



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



ENTERED



OCT 3 2011

Mr. John Kieling, Acting Chief
 Hazardous Waste Bureau
 New Mexico Environment Department
 2905 Rodeo Park Drive East, Building 1
 Santa Fe, NM 87505-6303

**Subject: Review of Idaho National Laboratory – Central Characterization Project
 Waste Stream Profile Form Number, ID-SNL-SOURCES-S5400**

Dear Mr. Kieling:

The Carlsbad Field Office has approved the Waste Stream Profile Form (WSPF) Number ID-SNL-SOURCES-S5400, *TRU Radioactive Sources (Debris) from the Sandia National Laboratories/New Mexico Stored at the Idaho National Laboratory*, for the Central Characterization Project at the Idaho National Laboratory.

Enclosed is a copy of the WSPF as required by Section C-5a of the Waste Isolation Pilot Plant, Hazardous Waste Facility Permit, No. NM4890139088-TSDF.

If you have questions, please contact Mr. J. R. Stroble, Director of the Office of the National TRU Program, at (575) 234-7313.

Sincerely,

Edward Ziemianski
 Interim Manager

Enclosure

cc: w/enclosure
 T. Hall, NMED *ED
 J. Davis, NMED ED
 S. Holmes, NMED ED

cc: w/o enclosure
 J. R. Stroble, CBFO ED
 N. Castaneda, CBFO ED
 B. Mackie, CBFO ED
 T. Morgan, CBFO ED
 CBFO M&RC

*ED denotes electronic distribution



CCP-TP-002, Rev. 23
CCP Reconciliation of DQOs and
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Attachment 2 – CCP Waste Stream Profile Form

(1) Waste Stream Profile Number: ID-SNL-SOURCES-S5400			
(2) Generator site name: Idaho National Laboratory		(4) Technical contact: Jim Vernon	
(3) Generator site EPA ID: ID4890008952		(6) Technical contact phone number: 575-234-7141	
(5) Date of audit report approval by New Mexico Environment Department (NMED): September 19, 2005, June 29, 2006; August 6, 2007, September 22, 2008, September 11, 2009, October 20, 2010			
(7) Title, version number, and date of documents used for WAP Certification: CCP-PO-001, CCP Transuranic Waste Characterization Quality Assurance Project Plan, Revision 20, June 16, 2011; CCP-PO-002, CCP Transuranic Waste Certification Plan, Revision 26, July 14, 2011; CCP-PO-024, CCP/INL Interface Document, Revision 11 July 18, 2011; CCP-AK-INL-022 Central Characterization Project Acceptable Knowledge Summary Report for Idaho National Laboratory Sandia National Laboratories/New Mexico TRU Radioactive Sources (Debris) Waste Streams: ID-SNL-SOURCES-S5400, Revision 1, August 11, 2011			
(8) Did your facility generate this waste? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>			
(9) If no, provide the name and EPA ID of the original generator: Sandia National Laboratories/New Mexico, NM5890110518			
Waste Stream Information			
(10) WIPP ID: SA-W134M ²		(11) Summary Category Group: S5000	
(12) Waste Matrix Code Group: Heterogeneous Debris Waste		(13) Waste Stream Name: TRU Radioactive Sources (Debris) from the Sandia National Laboratories/New Mexico Stored at the Idaho National Laboratory	
(14) Description from the TWBIR: Heterogeneous CH mixed debris from SNL/NM Hot Cell Facility D&D project and other miscellaneous waste generators.			
(15) Defense TRU Waste: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>			
(16) Check One: CH <input checked="" type="checkbox"/> RH <input type="checkbox"/>			
(17) Number of SWBs NA	(18) Number of Drums⁴ 3 55-gallon drums		(19) Number of Canisters NA
(20) Batch Data Report numbers supporting this waste stream characterization: See Characterization Information Summary for correlation of containers identification numbers to batch data report numbers.			
(21) List applicable EPA Hazardous Waste Numbers: D006, D007, D008, D009 and D011			
(22) Applicable TRUCON Content Numbers: SQ 125/225			
(23) Acceptable Knowledge Information			
(For the following, enter the supporting documentation used [i.e., references and dates])			
Required Program Information			
(23A) Map of site: CCP-AK-INL-022, Revision 1, August 11, 2011, Figures 1, 2, 3 and 5			
(23B) Facility mission description: CCP-AK-INL-022, Revision 1, August 11, 2011, Section 4.2			
(23C) Description of operations that generate waste: CCP-AK-INL-022, Revision 1, August 11, 2011, Section 4.4			
(23D) Waste identification/categorization schemes: CCP-AK-INL-022, Revision 1, August 11, 2011, Section 4.5.2			
(23E) Types and quantities of waste generated: CCP-AK-INL-022, Revision 1, August 11, 2011, Section 4.5.1			
(23F) Correlation of waste streams generated from the same building and process, as applicable: CCP-AK-INL-022, Revision 1, August 11, 2011, Section 4.5.3			
(24) Waste certification procedures: CCP-TP-030, Revision 29, April 26, 2011			

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(25) Required Waste Stream Information	
(25A) Area(s) and building(s) from which the waste stream was generated: CCP-AK-INL-022, Revision 1, August 11, 2011, Section 5.1	
(25B) Waste stream volume and time period of generation: CCP-AK-INL-022, Revision 1, August 11, 2011, Section 5.2	
(25C) Waste generating process description for each building: CCP-AK-INL-022, Revision 1, August 11, 2011, Section 5.3	
(25D) Waste Process flow diagrams: NA	
(25E) Material inputs or other information identifying chemical/radionuclide content and physical waste form: CCP-AK-INL-022, Revision 1, August 11, 2011, Section 5.4	
(25F) Waste Material Parameter Weight Estimates per unit of waste: See Table in Summation of Aspects entitled "Waste Stream ID-SNL-SOURCES-S5400 Waste Material Parameters Estimate"	
(26) Which Defense Activity generated the waste ³ : (check one)	
<input type="checkbox"/> Weapons activities including defense inertial confinement fusion	<input type="checkbox"/> Naval Reactors development
<input type="checkbox"/> Verification and control technology	<input type="checkbox"/> Defense research and development
<input type="checkbox"/> Defense nuclear waste and material by products management	<input checked="" type="checkbox"/> Defense nuclear material production
<input type="checkbox"/> Defense nuclear waste and materials security and safeguards and security investigations	
(27) Supplemental Documentation	
(27A) Process design documents: NA	
(27B) Standard operating procedures: See P1101 and P1106 in Summation of Aspects of AK Summary Report: Waste Stream ID-SNL-SOURCES-S5400, Source Documents	
(27C) Safety Analysis Reports: See P1104 in Summation of Aspects of AK Summary Report: Waste Stream ID-SNL-SOURCES-S5400, Source Documents	
(27D) Waste packaging logs: NA	
(28E) Test plans/research project reports: NA	
(27F) Site databases: NA	
(27G) Information from site personnel: See M1023 in Summation of Aspects of AK Summary Report: Waste Stream ID-SNL-SOURCES-S5400, Source Documents	
(27H) Standard industry documents: See P1106 in Summation of Aspects of AK Summary Report: Waste Stream ID-SNL-SOURCES-S5400, Source Documents	
(27I) Previous analytical data: See C1027, M1023 and M1025 in Summation of Aspects of AK Summary Report: Waste Stream ID-SNL-SOURCES-S5400, Source Documents	
(27J) Material safety data sheets: See M1007 in Summation of Aspects of AK Summary Report: Waste Stream ID-SNL-SOURCES-S5400, Source Documents	
(27K) Sampling and analysis data from comparable/surrogate Waste: NA	
(27L) Laboratory notebooks: See M1023 in Summation of Aspects of AK Summary Report: Waste Stream ID-SNL-SOURCES-S5400, Source Documents	
Confirmation Information¹	
<i>For the following, when applicable, enter procedure title(s), number(s) and date(s)</i>	
(28)	Radiography: CCP-TP-053, Revision 11, July 20, 2011
(29)	Visual Examination: NA

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(30) Comments: For a list of the waste characterization procedures used and date of respective procedures see the list of procedures on the attached CIS.

Reviewed by AK Expert: YES Date: 8/23/2011

Reviewed by STR (if necessary): YES N/A Date: 8/17/2011

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.

(31) 
Signature of Site Project Manager

(32) Jim Vernon
Printed Name

(33) 9-21-11
Date

- NOTE:**
- (1) If, radiography, visual examination were used to confirm EPA Hazardous Waste Numbers, attach signed Characterization Information Summary documenting this determination.
 - (2) The ATWIR number for this waste stream at INL is to be developed. The number listed above corresponds to the SNL/NM waste stream prior to shipment to AMWTP and identified in DOE/TRU-10-3425, Annual Transuranic Waste Inventory Report – 2010.
 - (3) This waste was also generated by the following defense activity: Defense Nuclear Waste and Material by products Management and Defense Nuclear Waste and Materials Security and Safeguards and Security Investigations.
 - (4) There are only 3 55-gallon drums in this waste stream; all 3 drums were headspace gas sampled.

CHARACTERIZATION INFORMATION SUMMARY

WSPF # ID-SNL-SOURCES-S5400

Lot 1

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CCP Characterization Information Summary Cover Page

Waste Stream #	ID-SNL-SOURCES-S5400	Lot #:	1
AK Expert Review:	N/A	Date:	N/A
SPM Review:	Jim Vernon	Date:	9/21/2011

SPM signature certifies that through Acceptable Knowledge testing and/or analysis that the waste identified in this summary is not corrosive, ignitable, reactive, or incompatible with the TSDF.

A summary of the Acceptable Knowledge regarding this waste stream containing specific information about the corrosivity, reactivity, and ignitability of the waste stream is included as an attachment to the Waste Stream Profile Form. By reference, that information is included in this lot.

List of procedures used:

Real-Time Radiography (RTR):

CCP-TP-053	Rev. 11	07/20/11	CCP Standard Real-Time Radiography (RTR) Inspection Procedure
CCP-TP-053	Rev. 10	03/04/11	CCP Standard Real-Time Radiography (RTR) Inspection Procedure

Non Destructive Assay (NDA):

CCP-TP-109	Rev. 7	01/26/11	CCP Data Reviewing, Validating, and Reporting Procedure
CCP-TP-019	Rev. 5	09/16/09	CCP Waste Assay Gamma Spectrometer (WAGS) Operating Procedure

Headspace Gas Analysis:

CCP-TP-093	Rev. 15	03/10/11	CCP Sampling of TRU Waste Containers
CCP-TP-093	Rev. 14	12/29/10	CCP Sampling of TRU Waste Containers
CCP-TP-173	Rev. 1	09/30/09	CCP Analysis of Gas Samples for VOCs by GC/FID
CCP-TP-175	Rev. 2	12/29/10	CCP Analysis of Gas Samples for VOCs by GC/MS

Project Level Data Validation / DQO Reconciliation:

CCP-TP-001	Rev. 19	12/29/10	CCP Project Level Data Validation and Verification
CCP-TP-002	Rev. 23	12/29/10	CCP Reconciliation of DQOs and Reporting Characterization Data
CCP-TP-003	Rev. 18	12/29/10	CCP Data Analysis for S3000, S4000, and S5000 Characterization
CCP-TP-005	Rev. 23	06/30/11	CCP Acceptable Knowledge Documentation
CCP-TP-005	Rev. 22	04/21/11	CCP Acceptable Knowledge Documentation
CCP-TP-030	Rev. 29	04/26/11	CCP CH TRU Waste Certification and WWISWDS Data Entry

WAP Certification:

CCP-PO-001	Rev. 20	06/16/11	CCP Transuranic Waste Characterization Quality Assurance Project Plan
CCP-PO-001	Rev. 19	12/29/10	CCP Transuranic Waste Characterization Quality Assurance Project Plan
CCP-PO-002	Rev. 26	07/14/11	CCP Transuranic Waste Certification Plan
CCP-PO-002	Rev. 25	12/29/10	CCP Transuranic Waste Certification Plan

CCP Correlation of Container Identification Numbers to Batch Data Report Numbers

Waste Stream: #

ID-SNL-SOURCES-S5400

Lot # 1

Container ID Number	NDA BDR	RTR BDR	VE BDR	Solids Sampling BDR	Solids Analytical BDR	Load Management/ Overpack Yes	Headspace Gas BDR				GGT BDR
							Sample	Analysis			
SNL/NM006398R	INNDAW110077	INRTR5110051	N/A	N/A	N/A	N/A	INHSG1104	ECL11017G	ECL11017M	N/A	N/A
SNL/NM006992R	INNDAW110077	INRTR5110051	N/A	N/A	N/A	N/A	INHSG1104	ECL11017G	ECL11017M	N/A	N/A
SNL/NM006995R	INNDAW110077	INRTR5110051	N/A	N/A	N/A	N/A	INHSG1104	ECL11017G	ECL11017M	N/A	N/A



 Signature of Site Project Manager

 Jim Vernon
 Printed Name

 9/21/2011
 Date

CCP Headspace Gas UCL₉₀ Evaluation Form

WSPF #:	ID-SNL-SOURCES-S5400		Waste Stream Lot Number					1 through 1				
ANALYTE	Transform Data Used (No, Data-Log, SQRT, other)	# Samples above MDL ⁽¹⁾	# Samples	Maximum (ppmv)	Mean (ppmv)	SD (ppmv)	UCL ₉₀ (ppmv)	PRQL (ppmv)	Transformed PRQL (N/A or Value)	UCL ₉₀ > PRQL Yes	EPA Code	
Acetone	No	1	3	0.2300	0.0910	0.1204	0.2221	100	N/A			
Benzene	No	0	3	0.0175	0.0175	0.0000	(2)	10	N/A			
Bromoform	No	0	3	0.0060	0.0060	0.0000	(2)	10	N/A			
Butanol	No	0	3	0.0265	0.0265	0.0000	(2)	100	N/A			
Carbon Disulfide ^a	No	0	3	0.0160	0.0158	0.0003	0.0161	10	N/A			
Carbon Tetrachloride	No	3	3	0.1100	0.0797	0.0300	0.1123	10	N/A			
Chlorobenzene	No	0	3	0.0140	0.0140	0.0000	(2)	10	N/A			
Chloroform	No	0	3	0.0205	0.0205	0.0000	(2)	10	N/A			
Chloromethane ^a	No	0	3	0.0325	0.0325	0.0000	(2)	10	N/A			
Cyclohexane ^a	No	0	3	0.0245	0.0243	0.0003	0.0246	10	N/A			
1,1-Dichloroethane	No	0	3	0.0425	0.0425	0.0000	(2)	10	N/A			
1,2-Dichloroethane	No	0	3	0.0240	0.0240	0.0000	(2)	10	N/A			
1,1-Dichloroethylene	No	0	3	0.0150	0.0150	0.0000	(2)	10	N/A			
cis-1,2-Dichloroethylene ^a	No	0	3	0.0175	0.0175	0.0000	(2)	10	N/A			
trans-1,2-Dichloroethylene	No	0	3	0.0195	0.0193	0.0003	0.0196	10	N/A			
1,2-Dichloropropane ^a	No	0	3	0.0210	0.0210	0.0000	(2)	10	N/A			
Ethyl benzene	No	0	3	0.0170	0.0170	0.0000	(2)	10	N/A			
Ethyl Ether	No	0	3	0.0395	0.0395	0.0000	(2)	100	N/A			
Methanol	No	0	3	14.0000	14.0000	0.0000	(2)	100	N/A			
Methyl Ethyl Ketone	No	0	3	0.0460	0.0460	0.0000	(2)	100	N/A			
Methyl Isobutyl Ketone	No	0	3	0.0340	0.0340	0.0000	(2)	100	N/A			
Methylene Chloride	No	0	3	0.0185	0.0185	0.0000	(2)	10	N/A			
1,1,2,2-Tetrachloroethane	No	0	3	0.0115	0.0115	0.0000	(2)	10	N/A			
Tetrachloroethylene	No	0	3	0.0125	0.0125	0.0000	(2)	10	N/A			
Toluene	No	2	3	0.1200	0.0853	0.0384	0.1272	10	N/A			
1,1,1-Trichloroethane	No	1	3	0.0410	0.0247	0.0141	0.0401	10	N/A			
Trichloroethylene	No	1	3	0.1100	0.0487	0.0531	0.1065	10	N/A			
1,1,2-Trichloro-1,2,2-trifluoroethane	No	2	3	0.0240	0.0178	0.0075	0.0260	10	N/A			

CCP Headspace Gas UCL₉₀ Evaluation Form

WSPF #:	ID-SNL-SOURCES-S5400			Waste Stream Lot Number				1 through 1			
ANALYTE	Transform Data Used (No, Data-Log, SQRT, other)	# Samples above MDL ⁽¹⁾	# Samples	Maximum (ppmv)	Mean (ppmv)	SD (ppmv)	UCL ₉₀ (ppmv)	PRQL (ppmv)	Transformed PRQL (N/A or Value)	UCL ₉₀ > PRQL Yes	EPA Code
1,3,5-Trimethylbenzene ^a	No	0	3	0.0165	0.0163	0.0003	0.0166	10	N/A		
1,2,4-Trimethylbenzene ^a	No	0	3	0.0150	0.0150	0.0000	(2)	10	N/A		
m/p-Xylene ^b	No	0	3	0.0160	0.0160	0.0000	(2)	10	N/A		
o-Xylene	No	0	3	0.0170	0.0170	0.0000	(2)	10	N/A		

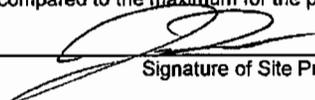
^a These compounds are from the CH-TRAMPAC or CH-TRUCON and are flammable VOCs that do not appear in the QAPjP or the WIPP WAP. These are not part of the target analyte list, but samples may be analyzed for these compounds.

^b These xylene isomers cannot be resolved by the analytical methods employed in the program. m-Xylene and p-Xylene will be reported as "Total m-p-Xylene."

Comments:

(1) For analytes where there were no samples measured above the MDL value, 1/2 of the MDL value was used. (Per section C4 of the WAP, 1/2 of the MDL value is used in calculating the mean concentration.)

(2) Because the noted analyte had < 3 different observations and only 3 samples total in the waste stream, no meaningful covariance exists and the UCL₉₀ value could not be calculated. Therefore, the PRQL was compared to the maximum for the purpose of confirming HWN.


 Signature of Site Project Manager

 Jim Vernon
 Printed Name

 9/21/2011
 Date

CCP Headspace Gas Summary Data

Waste Stream Number

ID-SNL-SOURCES-S5400

Lot Number (s)

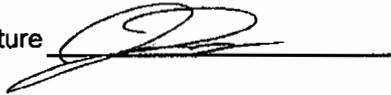
1 through 1

Tentatively Identified Compound	Maximum Observed Estimated Concentrations (ppmv)	# Samples Containing TIC	% Detected
NONE	N/A	N/A	N/A

Data Supports EPA Hazardous Waste Numbers Assigned by AK? Yes No

If no, describe the basis for assigning the EPA Hazardous Waste Codes:

SPM Signature



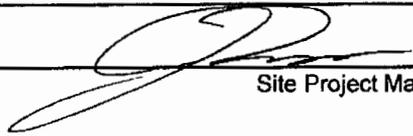
Date 9/21/2011

CCP RTR/VE Summary of Prohibited Items and AK Confirmation

Waste Stream Number: ID-SNL-SOURCES-S5400

Lot #: 1

Container Number	RTR Prohibited Items ^{a,b}	Visual Examination Prohibited Items ^{a,b}
See correlation of container ID numbers for list of remaining drum numbers in this Lot.	None of the containers in this lot had prohibited items identified during RTR.	VE was not used to certify any containers in this Lot.
<p>a. See Batch Data Reports</p> <p>b. If AK has assigned U134 to this waste stream, then any liquids in these containers are prohibited items (not acceptable by the TSDF).</p>		
<p>Justification for the selection of RTR and/or VE: RTR was selected as the characterization method for this lot because the waste containers were previously packaged and RTR is an acceptable characterization method to meet all the Data Quality Objectives for NDE of waste stream ID-SNL-SOURCES-S5400.</p>		



Site Project Manager Signature

Jim Vernon
Printed Name

9/21/2011
Date

CCP Reconciliation with Data Quality Objectives

WSPF# ID-SNL-SOURCES-S5400

Lot # 1

Sampling Completeness

RTR/VE

Number of Valid Samples: 3
Percent Complete: 100 (QAO is 100%)

Number of Total Samples Analyzed: 3

NDA

Number of Valid Samples: 3
Percent Complete: 100 (QAO is 100%)

Number of Total Samples Analyzed: 3

HSG

Number of Valid Samples: 3
Percent Complete: 100 (QAO is $\geq 90\%$)
Number of Valid Samples: 3
Percent Complete: 100 (QAO is $\geq 90\%$)

Number of Total Samples Collected: 3

Number of Total Samples Analyzed: 3

Total VOC

Number of Valid Samples: NA
Percent Complete: NA (QAO is $\geq 90\%$)
Number of Valid Samples: NA
Percent Complete: NA (QAO is $\geq 90\%$)

Number of Total Samples Collected: NA

Number of Total Samples Analyzed: NA

Total SVOC

Number of Valid Samples: NA
Percent Complete: NA (QAO is $\geq 90\%$)
Number of Valid Samples: NA
Percent Complete: NA (QAO is $\geq 90\%$)

Number of Total Samples Collected: NA

Number of Total Samples Analyzed: NA

Total Metals

Number of Valid Samples: NA
Percent Complete: NA (QAO is $\geq 90\%$)
Number of Valid Samples: NA
Percent Complete: NA (QAO is $\geq 90\%$)

Number of Total Samples Collected: NA

Number of Total Samples Analyzed: NA

CCP Reconciliation with Data Quality Objectives

WSPF# ID-SNL-SOURCES-S5400

Lot # 1

	Y/N/NA	Reconciliation Parameter
1	Y	Waste Matrix Code.
2	Y	Waste Material Parameter Weights.
3	Y	The waste matrix code identified is consistent with the type of sampling and analysis used to characterize the waste.
4	Y	The TRU activity reported in the BDRs for each container demonstrates with a 95% probability that the container of waste contains TRU radioactive waste.
5	N	AK Sufficiency. Is there an approved AK sufficiency Determination for this waste stream?
6	Y	Mean concentrations, UCL ₉₀ values for the mean concentration, standard deviations, and the number of samples collected for each VOC in the HSG of each container were calculated and compared with the program required quantitation limits, as reported in CCP-TP-003 Attachment 3, and additional U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers were assigned as required. Samples were randomly collected (when appropriate).
7a	NA	Mean concentrations, UCL ₉₀ values for the mean concentration, standard deviations, and the number of samples collected for solids VOCs were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP-TP-003 Attachment 4, and additional EPA HWNs were assigned as required. Samples were randomly collected.
7b	NA	Mean concentrations, (UCL ₉₀) values for the mean concentration, standard deviations, and the number of samples collected for solids SVOCs were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP-TP-003 Attachment 5, and additional EPA HWNs were assigned as required. Samples were randomly collected.
7c	NA	Mean concentrations, (UCL ₉₀) values for the mean concentration, standard deviations, and the number of samples collected for total metals were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP-TP-003 Attachment 6, and additional EPA HWNs were assigned as required. Samples were randomly collected.

SUMMATION OF ASPECTS OF AK SUMMARY REPORT: ID-SNL-SOURCES-S5400**Overview:**

Waste stream ID-SNL-SOURCES-S5400 is contact-handled (CH) transuranic (TRU) mixed heterogeneous debris generated by a February 2011 campaign at the Radioactive and Mixed Waste Management Facility (RMWMF) to repackage approximately 170 discarded tape-impregnated, foil, and sealed sources used during historic Sandia National Laboratories/New Mexico (SNL/NM) operations. This waste stream consists of organic and inorganic debris and includes plastic, inorganic items, and various metals. The waste has been shipped to the Radioactive Waste Management Complex (RWMC) Transuranic Storage Area (TSA) located at the Idaho National Laboratory (INL). The waste will be characterized by the Central Characterization Project (CCP) at the RWMC Advanced Mixed Waste Treatment Project (AMWTP) prior to shipment to the Waste Isolation Pilot Plant (WIPP).

Waste stream ID-SNL-SOURCES-S5400 is comprised of 161 Am-241, 6 Pu-239 and 4 Cm-244 sources. All of these sealed sources meet the definition of defense waste as defined in the NWPA because they are derived from defense nuclear materials production. All such sources have been determined to be defense-related because they were derived from defense nuclear materials production and by-products management and because they are being recovered to support defense nuclear material security and safeguards.

This summation of aspects is based on Acceptable Knowledge (AK) Summary Report CCP-AK-INL-022, *Central Characterization Project Acceptable Knowledge Report for Idaho National Laboratory, Sandia National Laboratories/New Mexico, TRU Radioactive Sources (Debris)*.

Waste Stream Identification Summary:

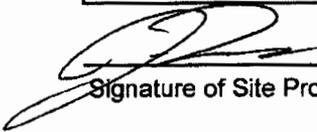
Waste Stream Name:	TRU Radioactive Sources (Debris) from the Sandia National Laboratories/New Mexico Stored at the Idaho National Laboratory
Waste Stream Number:	ID-SNL-SOURCES-S5400
Waste Stream Volume, Current:	3 55-gallon drums
Waste Stream Volume, Projected:	None
Generation Dates	February 2011
Summary Category Group:	S5000
Waste Matrix Code Group:	Heterogeneous Debris Waste
Waste Matrix Code:	S5400

CCP Reconciliation with Data Quality Objectives

WSPF# ID-SNL-SOURCES-S5400

Lot # 1

8	Y	The data demonstrates whether the waste stream exhibits a toxicity characteristic under Title 40 Code of Federal Regulations (CFR), Part 261, Identification and Listing of Hazardous Waste, Subpart C, Characteristics of Hazardous Waste.			
9	N	Does the waste stream contain listed waste found in 20.4.1.200 NMAC incorporating 40 CFR Part 261, Subpart D, Lists of Hazardous Wastes.			
10	Y	Waste stream can be classified as hazardous or nonhazardous at the 90-percent confidence level.			
11	Y	Appropriate packaging configuration and Drum Age Criteria (DAC) is applied and documented in the headspace gas sampling documentation, and the drum age met prior to sampling.			
12	Y	TICs were appropriately identified and reported in accordance with the requirements of Section C3-1 of the QAPjP.			
13	Y	The PRQLs for headspace gas VOCs were met for all analyses as evidenced by the analytical batch data reports.			
14		The overall completeness, comparability, and representativeness QAOs were met for each of the analytical and testing procedures as specified in the WAP Sections C3-2 through C3-9 prior to submittal of a waste stream profile form for a waste steam or waste stream lot.			
			Completeness	Comparability	Representativeness
	Radiography	Y	Y	Y	
	VE	NA	NA	NA	
	Headspace Gas Analysis	Y	Y	Y	
	Solids Sampling	NA	NA	NA	
	Solids VOCs	NA	NA	NA	
	Solids SVOCs	NA	NA	NA	
Solids Metals	NA	NA	NA		
Comments:					
None					



 Signature of Site Project Manager

Jim Vernon

 Printed Name

9/21/2011

 Date

TRUPACT-II Content Code (TRUCON): SQ125, SQ225

Annual Transuranic Waste Inventory Report
(ATWIR) Identification Number: SA-W134M¹

¹ The ATWIR number for this waste stream at INL is to be developed. The number listed above corresponds to the SNL/NM waste stream prior to shipment to AMWTP and identified in DOE/TRU-10-3425, *Annual Transuranic Waste Inventory Report – 2010*.

Waste Stream Description and Physical Form:

Waste stream ID-SNL-SOURCES-S5400 consists of organic and inorganic debris associated with discarded SNL/NM tape, foil, and sealed sources. This waste stream contains the following materials:

- **Plastic** materials including: source holders, mounts, bags (inner packages), tape, and foam rubber (bracing).
- **Other inorganic items** including: sapphire, ceramic, quartz, glass blocks, plates, end caps, and tubes.
- **Metal** items (ferrous materials) including: stainless steel, iron hardware, steel cans (internal containers), foils, plates, discs, and planchets.
- **Non-ferrous metals** including: aluminum, cadmium, mercury, platinum, nickel, gold, titanium, copper, lead, and silver. Items include source holders, discs, planchets, backings, foils, and solder.

In addition to the debris materials described above, waste stream ID-SNL-SOURCES-S5400 will also contain vermiculite used as void filler in drum SNL/NM006398R. This waste stream is greater than 50 percent by volume material that meets the criteria for heterogeneous debris.

The WIPP Waste Analysis Plan (WAP) defines a waste stream as waste materials that have common physical form, that contain similar hazardous constituents, and that are generated from a single process or activity. The SNL/NM AK records have been reviewed for each container to verify similar physical composition and that the waste consists only of discarded sources. Therefore, it has been determined that every container included in the most current AK Waste Containers List was generated from this SNL/NM source repackaging campaign and can be assigned to a single hazardous debris waste stream.

The point of generation and area and/or building of generation are the SNL/NM RMWMF and Building 6920 respectively.

Generating Processes:**Description of Waste Generating Processes**

Waste stream ID-SNL-SOURCES-S5400 was generated by a campaign to repack approximately 170 discarded tape-impregnated, foil, and sealed sources generated by historic SNL/NM operations in the RMWMF in February 2011. The repackaging operation was conducted in the south glovebox in Room 103W of the RMWMF. Small containers of sources were directly loaded through a door in the glovebox. Larger containers (30-gallon and 20-gallon drums) containing sources were opened in Room 103W and the contents then transferred into the glovebox.

The sources in containers were removed from the storage containers, the empty containers were swiped for contamination, and then removed from the glovebox. Most of the sources were then placed into one-gallon paint cans. The contents and tare weight of each can were documented in the project log. The outer surfaces of the one-gallon cans were decontaminated with a non-hazardous all-purpose cleaner (Simple Green). The closed paint cans were then moved out of the glovebox and placed directly into the 55-gallon drums with foam rubber bracing.

A leak test survey was performed on higher activity sources. These sources were transferred directly out of the glovebox into clean plastic bags labeled with the applicable parcel numbers. Five of these sources were taped to the inside surface of a 55-gallon drum between the first and second rolling hoop from the top of the drum. The drum was then back-filled with vermiculite used as a void filler to allow for accurate nondestructive assay (NDA) measurements of this container. Secondary waste (e.g., empty storage cans, swipes, etc.) were segregated and not included during repackaging of waste stream ID-SNL-SOURCES-S5400. The material inputs listed in the previous section, unless identified as packaging, were used in the construction or manufacturing of the sources, and are integral parts of the sources. No other processes, after the generation of the sources, were identified that would have modified the chemical or physical properties of the sources.

RCRA Determinations – Hazardous Waste Determinations**Historical Waste Management**

SNL/NM has historically managed the sources in this waste stream as hazardous waste in accordance with their waste management practices in compliance with the requirements imposed by the New Mexico Environment Department. SNL/NM assigned the Environmental Protection Agency (EPA) Hazardous Waste Numbers (HWNs) for cadmium (D006), chromium (D007), lead (D008), mercury (D009), and silver (D011). CCP has assigned the same EPA HWNs.

The assignment of these EPA HWNs was based on a review of SNL/NM source documentation which included manufactures specifications, physical descriptions, and sealed source certificates. The bulk of sources were constructed of non-hazardous materials such as stainless

steel. However, the characteristic metals listed above are integral in some sources' construction materials and are contained in either the foil or encapsulation material. Based on how the sources were used and managed, they would not have come in contact with characteristic or listed hazardous materials as constituents. No other waste materials were added during packaging, and the sources were not treated or cleaned with any form of solvents between recovery and packaging. Therefore, no characteristic or listed HWNs for organic chemicals were assigned.

Ignitability, Corrosivity, and Reactivity

The materials in this waste stream do not exhibit the characteristic of ignitability as defined in 40 Code of Federal Regulation (CFR) 261.21. The materials in this waste stream are not liquid and liquids were not added to containers during packaging. This material will not cause fire through friction, absorption of moisture, or spontaneous chemical changes, and procedures did not allow packaging of pyrophoric materials. This material is not a compressed gas or an oxidizer (References C1045 and M1023).

The materials in this waste stream do not meet the definition of corrosivity as defined in 40 CFR 261.22. The materials are not liquid and liquids were not added to containers during packaging. The materials in this waste stream are therefore not corrosive wastes (Reference M1023).

The materials in this waste stream are stable and will not undergo violent chemical change, and therefore are not reactive wastes as defined in 40 CFR 261.23. The materials will not react violently with water, form potentially explosive mixtures with water, or generate toxic gases, vapors, or fumes when mixed with water. Lithium is present in one of the sources to be repackaged in this waste stream. However, this source was segregated and was not included in waste stream ID-SNL-SOURCES- S5400. In addition, CCP's Off-Site Source Recovery Project has demonstrated that the lithium in sources is non-reactive and, thus, would not require listing as D003 material. Sealed sources are typically double encapsulated, with the nuclide/lithium mixture contained in a welded stainless-steel cylinder additionally encapsulated in an outer welded stainless-steel capsule. The sources are manufactured items that are stable and will not undergo violent chemical change. The sources will not react violently with water, form potentially explosive mixtures with water, or generate toxic gases, vapors, or fumes when mixed with water. The sources do not contain cyanides or sulfides, and are not capable of detonation or explosive reaction (References C1045 and M1023).

Based on SNL/NM waste management practices and source documentation, the materials contained in waste stream ID-SNL-SOURCES-S5400 do not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003) as defined in 40 CFR 261.21, 261.22, and 261.23, respectively.

Toxicity Characteristic Constituents

Based on review of AK documentation, waste stream ID-SNL-SOURCES-S5400 contains toxicity characteristic metals, but not characteristic organic contaminants as defined in 40 CFR 261.24. Where a constituent has been identified and there is no or limited quantitative data available to demonstrate that the concentration of a constituent is below regulatory threshold levels, the applicable EPA HWN is applied to the waste stream. The AK documentation identified the following toxicity characteristic metals; cadmium (D006), chromium (D007), lead (D008), mercury (D009), and Silver (D011). These metals were used in the manufacturing or construction of the sources (References C1045, M1023, and P1106).

F-Listed Constituents

Based on a review of AK documentation and discarded source management practices, waste stream ID-SNL-SOURCES-S5400 is not mixed with or derived from the treatment of a waste listed as a hazardous waste from non-specific sources as listed in 40 CFR 261.31. Waste stream ID-SNL-SOURCES-S5400 is not hazardous waste due to the presence of F-listed solvents because there are no solvents present in the manufacturing or waste generation processes (References C1045, M1023, and P1106).

P-, U-, and K-Listed Wastes

Based on review of AK, waste stream ID-SNL-SOURCES-S5400 does not contain and is not mixed with a discarded commercial chemical product, an off-specification commercial chemical product, or a container residue or spill residue thereof listed in 40 CFR 261.33. No listed chemicals were identified in the container-specific documentation (References C1045, M1023, and P1106).

Some of the sources contain beryllium metal that is sealed within the source. The physical form of the beryllium is typically powder or sintered solid. However, since any beryllium powder in the sources is not the sole active ingredient, the waste stream does not meet the definition of P015 as defined in 40 CFR 261.33 (References C1045 and M1023).

The review of the AK source documentation did not identify the disposal of unused hydrofluoric acid (U134) or disposal of materials contaminated with spills of this acid; therefore the EPA HWN U134 is not assigned to waste stream ID-SNL-SOURCES-S5400 (References C1045, M1023, and P1106).

Waste stream ID-SNL-SOURCES-S5400 is therefore not assigned a P- or U-listed HWN.

The material in waste stream ID-SNL-SOURCES-S5400 is not a hazardous waste from any of the sources specified in 40 CFR 261.32 and is therefore not assigned a K-listed HWN (References C1045, M1023, and P1106).

Headspace Gas/Volatile Organic Compound Information

Headspace gas analysis was completed on the three containers in this waste stream. No new EPA HWNs were assigned as a consequence of headspace gas sampling and analysis. No UCL₉₀ values exceeded the respective target analyte Program Required Quantitation Limits. No tentatively identified compounds were identified. The specifics of this information are included in the attached Characterization Information Summary report.

Other Waste Streams Generated from the Same Buildings and Processes

The RMWMF has repackaged one other CH waste stream, ID-SNL-HCF-S5400, generated specifically from the Hot Cell Facility (HCF). There are no other TRU radioactive sources waste streams at SNL/NM. Waste stream ID-SNL-HCF-S5400 was generated from activities performed at the HCF. It includes EPA HWNs D004, D005, D006, D007, D008, D009, D011, D019, D022, D028, F002, and F005 that were assigned specifically as a result of known contaminants based on AK specific to the HCF. EPA HWNs assigned to Waste stream ID-SNL-SOURCES-S5400 were based on the known makeup of the sources, and based on their typical use, would not normally have come in contact with chemical contaminants. Therefore, only the EPA HWNs D006, D007, D008, D009, and D011 were assigned.

Polychlorinated Biphenyls

Based on the review of AK, no source for polychlorinated biphenyls (PCBs) regulated by the Toxic Substances Control Act (TSCA) under 40 CFR 761 has been identified in waste stream ID-SNL-SOURCES-S5400 (References C1045 and M1023).

Prohibited Items

Based on a review of AK, the three drums in waste stream ID-SNL-SOURCES-S5400 contain solely discarded sources and associated packaging materials and do not contain prohibited items. Prior to shipment to WIPP, CCP will perform real-time radiography (RTR) to verify the absence of any prohibited items.

Justification for the Selection of Radiography or Visual Examination

Radiography was used as the characterization method for this lot because the waste containers were previously packaged and radiography is an acceptable characterization method to meet all the Data Quality Objectives for non-destructive examination (NDE) of waste stream ID-SNL-SOURCES-S5400.

Method for Determining Waste Material Parameters (WMPs) Weights per Unit of Waste

Waste Material Parameters (WMP) estimates for waste stream ID-SNL-SOURCES-S5400 were based on review of the estimates made by the Off-Site Source Recovery Project for similar waste streams (LA-OS-00-01.001 and LA-OS-00-03), and descriptions in SNL/NM disposal documentation.

The WMP estimate for waste stream ID-SNL-SOURCES-S5400 is presented in the following table. The average weight percentages for inorganic and organic waste materials for Waste Stream ID-SNL-SOURCES-S5400 are 80 percent and 20 percent, respectively; with the predominant WMPs being iron based metal alloys, other metals, and plastic. Ranges for minimum and maximum weight percentages per drum are also estimated. The statistical analysis of the data is documented in a WMP memorandum for this waste stream.

Waste Stream ID-SNL-SOURCES-S5400 Waste Material Parameters Estimate

Waste Material Parameter	Average Weight Percent (Wt%)	Wt% Range
Iron-based Metals/Alloys	64%	0% - 99%
Aluminum-based Metals/Alloys	<1%	0% - 1%
Other Metals	15%	0% - 30%
Other Inorganic Materials	<1%	0% - 1%
Cellulosics	<1%	0% - <1%
Rubber	0%	0% - 0%
Plastic (waste materials)	20%	0% - 50%
Inorganic Matrix	0%	0% - 0%
Organic Matrix	0%	0% - 0%
Soils/gravel	0%	0% - 0%
Total Inorganic Waste Average	80%	
Total Organic Waste Average	20%	

List of AK Sufficiency Determinations

There are no AK sufficiency determination requests for this waste stream.

Transportation

This waste stream meets the requirements of TRUCON codes SQ125/SQ225

Beryllium

Some of the sources contain beryllium metal that is sealed within the source. The weight percent of beryllium in the waste does not exceed 1 wt% for any payload container.

Radionuclide Information

The SNL/NM Disposal Request (DR) container paperwork, in most cases, provides the isotope, curie content at time of manufacturing, and manufacture date. The majority of sources are sealed consisting of Am-241, Pu-239 (or both), and Cm-244. A few are "in house" sources or samples that were made by placing Am-241 and/or Pu-239 powder on tape or paper. The total non-decay corrected curie content of all of the sources in this waste stream is 0.183 Curies (Ci). The documentation associated with the sources in this waste stream did not, in most cases, identify impurities or additional radionuclides associated with the primary source radionuclide. For the purposes of this report, all of the identified source activity is assumed to originate from identified source radionuclide at the time of the manufacture date.

Waste stream ID-SNL-SOURCES-S5400 consists of 161 Am-241 sources, three Pu-239 sources, four Cm-244 sources, and three Pu-239/Am-241 sources. Review of AK source documents did not identify the manufacture date for 22 of the 161 Am-241 sources. The oldest of the known manufacture dates for the remaining 139 Am-241 sources is April 7, 1964 (approximately 47 years), and the average age of the Am-241 sources is 24.2 years. Additionally, the initial activity of one of the Am-241 source is not known. Am-241 alpha decays with a half life of 432.2 year, and the maximum expected activity associated with decay products from Am-241 sources is summarized in following table, Decay Products of Am-241, based on a maximum decay age of 47 years. The activities of the decay products are expressed as a percentage of the initial Am-241 activity.

Decay Products of Am-241

Radionuclide	Activity as a Percentage of Initial Am-241 activity after 47 Years
Am-241	93%
Np-237	1.5E-3%
Pa-233	1.5E-3%
U-233	1.5E-11%

Source: World Information Service on Energy's Universal Decay Calculator (www.wise-uranium.org/rcc.html)

Manufacture dates were not identified for one of the three Pu-239 sources, however, because the half life for Pu-239 is over 24,000 years, no significant radionuclide activity from decay products is expected from Pu-239. The manufacture date of the three Pu-239/Am-241 sources is identified as December 2, 1992. Some of the DRs include an assumption that the Pu-239 is

weapons grade plutonium rather than purified Pu-239. For example, DR 204318 (which is superseded by DR 2010072), identifies several radionuclides which were "... calculated with ratios to Pu-239 based upon the isotopic composition of WG-52 [weapons grade plutonium material type 52] utilizing a 20 year decay period." This DR is specific to the Pu-239/Am-241 sources.

The manufacture date for all four of the Cm-244 sources is identified as January 1, 1992 (approximately 19 years). Cm-244 alpha decays with a half life of 18.1 years. The following table, Decay Products of Cm-244, shows the expected activities of decay products from Cm-244 after 19 years as a percentage of the initial activity of Cm-244.

Decay Products of Cm-244

Radionuclide	Activity as a Percentage of Initial Cm-244 Activity after 19 Years
Cm-244	48%
Pu-240	1.4E-5%
U-236	4.5E-10%

Source: World Information Service on Energy's Universal Decay Calculator (www.wise-uranium.org/rcc.html)

The following table, Waste Stream ID-SNL-SOURCES-S5400 Container Radionuclide Summary, provides a summary of the specific sources contained in each of the three 55-gallon drums in this waste stream. Based on the available curie content of the sources at the time of manufacture, the two most prevalent radionuclides for the waste stream by mass and activity are Am-241 and Pu-239, with Am-241 accounting 97 percent of the total activity.

Waste Stream ID-SNL-SOURCES-S5400 Container Radionuclide Summary

55-Gallon Drum Number	Source	# of Sources	Total Activity (Ci) (not Decay Corrected)
SNL/NM006398R	Am-241	5	9.03E-02
SNL/NM006992R	Am-241	156	8.70E-02
SNL/NM006995R	Pu-239	3	4.12E-05
	Pu-239/Am-241	3	1.81E-03
	Cm-244	4	4.24E-03
Total		171	1.83E-01

Payload management will not be utilized for this waste stream.

AK SOURCE DOCUMENTS

Tracking Number	Title	Document Number	Date
C1027	Memo Concerning Management Readiness Review of Pu Repackaging Project at the RMWMF	NA	11/02/2000
C1044	Waste Material Parameter Evaluation for Waste Stream SNL-SOURCES-S5400	NA	3/7/2011
C1045	Correlation of Waste Stream SNL-SOURCES-S5400 Sources to the Off-Site Source Recovery Project Sealed Sources	NA	3/7/2011
I1042	Work Instructions for Repackaging TRU Waste at Sandia National Laboratories/New Mexico DRAFT	SNL-WP-001, R0	NA
I1053	Transuranic Waste Repackaging Plan	NA	04/30/2008
M1007	Collection of Material Safety Data Sheets for products used at SNL/NM	NM	Various
M1023	Disposal Requests for Radioactive Sources	NA	Various
M1024	Radioactive Sources repackaging documentation	NA	2010 to 2011
M1025	NDA & RTR data for shipment to INL	NA	02/23/2011
P1041	Sandia National Laboratories/New Mexico Environmental Information Document, Volume II	SAND99-2022/2	September 1999
P1100	Programmatic Waste Acceptance Criteria	POL-95-01	October 7, 1997
P1101	Waste Handling	FOP 00-02	June 26, 2006
P1104	Hot Cell Facility (HCF) Safety Analysis Report, Main Report and Appendices	SAND94-2650	10/21/1994
P1106	Work Plan for repackaging radioactive sources	SNL09A00424-002	2/16/2011
U1016	Sandia National Laboratories Draft Hazardous Waste Facility Permit	No. NM5890110518	8/20/2007