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Revision 0

Summary Report for the Analysis of the Sludge Batch 6 (Macrobatch 7) DWPF Pour Stream Glass Sample for Canister S03472

F.C. Johnson

February 2012

Savannah River National Laboratory
Savannah River Nuclear Solutions, LLC
Aiken, SC 29808

Prepared for the U.S. Department of Energy under contract number DE-AC09-08SR22470.

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REVIEWS AND APPROVALS

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1.0 Summary

In order to comply with the Waste Acceptance Specifications in Sludge Batch 6 (Macrobatch 7), Savannah River National Laboratory personnel performed characterization analyses on the Defense Waste Processing Facility (DWPF) pour stream glass sample collected while filling canister S03472. This report summarizes results of the characterization, which indicate that the DWPF produced glass that is significantly more durable than the Environmental Assessment glass. Results and further details are documented in "Analysis of DWPF Sludge Batch 6 (Macrobatch 7) Pour Stream Glass Samples," SRNL-STI-2011-00555.

Table 1. Measured Reportable Oxides[a]

Oxide	Concentration (wt%)
Al_2O_3	8.63
B_2O_3	4.55
Fe_2O_3	8.74
Li_2O	4.92
MnO	2.19
Na_2O	14.86
NiO	1.02
SiO_2	49.10
ThO_2	1.00
U_3O_8	1.83

Table 2. Normalized PCT Results (g/L)

Glass ID	NL B	NL Li	NL Na	NL Si
EA[b] - Measured	16.60	9.56	13.36	3.96
St. Dev.	0.02	0.04	0	0
% RSD	0.1	0.4	0	0
EA[c] - Published	16.7	9.6	13.3	3.9
St. Dev.	1.2	0.7	0.9	0.4
% RSD	7	7	7	10
SB6[d]	0.69	0.81	0.85	0.49
St. Dev.	0.02	0.01	0.02	0.01
% RSD	2.5	1.6	2.8	2.8

[a] Greater than 0.5 wt% on an elemental basis. Note that only the aqua regia data was used for Ca, K, Na, S and Zr. Both the aqua regia and peroxide fusion data were used for all other elements.
[b] Average of duplicate results.
[c] C.M. Jantzen, N.E. Bibler, D.C. Beam, C.L. Crawford, and M.A. Pickett, "Characterization of the Defense Waste Processing Facility (DWPF) Environmental Assessment (EA) Glass Standard Reference Material," Westinghouse Savannah River Company, Aiken, SC, WSRC-TR-92-346, Rev. 1, 1993.
[d] Average of quadruplicate results.

Table 3. Measured Reportable Radionuclides

Radionuclide	Concentration (Ci/kg)
Sr-90	5.9E+00
Zr-93	5.3E-04
Tc-99	<1.3E-04
Cs-137	1.3E+00
Th-232	9.3E-07
U-233	7.0E-05
U-234	4.2E-05
U-235	2.3E-07
U-236	6.3E-07
U-238	5.1E-06
Np-237	1.7E-05
Pu-238	1.4E-01
Pu-239	7.7E-03
Pu-240	2.9E-03
Pu-241	3.7E-02
Pu-242	<1.4E-05
Am-241	1.4E-02

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