



Department of Energy

Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

DEC 02 2004



Mr. Steve Zappe, WIPP Project Leader
Hazardous Waste Permits Program
New Mexico Environment Department
2905 E. Rodeo Park Drive, Bldg. 1
Santa Fe, NM 87505

Subject: Transmittal of Approved RFETS WSPF Number RF 15.01, Revision 0, TRU
Firebrick Debris Waste

Dear Mr. Zappe:

The Department of Energy, Carlsbad Field Office (CBFO) has approved the Rocky
Flats Environmental Technology Site (RFETS) Waste Stream Profile Form (WSPF)
RF15.01, Revision 0, TRU Firebrick Debris Waste.

Enclosed is a copy of the approved form as required by Section B-4(b)(1) of the WIPP
Hazardous Waste Facility Permit, No. NM4890139088-TSDF.

If you have any questions on this matter, please contact me at (505) 234-7357 or
(505) 706-0066.

Sincerely,

Kerry W. Watson
Office Director
Office of Characterization and Transportation

Enclosure

cc: w/o enclosure	
J. Kieling, NMED	*ED
C. Walker, TechLaw	*ED
M. Strum, WTS	*ED
R. Chavez, WRES	*ED
L. Greene, WRES	*ED
K. Zbryk, WRES	*ED
W. Ledford, CTAC	*ED
CBFO M&RC	



Waste Stream Profile Number: RF015.01

Generator site name: RFETS

Technical contact: Eric D'Amico

Generator site EPA ID: CO7890010526

Phone number: (303) 966-5362

Date of audit report approval by NMED: March 9, 2000 as amended February 6, 2001; May 24, 2001; June 5, 2001; April 5, 2002; April 8, 2002; August 20, 2002; August 29, 2002; December 20, 2002; April 8, 2003; September 19, 2003; December 30, 2003; July 14, 2004 and September 14, 2004

Title, version number, and date of documents used for WAP certification: Rocky Flats Environmental Technology Site TRU Waste Characterization Program Quality Assurance Project Plan, 95-QAPjP-0050, Version 10, August 2004.

Transuranic (TRU) Waste Management Manual, Version 7, 1-MAN-008-WM-001, February 2004. Contact-Handled Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant, Revision 2.0. November 2004.

Did your facility generate this waste? Yes No If no, provide the name and EPA ID of the original generator:

Waste Stream Information⁽¹⁾

WIPP ID: RF015.01⁽²⁾

Summary Category Group: S5000 Waste Matrix Code Group: Inorganic Nonmetal Waste

Waste Stream Name TRU Firebrick Debris Waste⁽²⁾

Description from the WTWBIR: This waste stream is firebrick debris generated during decontamination and decommissioning activities.

Defense TRU Waste: Yes No

Check one: CH RH Number of SWBs N/A Number of Drums 8 Number of Canisters N/A

Batch Data Report numbers supporting this waste stream characterization: See Table 7.

List applicable EPA Hazardous Waste Codes⁽³⁾: None

Applicable TRUCON Content Codes: RF 122A/222A, RF 122B/222B, RF 122N/222N

Acceptable Knowledge Information⁽¹⁾

Required Program Information

- Map of site: Reference List, No. 2
- Facility mission description: Reference List, No. 2
- Description of operations that generate waste: Reference List, Nos. 1, 2, 5
- Waste identification/categorization schemes: Reference List, Nos. 7, 8
- Types and quantities of waste generated: Reference List, Nos. 1, 2, 5
- Correlation of waste streams generated from the same building and process, as appropriate: Reference List, Nos. 1, 5
- Waste certification procedures: Reference List, No. 4

Required Waste Stream Information

- Area(s) and building(s) from which the waste stream was generated: Reference List, Nos. 1, 5
- Waste stream volume and time period of generation: Reference List, Nos. 3, 5
- Waste generating process description for each building: Reference List, Nos. 1, 5
- Process flow diagrams: Reference List, Nos. 1
- Material inputs or other information identifying chemical/radionuclide content and physical waste form: Reference List, Nos. 1, 2, 5

Which Defense Activity generated the waste: (Check one) Reference List, No. 2

- | | |
|--|---|
| <input checked="" type="checkbox"/> Weapons activities including defense inertial confinement fusion | <input type="checkbox"/> Naval Reactors development |
| <input type="checkbox"/> Verification and control technology | <input type="checkbox"/> Defense research and development |
| <input type="checkbox"/> Defense nuclear waste and material by products management | <input type="checkbox"/> Defense nuclear materials production |
| <input type="checkbox"/> Defense nuclear waste and materials security and safeguards and security investigations | |

Supplemental Documentation:

- Process design documents: Note 4
- Standard operating procedures: Note 4
- Safety Analysis Reports: Note 4
- Waste packaging logs: Note 4
- Test plans/research project reports: Note 4
- Site data bases: Note 4
- Information from site personnel: Note 4
- Standard industry documents: Note 4
- Previous analytical data: Note 4
- Material safety data sheets: Note 4
- Sampling and analysis data from comparable/surrogate Waste: Note 4
- Laboratory notebooks: Note 4

Sampling and Analysis Information⁽¹⁾

[For the following, when applicable, enter procedure title(s), number(s) and date(s)]

- Radiography: Reference List, Nos. 12, 13, 14
- Visual Examination: Reference List, Nos. 15, 16, 17
- Headspace Gas Analysis
 - VOCs: Reference List, No. 6, 10, 11
 - Flammable: Reference List, No. 6, 10, 11
 - Other gases (specify): N/A
- Homogeneous Solids/Soils/Gravel Sample Analysis (Tables 1, 3, 4, and 5 are not applicable and not included)
 - Total metals: N/A
 - PCBs: N/A
 - VOCs: N/A
 - Nonhalogenated VOCs: N/A
 - Semi-VOCs: N/A
 - Other (specify): N/A

Waste Stream Profile Form certification:

I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

[Signature]
Signature of Site Project Manager

G. A. O'Leary, Manager TRU Programs
Printed Name and Title

11/18/04
Date

[Signature]
Signature of Site QA Officer

C. L. Ferrera, TWCP Site QAO
Printed Name and Title

11/18/04
Date

NOTE

- (1) Use back of sheet or continuation sheets, if required.
- (2) TRU firebrick debris (IDC 377) is a newly created waste stream generated from decontamination and decommissioning (D&D) activities, and is not in the WTWBIR. The WIPP ID corresponds to the Waste Stream Profile Number. The Summary Category Group, Waste Matrix Code Group, Waste Matrix Code and Waste Stream Description are based on the acceptable knowledge for this stream (see attached Acceptable Knowledge Summary).
- (3) EPA Hazardous Waste Codes were determined using acceptable knowledge and confirmed using headspace gas sampling and analysis (see attached Characterization Information Summary documenting this determination).
- (4) See the References section in the Acceptable Knowledge Summary (attached) for additional backup documentation associated with this waste stream.

REFERENCE LIST

1. Waste Stream and Residue Identification and Characterization (WSRIC), Version 7, September 2004, and archived versions.
2. RFETS TRU Waste Acceptable Knowledge Supplemental Information, RF/RMRS-97-018, Revision 14, October 2004.
3. Waste and Environmental Management System (WEMS) database.
4. Transuranic (TRU) Waste Certification, PRO-X05-WC-4018, Version 8, September 2004.
5. Acceptable Knowledge TRU/TRM Waste Stream Summaries, RMRS-WIPP-98-100, Section 6.17, Revision 0, November 2004.
6. GC/MS Determination of Volatile Organics Waste Characterization, L-4111-X, January 2002.
7. Waste Characterization, Generation, and Packaging, 1-PRO-079-WGI-001, Revision 4, May 2002.
8. Waste Characterization Program Manual, 1-MAN-036-EWQA-Section 1.6.1, Revision 3, May 2002.
9. Interoffice Memorandum from Thomas R. Gatliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF015.01 (TRU Firebrick Debris Waste) Lot 1, TRG-358-04, November 2004.
10. Headspace Gas Sampling And Analysis Using An Automated Manifold, L-4231-F, March 2002
11. Headspace Gas Sampling and Analysis Using An On-Line Integrated System, PRO-1676-HGAS-S&A, Version 2, January 2004.
12. Real-Time Radiography Testing of Transuranic and Low-Level Waste, 4-W30-NDT-00664, Version 11, July 2004.
13. Real-Time Radiography Testing of Transuranic and Low-Level Waste in Building 569, 4-I19-NDT-00569, Revision 5, January 2002.
14. Mobile Real-Time Radiography Testing of Transuranic and Low-Level Waste, PRO-1520-Mobile-RTR, Version 5, October 2004.
15. Glovebox and C-Cell Waste Operations, PRO-1358-440-VERP, Version 7, July 2004.
16. RTR Visual Examination Confirmation, Building 371, PRO-1608-VECRTR-371, Revision 0, October 2002.
17. Visual Examination for Confirmation of RTR, 4-H80-776-ASRF-007, Revision 5, June 2001.

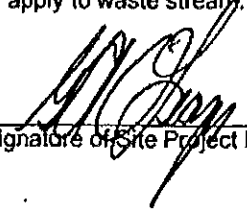
**Form A
Reconciliation with Data Quality Objectives**

I certify by signature (below) that sufficient data have been collected to determine the following Program-required waste parameters:

WSPF # RF015.01

Item	Check Box ^a	Reconciliation Parameter
1	✓	Waste Matrix Code as reported in WEMS.
2	✓	Waste Material Parameter Weights for individual containers as reported in WEMS.
3	✓	The waste matrix code identified is consistent with the type of sampling and analysis used to characterize the waste.
4	✓	Container mass and activities of each radionuclide of concern as reported in WEMS.
5	✓	Each waste container of waste contains TRU radioactive waste.
6	✓	Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, and the number of samples collected for each VOC in the headspace gas of waste containers in the waste stream/waste stream lot.
7	N/A	Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, and number of samples collected for VOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
8	N/A	Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, number of samples collected for SVOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
9	N/A	Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, and number of samples collected for metals in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
10	N/A	Sufficient number of samples was taken to meet statistical sampling requirements.
11	✓	Only validated data were used in the above calculations, as documented through the site data review and validation forms and process.
12	✓	Waste containers were selected randomly for sampling, as documented in site procedures.
13	✓	The potential flammability of TRU waste headspace gases.
14	✓	Sufficient number of waste containers was visually examined to determine with a reasonable level of certainty that the UCL ₉₀ for the misclassification rate is less than 14 percent.
15	✓	Whether the waste stream exhibits a toxicity characteristic (TC) under 40 CFR Part 261, Subpart C.
16	✓	All TICs were appropriately identified and reported in accordance with the requirements of the WIPP WAP prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
17	✓	The overall completeness, comparability, and representativeness QAOs were met for each of the analytical and testing procedures as specified in the WIPP WAP Sections B3-2 through B3-9 prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
18	✓	The RTLs (i.e., PRQLs) for all analyses were met prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
19	✓	Appropriate packaging configuration and DAC were met and documented in the headspace gas sampling documentation and the drum age was met prior to sampling.
20	✓	Whether the waste stream can be classified as hazardous or non-hazardous at the 90-percent confidence limit.

^a Check (✓) indicates that data or acceptable knowledge are sufficient to determine the waste parameters and that the waste parameters have been reported in the listed document or database. N/A indicates parameter does not apply to waste stream. NO indicates data are insufficient.



 Signature of Site Project Manager

G. A. O'Leary
 Printed Name

11/18/04

 Date

Data Summary Report—Table 2: Headspace Gas Summary Data

WSPF # RF015.01

Sampling and Analysis Method (check one):

 100% Sampling Reduced Sampling

2A

ANALYTE ^a	# Samples ^b	Transform Applied ^c	Normality Test (Pass/Fail) ^d	Maximum (ppmv)	Mean ^d	Std. Dev. ^e	UCL ₉₀ ^d	Transformed RTL ^e	Un-Transformed RTL ^e (ppmv)	EPA Code ^f
1,1-Dichloroethane	0			2.5	0.975				10	
1,2-Dichloroethane	0			2.3	1.05				10	
1,1-Dichloroethylene	0			3.2	1.3				10	
cis-1,2-Dichloroethylene	0			3.2	1.175				10	
trans-1,2-Dichloroethylene	0			2.5	1.075				10	
1,1,2,2-Tetrachloroethane	0			3.4	1.275				10	
1,1,1-Trichloroethane	0			2.9	1.225				10	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0			2.6	1.2				10	
1,2,4-Trimethylbenzene	0			2.4	1.125				N/A	
1,3,5-Trimethylbenzene	0			2.9	1.225				N/A	
Acetone	0			36	14.75				100	
Benzene	0			2.7	1.05				10	
Bromoform	0			2.3	1.05				10	
Butanol	0			33	13.25				100	
Carbon disulfide	0			3.6	1.25				10	
Carbon tetrachloride	0			2.9	1.375				10	
Chlorobenzene	0			2.8	1.275				10	
Chloroform	0			2.5	1.05				10	
Cyclohexane	0			3.4	1.275				N/A	
Ethyl benzene	0			2.2	1.075				10	
Ethyl ether	0			3.5	1.2				10	
Methanol	0			30	11				100	
Methyl ethyl ketone	0			34	14				100	
Methyl isobutyl ketone	0			28	13.25				100	
Methylene chloride	0			3	1.1				10	
o-Xylene	0			2.6	1.175				10	
m,p-Xylene	0			4.9	2.225				10	
Tetrachloroethylene	0			2.5	1.075				10	
Toluene	0			2.1	1.025				72.02 ^g	
Trichloroethylene	0			2.4	1.075				10	

NOTES:

- ^a A total of 8 samples were collected and analyzed. Analysis was performed for all analytes identified. Samples were not composited.
- ^b Identifies the number of samples in which the associated analyte was detected.
- ^c Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.

Data Summary Report—Table 2: Headspace Gas Summary Data (continued)

NOTES (continued):

- ^d Statistics calculated based on using $\frac{1}{2}$ the MDL for less-than-detectable observations with data transformation as identified (Reference 9). When transformation was applied, the Mean and UCL₉₀ values presented are the transformed values (Reference 9). With no detectable concentrations, listed mean reflects average of one-half of reported MDL values for analyte and calculation of standard deviation and UCL₉₀ values is not meaningful. With fewer than five detectable concentrations, calculated values for UCL₉₀ are subject to potentially large relative error.
- ^e RTLs for headspace gas analysis results correspond to the analyte PRQL for analytes that are WIPP WAP target analytes. "NA" means the analyte is not a WIPP WAP target analyte, but instead a flammable VOC that is analyzed for compliance with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC).
- ^f No entry indicates that the respective UCL₉₀ value did not exceed the associated RTL.
- ^g Limit used for evaluation of EPA Hazardous Waste Code for toluene (Reference No. 2).

Data Summary Report—Table 2: Headspace Gas Summary Data (continued)

WSPF # RF015.01

2B

TENTATIVELY IDENTIFIED COMPOUND (TIC)	Maximum Observed Estimated Concentrations (ppmV)	# Samples Containing TIC
No TIC listed in 40 CFR 261, Appendix VIII was detected in any of the containers sampled.		

Did the data verify the acceptable knowledge? Yes No

Data as reported in Data Summary Report – Table 2 confirm acceptable knowledge in that no toxicity characteristic volatile organic or F-listed solvent EPA codes are applicable.

If not, describe the basis for assigning the EPA Hazardous Waste Codes:

Data Summary Report—Table 6: Exclusion of Prohibited Items**WSPF # RF015.01**

The absence of prohibited items is documented through acceptable knowledge. Radiography or visual examination is performed on each container in this waste stream to verify the absence of the following prohibited items:

- Liquid waste (waste shall contain as little residual liquid as is reasonably achievable by pouring, pumping and/or aspirating, and internal containers shall contain less than 1-inch or 2.5-centimeters of liquid in the bottom of the container. Total residual liquid in any payload container (e.g., 55-gallon drum or standard waste box) may not exceed 1 percent volume of that container.)
- Non-radionuclide pyrophoric materials
- Waste incompatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, or other wastes
- Explosives or compressed gases
- Wastes with polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization
- Waste exhibiting the characteristics of ignitability, corrosivity or reactivity
- Non-mixed hazardous waste

Newly generated waste is characterized by visual verification (VV) at the time of waste packaging using the visual examination (VE) technique unless the use of radiography in lieu of, or in combination with, visual verification is justified by any of the following criteria:

- Visual verification was conducted during packaging, but was unacceptable,
- Visual verification requires extensive handling of high gram content waste that results in high radioactive exposure for the VV personnel,
- Situations where waste packaging is conducted at numerous locations generating small quantities of transuranic waste requiring a large number of VV personnel, and/or
- Where waste was originally packaged as low-level waste, but subsequently determined to be transuranic.

Each container of waste is certified and shipped only after radiography and/or VE either:

- Did not identify any prohibited items in the waste container, or
- All prohibited items found in a waste container by radiography or VE are identified and corrected (i.e., eliminated or removed) through the site non-conformance reporting system.

Data Summary Report—Table 7: Correlation
of Container Identification to Batch Data ReportsWSPF # RF015.01

Package No.	Radioassay Data Package	Headspace Sample Batch No.	Headspace VOC Data Package	RTR Data Package ^a	VE or VV Data Package ^b
DA0681	569IP1-DP-112801	04W0093	HGAS-DP-00811	5T-0264	
DA0684	569IP1-DP-112801	04W0183	HGAS-DP-00899	5T0264	
DA0696	569IP1-DP-112801	04W0093	HGAS-DP-00811	5T-0264	
DA0697	569IP1-DP-012202	04W0115	HGAS-DP-00832	5T0281	
DA0699	569IP1-DP-012202	04W0104	HGAS-DP-00821	5T0281	
DA0700	569IP1-DP-012202	04W0099	HGAS-DP-00816	5T0281	
DA0701	569IP1-DP-012202	04W0099	HGAS-DP-00816	5T0281	
DA0702	569IP1-DP-012202	04W0099	HGAS-DP-00816	5T0281	

NOTES:

- ^a No entry indicates visual verification (VV) at the time of waste packaging using the visual examination (VE) technique was performed for the container.
- ^b No entry indicates container was not selected for visual examination to confirm RTR or did not undergo VV at the time of waste packaging using the VE technique.

Acceptable Knowledge Summary

WSPF # RF015.01

RMRS-WIPP-98-100, Acceptable Knowledge TRU/TRM Waste Stream Summaries, Section 6.17, TRU Firebrick Debris Waste (attached).



Rocky Flats Environmental Technology Site

ACCEPTABLE KNOWLEDGE INFORMATION

**ACCEPTABLE KNOWLEDGE TRU/TRM
WASTE STREAM SUMMARIES**

RMRS-WIPP-98-100

Section 6.17

TRU Firebrick Debris Waste

Profile No. RF015.01

Revision 0

Reviewed for Classification/UCNI

By: Unclassified Not UCNI

Reference Exemption Number CEX-032-00

Date: November 10, 2004

Approval signatures in Site Document Control history file

6.17 Transuranic (TRU) Firebrick Debris Waste

Profile No. RF015.01

Acceptable Knowledge (AK) Waste Stream Summary

Waste Stream Name: TRU Firebrick Debris Waste

Generation Buildings: Building 771^(1,5)

Waste Stream Volume (Retrievably Stored): 8 55-gallon drums^(1,5)

Generation Dates (Retrievably Stored): July 1999^(1,5)

Waste Stream Volume (Newly Generated): None^(1,5)

Generation Dates (Newly Generated): N/A

Waste Stream Volume (Projected): None^(1,11)

Generation Dates (Projected): N/A

Transuranic Package Transporter-II (TRUPACT-II) Content (TRUCON) Code⁽²⁾:
RF122A/222A, RF122B/222B, RF122N/222N

Process Knowledge Demonstrates Flammable Volatile Organic Compounds (VOCs) in Headspace
< 500 ppm: Yes (see Section 6.17.6)

6.17.1 Transuranic Waste Baseline Inventory Report Information⁽³⁾

Waste Isolation Pilot Plant (WIPP) Identification Number(s): RF015.01^{See Note A}

Summary Category Group: S5000

Waste Matrix Code Group: Inorganic Nonmetal Waste^{See Note A}

Waste Matrix Code: S5123^{See Note A} Waste Stream Name: TRU Firebrick Debris Waste^{See Note A}

Description from the Waste Isolation Pilot Plant Transuranic Waste Baseline Inventory Report
(WTWBIR): This waste stream is firebrick debris generated during decontamination and
decommissioning (D&D) activities.

Note A: TRU firebrick debris Item Description Code 377 (IDC 377) is a newly created waste stream and is not in the WTWBIR. Firebrick is described in the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit (specifically in Table B3-1). The WIPP Identification Number (ID) corresponds to the Waste Stream Profile Number. The Summary Category Group, Waste Matrix Code Group, Waste Matrix Code, and Waste Stream Description are based on the AK for this stream as provided in Section 6.17.2.

6.17.2 Waste Stream Description

TRU firebrick debris waste consists of firebrick, coarse (IDC 377) generated from D&D operations. In accordance with Attachment B of the WAP, this waste stream is assigned Summary Category Group S5000 and Waste Matrix Code Group *Inorganic Nonmetal Waste*. This waste stream includes firebrick materials with particle size less than 2.36 inches; however, Summary Category Group S5000 (debris waste) is still valid because the waste material predominantly consists of manufactured objects (firebrick) that are not particles of S3000 or S4000 material. TRM firebrick debris wastes are similar in material, physical form, and hazardous constituents, and therefore constitute a single waste stream. Table 6.17-1 presents the waste matrix code and waste material parameters for firebrick debris. ⁽⁴⁾

Table 6.17-1, TRU Firebrick Debris

IDC	IDC Description	Waste Matrix Code	Waste Material Parameters	Weight % (Average)
377	Firebrick, Coarse	S5123, Ceramic/Brick Debris	Other Inorganic Materials	100%

Note: The above Waste Material Parameter addresses the waste material proper and does not include internal packaging (e.g. inner bags), container packaging (e.g. fiberboard liner), absorbent, secondary wastes, etc.

IDC 377, Firebrick, coarse: Firebrick, coarse consists of chunks (larger than ¼-inch in diameter and smaller than 1-inch in diameter) of ceramic brick used to line an incinerator, firebox, or high temperature furnace. ^(7,10)

6.17.3 Areas of Operation

TRU Firebrick Debris Waste was generated by the D&D defense operation in Building 771. ^(4,5,6,7)

6.17.4 Generation Processes

TRU Firebrick Debris Waste was generated during D&D activities in Building 771. The firebrick was removed from small furnaces in gloveboxes historically used in research and development of plutonium metallurgy operations. These operations utilized plutonium alloys on a research and development scale to simulate production operations conducted in Building 707 including casting, metal cutting, tensile-testing, and hardness-testing. ^(6,7,8,12)

D&D activities include the physical isolation and removal of contaminated gloveboxes, equipment, machinery, furnishings, and support systems. This includes removal and size reduction of firebrick from furnaces in Room 182 of Building 771. ^(6,7,12)

Process flow diagrams for the historical plutonium metallurgy operations can be found in the Waste Stream and Residue Identification and Characterization (WSRIC) Building Books.⁽⁸⁾

6.17.5 Resource Conservation and Recovery Act (RCRA) Characterization

This waste stream is **NOT** characterized as a mixed waste. As described in Section 6.17.2, this waste is generated from similar activities; is similar in material, physical form, and hazardous constituents; and is, therefore, considered a single waste stream. The specific WSRIC Process Numbers associated with the TRU Firebrick Debris Waste waste stream are listed in the WEMS AK Waste Stream Summary for Profile Number RF015.01.⁽⁵⁾

Visual examination of waste contents at the time of packaging/repackaging and/or real-time radiography (RTR) is used to verify that the waste stream is not a liquid waste and does not contain explosives, nonradionuclide pyrophoric materials, compressed gases, or reactive waste. Therefore, this waste stream does not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003).

TRU Firebrick Debris Waste is not RCRA-regulated hazardous waste. RCRA-regulated organic and metal compounds were not used in any of the generating processes, and the waste does not contain listed hazardous constituents. Based on AK, this waste stream is not contaminated with beryllium. No discarded chemical products, off-specification species, chemical residues, and spill residues thereof [40 Code of Federal Regulations (CFR) 261.33] were included in this waste stream and no hazardous waste from specific sources (40 CFR 261.32) was generated at the site. Therefore no F, K, U, or P listings have been applied to this waste stream.^(7,8)

The only potential source of toxicity characteristic metals identified by AK for this waste stream are the impurities in the plutonium feed materials (i.e., alloys) that were used in the simulated thermal processes from which this waste stream was generated (see Section 6.17.4). Specifically, only cadmium, chromium, and lead are known metal toxicity characteristic contaminants in the plutonium feed material. The plutonium material feed specifications limit the concentrations of these metals to 10 ppm, 100 ppm, and 100 ppm, respectively. Assuming 100 percent leaching, the plutonium feed material itself does not contain enough cadmium and may contain just enough chromium and lead to meet the toxicity characteristic regulatory threshold for these metals. The simulated thermal operations were not used to purify the plutonium material and the plutonium material was contained in crucibles or molds and was not in direct contact with the firebrick itself. Although deposition of some of the plutonium material may have occurred on the surface of the firebrick material during the simulated thermal operations, the concentrations of the toxicity characteristic metals in the waste material as a whole would be significantly less than that in the plutonium feed material. Consequently, based on AK, the firebrick waste material could not possibly contain enough toxicity characteristic metals to approach or exceed the toxicity regulatory

threshold limit for these metals, and so no toxicity characteristic metal D codes are applied to the TRU Firebrick Debris waste stream. ^(4,7,8)

Headspace gas sampling and analysis of containers assigned to this waste stream by AK detected no VOCs. With no detectable concentrations, calculation of standard deviation and the 90 percent upper confidence limit (UCL₉₀) of the mean concentrations is not meaningful and indicates the concentrations are below the associated Regulatory Threshold Limit (RTL) values. Therefore, the headspace data confirms the AK characterization that no characteristic volatile organic or F-listed solvent EPA codes are applicable. ⁽⁹⁾

6.17.6 Transportation

The payload containers in the waste stream must also comply with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC) requirements. Flammable VOCs were not identified in this waste stream based on the descriptions in the *WSRIC Building Books* and headspace gas sampling and analysis. Therefore, flammable VOCs in the payload container headspace do not exceed 500 ppm. ^(6,7,8,9)

6.17.7 Radionuclides

Table 6.17-2 summarizes the radionuclides that may be present in TRU Firebrick Debris Waste. ^(4,13)

Table 6.17-2, TRU Firebrick Debris Waste Radionuclides

IDC	Description	Radionuclides
377	Firebrick, Coarse	WG Pu, Am-241, Am-243, Np-237

Key: WG Pu weapons-grade plutonium
Am-241 americium-241
Am-243 americium-243
Np-237 neptunium-237

6.17.8 References

1. Wastren 2004. Interoffice Memorandum from Scott Smith to Waste Records Center. Current and Projected Waste Volumes for TRU Firebrick Debris Waste RF015.01, SMS-015-2004, October 26, 2004.
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