



TO: Trais Kliphuis, Steve Holmes, Ricardo Maestas, NMED HWB

FROM: Connie Walker

DATE: August 20, 2012

SUBJECT: Summary of NMED AK Observation of CCP Sandia Close-Out Audit A-12-15

On August 14-16, 2012, the New Mexico Environment Department (NMED) observed the acceptable knowledge (AK) portion of the DOE CBFO Sandia Site close-out audit. The site is certified for S5000 RH waste. Acceptable knowledge focused on the single approved waste stream from this site. This memorandum presents the results of audit observations pertinent to the AK process.

The audit was performed at Carlsbad, New Mexico and remotely from offices in Denver and Middleton, Ohio. The NMED AK observer, Ms. Connie Walker (Trinity Engineering Associates), attended the audit with CCP staff at the Denver location.

Acceptable Knowledge

The AK technical specialist was Mr. Dick Blauvelt and QA auditor was Berry Pace. Kevin Peters, John Kleckner, and Steve Schafer were the CCP-Sandia representatives and Ms. Irene Quintana was the SPM contact. Mr. Paul Gomez was the audit team leader. The NMED observer was Ms. Connie Walker (NMED support contractor, Trinity Engineering Associates). The documents presented in Attachment A were among those provided in hard copy and electronically to the audit team, including the NMED observer.

The following BDRS were among those provided for review:

Waste Stream	Container No.	NDE BDR No.	HSG BDR No.
SNL-HCF-S5400-RH	7119	SNLRHVE11010	ECL11034, SNHSG1102
SNL-HCF-S5400-RH	7112	SNLRHVE11008	N/A
SNL-HCF-S5400-RH	7025	SNLRHVE11007	N/A

Summary:

The CBFO Audit A-12-15 focused on one waste stream, SNL-HCF-S5400-RH, a debris waste stream that consisted of organic and inorganic debris generated at the Hot Cell Facility (HCF) during destructive fuel examination and testing, as well as HCF D&D activities. The waste stream is described in CCP-AK-SNL-500, Rev. 4. References provided for review are presented in Attachment A.

The AK Audit was performed in a professional manner. The AK Auditor and AK QA auditors and observers identified several issues during the course of the audit. Some issues were addressed as freeze file modifications (Attachment B), but most were presented as AK-related concerns (Attachment C) for CBFO's determination of status (e.g. recommendation, observation, or CAR). Note that there are two freeze files; a July 19 version and August 15 version. Attachment B



includes the August 15 version as well as pertinent pages of the July version. Issues identified during the audit and presented on the concern form are detailed below:

1. Regarding the submittal of SNL records to the WIPP Records Archive as required for “close-out” audits, the practice of using “freeze-files” (which is appropriate and has been used historically) for capturing changes to the AK Summaries is not prescribed within the CCP program. This means that the use of freeze files has not been proceduralized by CCP, but freeze files are used routinely and are a key tool in the AK process.
2. AK attachment 6 should be revised to identify the potential prohibited items in this waste stream as generated to be consistent with the information in the AK Summary. In addition, the number of containers in the waste stream as noted on attachment 8, the AK Containers list, should be modified to clarify the number of drums and casks. Attachment 8 still lists the pre-disposal drum quantity, but misidentified parcel vs. drum number.
3. It is recommended that a freeze file addition be made for AK Summary CCP-AK-SNL-500 Rev 4 for clarity regarding the final disposition of container number C980313 listed on page 28. In addition, DR1002 associated with that container should be added to the AK Summary freeze file in S9.0, AK Source Documents. Drum C980313 was identified as a solids drum that would be placed in a separate RH stream, but NDA revealed this drum was actually CH and would be sent to INL for disposition under the CCP’s Small Quantity Generator Program.
4. Objective Evidence could not be provided to confirm the requirement for the submittal of the AK Tracking Spreadsheet to the WIPP Records Archive
5. CCP-AK-SNL-501, Rev. 2, A8.2 “AK Source Documents” – Source Document Tracking Number U1036 is duplicated. The first document listed should be U1035.
6. Inconsistencies were noted in the description of the Source Documents listed on pages 29, 52, and 76 of CCP-AK-SNL-501, R2, versus the descriptions of those same Source Documents listed on the Attachment 3s and Attachment 4 of CCP-TP-005.
 - Examples of Source Documents with inconsistent descriptions:
 - U1032
 - U1036 (This one should actually be U1035)
 - U1036 (missing word)
 - U1039
 - U1029 (misspelled word on Att. 4), U1034
 - U1040
 - U1041 (missing word)
 - U1044

Note that the CCP does not intend to update CCP-AK-SNL-500, Rev. 4 to reflect the changes presented in the freeze files. Instead, freeze files will be attached to the AK Summary and submitted to archives as a package. Also different waste stream drum numbers are presented in the AK Summary, CCP-TP-005 Attachment 8 (list of containers in the stream), waste stream profile form, and AK tracking spreadsheet. The stream began with 29 drums, but during the course of NDA examination, seven of these drums proved to be either low level or CH waste. Note that drum C980313 was identified in the AK Summary as a solid that would be in a separate

RH stream, but this drum proved to be CH and will be sent to INL for characterization under the small quantity generator program. The final number of drums in the stream was 22, but this wasn't reflected in the AK Summary, Waste Stream Profile Form, or CCP-TP-005 Attachment 8. The only document that showed the final number of drums in the stream was the CCP-TP-005 AK Tracking Spreadsheet, which CCP said will be submitted as a QA record to archives with the other documents.

During the course of the audit, CCP indicated Sandia had discovered a few more potential RH waste containers. It was unclear whether the audit should then change focus from a close-out to suspension audit (like Hanford), but CBFO determined that the audit would continue as a close out and the dispensation of these new containers would be dealt with when the radiological characteristics of the containers was determined by NDA (e.g. RH vs. CH, LLW vs. TRU). Note that if the containers were RH and Sandia has been closed out, a new Sandia Certification Audit would be required.

As a result of the INL 2012 recertification audit and sensitivities with respect to how NMED observers interact with CTAC representatives, the NMED observer contacted NMED daily via phone to address issues, discuss information needs, and exchange information prior to the end-of-day caucuses. During the daily call, the NMED observer pointed out that the HWN assignments for this waste stream were based almost entirely on filter analysis for Glove Box Nos. 3-9 waste in the HCF, but the Glove Box Nos. 3-9 wastes were low level and not included in the RH waste stream. CCP-Sandia assumed that general transfer of material between the RH Steel Containment Boxes (SCB)/Common SA Area/Glove Box No. 1/2 vs. Glove Box Nos. 3-9 would be sufficient to impart the HWNs "to" the RH stream, and sharing of experiments between the SCG and glove boxes and later waste repackaging also contributed to commonality of HWN between the two areas. However, this approach resulted in extremely conservative application of HWN that did not necessarily correspond with Sandia's HWN assignments. NMED explicitly revised the permit to remove unnecessary conservativisms with respect to HWN assignment. While taking a "conservative approach" was allowed under RCRA, the assignment of HWN to this waste stream appeared to be overly conservative and CCP could have successfully demonstrated that some of the HWN did not really apply to the waste stream. The waste stream was undergoing initial AK evaluation when NMED made changes to the permit to remove conservative mandates and the HWN assignment approach was likely a carry-over from pre-permit modification approaches, so this issue was not raised by the NMED observer during the end of day caucuses. The difficulty with conducting remote conference call audits without knowing all participants present in the room at each location was discussed. It was suggested that when new participants or observers enter each audit location, they should introduce themselves to the entire group participating. Alternatively it was suggested that remote audits be conducted through the use of Skype or similar video conferencing, so that all participants in the audit can be seen. The issue of unseen/unknown observers at the audit was not addressed at the end of day caucuses.

The audit addressed one waste stream over the course of two days. The time allotted for this audit was sufficient and a few supporting documents were provided to the audit team prior to the audit. However, CCP did not provide source documents prior to the audit as done for the last few audits. A final CD with source documents was not available from CCP until the end of the audit. The auditor and NMED observer's reviews weren't slowed by the lack of source documents as the NMED observer had access to the necessary documents from another source (EPA contract). It is highly recommended that CCP have all source documents available from CCP Records for immediate download prior to each audit in order to avoid unnecessary delays.

ATTACHMENT A REFERENCES

Note: All references available electronically will be provided to NMED on CD-ROMs or flash drives. Not all references provided in hard copy may be presented below.

AK Tracking Spreadsheet, Sandia RH Waste, Printed August 13, 2012

AK Tracking Spreadsheet and Attachment 8 Comparison as of July 30, 2012 (informal spreadsheet) printed August 13, 2012

CCP-AK-SNL-500, Central Characterization Project Acceptable Knowledge Summary Report for Sandia National Laboratories/New Mexico Remote Handled Hot Cell Facility Transuranic Waste (Debris), Waste Stream: SNL-HCF-S5400-RH Revision 4 November 30, 2011

CCP-AK-SNL-500, Central Characterization Project Acceptable Knowledge Summary Report For Sandia National Laboratories/New Mexico Report Handled Hot Cell Facility Transuranic Waste (Debris), Waste Stream: SNL-HCF-S5400-RH Revision 4-Freeze File Changes 7-9-12

CCP-AK-SNL-500, Central Characterization Project Acceptable Knowledge Summary Report For Sandia National Laboratories/New Mexico Report Handled Hot Cell Facility Transuranic Waste (Debris) Waste Stream: SNL-HCF-S5400-RH Revision (MARKUP)- additional edits to Freeze file changes of July 2012, provided August 15, 2012

CCP-TP-005 Attachment 2 Waste Stream Profile Form (1) Waste Stream Profile Number: SNL-HCF-S5400-RH, Sandia National Laboratory, Irene Quintana, December 6, 2011

CCP-TP-005 Attachments 1, 4, 5, 6, and 8, dated April, 2011 – July, 2012

CCP-TP-005 Attachments 6 and 8, revised August 14, 2012

CCP-TP-005 Attachment 8 Waste Reconciliation Spreadsheet (Derived from AK Tracking Spreadsheet), provided August 16, 2012

CCP-TP-005 Attachment 13, CCP Waste Stream Characterization Checklist, Waste Stream SNL-HCF-S5400-RH, Lot 1 December 6, 2011

CCP-TP-005 Attachment 13, CCP Waste Stream Characterization Checklist, Waste Stream SNL-HCF-S5400-RH, Lot 2 April 25, 2012

IDC Screen Shots Drums 7119, 7112, 7025, printed August 14, 2012

IDC Screen Shots Drums 7119, 7112, 7025, showing Drum Status Provided August 16, 2012

Interoffice Correspondence, L.M. Nelson to CCP Records, Transmittal of Characterization Reconciliation Report CRR-SNL-HCFS5400-RH-0002 for Remote-Handled Lot 2, at the Sandia national Laboratory, April 30, 2012

Interoffice Correspondence, V.K. Cannon to D.K. Ploetz, Information copy of completed Central Characterization Project Surveillance report SUR-CCP-0004-11, Visual Examination of Remote-Handled Waste and Remote-handled Waste Sampling at Sandia National Laboratory, April 12, 2011

Interoffice Correspondence, V.K. Cannon to D.K. Ploetz, Information Copy of Completed Central Characterization Project Surveillance Report SUR-CCP-0005-11, Headspace Gas Sampling, Dose-to-Curie survey, and Visual Examination at Sandia National Laboratory, May 25, 2011

Interoffice Correspondence, V.K. Cannon to D.K. Ploetz, Information Copy of Completed Central Characterization Surveillance Report SUR-CCP-0007-11, Headspace Gas Sampling, Dose-to-Curie, and visual Examination- Sandia National Laboratory.

Inter-Office Correspondence, From L.S. Quintana to CCP Records, Subsequent Headspace Gas Random Selection memorandum for Waste Stream SNL-HCF-S5400-RH Lot 2, Characterized by the CCP at Sandia National Laboratory, March 25, 2011

Inter-Office Correspondence, from L.M. Nelson to CCP Records, Acceptable Knowledge Accuracy Report: Sandia National Laboratory, Waste Stream Number SNL-HCF-S5400-RH, Lots 1-2, and May 31, 2012

Inter-Office correspondence, from L.M. Nelson to CCP Records, Transmittal of Headspace Gas Data Summary for Remote-Handled Lot 2 SNL-NCF-S5400-RH at the Sandia National Laboratories, January 12, 2012

Inter-Office Correspondence, from J.E. Hoff to D.K. Ploetz, Transmittal and Closure of WTS quality Assurance Surveillance S11-18, Acceptable Knowledge, April 6, 2011

NCRs NCR-RHSNL- 2349-11, 2350-11, 2352-11, 2353-11, 2354-11, 3217-11, provided August 16, 2012

Random Selection Cross-Walk Sandia Waste Stream: SNL-HCF-S5400-RH, excel spreadsheet printed August 14, 2012

Source Documents Provided For Review By Waste Stream (Including UCNI Examined During The Audit). See Attachment 4 and Reference Lists in AK Summary for the specific references associated with each document ID number (e.g. C515, etc).

- C1001, C1004, C1005 (Attachment 3 only), C1006, C1008, C1009, C1011, C1012, C1017, C1021, C1027, C1038 (Attachment 3 only), C1041, C1042, C1043 (Attachment 3 only), C1047 (Attachment 3 only)
- DR1001, DR1002, DR1003, DR1004
- I1001, I1002, I1004, I1006, I1010, I1012, I1017, I1025, I1030, I1031, I1040, I1042, I1046, I1048, I1053,
- M1003, M1007, M1010, M1013, M1016, M1019, M1020, M1021,
- P1001, P1006, P1008, P1015, P1018, P1022, P1030, P1041, P1044, P1046, P1048, P1051, P1100, P1101, P1102, P1104, P1105,
- U1001, U1004, U1011, U1014

ATTACHMENT B
ACCEPTABLE KNOWLEDGE FREEZE FILES

1.0 EXECUTIVE SUMMARY

This Acceptable Knowledge (AK) Summary Report has been prepared for the Central Characterization Project (CCP) for remote-handled (RH) transuranic (TRU) waste generated at Sandia National Laboratories/New Mexico (SNL/NM) in Albuquerque, New Mexico. The waste described in this report was generated in the SNL/NM Hot Cell Facility (HCF) during decontamination operations in Building 6580. The waste has been stored at the Manzano Bunkers located at Manzano Base within Kirtland Air Force Base and is being repackaged at the Auxiliary Hot Cell Facility (AHCF). This report was prepared in accordance with DOE/WIPP-02-3214, *Remote Handled TRU Waste Characterization Program Implementation Plan (WCPIP)*; *Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Waste Analysis Plan (WIPP-WAP)*; and CCP-TP-005, *CCP Acceptable Knowledge Documentation* (References 1, 2, and 3).

The CCP is tasked with certification of TRU waste for transportation to and disposal at the Waste Isolation Pilot Plant (WIPP). The CCP is responsible for reviewing, approving, and maintaining this report and supporting AK source documentation as CCP Quality Assurance (QA) records. The CCP maintains responsibility for all referenced documentation stored at the CCP Records Center, Carlsbad, New Mexico.

Waste stream SNL-HCF-S5400-RH ~~currently consists of thirty-two (32) parcels, packaged within twenty-seven (27) 55-gallon shielded drums or casks, and two non-shielded drums. The~~ of waste originated from pre- and post-test processes associated with reactor fuel studies conducted in the gloveboxes, Steel Containment Boxes (SCBs), and Zone 2A of the HCF. ~~These containers in this waste stream were are being repacked in a remote-handling facility in the AHCF, so the final volume and number of containers may change.~~ The corresponding contact-handled (CH) debris waste stream

ID-SNL-HCF-S5400 is described in CCP-AK-INL-021, *Central Characterization Project Acceptable Knowledge Summary Report For Idaho National Laboratory, Sandia National Laboratories/New Mexico Hot Cell Facility Contact Handled Transuranic Waste (Debris), Waste Stream: ID-SNL-HCF-S5400* (Reference 21).

This AK summary report includes information relating to the HCF history, missions, configurations, equipment, process operations, and waste management practices, as well as relevant waste management practices at the SNL for RH TRU waste management. This report also includes information regarding the physical form, radiological characteristics, and chemical contaminants of the waste, as well as prohibited items management.

This report, along with the referenced supporting documentation, provides a defensible and auditable record of AK for waste stream SNL-HCF-S5400-RH. The references and AK sources used to prepare this report are listed in Sections 8.0 and 9.0, respectively. The AK sources are referenced within this report by an alphanumeric designator

- Identify packages that are below the 100 nanocuries per gram (nCi/g) limits and reclassify as necessary.
- Segregate mixed waste items from non-mixed, if possible.
- Consolidate TRU waste into fewer containers.
- Prepare a Document Safety Analysis (DSA) to move the high activity/highdose TRU waste from storage to a facility at TA-V for repackaging.

The waste generated during the HCF decontamination consists of a combination of historic experimental waste and decontamination waste. Experimental waste was defined by the generator as those items present in the areas prior to the implementation of the decontamination program and included experimental debris (i.e., paper, chemicals) and equipment items that cannot be decontaminated to be reused. These experimental waste items are heterogeneous in nature and have varying radioactivity levels. Decontamination waste was defined as the materials generated during the decontamination of experimental items and/or the containment structures. Special handling of the high activity potentially RH waste generated as a result of experiment assembly or disassembly or postexperiment examination was required for these materials and was the responsibility of the experimenter. The waste was collected and the experimenter was responsible for ultimate disposal. This waste may have been stored in the facility until disposal or may have been moved to another location (References I1030, P1015, P1102, and P1104).

4.5.1 Types and Quantity of TRU Waste

Waste stream SNL-HCF-S5400-RH is mixed heterogeneous debris originally packaged during HCF decontamination activities conducted from 1995 to 1997. Waste stream SNL-HCF-S5400-RH consists of ~~32~~ parcels originally packaged ~~currently inside 27~~ shielded casks or 55-gallon drums with concrete liners, and ~~two~~ non-shielded drums. ~~This number may vary as a result of repackaging operations scheduled to be performed at the AHCF.~~ ~~An~~ The inventory of containers that will be repackaged for WIPP characterization is identified ~~drums verified to be eligible for shipment to WIPP will be included in the AK Waste Containers List for waste stream SNL-HCF-S5400-RH, and will be updated to reflect the repackaging campaign~~ (References M1016 and M1019).

4.5.2 Waste Identification and Categorization

This SNL/NM waste stream has been characterized based on knowledge of the material, knowledge of the processes generating the waste, and historical container documentation. Section 5.3.1 provides information on the container documentation used to determine the waste matrix codes assigned to these waste streams (References M1016 and M1019).

- Nuclear material storage, historic process operations, waste management, decontamination operations and subsequent waste management and repackaging operations resulted in the RH and CH TRU waste materials to be contaminated with similar radiological and chemical constituents. These containers have been segregated from the CH stream, solely due to elevated radiological content of these materials. Based on review of the AK record the following resulted in comingling of chemical and radiological contamination in the TRU waste materials (Reference C1038, M1016, P1015, P1102, and P1104):
 - Storage and frequent movement of the nuclear test materials in common HCF storage areas;
 - Transfer of materials, specimens, equipment, and waste between research areas;
 - Contamination from previous destructive experiments on research area surfaces and from waste from previous experiments stored in the area;
 - Historic sharing of equipment between areas;
 - Fume hood operations involving the preparation of experimental chemicals and the decontamination of equipment for HCF areas;
 - Combination of RH waste parcels originating from CH repackaging operations conducted in the RMWMF;
 - The nature of the HCF decontamination program segregation of low-level, CH, and RH waste materials resulted in this RH waste stream containing predominantly post-irradiated experimental materials and contamination; and Cross contamination introduced during the final packaging of RH waste parcels in the same area in the AHCF.

~~It should be noted that the waste to be repackaged in container C980313 (see Table 11, Container Specific Information for Waste Stream SNL-HCF-S5400-RH) contained predominately homogeneous waste and will be repackaged in a separate waste stream to be included in a subsequent revision of this report (Reference DR1002).~~

It should be noted that the waste was originally contained in 32 parcels. The parcel repackaged in container C980313 contained predominately homogeneous waste and later determined to be low-level waste. This container was segregated from this waste stream and will managed as low-level waste. (Reference DR1002).

Based on the rational above, waste stream SNL-HCF-S5400-RH meets the WIPP-WAP and the WCPPIP waste stream definitions.

5.0 REQUIRED WASTE STREAM INFORMATION: SNL-HCF-S5400-RH

This section presents waste stream specific information for the TRU debris waste stored at SNL/NM. The debris waste in this waste stream originated from the research and subsequent decontamination processes performed in the Building 6580 HCF. This section also addresses waste packaging and prohibited items.

5.1 Area and Building of Generation

Waste stream SNL-HCF-S5400-RH originated from research and development and decontamination processes performed at SNL/NM as described in Section 4.4. Review of the container-specific records was performed to verify the generation location of waste to be shipped to WIPP (References M1016 and M1019).

5.2 Waste Stream Volume and Period of Generation

Waste stream SNL-HCF-S5400-RH is mixed heterogeneous debris originally packaged during HCF decontamination activities conducted from 1995 to 1997. Table 2, Waste Stream SNL-HCF-S5400-RH Volume, summarizes the ~~current~~ inventory of waste described ~~represented~~ by this report. The data in Table 2 represents the containers of waste assessed at the time this report was initially issued. ~~will change as a result of the scheduled repackaging of current inventory of containers with potential RH waste.~~ The volume was determined by estimating the inner volume of the shielded containers. The final volume after repackaging will vary. The current inventory of drums verified to be eligible for shipment to WIPP will be included in the AK Waste Containers List for waste stream SNL-HCF-S5400-RH (References M1016 and M1019). Additional containers of CH waste debris may be generated during the repackaging of the suspected RH waste inventory from the HCF decontamination operations.

Table 2. Waste Stream SNL-HCF-S5400-RH Volume

Containers	Volume in cubic meters (m ³)
32 parcels inside 29 various shielded and non-shielded casks or drums	2.8

5.3 Types of Wastes Generated

This section describes the waste materials based on process inputs and outputs, waste matrix code assignment, waste material parameter weight estimates, radionuclide contaminants, hazardous waste determinations, and prohibited items for waste stream SNL-HCF-S5400-RH.

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Table 11. Container Specific Information for Waste Stream SNL-HCF-S5400-RH
(Continued)

Current Container Number	Container Type	Waste Parcel ID#	Waste Disposal Request From Number#	Waste Weight (lbs)	Generation/Close Date
C980391	concrete lined 55-gal drum	P9800962	005940	19.00	3/13/1997
C980465	kingcask	P9801148	005959	124.00	1/15/1996
C980466	kingcask	P9801149	005959	189.00	11/10/1995
C980467	kingcask	P9801150	005959	256.00	12/15/1995
C980371	concrete lined 55-gal drum	P9800935	005962	10.00	7/13/1995
C980375	kingcask	P9800939	005965	142.00	2/20/1996
C980376	kingcask	P9800940	005965	204.00	2/13/1996
C980373	kingcask	P9800937	005965	138.00	3/22/1996
C980374	kingcask	P9800938	005965	140.00	3/13/1996
C980377	kingcask	P9800941	005965	340.00	2/9/1996
C980396	kingcask	P9800964	005967	102.00	3/12/1996
C080210	unshielded 30-gal drum	P9800660	007202	25.50	8/11/2008 ¹
		P2000938	204114	1.50	8/11/2008 ¹
C980378	kingcask	P9800942	007203	108.00	1/31/1996
C980379	kingcask	P9800943	007203	136.00	8/7/1997
C980380	kingcask	P9800944	007203	130.00	2/12/1996
C990236	kingcask	P9900529	007204	76.00	2/13/1996
C990238	kingcask	P9900531	007205	137.00	1/31/1996
C990239	55-gal drum with inner shielded cask	P9900532	007242	117.00	11/23/1998
C980313 ²	queencask	P9800776	041213	56.00	11/2/1995
SNL/NM000178	unshielded 55-gal drum	P0400016	081139	57.00	5/6/1996

Table 11. Container Specific Information for Waste Stream SNL-HCF-S5400-RH
 (Continued)

Current Container Number	Container Type	Waste Parcel ID#	Waste Disposal Request From Number#	Waste Weight (lbs)	Generation/Close Date
C080216	unshielded 30-gal drum	P2000836	091045	1.92	10/22/2008 ¹
		P9900533	091047	20.95	10/22/2008 ¹
		P9900534	091047	20.95	10/22/2008 ¹
C980281	kingcask	P9800712	100137	125.00	7/2/1996
C200357	queencask	P2000998	204139	25.00	8/6/1997

¹ Identified and repackaged during a CH TRU waste repackaging campaign

² Determined to be homogeneous low-level waste and segregated from the waste stream (Reference DR1002).

* This list may change as a result of ongoing characterization activities, and should be considered a representation of the waste at the time the report was initially published. The AK Waste Containers List should always be referenced for the current inventory.

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9.0 AK SOURCE DOCUMENTS

Tracking Number	Title
C1001	Memo from Gwendolyn J. Pirtle to Charles G. Thomas, David S. Barber, and Carlos S. Medrano re: Hot Cell Facility Decontamination
C1004	Reactor Accident Experiments and Funding
C1005	Memo from Cathy A. Ottinger re: Candidate Auxiliary Hot Cell Facility Containers
C1006	Memo from F. Gonzalez and D. Fenstermcher to S. Wright re: Loading of Experiment FD4.4 and FD4.5
C1008	Memo from D.M. Haaland to R.L. Coats re: High Temperature Equation-of-State Studies of Fast Breeder Reactor Fuels: Evaluations Summary
C1009	Memo from K.T. Stacicer to Picard re: Radiometric Temperature Measurement
C1010	Memos, re: SRSC, ACRR, ACPR, RCSC, & ACPR Meeting Minutes; TRAN-GAP Fuel Loading Procedure and Approval; Fuel Loading Procedures for Exp in Bldg. 6597; Removal and Encapsulation of ST-1 Fuel Assembly; ST-1 Cutting Procedure; Handling Procedures for WLM Ex
C1011	Memo: Explosive Valves in the ST-2 Experiment
C1012	Memos: draft Section 5 and 6 of the ARSR quarterly reports
C1013	Memo: Suggested Instrumentation for the Fuel Disruption Tests.
C1014	Memos: Working Document for Preliminary DFR Test Section Design Concepts; DFR Visual Diagnostics; Preliminary Calculations for the DFR Steam System.
C1015	Memo: Hydrogen Flow in DFR-PWR Experiments
C1016	Memo: Fission Product Release Rates for Proposed DFR Pre-Irradiated Fuel Experiments
C1017	Memo: Preliminary Evaluation of Pre-Irradiated Fuel Experiments for the DFR Program
C1021	Memo from Susawn Longley to File re: Characterization of waste from Glove Box 9
C1027	Memo Concerning Management Readiness Review of Pu Repackaging Project at the RMWMF
C1038	Ken Reil Interview, John Kleckner
C1039	Waste Material Parameter Memorandums for Waste Streams SNL-HCF-S5400, SNL-HCF-S5400-RH, and ID-SNL-HCF-S5400
C1041	Memos re: Modification of Hot Cell Bell Jar/Mass Spec (with supporting material)
C1042	Memorandum to Ines Triay: Determination and Findings, Defense Origin of Nuclear Waste, Kerr-McGee Waste
C1043	Memorandum to CCP Central Records, Evaluation of Kerr-McGee Fuel Production and FFTF History
C1047	Record of Communication between J. Kleckner and T. Mojica regarding RH final packaging configuration
DR1001	Discrepancy resolution for the assignment of EPA Hazardous Waste Numbers
DR1002	Discrepancy Resolution for Container #P1110154 (Parent Container C980313)
DR1003	AK Discrepancy Resolution DR1003 re: Assignment of EPA Hazardous Waste Numbers
I1001	EEOS Mass of Cadmium, Lead, and Remaining Package
I1002	Experiment Plan for Effective Equation of State (EEOS) Experiments with Irradiated Fuel
I1003	Design of EEOS Pressure Cell and In-Pile Calorimeter
I1004	Damaged Fuel Relocation (DFR) Experiment DF-2: Results and Analyses
I1005	Damaged Fuel Experiment DF-4: Test Result Report
I1006	Summary of Heating Conditions and Disruption for Each Fuel Disruption Experiment
I1007	Fuel Disruption Notes: FD1, FD2, HRR, FF and IF FF
I1009	Fuel Disruption Experiment Plan for the FD2/4 Series
I1010	ACRR Source Term Tests, Project Overview
I1011	ST-2 Operation Checklist
I1012	Star-5 Quick Look Report
I1013	STAR-6 Very Short Quick Look Report
I1015	Effective Equation of State Experiments

HCF support areas included in Zone 2 are Rooms 105, 106, 107, and 110/111/112. These rooms include the "cold" side of the Hot Cell walls and the operator areas for the hot cell. Also in these rooms are optical and scanning electron microscopes (SEMs), fume hoods, leak detectors, radiation-detection equipment, and other equipment for handling radioactive and nonradioactive materials and experiments (Reference P1104).

The primary storage location for the experimental nuclear materials associated with HCF operations was Room 108. Nuclear material, largely Special Nuclear Material (SNM), was stored in Room 108 in metal cabinets, file cabinets, drums, boxes, and other closed containers. Nuclear material and SNM were also stored in other locations in and around the HCF. These locations typically included areas inside the SCBs and gloveboxes, cabinets in Rooms 105 and 112, inside Zone 2A, in drums or other containers in Rooms 110/111/112 and 106, in storage or transport containers in the monorail fenced area, and in the monorail storage hole. The 20-foot deep monorail storage tube was designed to store the larger assemblies introduced into the HCF for examination. The inventories changed frequently as materials were used for experiments and research projects (Reference P1104).

~~The Radioactive and Mixed Waste Management Facility (RMWMF) Compound in TA-III includes buildings 6920, 6921, 6925, 6926, skid-mounted storage buildings, and transporters.~~

The AHCF, located in the High Bay of Building 6597 of TA-V, is the nuclear facility that has the capability to process and repackage RH TRU waste. The facility has radiological processing areas with gloveboxes for the safe handling of RH TRU waste. All of the containers currently assigned to waste stream SNL-HCF-S5400-RH will be repackaged at the AHCF to meet WIPP requirements prior to shipment. The containers have been stored at the Manzano Bunkers (References C1027, I1053, M1016, P1041, P1100, and P1101).

4.3 Defense Waste Assessment

The WIPP requires generator sites to determine that TRU waste streams to be disposed of at WIPP meet the definition of TRU defense waste. TRU waste is eligible for disposal at WIPP if it has been generated in whole or part by one of the atomic energy defense activities listed in Section 10101(3) of 42 U.S.C 10141, *Nuclear Waste Policy Act of 1982* (NWSA) (Reference 10). Based on the review of AK there is sufficient evidence to demonstrate that TRU wastes generated by the HCF operations are contaminated with materials from atomic energy defense research activities associated primarily with projects conducted to support safety programs for reactors with defense missions (References 9 and 10).

The United States has historically operated and continues to operate reactors used for the development of nuclear energy technology. Additionally, these reactors have been utilized to produce radioisotopes for medical, industrial, and military purposes; to generate neutron environments for scientific research; and to conduct irradiation

Table 7. Summary of Generator Reported Radionuclides for Waste Stream
 SNL-HCF-S5400-RH

Radio-nuclide	Number of Parcels with Reported Radio-nuclide	Total Radio-nuclide Weight % ^{1,5}	Total Radio-nuclide Curie % ^{2,5}	Radionuclide Wt% Range for Individual Parcels ^{3,5}	Radionuclide Ci% Range for Individual Parcels ^{4,5}	Average Ci/Parcel	Expected Present
WIPP Required Radionuclides							
Am-241	32	0.85%	1.24%	0.20 - 3.87%	Trace ⁵ - 4.72%	6.03E-02	Yes
Pu-238	31	0.07%	0.50%	0 - 4.57%	0 - 1.28%	2.45E-02	Yes
Pu-239	32	17.66%	0.47%	4.73 - 95.31%	Trace - 2.09%	2.27E-02	Yes
Pu-240	18	0.18%	0.02%	0 - 8.75%	0 - 0.05%	8.47E-04	Yes
Pu-242	4	0.02%	Trace	0 - 29.33%	0 - 0.04%	1.31E-06	Yes
U-233	Not Reported						No
U-234	4	0.12%	Trace	0 - 0.14%	0 - Trace	1.51E-05	Yes
U-238	4	54.25%	Trace	0 - 64.76%	0 - Trace	3.78E-07	Yes
Cs-137	32	1.59%	59.25%	0.26 - 88.85%	44.57 - 96.97%	2.87E+00	Yes
Sr-90	32	0.38%	21.94%	0.05 - 7.28%	1.36 - 47.24%	1.06E+00	Yes
Additional Radionuclides							
U-235	4	24.78%	Trace	0 - 29.57%	0 - Trace	1.11E-06	Yes
Am-243	2	Trace	Trace	0 - 1.25%	0 - 0.10%	1.92E-06	Yes
Co-60	22	0.03%	12.90%	0 - 7.67%	0 - 54.02%	6.26E-01	Yes
Th-234	2	Trace	Trace	0 - Trace	0 - Trace	3.11E-07	Yes
Cs-134	27	Trace	0.02%	0 - Trace	0 - 0.45%	8.84E-04	Yes
U-235	4	24.78%	Trace	0 - 29.57%	0 - Trace	1.11E-06	Yes
Am-243	2	Trace	Trace	0 - 1.25%	0 - 0.10%	1.92E-06	Yes
Co-60	22	0.03%	12.90%	0 - 7.67%	0 - 54.02%	6.26E-01	Yes
Th-234	2	Trace	Trace	0 - Trace	0 - Trace	3.11E-07	Yes
Cs-134	27	Trace	0.02%	0 - Trace	0 - 0.45%	8.84E-04	Yes

1. This listing indicates the total weight percent of each radionuclide over the entire waste stream.
2. This listing indicates the total activity (curie) percent of each radionuclide over the entire waste stream.
3. This listing is the weight percent range of each radionuclide on a container-by-container basis. Some containers with "0" listed as the lower range, will not contain the specified radionuclide.
4. This listing is the curie percent range of each radionuclide on a container-by-container basis.
5. "Trace" indicates <0.01 weight percent or activity percent for that radionuclide.

5.3.3 Chemical Content Identification – Hazardous Constituents

This section describes the characterization rationale for assignment of EPA HWNs to waste stream SNL-HCF-S5400-RH. Table 8, Waste Stream SNL-HCF-S5400-RH Hazardous Waste Characterization Summary, identifies the hazardous constituents and associated HWNs assigned to this waste stream.

**ATTACHMENT C
AUDIT ISSUES AND CONCERNS**

No.	Who	Description of Concern	Requirements Comments
1	Pace	Regarding the submittal of SNL records to the WIPP Records Archive as required for "close-out" audits, the practice of using "freeze-files" (which is appropriate and has been used historically) for capturing changes to the AK Summaries is not prescribed within the CCP program.	DOE/CBFO-94-1012 CBFO QAPD, Section 2.1.1.D <i>Work shall be planned, authorized, and accomplished under controlled conditions using technical standards, QA requirements, and implementing procedures commensurate with applicable control levels.</i>
2	Blauvelt	AK attachment 6 should be revised to identify the potential prohibited items in this waste stream as generated to be consistent with the information in the AK Summary. In addition, the number of containers in the waste stream as noted on attachment 8, the AK Containers list, should be modified to clarify the number of drums and casks	
3	Blauvelt	It is recommended that a freeze file addition be made for AK Summary CCP-AK-SNL-500 Rev 4 for clarity regarding the final disposition of container number C980313 listed on page 28. In addition, DR1002 associated with that container should be added to the AK Summary freeze file in S9.0, AK Source Documents	

No.	Who	Description of Concern	Requirements Comments
4 R.2	Martinez Bradford	<p>Procedure CCP-TP-500, CCP Remote-Handled Waste Visual Examination, does not reference closure methods for layers of confinement as specified in RH-TRU Payload Appendices, Table 2.5-1. Sections 4.1.2[I.10] and 4.2.4[I] asks the VE operator to record the Closure Method(s) for the individual layers of confinement. The VE operators recorded "filtered" as the closure method, "filtered" is not a specific description in the RH-TRU Payload Appendices, Table 2.5-1.</p> <p>NOTE: CCP-TP-113, CCP Standard Contact-Handled Waste Visual Examination, defines the approved closure methods for layers of confinement in Table 2.</p>	<p>CCP-QP-008, Rev. 20, Sec. 3.7.3, "Ensures that records are legible, accurate, and complete, appropriate to the work accomplished, when generating, reviewing, and validating records."</p> <p>4.3.1, "Verify that the records are accurate to the work accomplished."</p>
5	Martinez Bradford	<p>There is an inconsistency among ITRs on answering question 13, on Attachment 2 – Visual Examination Independent Technical Reviewer Checklist. ITRs are entering "YES" or "N/A" when addressing "Have the RH Quality Assurance Objectives (QAOs) for VE been met?" for "Precision – reconciled discrepancies between operators or between the operator and ITR."</p> <p>NOTE: For the BDRs reviewed, there were no discrepancies between operators or between the operator and ITR.</p>	
6	Gomez	<p>During the review of SNL/CCP VE BDR No. SNLRHVE11007, the SPM provided additional information to the checklist and did not document the page number.</p>	<p>CCP-TP-001, <i>CCP Project Level Data Validation and Verification</i>, Rev. 19, Section 4.2.18 states, "If additional information is placed after an SPM checklist, then indicate, on the appropriate SPM checklist, that additional information is being provided, and paginate the inserted documentation to show which checklist it is associated with."</p>

No.	Who	Description of Concern	Requirements Comments
7	Castillo	<p>During the review of SNL/CCP qualification cards, it was identified that the SPM signature approving the operator to perform the duties of the qualification card is dated prior to the verification performed by CCP Training for completion of briefings, comprehensive exams, and educational requirements. There were three instances in the objective evidence reviewed (1 Visual Examination and 2 Waste Sampling Operator qualification cards).</p> <p>NOTE: This concern was identified during the LANL/CCP Audit A-12-12 conducted on July 24-26, 2012 and is documented as CBFO CAR 12-033. This appears to be a programmatic issue, not site-specific to LANL/CCP.</p>	<p>CCP-QP-002, Rev. 32, CCP Training and Qualification Plan: Step 3.2.8 states, “[CCP Lead Site Project Manager (SPM)] ensures a CCP Trainee has completed all indoctrination reading prior to accessing operations/equipment.” Step 3.2.10 states, “[CCP Lead Site Project Manager (SPM)] ensures qualification and training documentation is complete.”</p>
8	Verret	<p>In HSGS BDR SNHSG1102, the ITR form, page 3 of the BDR, question #1 is missing the Step number and in question #5, the degree symbol has printed out as “N” in both temperature limit numbers.</p>	<p>CCP-TP-106, ITR Checklist, question 18, Att. 3 “Verify all the data is signed and dated, and the data is recorded clearly, legibly, and accurately.”</p>
9	Verret	<p>The Field Blank in HSGS Batch SNHSG1102 was collected simultaneously with the first sample and duplicate sample.</p>	<p>CCP-TP-093, Sec. 2.6.1 specifies that the Field Blank “...shall be collected prior to sample collection, ...”</p>

No.	Who	Description of Concern	Requirements Comments
10	Verret	The data logger printouts provided in HSGS Batch SNHSG1102, page 23, for XC0855 and XC0856 do not match up with the temperature recorder (XC0680) listed on the Sample Container Data Form page 21, or the thermometer (XC0688) listed on the COC form page 6, nor is there any indication of where these extraneous data logger printouts were obtained or how or if they are relevant to this sampling event.	CCP-TP-106, Sec. 4.1 NOTE "HSG sampling personnel trained to CCP-TP-093 will assemble the Sampling BDR as described in this procedure. A Sampling BDR shall include all information listed in the Attachment 2, HSG Sampling Batch Data Report Table of Contents. If the HSG ITR review determines that any of these steps were NOT performed correctly, the HSG ITR will inform the HSG Drum Sampler of the corrections required.."; 4.1.2[A.11] "72-Hour Temperature Equilibration Plots" ; Att. 2 #11 "72-Hour Temperature Equilibration Plots"; Att. 3 #15 & 18.

No.	Who	Description of Concern	Requirements Comments
11	Verret	The last entry in the Restrictive Hydrogen Diffusivity column of the Sample Container Data Form is missing a minus before the 6, instead there is a period or decimal point.	CCP-TP-093, Sec. 4.3.1 NOTE after 4.3.1[A.9] "The documented filter hydrogen (H ₂) diffusivity must be greater than or equal to the listed value to use the DAC for the listed filter H ₂ diffusivity (e.g., a container with a filter H ₂ diffusivity of 4.2 x 10 ⁻⁶ must use a DAC for a filter with a 3.7 x 10 ⁻⁶ filter H ₂ diffusivity). If a filter H ₂ diffusivity for a container is undocumented or unknown or is less than 1.9 X 10 ⁻⁶ filter H ₂ diffusivity, a filter of known H ₂ diffusivity that is greater than or equal to 1.9 x 10 ⁻⁶ filter H ₂ diffusivity must be installed prior to initiation of the relevant DAC period."
12	Bowden Pace Blauvelt	Objective Evidence could not be provided to confirm the requirement for the submittal of the AK Tracking Spreadsheet to the WIPP Records Archive	CBFO 94-1012 QAPD, Section 1.5.6.1(B), "If a generator/storage site ceases to operate, records shall be transferred before closeout for management at the WIPP Records Archive facility."

No.	Who	Description of Concern	Requirements Comments
13	Bowden Blauvelt Pace Walsh	<p>CCP-AK-SNL-501, Rev. 2, A8.2 "AK Source Documents" – Source Document Tracking Number U1036 is duplicated. The first document listed should be U1035. Inconsistencies were noted in the description of the Source Documents listed on pages 29, 52, and 76 of CCP-AK-SNL-501, R2, versus the descriptions of those same Source Documents listed on the Attachment 3s and Attachment 4 of CCP-TP-005.</p> <p>Examples of Source Documents with inconsistent descriptions:</p> <ul style="list-style-type: none"> • U1032 • U1036 (This one should actually be U1035) • U1036 (missing word) • U1039 • U1029 (misspelled word on Att. 4) • U1034 • U1040 • U1041 (missing word) • U1044 	
14	Gomez	<p>The results of the HSG Sampling quarterly repeat of the data generation level data package for fourth quarter 2011 has returned through the SPM re-review with no discrepancies noted. The audit has determined items 8 through 11 listed above as cited by the auditor, although section 4.3 of CCP-TP-001 was followed correctly the re-review did not produce discrepancies from the original review.</p>	
15 Rev. 1	Martin	<p>WWIS/WDS records packages have not been submitted to CCP Records Custodian.</p>	<p>CCP-TP-530, Rev. 10, CCP RH TRU Waste Certification and WWIS/WDS Data Entry, Section 4.5.7 states, "Compile the following items used in the submission of data to the WWIS/WDS, AND submit to the CCP Records Custodian."</p>

No.	Who	Description of Concern	Requirements Comments
16	Verret Martinez Bradford	<p>In HSGS BDR SNHSG1102, on page 20, Attachment 2 of CCP-TP-093 has the Packaging Configuration Group is incorrectly listed as 2. Sampling Scenario 3 with no layers of confinement (per the RH TRUCON, SN 321A) results in Packaging Configuration Group 1, which affects the Permit Required Equilibrium Time (goes from 11 days down to 4 days).</p> <p>On all of the VE BDRs reviewed, the layers of confinement are recorded as 1 layer of confinement. AK Summary CCP-AK-SNL-500, Revision 4, list the layers of confinement as 0 in Section 5.4, Waste Packaging, and a maximum of 2 layers of confinement in Section 2.0, Waste Stream Identification Summary.</p>	<p>DOE/WIPP 90-045, Rev. 22, Content Code 321A Waste Packaging "...there are zero layers of confinement."</p> <p>CCP-TP-093, Rev. 16, Sec. 4.3.1 [A.13] "Package Configuration Group No. from Table 3 (Scenario 3 only) (NA for Scenario 1 or 2)." And [A.16] (c) "For Scenario 3 - Record the number of days for the SCG listed in Table 5 for the Packaging Configuration Group, hole diameter, and filter diffusivity."</p> <p>CCP-TP-500, Rev. 11, Sec. 4.1.2 [I.10] and 4.2.4[I] "Record the Closure Method(s) for the individual layers of confinement. Use the Comments field on Attachment 1 if additional room is needed. N/A if there are no Layers of Confinement."</p>

No.	Who	Description of Concern	Requirements Comments
17	Gomez	For this designated CBFO Closeout Audit, SNL/CCP records were not transferred to the archive facility prior to closeout.	DOE/CBFO-94-1012, QAPD, Rev. 11, Section 1.5.6., Records Disposition Paragraph B states: "If a generator/ storage site ceases to operate, records shall be transferred before closeout for management at the WIPP Records Archive facility.