



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

FEB 05 2004



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 Number RF140.01-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) RF140.01.

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,

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

Enclosure

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



WIPP WASTE STREAM PROFILE FORM

RF140.01, Revision 0

Page 1 of 10

January 14, 2004

Waste Stream Profile Number: RF140.01

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 and December 30, 2003

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 8, October 2003.

Transuranic (TRU) Waste Management Manual, Revision 6, 1-MAN-008-WM-001, June 2003. Contact-Handled Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant, Revision 0.1, July 2002.

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: RF140.01⁽³⁾

Summary Category Group: S5000⁽³⁾ Waste Matrix Code Group: Heterogeneous Debris Waste⁽³⁾

Waste Stream Name: TRM Inorganic Composite Debris Waste (D005, D008, D009, D011, F001, F002, F005, F006, F007, F009)⁽³⁾

Description from the WTWBIR: Debris waste primarily from decommissioning and decontamination (D&D) activities with assigned EPA Hazardous Waste Numbers D005, D008, D009, D011, F001, F002, F005, F006, F007, F009)⁽³⁾

Defense TRU Waste: Yes No

Check one: CH RH Number of SWBs 103 Number of Drums 11 Number of Canisters N/A

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

List applicable EPA Hazardous Waste Codes⁽²⁾: Numbers D005, D008, D009, D011, F001, F002, F005, F006, F007, F009

Applicable TRUCON Content Codes: RF 130A, RF 130B, RF 130BA, RF 130D, RF 130DF, RF 130E, RF 130F, RF 130G, RF 130GF, RF 130H, RF 130I, RF 130J, RF 130K, RF 130N, RF 130P, RF 130PA, RF 130PAF, RF 130PF, RF 130Q, RF 130R, RF 130RF, RF 130S, RF 130SF, RF 130T, RF 130U, RF 130V, RF 130VF

Acceptable Knowledge Information⁽¹⁾

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/radionuclide 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 SENDELWECK

Date 14 JAN 04 (HAM)

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⁽¹⁾

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

- Radiography: Reference List Nos. 13, 14, 19
- Visual Examination: 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

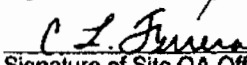
Waste Stream Profile Form certification:

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.


Signature of Site Project Manager

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

1/13/04
Date


Signature of Site QA Officer

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

1/13/04
Date

- NOTE**
- (1) Use back of sheet or continuation sheets, if required.
 - (2) 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).
 - (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 WWIS 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

1. Backlog Waste Reassessment Baseline Book, Waste Form 24, Metal, November 2003.
2. Waste Stream and Residue Identification and Characterization (WSRIC), Version 7, June 2003, and archived versions.
3. RFETS TRU Waste Acceptable Knowledge Supplemental Information, RF/RMRS-97-018, Revision 10, August 2002.
4. Waste and Environmental Management System (WEMS) database.
5. Transuranic (TRU) Waste Certification, PRO-X05-WC-4018, Revision 5, December 2003.
6. Acceptable Knowledge TRU/TRM Waste Stream Summaries, RMRS-WIPP-98-100, Section 7.16, Revision 0, January 2004.
7. GC/MS Determination of Volatile Organics Waste Characterization, L-4111-X, January 2002.
8. Waste Characterization, Generation, and Packaging, 1-PRO-079-WGI-001, Revision 4, May 2002.
9. Waste Characterization Program Manual, 1-MAN-036-EWQA-Section 1.6.1, Revision 3, May 2002.
10. Interoffice Memorandum from Thomas R. Gatliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF140.01 (TRM Inorganic Composite Debris Wastes [D005, D008, D009, D011, F001, F002, F005-F007, F009]) Lot 1, TRG-279-03, December 2003.
11. Visual Examination for Confirmation of RTR, 4-H80-776-ASRF-007, Revision 5, June 2001.
12. TRU/TRM Waste Visual Verification (V^2) and Data Review, PRO-1031-WIPP-1112, Revision 2, February 2003.
13. Real-Time Radiography Testing of Transuranic and Low-Level Waste, 4-W30-NDT-00664, Version 8, November 2003.
14. Real-Time Radiography Testing of Transuranic and Low-Level Waste in Building 569, 4-I19-NDT-00569, Revision 6, January 2002.
15. Headspace Gas Sampling And Analysis Using An Automated Manifold, L-4231-F, March 2002.
16. Visual Examination for Confirmation of RTR, PRO-1471-VE-771, Revision 0, November 2001.
17. Glovebox and C-Cell Waste Operations, PRO-1358-440-VERP, Revision 2, September 2002.
18. RTR Visual Examination Confirmation, Building 371, PRO-1608-VECRTR-371, Revision 0, October 2002.
19. Mobile Real-Time Radiography Testing of Transuranic and Low-Level Waste, PRO-1520-Mobile-RTR, Version 2, November 2003.
20. Residue Repack, Building 371; PRO-544-SALT REPACK-371, Revision 5, January 2002.
21. Combustible Residue Repackaging, PRO-823-REPACK-371, Revision 1, March 2001.
22. Headspace Gas Sampling and Analysis Using An On-Line Integrated System, PRO-1676-HGAS-S&A, Version 1, November 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:

WSPF # RF140.01

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

1-13-04
Date

Data Summary Report—Table 2: Headspace Gas Summary Data

WSPF # RF140.01

Sampling and Analysis Method (check one):

 100% Sampling Reduced Sampling

2A

ANALYTE ^a	# Samples ^b	Transform Applied ^c	Normality Test (Pass/Fail) ^d	Mean ^d	UCL ₉₅ ^d	Transformed RTL ^e	Un-Transformed RTL ^e (ppmV)	EPA Code ^f
1,1-Dichloroethane	0			1.034			10	
1,2-Dichloroethane	0			1.076			10	
1,1-Dichloroethylene	0			1.08			10	
cis-1,2-Dichloroethylene	0			1.103			10	
trans-1,2-Dichloroethylene	0			1.148			10	
1,1,2,2-Tetrachloroethane	1	Sq. Rt.	Fail ^h	1.031	1.083	3.162	10	
1,1,1-Trichloroethane	2	Log	Fail ^h	0.151	0.305	2.303	10	
1,1,2-Trichloro-1,2,2-Trifluoroethane	5	Log	Fail ^h	0.712	1.144	2.303	10	
1,2,4-Trimethylbenzene	0			1.007			NA	
1,3,5-Trimethylbenzene	0			0.96			NA	
Acetone	5	Sq. Rt.	Fail ^h	3.751	3.994	10	100	
Benzene	0			1.107			10	
Bromoform	0			0.966			10	
Butanol	0			11.56			100	
Carbon disulfide	0			1.041			10	
Carbon tetrachloride	2	Log	Fail ^h	0.283	0.506	2.303	10	
Chlorobenzene	0			0.937			10	
Chloroform	2	Sq. Rt.	Fail ^h	1.049	1.098	3.162	10	
Cyclohexane	0			1.102			NA	
Ethyl benzene	4	Log	Fail ^h	0.096	0.229	2.303	10	
Ethyl ether	0			1.106			10	
Methanol	0			11.613			100	
Methyl ethyl ketone	2	Log	Fail ^h	2.448	2.62	4.605	100	
Methyl isobutyl ketone	3	Sq. Rt.	Fail ^h	3.732	3.983	10	100	
Methylene chloride	0			1.003			10	
o-Xylene	7	Log	Fail ^h	0.16	0.321	2.303	10	
m,p-Xylene	6	Log	Fail ^h	0.909	1.092	2.303	10	
Tetrachloroethylene	0			1.055			10	
Toluene	18	Log	Fail ^h	1.055	1.353	4.2769	72.02 ^g	
Trichloroethylene	0			1.023			10	

NOTES:

^a A total of 34 samples were collected and analyzed. Analysis was performed for all analytes identified. Samples were not composited. Headspace gas sampling and analysis was conducted on one of the 34 containers prior to the addition of trans-1,2-dichloroethylene to the target analyte list.

^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 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).
- ^f No entry indicates no associated EPA Code assigned to the waste stream based on headspace analysis.
- ^g Limit used for evaluation of EPA Hazardous Waste Code for toluene (Reference No. 3).
- ^h 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 # RF140.01

2B

TENTATIVELY IDENTIFIED COMPOUND (TIC)	Maximum Observed Estimated Concentrations (ppmv)	# Samples Containing TIC
Decane, CAS # 124-18-5	73	1
Heptane, 3-ethyl-2-methyl-, CAS # 14676-29-0	35	1
3-Undecene, 6-methyl, (E)-, CAS # 74630-52-7	35	1

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:

Data Summary Report—Table 6: Exclusion of Prohibited Items**WSPF # RF140.01**

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:

- Liquids
- 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
- 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 # RF140.01

Package No.	Radioassay Data Package	Headspace Sample Batch No.	Headspace VOC Data Package	RTR Data Package ^a	VE or VV Data Package ^b
D68232	CIQ-98-010	02W0166	HVOC-DP-00269	6T-1618	
DA6981	569IP1-DP-031802	02W0172	HGAS-DP-00340	5T-0292	
S00679	440SH1-DP-031902	02W0058	HGAS-DP-00200	5T-0213	
S00765	440SH1-DP-061402	02W0139	HGAS-DP-00223	5T-0196	
S01285	440SH1-DP-020802	03W0003	HGAS-DP-00336		VV-774-00001
S01300	440SH1-DP-020802	03W0002	HGAS-DP-00335		VV-774-00001
S01743	440SH1-DP-082002	03W0077	HGAS-DP-00434		VV-371-00041
S01745	440SH1-DP-082002	03W0077	HGAS-DP-00434		VV-371-00048
S01832	440SH1-DP-090402	03W0104	HGAS-DP-00461		VV-371-00032
S01864	440SH1-DP-092302	03W0101	HGAS-DP-00458		VV-371-00066
S01872	440SH1-DP-092302	03W0104	HGAS-DP-00461		VV-371-00066
S01934	440SH1-DP-092402	03W0104	HGAS-DP-00461		VV-371-00066
S01935	440SH1-DP-092402	03W0102	HGAS-DP-00460		VV-371-00066
S01936	440SH1-DP-092402	03W0104	HGAS-DP-00461		VV-371-00066
S01937	440SH1-DP-091702	03W0102	HGAS-DP-00460		VV-371-00066
S01938	440SH1-DP-092002	03W0101	HGAS-DP-00458		VV-371-00066
S01939	440SH1-DP-100902	03W0121	HGAS-DP-00474		VV-371-00066
S01940	440SH1-DP-092602	03W0125	HGAS-DP-00479		VV-371-00066
S01941	440SH1-DP-100302	03W0134	HGAS-DP-00482		VV-371-00066
S01942	440SH1-DP-100302	03W0125	HGAS-DP-00479		VV-371-00066
S01945	440SH1-DP-010803	03W0185	HGAS-DP-00530		VV-559-00011
S01979	440SH1-DP-092502	03W0195	HGAS-DP-00539		VV-371-00066
S01980	440SH1-DP-092602	03W0125	HGAS-DP-00479		VV-371-00066
S01981	440SH1-DP-092602	03W0165	HGAS-DP-00510		VV-371-00066
S01982	440SH1-DP-100902	03W0121	HGAS-DP-00474		VV-371-00066
S01983	440SH1-DP-092002	03W0102	HGAS-DP-00460		VV-371-00066
S01984	440SH1-DP-092002	03W0123	HGAS-DP-00475		VV-371-00066
S01985	440SH1-DP-092502	03W0149	HGAS-DP-00508		VV-371-00066
S01986	440SH1-DP-092502	03W0121	HGAS-DP-00474		VV-371-00066
S01995	440SH1-DP-100202	03W0125	HGAS-DP-00479		VV-371-00067
S02047	440SH1-DP-100102	03W0136	HGAS-DP-00486		VV-371-00067
S02165	440SH1-DP-110602	03W0143	HGAS-DP-00489		VV-371-00072
S02459	440SH1-DP-031203	03W0219	HGAS-DP-00565		VV-707-00054
S02591	440SH1-DP-031003	03W0193	HGAS-DP-00537		VV-371-00084

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 and did not undergo VV at the time of waste packaging using the VE technique.

Acceptable Knowledge Summary

WSPF # RF140.01

RMRS-WPP-98-100, Acceptable Knowledge TRM Waste Stream Summaries, Section 7-16: TRM Inorganic Composite Debris Waste (D005, D008, D009, D011, F001, F002, F005, F006, F007, F009) (attached).



Rocky Flats Environmental Technology Site

ACCEPTABLE KNOWLEDGE INFORMATION

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

RMRS-WIPP-98-100

Section 7.16

TRM Inorganic Composite Debris Wastes

(D005, D008, D009, D011, F001, F002, F005, F006, F007, F009)

Profile No. RF140.01

Revision 1

Reviewed for Classification/UCNI

By: Unclassified Not UCNI

Reference Exemption Number CEX-032-00

Date: January 22, 2004

Approval signatures in Site Document Control history file

7.16 TRM Inorganic Composite Debris Wastes
(D005, D008, D009, D011, F001, F002, F005,
F006, F007, F009)

Profile No. RF140.01

Acceptable Knowledge Waste Stream Summary

Waste Stream Name: TRM Inorganic Composite Debris Wastes (D005, D008, D009, D011,
F001, F002, F005, F006, F007, F009)

Generation Buildings: Buildings 371, 528, 559, 707, 771, 774, 776, and 777^(1,8)

Waste Stream Volume (Retrievably Stored): 2 55-Gallon Drums and 2 Standard Waste Boxes⁽¹⁾

Generation Dates (Retrievably Stored): September 1988 – April 2001⁽¹⁾

Waste Stream Volume (Newly Generated): 4 55-Gallon Drums and 80 Standard Waste Boxes⁽¹⁾

Generation Dates (Newly Generated): January 2002 – September 2003⁽¹⁾

Waste Stream Volume (Projected): 5 55-Gallon Drums and 21 Standard Waste Boxes^(1,2)

Generation Dates (Projected): January 2004 to September 2004^(1,2)

TRUCON Content Codes⁽³⁾: RF 130A, RF 130B, RF 130BA, RF 130D, RF 130DF, RF 130E,
RF 130F, RF 130G, RF 130GF, RF 130H, RF 130I, RF 130J, RF 130K, RF 130N, RF 130P,
RF 130PA, RF 130PAF, RF 130PF, RF 130Q, RF 130R, RF 130RF, RF 130S, RF 130SF,
RF 130T, RF 130U, RF 130V, RF 130VF

Process Knowledge Demonstrates Flammable VOCs in Headspace < 500 ppm: No (see Sec. 7.16.6)

7.16.1 WIPP Transuranic Waste Baseline Inventory Report Information⁽⁴⁾

WIPP Identification Numbers: RF140.01

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

Waste Matrix Code: S5420 Waste Stream Name: TRM Inorganic Composite Debris Waste
(D005, D008, D009, D011, F001, F002, F005, F006, F007, F009)

Description from the WTWBIR: Debris waste primarily from decommissioning and
decontamination (D&D) activities with assigned EPA Hazardous Waste Numbers D005, D008,
D009, D011, F001, F002, F005, F006, F007, F009)

NOTE: IDC 3010 is a newly created IDC primarily for D&D operations and thus is not identified in the WTWBIR. However, 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 corresponds to the Waste Stream Profile Number. The Summary Category Group, Waste Matrix Code Group, and Waste Matrix Code are based on the acceptable knowledge for this waste stream.

7.16.2 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 inorganic composite debris waste assigned EPA hazardous waste numbers D005, D008, D009, D011, F001, F002, F005, F006, F007, and F009 consists of composite debris (IDC 3010). Table 7.16-1 presents the waste matrix code and waste material parameters for inorganic composite debris wastes.⁽⁵⁾

Table 7.16-1, Inorganic Composite Debris Wastes Description

IDC	Description	Waste Matrix Code	Waste Material Parameters	Weight (Average)
3010	Composite Debris (up to 10 percent organic)	S5420, Predominantly Inorganic Debris	Note 1	

Notes:

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

IDC 3010, 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, and other metal alloys. It could also include glovebox parts with lead. Waste items may be size reduced. The materials contain up to 10 weight percent hydrogenous (organic) material such as cellulose, Plexiglas, plastics, rubber, or other organic materials associated with the waste items.^(6,7,8,9,10,12,13)

7.16.3 Areas of Operation

TRM metal debris wastes in this waste stream are generated by the following defense operations in Buildings 371, 528, 559, 707, 771, 774, 776, and 777:⁽⁵⁾

- Decontamination and Decommissioning Operations (D&D)

7.16.4 Generation Processes

TRM inorganic composite debris wastes with EPA hazardous waste numbers D005, D008, D009, D011, F001, F002, F005, F006, F007, and F009 are primarily generated during decontamination and decommissioning (D&D) activities in Buildings 371, 528, 559, 707, 771, 774, 776 and 777. These buildings were utilized in the past for plutonium production, recovery, laboratory, waste treatment, research and development, maintenance, and waste and residue 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 3010. ^(6,7,8,9,10,11,12,13)

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 windows, 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. ^(7,8,9,10,11,12)

A more detailed description of each of these processes and process flow diagrams can be found in the WSRIC Building Books referenced in Section 7.16.8.

7.16.5 RCRA Characterization

This waste stream is characterized as a mixed waste. As described in Section 7.16.2, 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 D005, D008, D009, D011, F001, F002, F005, F006, F007, and F009. For on site storage, the individual containers of mixed waste in this waste 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 streams in accordance with the WAP. The specific BWR Baseline Book Subpopulations and WSRIC Process Numbers associated with metal debris wastes in this waste stream are listed in the WEMS AK Waste Stream Summary for Profile Number RF140.01. ⁽¹⁴⁾

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 system. 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 3010 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. ^(6,7,8,9,10,11,12,13)

Visual examination of waste contents at the time of packaging and/or RTR 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 and sulfide bearing wastes, these constituents were rendered non-reactive and the cyanide or sulfide concentrations are below regulatory limits as described in Reference 17. Therefore, this waste stream does not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003).⁽¹⁶⁾

The materials in this waste stream are toxicity characteristic for RCRA metals. Barium, lead, mercury, and silver were determined to be in TRM inorganic composite debris based on the types of materials included in the waste stream. Barium is present in leaded glass, packaged together with glovebox parts as inorganic composite debris. Lead is present in the form of lead bonded to light metal glovebox parts, other lead components associated with gloveboxes including leaded gloves and leaded glass, lead shielding in the form of bricks and sheeting, brass or bronze fittings (contain lead), circuit boards (containing lead and silver solder), piping with lead solder, and lead tape. Waste materials also include metal tools, empty containers, and fluorescent light bulbs (containing mercury). Therefore, this waste stream is assigned EPA hazardous waste numbers D005, D008, D009, and D011.^(6,7,9,10,12,13)

The materials in this waste stream are mixed with, or derived from the treatment of F-listed constituents. Carbon tetrachloride, 1,1,2-trichloro-1,2,2-trifluoroethane, methylene chloride, 1,1,1-trichloroethane were used for paint stripping, sample etching, machining, cleaning, and or degreasing. This waste stream includes inorganic composite debris generated from the D&D of equipment contaminated with these solvents, such as the Building 528 process waste tanks. These tanks stored liquid waste from Building 559 prior to discharge to the liquid waste treatment system in Building 374. These liquids contained laboratory solvents including benzene, carbon disulfide, carbon tetrachloride, chlorobenzene, 1,2-dichlorobenzene, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, isobutyl alcohol, methyl ethyl ketone, methylene chloride, pyridine, toluene, 1,1,1-trichloroethane, trichloroethylene, and tetrachloroethylene. 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 and/or F002 listed solvents were detected in concentrations above the PRQL in the individual container headspace of these segregated containers. In addition, liquids from the Building 528 waste tanks are contaminated with waste generated from the analysis of cyanide electroplating wastes (F006, F007, and F009). Therefore, these wastes are assigned EPA hazardous waste numbers F001, F002, F005, F006, F007, and F009.^(6,8,10,12)

Beryllium parts were used in the manufacture/assembly of weapons components, and residual beryllium contamination of plutonium parts may have occurred. Inorganic composite debris 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.^(5,10,12,13)

Headspace gas sampling and analysis of the first lot of containers assigned to this waste stream by AK detected 12 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 this "WIPP directed" method, the calculated 90 percent upper confidence limit (UCL₉₀) of the mean concentrations for none of the analytes were found to exceed their associated PRQL values. Consequently, no VOC EPA hazardous waste codes were confirmed by headspace gas sampling/analysis; however, 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).⁽¹⁵⁾

7.16.6 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, butanol, chlorobenzene, methyl ethyl ketone, toluene, and carbon disulfide were identified in this waste stream based on the descriptions in the *BWR Baseline Book* and *WSRIC Building Books*. 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.^(6,8,10,12)

7.16.7 Radionuclides

Table 7.16-2 summarizes the radionuclides potentially present in TRM inorganic composite debris wastes.⁽⁵⁾

Table 7.16-2, Inorganic Composite Debris Wastes Radionuclides

IDC	Description	Radionuclides	Rationale
3010	Composite Debris (up to 10 percent organic)	WG Pu, Am-241, DU, EU, Np-237, Am-243	IDC generated from decontamination & decommissioning (D&D) of buildings associated with plutonium production.

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.

7.16.8 References

1. WASTREN 2004. Interoffice Memorandum from Scott Smith to Waste Records Center. Current and Projected Waste Volumes for TRM Inorganic Composite Debris Waste (D005, D008, D009, D011, F001, F002, F005, F006, F007, F009), SMS-001-2004. January 7, 2004.
2. WASTREN 2003. Interoffice Memorandum from Jeff Harrison to Eric D'Amico. Projected Waste Stream Volumes and Generation Dates for TRU and TRM Waste, JLH-011-2003. February 12, 2003.
3. RFETS 2003. Transuranic (TRU) Waste Management Manual, Revision 6, 1-MAN-008-WM-001. June 17, 2003.
4. DOE 1995. WIPP Transuranic Waste Baseline Inventory Report, Revision 2. DOE/CAO-95-1121.
5. RFETS 2002. RFETS TRU Waste Acceptable Knowledge Supplemental Information. RF/RMRS-97-018, Revision 10.
6. RFETS 2003. Backlog Waste Reassessment Baseline Book, Waste Form 24, Metal.
7. RFETS 2003. Waste Stream and Residue Identification and Characterization, Building 371, Version 7.0.
8. RFETS 2003. Waste Stream and Residue Identification and Characterization, Building 528, Version 7.0.
9. RFETS 2003. Waste Stream and Residue Identification and Characterization, Building 559, Version 7.0.
10. RFETS 2003. Waste Stream and Residue Identification and Characterization, Building 707, Version 7.0.
11. RFETS 2003. Waste Stream and Residue Identification and Characterization, Building 771, Version 7.0.
12. RFETS 2003. Waste Stream and Residue Identification and Characterization, Building 776/777, Version 7.0.
13. RFETS 2003. Waste Stream and Residue Identification and Characterization, Decontamination/Decommissioning WSRIC Building Book, Version 7.0.
14. RFETS 2004. Waste and Environmental Management System (WEMS) Database.
15. Interoffice Memorandum from Thomas R. Gatliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF140.01 (TRM Inorganic Composite Debris Wastes [D005, D008, D009, D011, F001, F002, F005-F007, F009]) Lot 1, TRG-279-03, December 2003.

16. WASTREN 2003. Interoffice Memorandum from Scott Smith to Waste Records. Reactivity Characteristic Evaluation for Waste Derived from Aqueous Liquid Waste Treatment Operations, SMS-008-2003. November 17, 2003.
17. Department of Energy, Carlsbad Field Office letter from Dr. Ines Triay and S. D. Warren to Mr. Steve Zappe; Request for Permit Modification to the Hazardous Waste Facility Permit, Permit Number NM4890139088-TSDF, Waste Characterization Updates and Other Process Improvements; Item 5: Add New Hazardous Waste Numbers, May 13, 2003.
18. 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.