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
C. Walker, TechLaw
M. Strum, WTS
R. Chavez, WRES
L. Greene, WRES
K. Zbryk, WRES
W. Ledford, CTAC
CBFO M&RC

*ED denotes Electronic Distribution
Waste Stream Profile Number: RF015.01
Generator site name: RFETS
Generator site EPA ID: C07890010526
Technical contact: Eric D'Amico
Phone number: (303) 965-5362

Date of audit report approval by NMED: March 8, 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


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

Waste Stream Information

Waste Stream Name TRU Firebrick Debris Waste

Description from the WTW83R: 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: None.

Applicable TRUCON Content Codes: RF122A/222A, RF122B/222B, RF122N/222N

Acceptable Knowledge Information

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, 5
- 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

☑ Weapons activities including defense inertial confinement fusion ☐ Naval Reactors development
☐ Verification and control technology ☐ Defense research and development
☐ Defense nuclear waste and material by products management ☐ Defense nuclear materials production
☐ 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:
[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/Sols/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 knowingly violations.

[Signature]
G. A. O’Leary, Manager TRU Programs
Printed Name and Title
11/18/04

[Signature]
C. L. Ferrera, TWCP Site QA Officer
Printed Name and Title
11/18/04

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 WITWBR. 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

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

<table>
<thead>
<tr>
<th>Item</th>
<th>Check Box</th>
<th>Reconciliation Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>✓</td>
<td>Waste Matrix Code as reported in WEMS.</td>
</tr>
<tr>
<td>2</td>
<td>✓</td>
<td>Waste Material Parameter Weights for individual containers as reported in WEMS.</td>
</tr>
<tr>
<td>3</td>
<td>✓</td>
<td>The waste matrix code identified is consistent with the type of sampling and analysis used to characterize the waste.</td>
</tr>
<tr>
<td>4</td>
<td>✓</td>
<td>Container mass and activities of each radionuclide of concern as reported in WEMS.</td>
</tr>
<tr>
<td>5</td>
<td>✓</td>
<td>Each waste container of waste contains TRU radioactive waste.</td>
</tr>
<tr>
<td>6</td>
<td>✓</td>
<td>Mean concentrations, UCL₇₀ 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.</td>
</tr>
<tr>
<td>7</td>
<td>N/A</td>
<td>Mean concentrations, UCL₇₀ 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.</td>
</tr>
<tr>
<td>8</td>
<td>N/A</td>
<td>Mean concentrations, UCL₇₀ for the mean concentrations, standard deviations, number of samples collected for SVOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000.</td>
</tr>
<tr>
<td>9</td>
<td>N/A</td>
<td>Mean concentrations, UCL₇₀ 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.</td>
</tr>
<tr>
<td>10</td>
<td>N/A</td>
<td>Sufficient number of samples was taken to meet statistical sampling requirements.</td>
</tr>
<tr>
<td>11</td>
<td>✓</td>
<td>Only validated data were used in the above calculations, as documented through the site data review and validation forms and process.</td>
</tr>
<tr>
<td>12</td>
<td>✓</td>
<td>Sufficient containers were selected randomly for sampling, as documented in site procedures.</td>
</tr>
<tr>
<td>13</td>
<td>✓</td>
<td>The potential flammability of TRU waste headspace gases.</td>
</tr>
<tr>
<td>14</td>
<td>✓</td>
<td>Sufficient number of waste containers was visually examined to determine with a reasonable level of certainty that the UCL₇₀ for the misclassification rate is less than 14 percent.</td>
</tr>
<tr>
<td>15</td>
<td>✓</td>
<td>Whether the waste stream exhibits a toxicity characteristic (TC) under 40 CFR Part 261, Subpart C.</td>
</tr>
<tr>
<td>16</td>
<td>✓</td>
<td>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.</td>
</tr>
<tr>
<td>17</td>
<td>✓</td>
<td>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.</td>
</tr>
<tr>
<td>18</td>
<td>✓</td>
<td>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.</td>
</tr>
<tr>
<td>19</td>
<td>✓</td>
<td>Appropriate packaging configuration and DAC were met and documented in the headspace gas sampling documentation and the drum age was met prior to sampling.</td>
</tr>
<tr>
<td>20</td>
<td>✓</td>
<td>Whether the waste stream can be classified as hazardous or non-hazardous at the 90-percent confidence limit.</td>
</tr>
</tbody>
</table>

* 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.

[Signatures and dates]
### Data Summary Report—Table 2: Headspace Gas Summary Data

**WSPF # RF015.01**

**Sampling and Analysis Method (check one):**
- ☑ 100% Sampling
- ☐ Reduced Sampling

#### 2A

<table>
<thead>
<tr>
<th>ANALYTE</th>
<th># Samples</th>
<th>Transform Applied</th>
<th>Normality Test (Pass/Fail)</th>
<th>Maximum (ppmv)</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>UCLₜₐₜ</th>
<th>Transformed RTL</th>
<th>Un-Transformed RTL (ppmV)</th>
<th>EPA Code</th>
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<tbody>
<tr>
<td>1,1-Dichloroethane</td>
<td>0</td>
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<td>2.5</td>
<td>0.975</td>
<td></td>
<td></td>
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<td>10</td>
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<tr>
<td>1,2-Dichloroethane</td>
<td>0</td>
<td></td>
<td></td>
<td>2.3</td>
<td>1.05</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>1,1-Dichloroethylene</td>
<td>0</td>
<td></td>
<td></td>
<td>3.2</td>
<td>1.3</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
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<tr>
<td>cis-1,2-Dichloroethylene</td>
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<td>3.2</td>
<td>1.175</td>
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<td>1.075</td>
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<tr>
<td>1,1,2,2-Tetrachloroethane</td>
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<td></td>
<td></td>
<td>3.4</td>
<td>1.275</td>
<td></td>
<td></td>
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<td>10</td>
<td></td>
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<tr>
<td>1,1,1-Trichloroethane</td>
<td>0</td>
<td></td>
<td></td>
<td>2.9</td>
<td>1.225</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
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<tr>
<td>1,1,2-Trichloro-1,2,2-Trifluoroethane</td>
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<td>2.6</td>
<td>1.2</td>
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<tr>
<td>1,2,4-Trimethylbenzene</td>
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<td>2.4</td>
<td>1.125</td>
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<tr>
<td>1,3,5-Trimethylbenzene</td>
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<td>2.9</td>
<td>1.225</td>
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<td>Acetone</td>
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<td>Benzene</td>
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<td>2.7</td>
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<td>Bromoform</td>
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<td>1.05</td>
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<tr>
<td>Butanol</td>
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<td>33</td>
<td>13.25</td>
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<tr>
<td>Carbon disulfide</td>
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<td>3.6</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
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<tr>
<td>Carbon tetrachloride</td>
<td>0</td>
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<td>2.9</td>
<td>1.375</td>
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<tr>
<td>Chlorobenzene</td>
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<td>2.8</td>
<td>1.275</td>
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<td>10</td>
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<tr>
<td>Chloroform</td>
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<td>2.5</td>
<td>1.06</td>
<td></td>
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<tr>
<td>Cyclohexane</td>
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<td>3.4</td>
<td>1.275</td>
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<tr>
<td>Ethyl benzene</td>
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<td>2.2</td>
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<td>Ethyl ether</td>
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<td>Methanol</td>
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<tr>
<td>Methyl isobutyl ketone</td>
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<td></td>
<td>28</td>
<td>13.25</td>
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<td></td>
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<td>100</td>
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<tr>
<td>Methylene chloride</td>
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<td></td>
<td>3</td>
<td>1.1</td>
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<td></td>
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<tr>
<td>o-Xylene</td>
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<td></td>
<td>2.6</td>
<td>1.175</td>
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<tr>
<td>m,p-Xylene</td>
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<td>Tetrachloroethylene</td>
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<td>2.5</td>
<td>1.075</td>
<td></td>
<td></td>
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<td>10</td>
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<tr>
<td>Toluene</td>
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<td>2.1</td>
<td>1.025</td>
<td></td>
<td></td>
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<tr>
<td>Trichloroethylene</td>
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<td>1.075</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

**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.
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 UCL\(_{50}\) 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 UCL\(_{50}\) values is not meaningful. With fewer than five detectable concentrations, calculated values for UCL\(_{50}\) 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 UCL\(_{50}\) 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**

<table>
<thead>
<tr>
<th>TENTATIVELY IDENTIFIED COMPOUND (TIC)</th>
<th>Maximum Observed Estimated Concentrations (ppmV)</th>
<th># Samples Containing TIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>No TIC listed in 40 CFR 261, Appendix VIII was detected in any of the containers sampled.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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:
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-radiouclide 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.
<table>
<thead>
<tr>
<th>Package No.</th>
<th>Radioassay Data Package</th>
<th>Headspace Sample Batch No.</th>
<th>Headspace VOC Data Package</th>
<th>RTR Data Package</th>
<th>VE or VV Data Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA0681</td>
<td>569IP1-DP-112801</td>
<td>04W0093</td>
<td>HGAS-DP-00811</td>
<td>ST-0264</td>
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<td>04W0099</td>
<td>HGAS-DP-00816</td>
<td>ST0261</td>
<td></td>
</tr>
</tbody>
</table>

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

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

Waste Stream Volume (Retrievably Stored): 8.55-gallon drums

Generation Dates (Retrievably Stored): July 1999

Waste Stream Volume (Newly Generated): None

Generation Dates (Newly Generated): N/A

Waste Stream Volume (Projected): None

Generation Dates (Projected): N/A

Transuranic Package Transporter-II (TRUPACT-II) Content (TRUCON) Code: 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

Waste Isolation Pilot Plant (WIPP) Identification Number(s): RF015.01

Summary Category Group: S5000

Waste Matrix Code Group: Inorganic Nonmetal Waste

Waste Matrix Code: S5123

Waste Stream Name: TRU Firebrick Debris Waste

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 WTBIR. 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. TRU 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>
<thead>
<tr>
<th>IDC</th>
<th>IDC Description</th>
<th>Waste Matrix Code</th>
<th>Waste Material Parameters</th>
<th>Weight % (Average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>377</td>
<td>Firebrick, Coarse</td>
<td>S5123, Ceramic/Brick Debris</td>
<td>Other Inorganic Materials</td>
<td>100%</td>
</tr>
</tbody>
</table>

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 liners), 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.\(^{(3)}\)

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, nonradioactive 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 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 (UCL\(_{90}\)) 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>
<thead>
<tr>
<th>JDC</th>
<th>Description</th>
<th>Radionuclides</th>
</tr>
</thead>
<tbody>
<tr>
<td>377</td>
<td>Firebrick, Coarse</td>
<td>WG Pu, Am-241, Am-243, Np-237</td>
</tr>
</tbody>
</table>

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

6.17.8 References


