



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

JAN 23 2004

ENTERED



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,

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

RF129.01, Revision 0
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Waste Stream Profile Number: RF129.01
 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, Revision 6, March 2002. Transuranic (TRU) Waste Management Manual, Revision 5, 1-MAN-008-WM-001, May 2002. 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: RF129.01⁽³⁾
 Summary Category Group: S500⁽³⁾ Waste Matrix Code Group: Heterogeneous Debris Waste⁽³⁾
 Waste Stream Name: TRM Heterogeneous Debris Waste (D004-D011, D022, D028, D029, 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 D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, F009⁽³⁾
 Defense TRU Waste: Yes No
 Check one: CH RH Number of SWBs 116 Number of Drums 16 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 D004-D011, D022, D028, D029, F001, F002, F005, F006, F007, F009
 Applicable TRUCON Content Codes: RF 121A, RF 121D, RF 121DF, RF 121DA, RF 121DAF, RF 121E, RF121F, RF 121H, RF 121I, RF 121K, RF 121N, RF 121T

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 9 JAN 04 GND
 APPROVED PUBLIC RELEASE

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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]
Signature of Site Project Manager

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

Date 1/9/04

[Signature]
Signature of Site QA Officer

C. L. Ferrara, TWCP Site QAO
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 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 4, May 2002.
6. Acceptable Knowledge TRU/TRM Waste Stream Summaries, RMRS-WIPP-98-100, Section 7.14, Revision 0, December 2003.
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 RF129.01 (TRM Heterogeneous Debris Wastes D004-D011, D022, D028, D029, F001, F002, F005-F007, F009) Lot 1, TRG-255-03, 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, Revision 5, October 2001.
14. Real-Time Radiography Testing of Transuranic and Low-Level Waste in Building 569, 4-119-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-VECRR-371, Revision 0, October 2002.
19. Mobile Real-Time Radiography Testing of Transuranic and Low-Level Waste, PRO-1520-Mobile-RTR, Revision 0, May 2002.
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, Revision 0, June 2003.

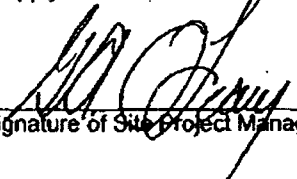
Form A
Reconciliation with Data Quality Objectives

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

WSPF # RF129.01

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

1/9/04
Date

Data Summary Report—Table 2: Headspace Gas Summary Data

WSPF # RF129.01

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 ₉₀ ^d	Transformed RTL ^e	Un-Transformed RTL ^e (ppmV)	EPA Code ^f
1,1-Dichloroethane	6	Log	Fail ^h	0.020	0.2741	2.3026	10	
1,2-Dichloroethane	1	Sq. Rt.	Pass	0.967	1.0271	3.1623	10	
1,1-Dichloroethylene	3	Log	Fail ^h	0.064	0.3157	2.3026	10	
cis-1,2-Dichloroethylene	0			0.857			10	
trans-1,2-Dichloroethylene	0			0.929			10	
1,1,2,2-Tetrachloroethane	0			0.846			10	
1,1,1-Trichloroethane	16	Log	Fail ^h	1.727	2.334	2.3026	10	F001 F002
1,1,2-Trichloro-1,2,2-Trifluoroethane	16	Log	Fail ^h	1.450	1.963	2.3026	10	
1,2,4-Trimethylbenzene	0			0.815			NA	
1,3,5-Trimethylbenzene	0			0.801			NA	
Acetone	4	Sq. Rt.	Fail ^h	3.148	3.3295	10	100	
Benzene	1	Sq. Rt.	Fail ^h	0.946	1.0021	3.1623	10	
Bromoform	0			0.819			10	
Butanol	0			8.933			100	
Carbon disulfide	0			0.878			10	
Carbon tetrachloride	17	Log	Fail ^h	2.078	2.7446	2.3026	10	F001
Chlorobenzene	0			0.783			10	
Chloroform	10	Log	Fail ^h	0.596	1.0215	2.3026	10	
Cyclohexane	2	Log	Fail ^h	-0.256	-0.0705	2.3026	NA	
Ethyl benzene	6	Log	Pass	-0.072	0.111	2.3026	10	
Ethyl ether	0			0.873			10	
Methanol	9	Log	Fail ^h	2.503	2.633	4.6052	100	
Methyl ethyl ketone	1	Sq. Rt.	Fail ^h	2.952	3.146	10	100	
Methyl isobutyl ketone	7	Log	Pass	2.300	2.464	4.6052	100	
Methylene chloride	5	Log	Fail ^h	0.016	0.270	2.3026	10	
o-Xylene	13	Log	Pass	0.125	0.305	2.3026	10	
m,p-Xylene	11	Log	Fail ^h	0.892	1.108	2.3026	10	
Tetrachloroethylene	1	Sq. Rt.	Fail ^h	0.887	0.942	3.1623	10	
Toluene	32	Log	Pass	2.176	2.457	4.2769	72.02 ^g	
Trichloroethylene	1	Log	Fail ^h	-0.311	-0.167	2.3026	10	

NOTES:

^a 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.

^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 UCL₉₀ 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 UCL₉₀ values is not meaningful. With fewer than five detectable concentrations, calculated values for UCL₉₀ are subject to potentially large relative error.
- ^e RTLs for headspace gas analysis results correspond to the analyte PRQL for analytes that are WIPP WAP target analytes. "NA" means the analyte is not a WIPP WAP target analyte, but instead a flammable VOC that is analyzed for compliance with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC).
- ^f No entry indicates 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 # RF129.01

2B

TENTATIVELY IDENTIFIED COMPOUND (TIC)	Maximum Observed Estimated Concentration (ppmv)	# Samples Containing TIC
Nonane, CAS # 111-84-2	36	2
Decane, CAS # 124-18-5	99	3
Octane, 3,6-Dimethyl, CAS # 15869-94-0	34	1
2,6-Dimethyloctane, CAS # 2051-30-1	34	1
Cyclohexane, 1-Ethyl-2-Methyl-(trans), CAS # 4923-78-8	27	1
3-Methylhexane, CAS # 589-34-4	35	1
3-Methylnonane, CAS # 5911-04-6	34	1
Ethyl Alcohol, CAS # 64-17-5	11.2	1
Cyclohexane, 1-Ethyl-2,3-Dimethyl, CAS # 7058-05-1	28	1
3,4-Dimethyl, 1-3-Hexene, CAS # 868-46-2	28	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 # RF129.01**

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
- 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

Package No.	Radioassay Data Package	Headspace Sample Batch No.	Headspace VOC Data Package	RTR Data Package ^a	VE or VV Data Package ^b
D65965	CIQ-98-017	00C1101	HVOC-DP-00270	6T-1623	
S00773	440SH1-DP-062702	03W0071	HGAS-DP-00429	5T-0124	
S00857	440SH1-DP-012303	03W0068	HGAS-DP-00425	5T-0255	
S00940	440SH1-DP-031902	02W0200	HGAS-DP-00283		VV-371-00029
S00987	440SH1-DP-092302	02W0134	HGAS-DP-00242	5T-0231	
S01093	440SH1-DP-011303	03W0073	HGAS-DP-00430	5T-0285	
S01096	664MP1-DP-021203	03W0066	HGAS-DP-00423	6T-2115	
S01117	440SH1-DP-022503	03W0067	HGAS-DP-00424	5T-0253	
S01124	440SH1-DP-012503	03W0068	HGAS-DP-00425	5T-0249	
S01125	440SH1-DP-011003	03W0057	HGAS-DP-00416	5T-0249	
S01127	440SH1-DP-011103	03W0067	HGAS-DP-00424	5T-0247	
S01243	440SH1-DP-041802	02W0217	HGAS-DP-00326		VV-707-00008
S01274	440SH1-DP-020602	02W0175	HGAS-DP-00288		VV-771-00020
S01278	440SH1-DP-021402	03W0029	HGAS-DP-00379		VV-771-00022
S01317	440SH1-DP-020702	02W0175	HGAS-DP-00288		VV-771-00020
S01327	440SH1-DP-022802	02W0199	HGAS-DP-00282		VV-771-00023
S01338	440SH1-DP-020702	02W0176	HGAS-DP-00328		VV-771-00021
S01365	440SH1-DP-041702	02W0220	HGAS-DP-00367		VV-707-00008
S01367	440SH1-DP-041002	03W0063	HGAS-DP-00419		VV-707-00001
S01398	440SH1-DP-031102	02W0209	HGAS-DP-00324		VV-771-00024
S01400	440SH1-DP-092002	03W0101	HGAS-DP-00458		VV-707-00016
S01402	440SH1-DP-031502	02W0202	HGAS-DP-00332		VV-771-00025
S01441	440SH1-DP-031102	03W0025	HGAS-DP-00384		VV-771-00024
S01490	440SH1-DP-050702	03W0083	HGAS-DP-00440		VV-774-00001
S01545	440SH1-DP-041702	03W0023	HGAS-DP-00383		VV-771-00028
S01546	440SH1-DP-060502	03W0035	HGAS-DP-00395		VV-771-00033
S01611	440SH1-DP-061302	03W0080	HGAS-DP-00435		VV-774-00001
S01673	440SH1-DP-020403	03W0083	HGAS-DP-00440		VV-774-00001
S01863	440SH1-DP-111302	03W0185	HGAS-DP-00530		VV-559-00010
S01955	440SH1-DP-012803	03W0193	HGAS-DP-00537		VV-771-00072
S01957	440SH1-DP-101702	03W0195	HGAS-DP-00539		VV-774-00003
S01962	440SH1-DP-103002	03W0163	HGAS-DP-00506		VV-771-00055
S02212	440SH1-DP-120402	03W0148	HGAS-DP-00498		VV-707-00046
S02485	440SH1-DP-022703	03W0241	HGAS-DP-00579		VV-371-00073
S02586	440SH1-DP-040303	03W0242	HGAS-DP-00580		VV-371-00073

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 # RF129.01

RMRS-WIPP-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).



Rocky Flats Environmental Technology Site

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)

Profile No. RF129.01

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 ^(5,6,7,8,9,10,11,15,16,17,18)

Waste Stream Volume (Retrievably Stored): 5 55-Gallon Drums and 5 Standard Waste Boxes ^(5,13)

Generation Dates (Retrievably Stored): July 1987 – September 2001 ^(5,13)

Waste Stream Volume (Newly Generated): 10 55-Gallon Drums and 96 Standard Waste Boxes ^(5,13)

Generation Dates (Newly Generated): October 2001 – October 2003 ^(5,13)

Waste Stream Volume (Projected): 1 55-Gallon Drum and 15 Standard Waste Boxes ^(5,13)

Generation Dates (Projected): November 2003 – July 2004 ^(5,13)

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

IDC	IDC Description	Waste Matrix Code	Waste Material Parameters	Weight % (Average)
3011	Composite Debris	S5490, Heterogeneous Debris	Note 1	

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 cellulose, 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. ^(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. ^(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. ^(7,9)

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

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. ⁽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).⁽¹⁹⁾

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^(4,6,8,10,17)

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.⁽⁴⁾

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. ^(6,8,10,12,15,17)

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. ^(3,6,8,10,11,12,15)

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

IDC	Description	Radionuclides ¹	Rationale
3011	Composite Debris (0-100% 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.

7.14.8 References

1. RFETS 2003. Transuranic (TRU) Waste Management Manual, Revision 6, 1-MAN-008-WM-001.
2. DOE 1995. WIPP Transuranic Waste Baseline Inventory Report, Revision 2. DOE/CAO-95-1121.
3. RFETS 2002. RFETS TRU Waste Acceptable Knowledge Supplemental Information. RF/RMRS-97-018, Revision 10.
4. RFETS 2003. Backlog Waste Reassessment Baseline Book, Waste Form 24, Metal.
5. Waste and Environmental Management System (WEMS) database.
6. RFETS 2002. Waste Stream and Residue Identification and Characterization, Building 371, Version 7.0.
7. RFETS 2002. Waste Stream and Residue Identification and Characterization, Building 440STOR, Version 7.0.
8. RFETS 2002. Waste Stream and Residue Identification and Characterization, Building 707, Version 7.0.
9. RFETS 2002. Waste Stream and Residue Identification and Characterization, Building 771, Version 7.0.
10. RFETS 2002. Waste Stream and Residue Identification and Characterization, Building 774, Version 7.0.
11. RFETS 2002. Waste Stream and Residue Identification and Characterization, Building 776/777, Version 7.0.
12. RFETS 2002. Waste Stream and Residue Identification and Characterization, Building D&D, Version 7.0
13. WASTREN 2003. Interoffice Memorandum from Vivian S. Sendelweck to Waste Records Center. VSS-029-2003. November 12, 2003.
14. Interoffice Memorandum from Thomas R. Gatliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF129.01 (TRM Heterogeneous Debris Wastes [D004-D011, D022, D028, D029, F001, F002, F005-F007, F009]) Lot 1, TRG-255-03, December 2003.
15. RFETS 2002. Waste Stream and Residue Identification and Characterization, Building 528, Version 7.0
16. RFETS 2002. Waste Stream and Residue Identification and Characterization, Building 559, Version 7.0
17. RFETS 2002. Waste Stream and Residue Identification and Characterization, Building 779, Version 7.0
18. RFETS 2002. Waste Stream and Residue Identification and Characterization, Building 886, Version 7.0

19. 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.
20. 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.
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.