administrative	N/A	N/A	N/A	Not applicable to this waste stream	N/A
256	Time Container Vented	PT	PCTCD - Analytical	None	Minimum: Type I and IV - 225 days; Type II and III - 142 days	Administrative	N/A	221-FBL	TBD	TBD	Obtain from **OSR 7-872** (determined at waste generation from 221FB Line).

ACRONYMS:
WWIS - WIPP Waste Information System
WSPF - Waste Stream Profile Form
PCTCD Analytical - Payload Container Transportation Certification Document Analytical
PCTCD Test - Payload Container Transportation Certification Document Test
WCS - Waste Certification Statement
CS - Container specific
PT - TRUPACT II
WS - Waste Stream

OSR 14-357# (Rev 12-11-96)
Stores: 26-12801.00

Westinghouse Savannah River Company
Document Approval Sheet

DOE Contact: Herbert M. Crapse
phone: 725-9866, Location: 703-A, Rm. B106

Document No. WSRC-TR-98-00301

Title: Acceptable Knowledge Summary Report For Waste Streams SR-TØØ1-221F-HET/Drums

Primary Author/Contact (Must be WSRC)	Location	Phone No.	Position	User ID
G.F. Lunsford	724-35E	952-2542	Sr. Engineer	48209

Organization Code	Organization (No Abbreviations)
KK4000	Solid Waste Division

Other Authors: — None —

Deadline Date for Approval: 11/16/98

Has an invention disclosure been submitted related to this information? ☐ Yes ☐ No

Disclosure No. (If Known) _____ Title _____ Date Submitted _____

Do you intend to submit an invention disclosure? ☐ Yes ☒ No If yes, projected date _____

Information Product Description

☒ Report Type
- ☐ Quarterly ☐ Annual ☐ Final ☐ Other _____
- ☐ Semiannual ☒ Technical ☒ Topical
- Report Dates _____ thru _____

☐ Conference Type
- ☐ Abstract ☐ Published Proceedings
- ☐ Conf Paper ☐ Other _____
- ☐ Slides

☐ Journal Article (Journal Name) _____
☐ Videotape/Multimedia
☐ External Web Page
☐ Software (Additional forms are required (ESTSC F1 and F2)).

Conference/Meeting/Presentation

Meeting Title (No Abbreviations)

Meeting Address (City, State, Country)

Meeting Date(s) _____ (m/d/y) thru _____ (m/d/y)

Sponsor

References ☐ In Public Literature ☐ Routing Concurrently ☐ Approved for Release ☐ Other _____

I understand that for the information in this material to be given external disbribution, approvals by both WSRC and, as appropriate, DOE-SR are required. Distribution (verbally or published) must be in accordance with policies set forth in WSRC management requirements and procedures (MRP 3.25) and in DOE-SR orders, and the content of the external distribution must be limited to that actually approved.

G.F. Lunsford — Author's Signature — 10-20-98 Date

Approvals by Author's Organization

Derivative Classifier	Classification	Topic	Distribution
J.A. Blankenhorn	Unclassified	Transuranic Waste Characterization	☐ Unlimited ☐ Limited (Explain Below)

Explanations

I understand and have considered whether any potential intellectual property rights (patents, copyrights, etc., in accordance with MP 1.09 and MRP 1.07) or any contractural barriers (CRADAs, Work for Others, etc.) may be involved before authorizing that this document be proposed for public release. If any concerns were identified, these have been discussed and resolved with General Counsel.

J.A. D'Amelio — Manager's Name (Print) — Manager's Signature — 10/20/98 Date

Classification Information (To be Completed by Classification Reviewer)

Classification (Check One for Each)					Classification Guide Topics
Overall	☐ S	☐ C	☐ UCNI	☑ U	
Abstract	☐ S	☐ C	☐ UCNI	☐ U	
Title	☐ S	☐ C	☐ UCNI	☑ U	

WSRC Classification Officer's Name (Print)	WSRC Classification Officer's Signature	Date
R. L. SHANKLE CLASSIFICATION ANALYST	R L Shankle	10/20/98

Export Control Review (To be Completed by Export Control Reviewing Official)

Export Control Related ☐ Yes ☑ No

Export Control Reviewer's Name (Print)	Export Control Reviewer's Signature	Date
R. L. SHANKLE CLASSIFICATION ANALYST	R L Shankle	10/20/98

STI Program Use Only

UC/C Number	Routing	Editor
SC 05	Class/ECFODE	

NOTE OSR 17-8 must be completed in addition to this form when submitting information for review and approval.

Keywords: Transuranic Waste, TRU, WIPP, acceptable knowledge

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Savannah River Company

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DOE Contact:
Herbert M. Crapse
5-9866
703-A, Rm B106

October 20, 1998

WSRC-TR-98-00301
MSD-STI-97-3377

Ms. W. F. Perrin, Technical Information Officer
U. S. Department of Energy - Savannah River Operations Office

Dear Ms. Perrin:

REQUEST FOR APPROVAL TO RELEASE SCIENTIFIC/TECHNICAL INFORMATION

The attached document is submitted for classification and technical approvals for the purpose of external release. Please complete Part II of this letter and return the letter to the undersigned by 11/16/98. The document has been reviewed for classification and export control by a WSRC Classification staff member and has been determined to be Unclassified.

Trish Baughman for
Jeanne E. Sellers, WSRC STI Program Manager

I. DETAILS OF REQUEST FOR RELEASE

Document Number:	WSRC-TR-98-00301
Author's Name:	G. F. Lunsford
Location:	724-35E Phone 2-2542
Department:	Solid Waste Div.
Document Title:	Acceptable Knowledge Summary Report for Waste Stream: SR-T001-221F-HET/Drums
Presentation/Publication:	
Meeting/Journal:	OSTI Reportable
Location:	
Meeting Date:	

II. DOE-SR ACTION

Date Received by TIO 10/20/98

- [X] Approved for Release
- [ ] Approved Upon Completion of Changes
- [ ] Approved with Remarks
- [ ] Not Approved
- [ ] Revise and Resubmit to DOE-SR

Remarks:

W. F. Perrin, Technical Information Officer, DOE-SR — Date 10/26/98

OSR 25-82-W# (4-89)
Stores: 26-15460.00

DOE F 241.1
(7-98) p. 1 of 2
(Formerly DOE F 1332.15)
(All other versions are obsolete)

US DEPARTMENT OF ENERGY

ANNOUNCEMENT OF U. S. DEPARTMENT OF ENERGY (DOE) SCIENTIFIC AND TECHNICAL INFORMATION (STI)

OMB Control No.
1910-1400

RECORD STATUS (select one):

X New ..... Revised Data ..... Revised STI Product

Part I: STI PRODUCT DESCRIPTION

A. STI PRODUCT TYPE (select one)

X 1. **Technical Report**
   a. Type: ☐ **Topical** ☐ **Semiannual** ☐ **Annual** ☐ **Final** Other (**specify**) .....
   b. Reporting Period *(mm/dd/yyyy)* ..... thru .....

..... 2. **Conference**
   a. Product Type: ..... Conference Proceedings ..... Conference Paper or Other (*abstracts, excerpts, etc.*) ___
   b. Conference Information (*title, location, dates*) _____

..... 3. **Software Manual** (*The actual software package should be made available simultaneously. Follow instructions provided with ESTSC F 1 and ESTSC F 2.*)

..... 4. **Journal Article**
   a. Type: X Announcement citation only ___ Preprint ___ Postprint
   b. Journal Name .....
   c. Volume_____ d. Issue _____ e. Serial identifier (*e.g., ISSN or CODEN*) _____

..... 5. **S&T Accomplishment Report**

..... 6. **Book**

..... 7. **Patent Application**
   a. Date Filed *(mm/dd/yyyy)* ___/___/___
   b. Date Priority *(mm/dd/yyyy)* ___/___/___
   c. Patent Assignee _____

..... 8. **Thesis/Dissertation**

B. **STI PRODUCT TITLE** Acceptable Knowledge Summary Report for Waste Stream: SR-T001-221F-HET/Drums

C. **AUTHOR(s)** G. F. Lunsford
   E-mail Address(*es*):

D. **STI PRODUCT IDENTIFIER**

___ 1. Report Number(*s*) WSRC-TR-98-00301
___ 2. DOE Contract Number(*s*) DE-AC09-96SR18500
___ 3. R&D Project ID(s)
___ 4. Other Identifying Number(*s*)

E. **ORIGINATING RESEARCH ORGANIZATION** Savannah River Site

F. **DATE OF PUBLICATION** *(mm/dd/yyyy)* .....

G. **LANGUAGE** (***if non-English***) English

(*Grantees and Awardees: Skip to Description/Abstract section at the end of Part I*)

H. **SPONSORING ORGANIZATION**

I. **PUBLISHER NAME AND LOCATION (if other than research organization)**

Availability *(refer requests to [if applicable])*

J. **SUBJECT CATEGORIES** *(list primary one first)* 05

Keywords Transuranic Waste, TRU, WIPP

K. **DESCRIPTION/ABSTRACT**

Since beginning operations in 1954, the Savannah River Site FB-Line produced Weapons Grade Plutonium for the United States National Defense Program. The facility mission was mainly to process dilute plutonium solution received from the 221-F Canyon into highly purified plutonium metal. As a result of various activities (maintenance, repair, clean up, etc.) in support of the mission, the facility generated a transuranic heterogeneous debris waste stream. Prior to January 25, 1990, the waste stream was considered suspect mixed transuranic waste (based on potential for inclusion of F-Listed solvent rags/wipes) and is not included in this characterization. Beginning January 25, 1990, Savannah River Site began segregation of rags and wipes containing F-Listed solvents thus creating a mixed transuranic waste stream and a non-mixed transuranic waste stream. This characterization addresses the non-mixed transuranic waste stream packaged in 55-gallon drums after January 25, 1990.

Characterization of the waste stream was achieved using knowledge of process operations, facility safety basis documentation, facility specific waste management procedures and storage / disposal records. The report is fully responsive to the requirements of Section 4.0 "Acceptable Knowledge" from the WIPP Transuranic Waste

US DEPARTMENT OF ENERGY

ANNOUNCEMENT OF U. S. DEPARTMENT OF ENERGY (DOE) SCIENTIFIC AND TECHNICAL INFORMATION (STI)

Part II: STI PRODUCT MEDIA/FORMAT and LOCATION/TRANSMISSION

A. MEDIA/FORMAT INFORMATION

1. Medium of STI product is: X Paper ..... Electronic document ..... Computer medium ..... Audiovisual material
2. Size of STI product _____
3. File format:
   a. If electronic document is posted at site, indicate: ☐ **html** ☐ **pdfn** ☐ **sgml** ☐ **xml**
   b. If electronic document is transmitted to OSTI, indicate: ☐ **html** ☐ **pdfn** ☐ **pdfi** ☐ **msword**
   ___ TIFFG4 ___ WP–indicate Version (5.0 or greater) _____ platform/operating system _____
   ___ MS Word–indicate Version (5.0 or greater) _____ platform/operating system _____ ___ Postscript
4. If computer medium or audiovisual material:
   a. Quantity/type (*specify*) _____
   b. Machine compatibility (*specify*) _____ c. Sound: ___ (*yes*) d. Color ___ (*yes*) e. Tables/Graphics ___ (*yes*)
   f. Other information about product format a user needs to know: _____

B. LOCATION/TRANSMISSION INFORMATION

1. STI Product is available at site: Unique URL (*of specific STI Product*) .....
2. STI Product is being transmitted to OSTI: .....
   a.___ Electronically via FTP
   b.___ Via Mail or shipment (*e.g., Federal Express*) (*Paper products, electronic documents on* CD-ROM, *diskettes, videocassettes, etc.*)
3. Information Product Filename (*of transmitted electronic format*) .....

C. ADDITIONAL INFORMATION (concerning media/format or location/transmission; for OSTI internal use only): _____

(Grantees and Awardees: Skip to Contact section at the end of Part III)

Part III: STI PRODUCT REVIEW? RELEASE INFORMATION

A. ACCESS LIMITATION

X ..... 1. **Unlimited Announcement** (*available to U.S. and non-U.S. public*)

..... 2. **OpenNet** (*use OpenNet guidance for below*):
   a. If additional source other than making it available through NTIS:
      (1) Accession Number _____
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