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

Subject: Transmittal of Approved RFETS WSPF RF129.01-Transuranic Mixed Heterogeneous 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) RF129.01. 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,

[Signature]

Kerry W. Watson  
CBFO Assistant Manager  
Office of National TRU Program

Enclosure

cc: w/o enclosure  
J. Kieling, NMED  
C. Walker, TechLaw  
R. Chavez, WRES  
K. Dunbar, WRES  
L. Greene, WRES  
S. Calvert, CTAC  
CBFO M&RC
WIPP WASTE STREAM PROFILE FORM

Waste Stream Profile Number: RF129.01
Generator site name: RFETS
Technical contact: Eric D'Amico
Phone number: (303) 966-5362
Date of audit report approval by NMED: [lists dates]

Did your facility generate this waste? [ ] Yes [ ] No

Waste Stream Information

WIPP ID: RF129.01

Summary Category Group: SS500
Waste Matrix Code Group: Hetergeneous Debris Waste
Waste Stream Name: TRM Hetergeneous Debris Waste (D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, F009)

Description from the WITWIB: Debris waste primarily from decommissioning and decontamination (D&D) activities with assigned EPA Hazardous Waste Numbers D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, F009

Defense TRU Waste: [ ] Yes [ ] No

Check one: [ ] CH [ ] RH

Number of SWBs 116 Number of Drums 16 Number of Canisters N/A

List applicable EPA Hazardous Waste Codes: D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, F009

Applicable TRUCON Content Codes: RF 121A, RF 121D, RF 121DF, RF 121DAF, RF 121E, RF 121F, RF 121H, RF 121I, RF 121K, RF 121N, RF 121T

Acceptable Knowledge Information

Required Program Information

- Map of site: Reference List, No. 3
- Facility mission description: Reference List, No. 3
- Description of operations that generate waste: Reference List, Nos. 1, 2, 3, 6
- Waste identification/categorization schemes: Reference List, Nos. 8, 9
- Types and quantities of waste generated: Reference List, Nos. 1, 2, 3, 6
- Correlation of waste streams generated from the same building and process, as appropriate: Reference List, Nos. 1, 2, 6
- Waste certification procedures: Reference List, No. 5

Required Waste Stream Information

- Area(s) and building(s) from which the waste stream was generated: Reference List, Nos. 1, 2, 6
- Waste stream volume and time period of generation: Reference List, Nos. 4, 6
- Waste generating process description for each building: Reference List, Nos. 1, 2, 6
- Process flow diagrams: Reference List, Nos. 1, 2
- Material inputs or other information identifying chemical/radio nuclide content and physical waste form: Reference List, Nos. 1, 2, 3, 6
- Which Defense Activity generated the waste: (Check one) Reference List, No. 3

☐ 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

Reviewed For Classification/UCNI
By V.S. Sznajdweck
Date 9 JAN 04
APPROVED PUBLIC RELEASE
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. 13, 14, 19
   - Visual Examination: No. 11, 12, 16, 17, 18, 20, 21
   - Headspace Gas Analysis
     - VOCs: Reference List, No. 7, 15, 22
     - Flammable: Reference List, No. 7, 15, 22
     - 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.

[Signatures]

G. A. O'Leary, Manager TRU Programs
Printed Name and Title
Date 1/9/04

C. L. Ferrera, TWCP Site QA Officer
Printed Name and Title
Date 1/9/04

NOTE

(1) Use back of sheet or continuation sheets, if required.
(2) EPA Hazardous Waste Codes were determined using acceptable knowledge and confirmed using
   headsapce gas sampling and analysis (see attached Characterization Information Summary
documenting this determination).
(3) This waste stream description is not from the WTWBIR, but the waste is similar to other waste that is
   identified in the WTWBIR. The waste material in this waste stream is not physically segregated to the
   extent of the waste streams in the WTWBIR and so is most accurately described as some
   combination of WTWBIR waste streams primarily: RF-MT0320, RF-MT0321, RF-MT0330, RF-
   MT0336, RF-MT-0337, RF-MT-0374, RF-MT0480, RF-MT-0821, RF-MT0822, RF-MT0831, RF-
   MT0832, RF-MT0833, RF-MT0856). The WIPP ID assigned corresponds to the Waste Stream
   Profile Number. The Summary Category Group, Waste Matrix Code Group, and Waste Matrix Code
   are based on acceptable knowledge (see attached AK Summary). The BIR ID reported in WWS is
   assigned using standard BIR conventions for those containers that do not have a valid BIR ID in the
   WTWBIR.
(4) See the References section in the Acceptable Knowledge Summary (attached) for additional backup
documentation associated with this waste stream.
REFERENCE LIST

12. TRU/TRM Waste Visual Verification (V²) and Data Review, PRO-1031-WIPP-1112, Revision 2, February 2003.
**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:

<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, UCL90 for the mean concentrations, standard deviations, and 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, UCL90 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, UCL90 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, UCL90 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>Waste 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 UCL90 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 QAO's 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 RTILs (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. OD indicates data are insufficient.

Signature of Site Project Manager: [Signature]

Printed Name: G. A. O'Leary

Date: 1/9/04
### Data Summary Report—Table 2: Headspace Gas Summary Data

**WSPF # RF129.01**

Sampling and Analysis Method (check one):
- □ 100% Sampling
- □ Reduced Sampling

<table>
<thead>
<tr>
<th>ANALYTE</th>
<th>Samples</th>
<th>Transform Applied</th>
<th>Normality Test (Pass/Fail)</th>
<th>Mean</th>
<th>UCL</th>
<th>Transformed RTL</th>
<th>Untransformed RTL (ppmV)</th>
<th>EPA Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1-Dichloroethane</td>
<td>5</td>
<td>Log</td>
<td>Fail</td>
<td>0.020</td>
<td>0.2741</td>
<td>2.3026</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>1,2-Dichloroethane</td>
<td>1</td>
<td>Sq. Rt</td>
<td>Pass</td>
<td>1.0271</td>
<td>3.1623</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,1-Dichloroethylene</td>
<td>3</td>
<td>Log</td>
<td>Fail</td>
<td>0.064</td>
<td>0.3157</td>
<td>2.3026</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>cis-1,2-Dichloroethylene</td>
<td>0</td>
<td></td>
<td></td>
<td>0.857</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>trans-1,2-Dichloroethylene</td>
<td>0</td>
<td></td>
<td></td>
<td>0.929</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,1,2-Tetrachloroethane</td>
<td>0</td>
<td></td>
<td></td>
<td>0.846</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,1,1-Trichloroethane</td>
<td>16</td>
<td>Log</td>
<td>Fail</td>
<td>1.727</td>
<td>2.334</td>
<td>2.3026</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>1,1,2-Trichloro-1,2,2-Trifluoroethane</td>
<td>16</td>
<td>Log</td>
<td>Fail</td>
<td>1.450</td>
<td>1.963</td>
<td>2.3026</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>1,2,4-Trimethylbenzene</td>
<td>0</td>
<td></td>
<td></td>
<td>0.815</td>
<td></td>
<td></td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>1,3,5-Trimethylbenzene</td>
<td>0</td>
<td></td>
<td></td>
<td>0.801</td>
<td></td>
<td></td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>4</td>
<td>Sq. Rt</td>
<td>Fail</td>
<td>3.148</td>
<td>3.205</td>
<td>10</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Benzene</td>
<td>1</td>
<td>Sq. Rt</td>
<td>Fail</td>
<td>1.002</td>
<td>3.1623</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bromoform</td>
<td>0</td>
<td></td>
<td></td>
<td>0.819</td>
<td></td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Butanol</td>
<td>0</td>
<td></td>
<td></td>
<td>0.893</td>
<td></td>
<td></td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Carbon disulfide</td>
<td>0</td>
<td></td>
<td></td>
<td>0.878</td>
<td></td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Carbon tetrachloride</td>
<td>17</td>
<td>Log</td>
<td>Fail</td>
<td>2.078</td>
<td>2.7446</td>
<td>2.3026</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Chlorobenzene</td>
<td>0</td>
<td></td>
<td></td>
<td>0.783</td>
<td></td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Chloroform</td>
<td>10</td>
<td>Log</td>
<td>Fail</td>
<td>0.596</td>
<td>1.0215</td>
<td>2.3026</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>2</td>
<td>Log</td>
<td>Fail</td>
<td>-0.256</td>
<td>-0.0705</td>
<td>2.3026</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Ethyl benzene</td>
<td>6</td>
<td>Log</td>
<td>Pass</td>
<td>0.072</td>
<td>0.111</td>
<td>2.3026</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Ethyl ether</td>
<td>0</td>
<td></td>
<td></td>
<td>0.873</td>
<td></td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Methanol</td>
<td>9</td>
<td>Log</td>
<td>Fail</td>
<td>2.503</td>
<td>2.633</td>
<td>4.6052</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Methyl ethyl ketone</td>
<td>1</td>
<td>Sq. Rt</td>
<td>Fail</td>
<td>2.952</td>
<td>3.146</td>
<td>10</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Methyl isobutyl ketone</td>
<td>7</td>
<td>Log</td>
<td>Pass</td>
<td>2.300</td>
<td>2.464</td>
<td>4.6052</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Methylene chloride</td>
<td>5</td>
<td>Log</td>
<td>Fail</td>
<td>0.016</td>
<td>0.270</td>
<td>2.3026</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>o-Xylene</td>
<td>13</td>
<td>Log</td>
<td>Pass</td>
<td>0.125</td>
<td>0.305</td>
<td>2.3026</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>m,p-Xylene</td>
<td>11</td>
<td>Log</td>
<td>Fail</td>
<td>0.892</td>
<td>1.108</td>
<td>2.3026</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Tetrachloroethylene</td>
<td>1</td>
<td>Sq. Rt</td>
<td>Fail</td>
<td>0.887</td>
<td>6.942</td>
<td>3.1623</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>32</td>
<td>Log</td>
<td>Pass</td>
<td>2.176</td>
<td>2.457</td>
<td>4.2769</td>
<td>72.92a</td>
<td></td>
</tr>
<tr>
<td>Trichloroethylene</td>
<td>1</td>
<td>Log</td>
<td>Fail</td>
<td>-0.311</td>
<td>-0.167</td>
<td>2.3026</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

- A total of 35 samples were collected and analyzed. Analysis was performed for all analytes identified except as noted. Samples were not composited. Headspace gas sampling and analysis was conducted on one of the 35 containers prior to the addition of trans-1,2-dichloroethylene to the target analyte list.
- Identifies the number of samples in which the associated analyte was detected.
- Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.
NOTES: (continued)

4 Statistics calculated based on using ½ the MDL for less-than-detectable observations with data transformation as identified (Reference 10). When transformation was applied, the Mean and UCL_{90} values presented are the transformed values (Reference 10). With no detectable concentrations, listed mean reflects average of one-half of reported MDL values for analyte and calculation of standard deviation and UCL_{90} values is not meaningful. With fewer than five detectable concentrations, calculated values for UCL_{90} are subject to potentially large relative error.

* 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).

1 No entry indicates no associated EPA Code assigned to the waste stream based on headspace analysis.

2 Limit used for evaluation of EPA Hazardous Waste Code for toluene (Reference No. 3).

3 Data set (with or without transformation) did not pass the test for normality. The data set that most approximated a normal distribution was used for computation of statistics.
### Data Summary Report—Table 2: Headspace Gas Summary Data (continued)

**WSPF # RF129.01**

<table>
<thead>
<tr>
<th>TENTATIVELY IDENTIFIED COMPOUND (TIC)</th>
<th>Maximum Observed Estimated Concentration (ppmv)</th>
<th># Samples Containing TIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonane, CAS # 111-84-2</td>
<td>36</td>
<td>2</td>
</tr>
<tr>
<td>Decane, CAS # 124-18-5</td>
<td>99</td>
<td>3</td>
</tr>
<tr>
<td>Octane, 3,6-Dimethyl, CAS # 15869-94-0</td>
<td>34</td>
<td>1</td>
</tr>
<tr>
<td>2,6-Dimethyloctane, CAS # 2051-30-1</td>
<td>34</td>
<td>1</td>
</tr>
<tr>
<td>Cyclohexane, 1-Ethyl-2-Methyl-(trans), CAS # 4923-78-6</td>
<td>27</td>
<td>1</td>
</tr>
<tr>
<td>3-Methylnonane, CAS # 569-34-4</td>
<td>35</td>
<td>1</td>
</tr>
<tr>
<td>3-Methylmethyl, CAS # 5911-04-6</td>
<td>34</td>
<td>1</td>
</tr>
<tr>
<td>Ethyl Alcohol, CAS # 64-17-5</td>
<td>11.2</td>
<td>1</td>
</tr>
<tr>
<td>Cyclohexane, 1-Ethyl-2,3-Dimethyl, CAS # 7058-05-1</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>3,4-Dimethyl, 1,3-Hexene, CAS # 868-46-2</td>
<td>28</td>
<td>1</td>
</tr>
</tbody>
</table>

No TIC listed in 40 CFR 261, Appendix VIII was detected in greater than or equal to 25 percent of the waste 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, other than those assigned by acceptable knowledge, are applicable.

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

- Liquids
- 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
- PCBs in concentrations greater than or equal to 50 ppm
- Waste exhibiting the characteristics of ignitability, corrosivity or reactivity
- Non-mixed hazardous wastes

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:

1. Did not identify any prohibited items in the waste container, or
2. 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 Reports

**WSPF # RF129.01**

<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&lt;sup&gt;a&lt;/sup&gt;</th>
<th>VE or W Data Package&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>D65965</td>
<td>CIQ-98-017</td>
<td>00C1101</td>
<td>HVOC-DP-00270</td>
<td>6T-1623</td>
<td></td>
</tr>
<tr>
<td>S00773</td>
<td>440SH1-DP-0062702</td>
<td>03W0071</td>
<td>HGAS-DP-00429</td>
<td>5T-0124</td>
<td></td>
</tr>
<tr>
<td>S00857</td>
<td>440SH1-DP-012303</td>
<td>03W0068</td>
<td>HGAS-DP-00425</td>
<td>5T-0255</td>
<td></td>
</tr>
<tr>
<td>S00940</td>
<td>440SH1-DP-031902</td>
<td>02W0200</td>
<td>HGAS-DP-00283</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S00987</td>
<td>440SH1-DP-092302</td>
<td>02W0134</td>
<td>HGAS-DP-00242</td>
<td>5T-0231</td>
<td></td>
</tr>
<tr>
<td>S01093</td>
<td>440SH1-DP-0110303</td>
<td>03W0073</td>
<td>HGAS-DP-00430</td>
<td>5T-0285</td>
<td></td>
</tr>
<tr>
<td>S01096</td>
<td>664MP1-DP-021203</td>
<td>03W0066</td>
<td>HGAS-DP-00423</td>
<td>6T-2115</td>
<td></td>
</tr>
<tr>
<td>S01117</td>
<td>440SH1-DP-022503</td>
<td>03W0067</td>
<td>HGAS-DP-00424</td>
<td>5T-0253</td>
<td></td>
</tr>
<tr>
<td>S01124</td>
<td>440SH1-DP-012503</td>
<td>03W0068</td>
<td>HGAS-DP-00425</td>
<td>5T-0249</td>
<td></td>
</tr>
<tr>
<td>S01125</td>
<td>440SH1-DP-011003</td>
<td>03W0057</td>
<td>HGAS-DP-00416</td>
<td>5T-0249</td>
<td></td>
</tr>
<tr>
<td>S01127</td>
<td>440SH1-DP-011103</td>
<td>03W0067</td>
<td>HGAS-DP-00424</td>
<td>5T-0247</td>
<td></td>
</tr>
<tr>
<td>S01243</td>
<td>440SH1-DP-041802</td>
<td>02W0217</td>
<td>HGAS-DP-00326</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01274</td>
<td>440SH1-DP-020502</td>
<td>02W0175</td>
<td>HGAS-DP-00288</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01278</td>
<td>440SH1-DP-021402</td>
<td>03W0029</td>
<td>HGAS-DP-00379</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01317</td>
<td>440SH1-DP-020702</td>
<td>02W0175</td>
<td>HGAS-DP-00288</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01327</td>
<td>440SH1-DP-022802</td>
<td>02W0199</td>
<td>HGAS-DP-00282</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01338</td>
<td>440SH1-DP-020702</td>
<td>02W0176</td>
<td>HGAS-DP-00328</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01345</td>
<td>440SH1-DP-041702</td>
<td>02W0220</td>
<td>HGAS-DP-00367</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01367</td>
<td>440SH1-DP-041003</td>
<td>03W0063</td>
<td>HGAS-DP-00419</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01398</td>
<td>440SH1-DP-031102</td>
<td>02W0209</td>
<td>HGAS-DP-00324</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01400</td>
<td>440SH1-DP-052002</td>
<td>03W0101</td>
<td>HGAS-DP-00458</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01402</td>
<td>440SH1-DP-031502</td>
<td>02W0202</td>
<td>HGAS-DP-00332</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01441</td>
<td>440SH1-DP-031102</td>
<td>03W0025</td>
<td>HGAS-DP-00384</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01490</td>
<td>440SH1-DP-050702</td>
<td>03W0083</td>
<td>HGAS-DP-00440</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01545</td>
<td>440SH1-DP-041702</td>
<td>03W0023</td>
<td>HGAS-DP-00383</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01546</td>
<td>440SH1-DP-060502</td>
<td>03W0035</td>
<td>HGAS-DP-00395</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01611</td>
<td>440SH1-DP-061302</td>
<td>03W0080</td>
<td>HGAS-DP-00435</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01673</td>
<td>440SH1-DP-020403</td>
<td>03W0083</td>
<td>HGAS-DP-00440</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01833</td>
<td>440SH1-DP-111302</td>
<td>03W0185</td>
<td>HGAS-DP-00530</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01955</td>
<td>440SH1-DP-012803</td>
<td>03W0193</td>
<td>HGAS-DP-00537</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01957</td>
<td>440SH1-DP-101702</td>
<td>03W0195</td>
<td>HGAS-DP-00539</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01962</td>
<td>440SH1-DP-103002</td>
<td>03W0163</td>
<td>HGAS-DP-00506</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S02212</td>
<td>440SH1-DP-120402</td>
<td>03W0148</td>
<td>HGAS-DP-00408</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S02485</td>
<td>440SH1-DP-022703</td>
<td>03W0241</td>
<td>HGAS-DP-00579</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S02586</td>
<td>440SH1-DP-040303</td>
<td>03W0242</td>
<td>HGAS-DP-00580</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

<sup>a</sup> No entry indicates visual verification (VV) at the time of waste packaging using the visual examination (VE) technique was performed for the container.

<sup>b</sup> No entry indicates container was not selected for visual examination to confirm RTR and did not undergo VV at the time of waste packaging using the VE technique.
Acceptable Knowledge Summary

WSPF # RF129.01

RMRS-WPP-98-100, Acceptable Knowledge TRM Waste Stream Summaries, Section 7-14: TRM Heterogeneous Debris Waste (D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, F009) (attached).
ACCEPTABLE KNOWLEDGE INFORMATION

ACCEPTABLE KNOWLEDGE TRU/TRM WASTE STREAM SUMMARIES

RMRS-WIPP-98-100

Section 7.14
TRM Heterogeneous Debris

(D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, F009)

Profile No. RF129.01
Revision 2

Reviewed for Classification/UCNI
By: Unclassified Not UCNI
Reference Exemption Number CEX-032-00
Date: January 20, 2003 VSS

Approval signatures in Site Document Control history file
7.14  TRM Heterogeneous Debris (D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, F009)  

Acceptable Knowledge Waste Stream Summary

Waste Stream Name: TRM Heterogeneous Debris (D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, and F009)

Generation Buildings: Buildings 371, 440, 528, 559, 707, 750 PAD, 771, 774, 776, 777, 779 and 886


Waste Stream Volume (Newly Generated): 10 55-Gallon Drums and 96 Standard Waste Boxes


TRUCON Content Codes (1): RF 121A, RF 121D, RF 121DF, RF 121DA, RF 121DAF, RF 121E, RF 121F, RF 121H, RF 121I, RF 121K, RF 121N, RF 121T

Process Knowledge Demonstrates Flammable VOCs in Headspace < 500 ppm: No (see Sec. 7.14.6)

7.14.1  WIPP Transuranic Waste Baseline Inventory Report Information (2)

WIPP Identification Numbers: RF129.01

Summary Category Group: S5000  Waste Matrix Code Group: Heterogeneous Debris Waste

Waste Matrix Code: S5490  Waste Stream Name: TRM Heterogeneous Debris Waste (D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, F009)

Description from the WTWBIR: Debris waste primarily from decommissioning and decontamination (D&D) activities with the assigned EPA Hazardous Waste Numbers D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, F009

NOTE: IDC 3011 is a newly created IDC primarily for D&D operations and thus is not identified in the WTWBIR. The WIPP ID corresponds to the Waste Stream Profile Number. The Summary Category Group and Waste Matrix Code Group are based on the acceptable knowledge for this stream.
7.14.2 Waste Stream Description

This waste is generated by similar activities, and is similar in material, physical form and hazardous constituents and therefore is considered a single waste stream. TRM heterogeneous debris waste assigned EPA hazardous waste numbers D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, and F009 consists of composite debris (Item Description Code 3011). Table 7.14-1 presents the waste matrix code and waste material parameters for heterogeneous debris wastes.\(^{(3)}\)

Table 7.14-1, Heterogeneous Debris Waste Description

<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>3011</td>
<td>Composite Debris</td>
<td>S5490, Heterogeneous Debris</td>
<td>Note 1</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

1. Waste material parameters and weights will be determined during visual verification at the time of packaging or by radiography, as appropriate.

*IDC 3011, Composite Debris:* This IDC is assigned to composite debris, rubble, or material composed of such things as gloveboxes, process equipment, tools, and other inorganic materials, such as concrete, glass, firebrick, ceramics, asbestos, etc. Metals in this IDC may include aluminum, copper, iron, brass, bronze, galvanized metal, stainless steel, carbon steel, lead, and other metal alloys. This IDC may also contain solid hydrogenous materials such as cellulosics, plastic, Plexiglas, and rubber that have been in contact with hazardous solvents.\(^{(4,6,7,8,9,10,11,12,15,16,17,18)}\)

7.14.3 Areas of Operation

TRM heterogeneous debris assigned EPA hazardous waste numbers D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, and F009 are generated by the following defense operations in Buildings 371, 440, 528, 559, 707, 750 PAD, 771, 774, 776, 777, 779 and 886:\(^{(3,4,5,6,7,8,9,10,11,12,15,16,17,18)}\)

- Plutonium Production
- Plutonium Recovery
- Decontamination and Decommissioning Operations (D&D)

7.14.4 Generation Processes

TRM heterogeneous debris wastes with EPA hazardous waste numbers D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, and F009 in inventory were primarily generated during decontamination and decommissioning (D&D) activities in Buildings 371, 440, 528, 559, 707, 750 PAD, 771, 774, 776, 777, 779 and 886. These buildings were utilized in the past for plutonium production, recovery, laboratory
operations, maintenance, and waste and residue treatment and repackaging operations. Some of the waste in inventory was generated as metal debris from past operations and from D&D; however, based on the amount of hydrogenous waste material detected by radiography, the waste was re-designated as IDC 3011.\textsuperscript{4,6,8,9,10,11,15,16,17,18}

Decontamination and decommissioning activities include the physical isolation and removal of contaminated gloveboxes, equipment, machinery, furnishings, and support systems. This includes removal and size reduction of glovebox internals, process piping and supports, tanks and ancillary equipment, and other fixed equipment such as ducting, wires, conduits, electrical panels and cabinets. Gloveboxes and equipment are size reduced as necessary and packaged for shipment to WIPP.\textsuperscript{6,8,9,10,11,15,16,17,18}

Current waste generation activities also include waste drum and crate repackaging operations in Buildings 440 and 771. Containers with non-conformances or insufficient acceptable knowledge are unpacked in a containment tent, examined and compared to the existing container paperwork, and repackaged to current WIPP waste generating requirements.\textsuperscript{7,9}

A more detailed description of each of these processes and process flow diagrams can be found in the \textit{WSRIC Building Books} or \textit{archived WSRIC files}.\textsuperscript{3,4,6,7,8,9,10,11,15,16,17,18}

\subsection*{7.14.5 RCRA Characterization}

This waste stream is characterized as a mixed waste. As described in Section 7.14.2, this waste is generated from similar activities, and is similar in material, physical form, and hazardous constituents, and is therefore considered a single waste stream. The waste stream as a whole is assigned EPA hazardous waste numbers D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, and F009. For on site, storage, the individual containers of mixed waste in this stream are assigned a subset of these EPA hazardous waste numbers because the BWR Baseline Book Subpopulations and WSRIC Process Numbers used by the site do not define waste stream in accordance with the WAP. The specific BWR Baseline Book Subpopulations and WSRIC Process Numbers associated with heterogeneous debris waste in this waste stream are listed in the WEMS AK Waste Stream Summary for Profile Number RF129.01.\textsuperscript{5}

This waste stream was generated primarily from D&D. D&D activities include the physical isolation and removal of contaminated gloveboxes, equipment, machinery, furnishings, and support systems. This activity includes removal and size reduction of glovebox internals, process piping and supports, tanks and ancillary equipment, and other fixed equipment such as ducting, wires, conduits, electrical panels and cabinets. This waste stream includes waste initially generated as metal debris and re-designated as IDC 3011 based on the amount of hydrogenous waste material detected by radiography. The RCRA characterization of this waste is verified by reviewing existing information for each container. This review includes verifying that the waste was generated within the specified time period, area and buildings, and waste generating
process. If this review identifies differences in the EPA hazardous waste numbers that were assigned, the waste is reassessed and the appropriate EPA hazardous waste numbers assigned. (4,6,7,8,9,10,11,12,15,16,17,18)

Visual examination of waste contents at the time of packaging and/or Real-Time Radiography is used to verify that the waste stream does not contain free liquid, explosives, non-radionuclide pyrophoric materials, compressed gasses, or reactive waste. Although materials in this waste stream are derived from the treatment of cyanide bearing wastes, these constituents were rendered non-reactive and the cyanide concentrations are below regulatory limits as described in Reference 20. Therefore, this waste stream does not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003).<sup>19</sup>

The materials in this waste stream are toxicity characteristic for RCRA metals and organics. Arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver are contaminants identified in feed materials to the Building 771 incinerator. This waste stream includes heterogeneous debris wastes generated from the D&D of the incinerator system or gloveboxes and equipment derived from the repackaging incinerator ash. Circuit boards (containing lead and silver solder) were generated in Building 750 PAD and identified by radiography in composite debris. Silver is also present from utilities processes and Building 779 research and development operations (i.e., Nonplutonium Physical Metallurgy, Nuclear Materials Compatibility Studies, and Surface Analysis Laboratory). Other materials in this waste stream include lead in the form of shielding, bricks, or tape, brass or bronze fittings (containing lead), and leaded glass (hazardous for barium and lead according to analytical data). Based on process knowledge and supported by analytical data (see Environmental Compliance Guidance No. 28), this output exhibits the RCRA hazardous characteristic of toxicity due to the presence of lead. Therefore, this waste stream is characterized as hazardous and assigned EPA Waste Codes D004, D005, D006, D007, D008, D009, D010, and D011<sup>4,6,8,10,17</sup>

This waste stream also includes containers that were originally assigned to a different waste stream by acceptable knowledge (AK), but are subsequently segregated into this waste stream after completion of headspace gas sampling/analysis. Chloroform and/or 1,1-dichloroethylene were detected in concentrations above the PRQL in the individual container headspace of these segregated containers. Combustibles in the composite debris comprising this waste stream may also contain sufficient 1,2-dichloroethane to exceed the PRQL in the individual containers. Therefore D022, D028 and D029 are conservatively assigned to composite debris materials in this waste stream.<sup>4</sup>

The materials in this waste stream are mixed with, or derived from the treatment of F-listed constituents. Ethyl alcohol, Freon TF, carbon tetrachloride, Freon (1,1,2-trichloro-1,2,2-trifluoroethane), methylene chloride, methyl ethyl ketone and 1,1,1-trichloroethane were used as solvents in Building 707 production operations, identified as contaminants in Organic and Sludge Immobilization System (OASIS) sludge treated in
the Building 774 OASIS Process, and utilized as solvents in utilities processes and Building 779 research and development operations (i.e., Nonplutonium Physical Metallurgy, Nuclear Materials Compatibility Studies, and Surface Analysis Laboratory). This waste stream includes composite debris wastes generated from D&D of the liquid waste treatment system, the Building 771 incinerator system, gloveboxes and equipment derived from the repackaging of incinerator ash, or Building 374 bypass sludge and saltcrete. F001, F002, and F005 listed solvent contaminated wastes were treated in the incinerator. Benzene, carbon disulfide, carbon tetrachloride, chlorobenzene, 1,2-dichlorobenzene, Freon (1,1,2-trichloro-1,2,2-trifluoroethane), isobutyl alcohol, methylene chloride, methyl ethyl ketone, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, pyridine, and tetrachloroethylene are solvent contaminants in Building 374 bypass sludge and saltcrete. This waste stream also includes containers that were originally assigned to a different waste stream by AK, but were subsequently segregated into this waste stream after completion of headspace gas sampling/analysis. F001, F002, and F005 listed solvents were detected in concentrations above the PRQL in the individual container headspace. Bypass sludge and saltcrete were derived from the treatment of F-listed waste from all radiological operations on Site, including cyanide-plating operations (F006, F007, and F009). Therefore, these wastes are assigned EPA hazardous waste numbers F001, F002, F005, F006, F007, and F009. 

Although F003 listed solvents such as acetone, butyl alcohol, methanol and xylenes are present in the waste; these solvents are listed solely for ignitability. Because the waste does not exhibit the characteristic of ignitability since it is not in liquid form, EPA hazardous waste number F003 is not assigned to this waste stream.

Beryllium parts were used in the manufacture/assembly of weapons components, and residual beryllium contamination of plutonium parts may have occurred. Composite debris including lead shielding associated with these operations may have been contaminated with beryllium and therefore, trace quantities (less than one weight percent) of beryllium may be present in the waste stream. Any beryllium present is as a contaminant of the process and not as unused commercial chemical product, and therefore is not a P015-listed waste.

Headspace gas sampling and analysis of containers assigned to this waste stream by AK detected twenty VOCs. Statistics were calculated based on using one-half the method detection limit (MDL) for less-than-detectable observations with data transformation applied where appropriate. Using the "WIPP directed" method, only two analytes that confirm EPA codes F001 and F002 already assigned to the waste stream by AK were found to exceed their associated PRQL values. Consequently, no new VOC EPA hazardous waste codes were assigned by headspace gas sampling/analysis. No changes to the AK assigned EPA hazardous waste codes were made based on this data (i.e., all EPA hazardous waste codes assigned by AK are retained for the subject waste stream). 

(14)
7.14.6 Transportation

The payload containers in this waste stream must also comply with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC) requirements. Flammable volatile organic compounds (VOCs) including benzene, butyl alcohol, carbon disulfide, chlorobenzene, cyclohexane; 1,1-dichloroethane; methyl ethyl ketone; methyl isobutyl ketone; 1,1-dichloroethylene, and toluene were identified in this waste stream based on the descriptions in the BWR Baseline Book and WSRIC Building Books, and headspace gas sampling and analysis. Therefore, flammable VOCs in the payload container headspace have the potential to exceed 500 ppm. All payload containers, including those that exceed 500 ppm flammable VOCs in the headspace gas, are evaluated for compliance with applicable TRAMPAC requirements using the eTRAMPAC system prior to shipment. (4,6,7,8,9,10,11,15,16,17,18)

7.14.7 Radionuclides

Table 7.14-3 summarizes the radionuclides potentially present in TRM heterogeneous debris. (3)

**Table 7.14-3, Heterogeneous Debris (D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, and F009) Radionuclides**

<table>
<thead>
<tr>
<th>IDC</th>
<th>Description</th>
<th>Radionuclides¹</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>3011</td>
<td>Composite Debris (0-100% organic)</td>
<td>WG Pu, Am-241, DU, EU, Np-237, Am-243</td>
<td>IDC generated from decontamination &amp; decommissioning (D&amp;D) of buildings associated with plutonium production.</td>
</tr>
</tbody>
</table>

Key:
- WG Pu  weapons-grade plutonium
- Am-241  americium-241
- DU  depleted uranium
- EU  enriched uranium
- Np-237  neptunium-237
- Am-243  americium-243

Notes:
1. Am-243 was not initially predicted to be present by AK; however, it has been identified by NDA and is therefore added as a potential radionuclide in this waste stream.
7.14.8 References


21. State of New Mexico Environment Department letter from Ron Curry to Dr. Ines Triay and Dr. Steven Warren; Final Determination, Class 2 Modification Requests WIPP Hazardous Waste Facility Permit EPA I.D. NM4890139088; approving Item 5 to add hazardous waste numbers, September 11, 2003.