

MEMORANDUM

TO: Steve Zappe, Steve Holmes, and Tim Hall, New Mexico Environmental Department,
Hazardous Waste Bureau

FROM: Connie Walker

DATE: April 30, 2011

SUBJECT: Summary of NMED AK Observation of CCP Oak Ridge Recertification Audit A-11-08



On April 19-21, 2011 the New Mexico Environment Department (NMED) observed the Acceptable Knowledge (AK), portions of DOE CBFO certification audit of CCP Bettis Laboratory (BAPL). The scope of audit A-11-12 was to evaluate the adequacy, implementation, and effectiveness of technical and related QA processes for the subject summary RH waste category group (S5000-heterogeneous debris). The audit was performed in Carlsbad, New Mexico.

Acceptable Knowledge

The AK audit was performed by Mr. Dick Blauvelt and QA support was provided by Ms. Prissy Martinez. Dr. Jim Luginbyhl, Ms. Irene Quintana, and Mr. Mark Doherty. Ms. Lisa Watson provided documents and information as requested by the audit team. The NMED observers were Mr. Steve Holmes and Ms. Connie Walker (NMED support contractor, Trinity Engineering Associates). The documents presented in Attachment C were among those provided in hard copy and electronically to the audit team, including the NMED observers.

The following BDRS were provided for review:

Drum	VE BDR	HSG BDR(s)	NDA
HIP-15	RHBAPLVE10001	ECL10037M	BAPLRHDTTC11001
HIP-33	RHBAPLVE10001	-----	BAPLRHDTTC11001

Summary:

The audit, CBFO Audit A-11-12, was performed in a professional manner. The scope of the audit was a single waste stream, BT-T001, which included 15 High Pressure Inner Container (HIP) containers in which powdered/fine material derived from sectioning and testing fuel was placed. Each HIP was placed in a 55 gallon drum. The AK Summary for this stream was CCP-AK-BAPL-500 Revision 1 dated 1/25/2011, and therefore should reflect new permit requirements pertinent to AK. The NMED observer compared these documents and related procedures against the new AK-related permit requirements, and developed a matrix that identified both the new AK requirements and the status of those requirements as presented in the various AK Summaries. The table, below, presents this information as identified by the NMED observer and as shared with CCP representatives.



Permit Requirement Cross Reference Table

Requirement	Waste Stream, example page and example source documents	Procedure	Items to Address
C-0a: A waste stream is defined as waste materials that have common physical form, that contain similar hazardous constituents, and that are generated from a single process or activity	Waste Stream BT-T001 in CCP-AK-BAPL-500 Revision 1, pages 10, 15 and 19	CCP-TP-005 Revision 21, 12/29/10, Section 1.1	Revise AK Summary to address.
Section C-1d: Generator/Storage sites will develop criteria to determine the specific circumstances under which a WSPF is revised versus when a new WSPF is required. These criteria will be evaluated by DOE during site audits.	Not addressed in the AKSR	CCP-TP-002 Revision 23 Section 4.7.3	
AKSD Notification Requirements (Section C-0b)	Not applicable	CCP-PO-001, Revision 19 (QAPjP) Section C-0b	
Attachment C4 (General) Removal of mandatory conservative HWN assignments (e.g. C4-3e)	Waste Stream BT-T001 in CCP-AK-BAPL-500 Revision 1, pages 10, 22, and 23	CCP-TP-005, Revision 21, 12/29/10	Revise AK Summary to address
C4-2b: ...Documentation regarding how the site has historically managed the waste, including the historical regulatory status of the waste (i.e., TRU mixed versus TRU non-mixed)	Waste Stream BT-T001 in CCP-AK-BAPL-500 Revision 1, pages 22 and 23, DR004	CCP-TP-005, Revision 21, 12/29/10, Attachment 1	Added references U360 and U361 to explain site concurrence with CCP's hazardous waste assignments.
C4-2b: ...Procedures that ensure the assignment of EPA hazardous waste numbers is appropriate, consistent with RCRA requirement and considers site historical waste management	Waste Stream BT-T001 in CCP-AK-BAPL-500 Revision 1, pages 22 and 23	CCP-TP-005, Revision 21, 12/29/10	Revise DR to better address representativeness (or lack thereof) of the TCLP analysis performed on the fuel sample(s)
C4-2c: Assignment of HWN in accordance with RCRA and rationale for HWN determinations	Waste Stream BT-T001 in CCP-AK-BAPL-500 Revision 1, pages 22, 23, and 27	CCP-TP-005, Revision 21, 12/29/10	Revise DR to better address process information including the assignment of D039 to the waste stream (lack of process information precluded assignment of a listed waste, so D039 was assigned).
C4-2C: Analytical data relevant the waste stream...including other processes that collect	Waste Stream BT-T001 in CCP-AK-BAPL-500 Revision 1, page	CCP-TP-005, Revision 21, 12/29/10, Attachment 1	No additional analytical information available other than the TC analysis addressed through

Requirement	Waste Stream, example page and example source documents	Procedure	Items to Address
information pertinent to the waste stream ... radiography screening for prohibited items.	23		modification of the DR004
C4-3b: ...Justify combining waste historically managed separately as TRU mixed and TRU non-mixed waste streams into a single waste stream.	Not applicable (waste historically managed as non hazardous but did not involve combining of hazardous/non hazardous waste streams)	CCP-TP-005, Revision 21, 12/29/10, Section 4.4.8	
C4-3b: ...All data examined to reach the hazardous waste number determination must be placed in the auditable record and must present a clear justification for the hazardous waste number analyses.	Waste Stream BT-T001 in CCP-AK-BAPL-500 Revision 1 DR004, C031, pages 22-28 of AKSR	CCP-TP-005, Revision 21, 12/29/10	Modification of DR004 and other freeze file changes to ensure correct HWN delineation and justification.
C4-3e: Each site shall document, justify, and consistently delineate all generator-specific waste streams and hazardous waste number assignments. The site must also consider site-specific permit requirements and other state-enforced agreements in this analysis.	Waste Stream BT-T001 in CCP-AK-BAPL-500 Revision 1, pages 22, 23 and 27	CCP-TP-005, Revision 21, 12/29/10	Added references U360 and U361 that addressed site positions regarding hazardous waste designations.

This information was provided to Mr. Blauvelt and Dr. Luginbyhl. Additionally and related to the above matrix, NMED representative posed questions regarding the HWN determinations, as presented below (resolution of the issues is also presented, as determined during discussions with CCP). Note that freeze file modifications to address issues presented in the table and in the questions below are presented in Attachment A. Mr. Blauvelt was provided all of this information and included the deficiencies in a recommendation to CCP, which is included in Attachment B; no other concerns were identified by the Audit Team. Attachment C is a list of references provided by CCP in support of this audit.

NMED Questions – BAPL HWN determinations

1. Reference C031 states that EPA concurred with Bettis' nonhazardous waste determination for spent naval fuel waste. The determination was based upon TCLP analyses performed by Bettis, the results of which were shared with EPA. The original Bettis report(s) were not available to

CCP, only Reference C031, that presented EPA's determination with summary tables and statements. Taken at face value, this reference clearly states that the subject waste is considered non-hazardous by EPA, and this is based on analytical data. DR004 addresses CCP's decision to assign HWN to the waste stream, in spite of this reference. The AKSR and/or DR should be revised to better justify CCP's decision to assign the TC metals HWNs to the waste stream this determination based on other arguments including representativeness of the TC analyses and any contradictory data.

Resolution: Will modify the DR to address limitations associated with C031 and to better justify the HWN assignment.-- DR004 Rev.1 was prepared and provided.

2. Please clarify the following in Table 3:

- Add C031 to the AK Source list for chromium and mercury

Resolution: Added C031 to Table 3 as source document for chromium and mercury

- Clarify why references C211 and U225 are listed as source documents for chromium as mention of chromium could not be found in these documents.

Resolution: Found reference to chrome in C211; remove U225 as source document for chromium in Table 3.

3. Does reference P119 provide any information about concentration of TCE to further justify the D040 HWN assignment? Also, references U239 and U264 state that tetrachloroethylene (perc) was "used" in the MEL, but doesn't specify how; is there information to suggest that PCE was used as a solvent (F002)?

Resolution: P119 states that TCE used as coolant, so it further justifies the D040 HWN assignment. For Perc, consider adding a sentence to the AKSR that simply states references U239 and U264 do not specify process use, so D039 is assigned. If the DR satisfies this, that's fine, too (no changes to AK Summary or DR would be required).

ATTACHMENT A FREEZE FILE CHANGES

Freeze File Changes for CCP-AK-BAPL-500 Revision 1

NOTE: This freeze file was obtained after the audit, and may include additional issues identified after the fact and unrelated to the audit.

Freeze File 2 for CCP-AK-BAPL-500, Rev. 1

- 1) Page 10, Section 2.0, add the following paragraph just before the paragraph titled **Prohibited Items**:
"The single process was the fuel testing performed in the MEL. While there are several sub-processes described in Section 4.2.2, all of the waste is from one overall process. Samples from a fuel type could be used in each of the sub-processes generating identical waste. The variability in the waste comes from different fuel types being tested in all of the sub-processes."
- 2) Page 13, Section 4.1.3, Add the following as the last paragraph in the section: "The Alpha Cell Bank consists of two total containment cells used for chemical processing of irradiated specimens. Both cells have 3 foot-thick concrete walls with a pair of master-slave manipulators (Reference U256)."
- 3) Page 14, Section 4.1.4, Add the following paragraph after the first paragraph in the section: "All waste in waste stream BT-T001 is defense related. Waste from material that was generated in the Advanced Test Reactor or the Shippingport Atomic Power Station was produced for the purpose of evaluating new naval fuels (Reference U256)."
- 4) Page 14, Section 4.2, third paragraph, first sentence change "Each waste container was sealed." To "Each waste container (Dolly tube, can and HIP) was sealed"
- 5) Page 14, Section 4.2, Change paragraph 2 to read as follows: "Waste from the Met Cell Bank, West Cell Bank and Alpha Cell Bank were placed in Dolly tubes to be transferred to the East Cell Bank for storage. Once in the East Cell Bank, Dolly tubes could have been placed, sealed and intact, inside storage cans. Waste generated inside the East Cell Bank did not need to be placed in the Dolly tubes. Waste generated in the East Cell Bank could be placed directly in cans. In 2005 and 2006, the Dolly tubes and cans were opened and poured into the HIP containers. The only consideration for placement in the HIP containers was to balance the fuel load. No attempt was made to segregate material based on fuel type or which process generated the waste. Most HIP containers contained waste from multiple fuel types. "
- 6) Page 15, Section 4.2.2, add the following paragraph after the existing fourth paragraph of the section: "Fifteen HIPs were generated at Bettis Laboratory. One of the HIP containers, HIP -41-06, was generated from Can 1078. Can 1078 was generated by cut-off wheel operations in the East Cell Bank. The radiation levels from this HIP container are much higher than from the other HIP containers.

During the VE of the HIP containers in 2010, material will be distributed to other HIP containers to balance the radiological loads.”

- 7) Page 15, Section 4.2, first paragraph, first sentence change to read: “Waste generating operations occurred in five cell banks, East, Met, Central, Alpha, and West Cell Banks.”
- 8) Page 15, Section 4.2.2, add the following paragraph after the first paragraph of the section: “Operation in the MEL occurred continuously from 1960 to 1992. Waste generated prior to 1973 was disposed of with the low level waste. In 1973, TRU waste was segregated from the low level waste to become waste stream BT-T001.”
- 9) Page 21, Section 5.4.1.2, First paragraph, add the following sentence after the first sentence: “The HIP container is considered part of the waste.”
- 10) Page 21, Table 1, change the Weight Percent Range for Iron-based Metals/Alloys from “93.0 – 95.0%” to “90.0 – 95.0%”
- 11) Page 31, Section 5.4.3.1, Add the following paragraph after the second paragraph of the section: “It was estimated that approximately 600 to 650 fuel specimens were examined during the 1973 to 1992 time period. The fuels included enriched uranium, enriched uranium with thorium, thorium, and depleted uranium with plutonium. Bettis Laboratory identified the material type of each sample. Table 6, Material Type Table, describes the material types identified for each specimen (References 15, 16, U231, U259, U396, and U398).”
- 12) Page 31, Section 5.4.3.1, After the above new paragraph add the Table 6 as follows:

Table 6, Material Type Table

Material Type	General Description	Specific Description
11	Depleted Uranium	<0.21% U-235
12	Depleted Uranium	0.21 to 0.24% U-235
33	Enriched Uranium	10 to <20% U-235
34	Enriched Uranium	20 to <35% U-235
36	Enriched Uranium	45 to <80% U-235
37	Enriched Uranium	80 to <92% U-235
38	Enriched Uranium	92 to <94% U-235
39	Enriched Uranium	94% and above U-235
56	Plutonium	16 to <19% Pu-240
57	Plutonium	19% and above Pu-240
72	Uranium Enriched in U-	5 to 10 ppm U-232

	233	
88	Thorium	Total Thorium

13) Page 31 Section 5.4.3.1, after the new Table 6 add the following new paragraph: “The number of specimens for each material type was summed up for each HIP container. The amount of material from each specimen was assumed to be equal. Table 7, Number of Specimens for Each Fuel Type, lists the number of specimens for each fuel type in the HIP container that were binned together. HIPs 41-06, 41-15 and 41-20 have been omitted in the Table 7 because the activities involved in the generation of the waste in these HIPs include processes with water, which would have the effect of altering the Cs-137 concentrations by dissolution and thereby potentially resulting in unique scaling factors for these HIPs. HIPs 41-06, 41-15 and 41-20 were sampled and not binned with any other HIP containers (Reference 15).”

14) Page 31, Section 5.4.3.1, After the above new paragraph add in the new Table 7

Table 7, Number of Specimens for Each Fuel Type

HIP No.	39 & 88	38 & 88	34 & 88	33 & 88	88	39	38	37	36	11 & 57	12 & 56	72 & 88	Total
41-05		1			1	42			4				48
41-13		10	2			6							18
41-16	4	1						15		14	1		35
41-18	4	5				9			47			1	66
41-21		4			1	5							10
41-23						125			16				141
41-24	2	6		2		9			33	10		2	64
41-27		4	3	2		25	12		4				50
41-28	1	4				11		12	4	7	2		56
41-30	4	1	2			11				2	2		22
41-32	2	11	2		1	6							22
Total		3				13				5			21

15) Page 31, Section 5.4.3.1, after the new Table 7, add the following new paragraph: “The relative contributions from the sample types were consolidated into the five broad fuel types and listed in Table 8, Contribution of Fuel Type to Each HIP.” The HIP containers were grouped by evaluating the percentages of each of the fuel type specimens that contributed waste to the container. The HIP

containers with similar fuel type percentages present were grouped or “binned” together (References 15 and 16).”

16) Page 31, Add Table 7, as follows:

Table 8, Contribution of Fuel Type to Each HIP

HIP Number	U-233+Th	EU+Th	Thorium	EU	DU+Pu
41-05	0%	2%	2%	96%	0%
41-13	0%	67%	0%	33%	0%
41-16	0%	14%	0%	43%	43%
41-18	2%	14%	0%	85%	0%
41-21	0%	40%	10%	50%	0%
41-23	0%	0%	0%	100%	0%
41-24	3%	16%	0%	66%	16%
41-27	0%	18%	0%	82%	0%
41-28	0%	9%	0%	75%	16%
41-30	0%	32%	0%	50%	18%
41-32	0%	68%	5%	27%	0%
41-33	0%	14%	0%	62%	24%

17) Page 31, Section 5.4.3.1, after the new Table 8, add the following paragraph: “ The HIP containers were grouped by radiological similarities in the bins described in Table 9, Waste Stream BT-T001 HIP Bins (References 15, 16).”

18) Page 31, Section 5.4.3.1, after new paragraph above add the new Table 9

Table 9, Waste Stream BT-T001 HIP Bins

Description of HIP contents	HIPs ¹
Very high enriched uranium percentage	41-20
Relatively high depleted uranium/plutonium percentage	41-16
Mid-range depleted uranium/plutonium percentage	41-24, 41-28, 41-33
Moderate thorium and thorium/uranium percentage	41-18 , 41-27
Relatively high thorium breeder fuel percentage	41-13,41- 21, 41-32
Relatively low thorium and thorium/uranium percentage	41-05 , 41-23
Generated by Operations that involved water	41-06

Generated by Operations that involved water	41-15
Generated by Operations that involved water	41-30

Note 1: Bolded HIP Containers were sampled

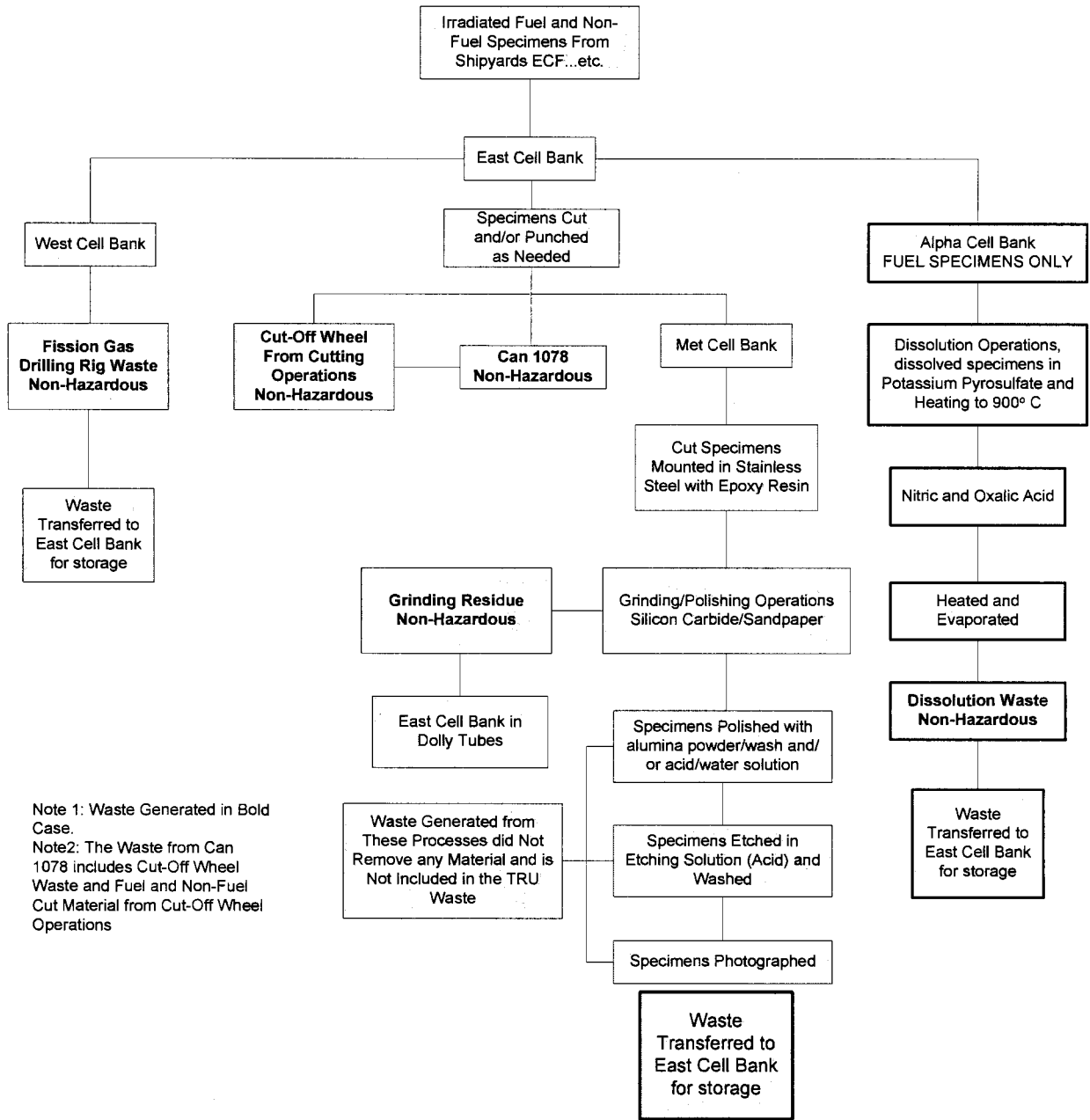
- 19) Change existing Table 6 to Table 10
- 20) Page 31, 5.4.3.1, after the new Table 9 add the following paragraph: “After the HIPs had initially been filled it was determined that one of the HIPs (41-06) had an elevated radiation dose. In order to reduce the radiation dose rate from HIP 41-06, an operation was conducted by BAPL to transfer some of the fuel debris out of HIP 41-06 and into HIPs 41-16, 41-21, and 41-27. The final disposition of the fuel debris was that approximately 20% by volume of the fuel debris was transferred to each of the three receiving HIPs, and the remaining approximate 40% of the fuel debris was placed back into HIP 41-06. This operation was conducted prior to the sampling campaign (References U268, U396, and U397).”
- 21) Page 34, Section 6.0, first paragraph, first sentence change CCP-AK-BAPL-502, Central Characterization Project RH TRU Waste Certification Plan for 40CFR 194 Compliance and Confirmation Test Plan for Bettis Laboratory Waste Stream: BT-T001” to “CCP-AK-BAPL-505A, Central Characterization Project Sampling and Analysis Plan for Bettis Atomic Power Laboratory Remote-Handled Transuranic Debris Waste, Waste Stream: BT-T001”
- 22) Page 35, Table 6, Second Row, Second Column, change “CCP-AK-BAPL-501, Central Characterization Project Remote-Handled Transuranic Radiological Characterization Technical Report for REMOTE-HANDLED TRANSURANIC DEBRIS WASTE From Bettis Laboratory Waste Stream: BT-T001” to “CCP-AK-BAPL-501, Central Characterization Project Remote-Handled Transuranic Radiological Characterization Technical Report for Bettis Atomic Power Laboratory Remote-Handled Transuranic Fuel Debris Waste, Waste Stream: BT-T001”
- 23) Page 38, Change Reference 15 to CCP-AK-BAPL-501, Central Characterization Project Remote-Handled Transuranic Radiological Characterization Technical Report for Bettis Atomic Power Laboratory Remote-Handled Transuranic Fuel Debris Waste, Waste Stream: BT-T001, Carlsbad, NM, Washington TRU Solutions, LLC.
- 24) Page 38, Change Reference 16 to CCP-AK-BAPL-505A, Central Characterization Project Sampling and Analysis Plan for Bettis Atomic Power Laboratory Remote-Handled Transuranic Debris Waste, Waste Stream: BT-T001, Carlsbad, NM, Washington TRU Solutions, LLC.
- 25) Page 10, Section 2.0, Paragraph before Prohibited Items: First sentence, Change “...(References P131 and U224).” To “...(Reference U224).”

- 26) Page 14, Third Paragraph, last sentence change reference "P114" to "P131"
- 27) Page 14, Section 4.2, first paragraph, add the following after the four subparagraphs: Waste from categories 1 and 3 were not included in the TRU waste stream.
- 28) Page 15, Section 4.2.2, fourth sentence change to read: " The Central Cell Bank generated no TRU waste that is included in this waste stream."
- 29) Page 15, Section 4.2.2, first paragraph. Add another sentence to the end of the paragraph "The waste material that was generated from each of the cell banks was very similar in form. The waste was a finely divided, powder-like material with some larger debris.
- 30) Page 15, Section, 4.2.2.1, last paragraph, Add the following after the last sentence: "The fuel sectioning process was located in the East Cell bank."
- 31) Page 16, Section, 4.2.2.2, Add the following after the last sentence: "lathe operations process was located in the East Cell bank."
- 32) Page 17, Section, 4.2.2.3, last paragraph, Add the following after the last sentence: "The metallographic process was located in the Met Cell bank."
- 33) Page 17, Section, 4.2.2.4, last paragraph, Add the following after the last sentence: "The decrudding/descaling operations were located in the Met Cell bank."
- 34) Page 17, Section, 4.2.2.5, Add the following after the last sentence: "The dye penetrant/fluorescent penetrant operations were located in the Met Cell bank."
- 35) Page 18, Section, 4.2.2.6, Add the following after the last sentence: "The fission gas process was located in the West Cell bank."
- 36) Page 18, Section, 4.2.2.7, Add the following after the last sentence: "The fuel crush and Clad etching processes were located in the West Cell bank."
- 37) Page 18, Section, 4.2.2.8, Add the following after the last sentence: "The Alpha Cell operations were located in the Alpha Cell bank."

- 38) Page 18, Section, 4.2.2.9, Add the following after the last sentence: "The packaging of waste into the HIP containers was performed in the East Cell bank."
- 39) Page 18, Section, 4.2.2.10, Add the following after the last sentence: "The VE and repackaging operations were performed in the East Cell bank."
- 40) Page 35, Table 6, first row in the last column add P104
- 41) Page 40, delete reference P114
- 42) Page 30, Section 5.4.3, first paragraph, delete the second sentence and replace with the following: "The calculations were for planning purposes with the expectation that samples would be taken during the VE process for more accurate information. The calculations were based on accountability records. The accountability records list the total material type and isotope weights for Enriched Uranium (U-235), U-233, Thorium and Plutonium. The average fuel loads for the HIP containers was used to produce ORIGEN runs for each of the material types. The activity for each radionuclide was then summed to develop the total activity for each radioisotope. The activity fraction for the waste stream was then calculated using specific activity from the TRAMPAC, Rev. 0 (Reference U223)."
- 43) Page 13, Section 4.1.3, Second paragraph, Second sentence, change "...25 shielded cells..." to "...27 shielded cells..." also change "...three free standing ..." to "...two free standing ..."
- 44) Page 22, Section 5.4.2, First paragraph, sixth sentence, add "U260, and U261" to the list of references
- 45) Page 24, Table 3 add reference "C031" to the AK source column for Chromium and Mercury also delete U225 from Chromium
- 46) Page 31, Section 5.4.3.1, Third paragraph, Change third sentence to read: "The second source was specimens that have been sectioned from defueled Naval ship reactors, Naval designed test specimens from commercial cores, or Naval prototype reactor expended cores."
- 47) Page 43, Section 9.0, Add the following items to the Table:

U260	Interview with Michael Brown; RE: Hazardous waste numbers assigned to the Bettis waste stream	NA	M. Doherty	1/21/2011
U261	Interview with Donna DeRennie; RE: Hazardous waste numbers assigned to the Bettis waste stream	NA	M. Doherty	1/21/2011
U396	Technical Work Record 23219; RE: TWR23120 Completion Date	TWR 23219	J. DiVecchio	4/20/2011
U397	Technical Work Record 23120; RE: Scoop Assignment	TWR 23120	J. DiVecchio	8/3/2010
U398	Technical Work Record 23008; RE: Fuel Type in MEL TRU Material	TWR 23008	R. Pfeifer	4/15/2011

48) Page 47, Attachment 4, Change the chart as follows:



Note 1: Waste Generated in Bold Case.
 Note2: The Waste from Can 1078 includes Cut-Off Wheel Waste and Fuel and Non-Fuel Cut Material from Cut-Off Wheel Operations

**ATTACHMENT B
AUDIT CONCERNS**

No.	Who	Description of Concern	Concern	CAR	CDA	O
1	D. Blauvelt	Recommend changes to AK Summary for waste stream BT-T001 to provide clarity and to address the newly established AK WAP requirements matrix developed during the ORNL/CCP audit. CCP has developed a freeze file for this document that includes results from the EPA Inspection of this waste stream during the week of 4/11/11.				
2						
3						
4						
5						
6						

ATTACHMENT C REFERENCES

CCP-AK-BAPL-500, Central Characterization Project Acceptable Knowledge Summary Report For Bettis Laboratory Remote-Handled Transuranic Debris Waste Waste Stream: BT-T001, Revision 1, January 25, 2011

Interoffice correspondence, March 26, 2011 from I Quintana to CCP Records, Acceptable Knowledge Accuracy Report: Bettis Atomic Power Laboratory Waste Stream Number BT-T001, Lot 1

CCP-TP-005, Revision 21 CCP Acceptable Knowledge Documentation EFFECTIVE DATE: 12/29/2010, Larry Porter

CCP-TP-005 Attachments 1,4, 5, 6, 8, 13, 14 CCP-AK-BAPL-500, various dates

CIS Lot Evaluation Forms Combined Lot 1 HSG Lot 1 provided April 19, 2011

Draft Characterization Reconciliation Report provided April 19, 2011

Interoffice Correspondence, September 2, 2010 from I. Quintana to CCP Project Management and Records, Headspace Gas Random Sample Selection Memorandum For Waste Stream Bt-T001, Lot 1, Characterized By The Central Characterization Project At The Bettis Atomic Power Laboratory

Draft Waste Stream Profile Form and related CIS and Summation Of Aspects Of AK Summary Report: BT-T001, provided April 19, 2011

Q&MIS Database Print Out showing Facility sign-off for AK Summary, CCP-AK-BAPL-500 Revision 1, provided April 20, 2011

List of Source Documents Provided:

C031, C117, C125, C126, C128, C129, C130, C211, C212, C213

DR004, DR004 Revision 1

P100, P102, P103, P104, P107, P108, P110, P112, P113, P115, P116, P120, P121, P123, P124, P125, P127, P128, P129, P133, P134, P135, P136, P137, P138, P139

U201, U210, U212, U216, U219, U224, U225, U227, U231, U233, U236, U238, U239, U240, U241, U243, U244, U245, U246, U247, U250, U251, U252, U255, U258, U259, U264, U265, U266, U267, U268, U269, U270, U360, U361

Latest version of the complete reference list Attachment 4 is also provided with this memorandum.

Attachment 4 - Acceptable Knowledge Source Document Reference List

Site(s): Bettis Atomic Propulsion LabWaste Stream Number: BT-T001Waste Stream Description: RH Metal Debris Waste

Source Document Tracking Number ^{a/c}	Title	Author	Document # ^b	Document Revision # and Date	AK # (from Att 1)
C014	Letter to J.W. Frazier NRF; RE: DOT Hazard Categorization of Zircaloy Swarf	T. L. Cox	B-NRF(E)-073	9/12/2007	PR4, WS2, WS9, S9, S13
C031	Letter to Joe Nagel; RE: TCLP Testing of Fuel Core Material	R.A. Guida	2802940	1/5/1994	WS12
C117	Letter to H.F. Hoffman; RE: Fission Gas Analyzer Historical Data	C.W. Singleton	NRFE-P-1813	6/6/1991	WS3
C121	Letter to D.P. Ridge; RE: Procedure for Determining TRU Content of Alpha Cell Waste	M.W. Weisfield	WPD-MT(CER)-1479	8/5/1988	WS11, S2
C125	Letter to K.M. Tomko; RE: Near Cell Filter Hazardous Waste Evaluation	R.G. Pfeifer	WAPD-DLO(MEL)FE-437	6/6/1990	WS8, WS12
C126	Letter to MEL Waste File; RE: Hazardous Evaluation of APAC Solutions and Kalling Etch	Donna DiRenna	WAPD-DLO(MEL)E-2900	2/25/1994	WS8, WS12
C128	Letter to W.R. Maxwell and K.D. Richardson; RE: Use of Alternative Cleaning Solvent for Test Specimens	B.F. Kammenzind	WAPD-MT(FZCT)-1215	4/18/1990	WS8, WS12
C129	Letter to M.A. DiBattista and J.F. Ruch; RE: Review of Fryquel 150 Oil	T.E. Reed	WAPD-RC/E(E)-292	5/9/1988	WS8, WS12, S10
C130	Letter to J.W. Frazier, NRF; RE: DOT Hazard Categorization of Zircaloy Swarf	T.L. Cox	B-NRF(E)-073	9/12/2007	WS12, S12
C211	Letter to T.E. Reed; RE: Disposition of Waste Generated from Process	W.R. Maxwell	WAPD-DLO(MEL)O-623	2/15/1988	PR6, PR7, WS4, WS8, WS9, WS12
C212	Letter to D.J. Miller; RE: Chemical Analysis of Hysol Material in Support of MEL Criticality Zone Limits	R.F. Beyer	WAPD-LOS(NS)-409	5/23/1980	WS8
C213	Letter to W. Vitvitsky; RE: Radionuclide Distribution for East and West Cell Banks	M.W. Weisfield	WAPD-MT(CER)-2792	5/27/1994	WS11

Attachment 4 - Acceptable Knowledge Source Document Reference List (continued)

Source Document Tracking Number ^{a/c}	Title	Author	Document # ^b	Document Revision # and Date	AK # (from Att 1)
DR004	Attachment 11, Acceptable Knowledge Source Document Discrepancy Resolution (EPA Hazardous Waste Numbers)	J.W. Luginbyhl	DR004	Rev. 1, 4/20/2011	WS1, WS12
P100	The United States Naval Nuclear Propulsion Program	Naval Reactors	NA	7/31/1998	PR3, WS7
P102	Cultural Resource Assessment: Bettis Atomic Power Laboratory, Allegheny County, Pennsylvania	Christine E. Davis	NA	May 2002	PR1, PR2, PR3, PR4
P103	The Design and Construction of the Enlarged Westinghouse Hot Laboratory	A.L. Maharam	WAPD-T-442	3/1/1957	PR1
P104	Light Water Breeder Reactor (LWBR)	NA	BET-10-U	1975	PR2, WS7
P105	Nuclear Material Balance Area 4 Accountability Manual	M.A. DiBattista	WAPD-NMM-1004	Issue II Rev. 5, May 1989	WS2, WS4, WS5
P106	Nuclear Safety Analysis for the Materials Evaluation Laboratory, RM-5A-103	M.L. Baker	B-NEO(F)-34	Rev. 7, 7/6/2005	WS2
P107	Preparation of Metallographic Specimens	R. G. Pfeifer	MEL(T)1-2	Rev. 1, 1/15/1985	PR4, WS4, WS8, S2
P108	Pressure Mounting of Fuel Rod Specimens	Ronald Minkus	MELT 2-3	Original, 3/3/1980	WS4, WS8
P109	NRF 1662.20 Descale Solutions and Operations	NA	MEL(T) 3-4 NRF1662.20	Rev. 9, 6/30/1973	WS4, WS8
P110	Operation of Lathe to Part Fuel Rods	W.S. Roesener	MEL(T)2-14	Original, 4/1/1981	WS4
P112	Sectioning Specimens on the Slow Speed Abrasive Cut Off Wheel	M.J. Hill	MEL(T) 2-6	Rev. 11, 4/16/1986	WS4
P113	Sectioning Specimens on the Precision Cut-Off Wheel	W. Vitvitsky	MEL (T) 3-6	Rev. 6, 6/18/1987	WS4
P114	Quality Assurance Packaging Procedure	R.H. Cosgrove	WAPD-DLO(E)F-1043	Addendum 1, Rev. 7, 1/18/1985	WS8, S16
P115	Operation of Gas Fission Rig Cleaning Box	H.L. Hodgdon	MEL-(T) 2-13	Rev. 3, 4/22/1982	WS4
P116	Fission Gas Collection Operations	D.P. Measures	MEL(T)2-5	Rev. 3, 10/9/1991	WS4, WS8, S2
P119	Remote Milling of Irradiated Punch and Die Sections	K.L. Rupp	HLP No. 35	3/17/1964	WS4, S2

Attachment 4 - Acceptable Knowledge Source Document Reference List (continued)

Source Document Tracking Number ^{a/c}	Title	Author	Document # ^b	Document Revision # and Date	AK # (from Att 1)
P120	Procedure for Decontaminating Items in the 10KW Ultrasonic Cleaner	L.M. Behr	HLP No 29	Rev. 1, 6/13/1967	WS4, WS8, S2
P121	APAC Decridding of Irradiated Specimens	V.J. Figliolia	HLP #22	Rev. 3, 7/31/1974	WS4, WS8
P123	Dye Penetrant Examination of Irradiated Specimens	V.J. Figliolia	HLP #27	Original, 10/29/1973	WS4, WS8, S2
P124	Fluorescent Penetrant Inspection	M. Phillips	MEL(T)3-10	Rev. 2, 8/23/1990	WS4, WS8, S2
P125	In-Cell Waste Segregation Plan and Guidelines	B. Maxwell	MEL(T) 8-13	Rev. 0, 9/22/1988	PR2, PR4, WS7
P126	Curie and Transuranic Content Determination for Radioactive Waste Packages	M. Bobuk	RM-AG-001	Rev. 3, 3/23/1988	PR4, PR5, WS10, WS11, S14
P127	Alpha Cell Waste Nuclide Distribution	R. Pfeifer	Work Request 20001430	0, 7/10/2001	WS11
P128	Fission Gas Rig Decon and Repair	R. Pfeifer and S. Fiscus	HLP-278 90-068-MEL	0, 12/4/1990	WS8
P129	Repackaging of MEL TRU Waste Material	R. Pfeifer	HLP-433 RCE # 2005-781-MEL	0, 12/14/2005	PR8, WS3, S16
P130	Quality Assurance Packaging Study Guide	C.A. DiVecchio	NA	Dec. 2004	PR8, S16
P131	BRASS Study Guide	C.A. DiVecchio	NA	Dec. 2004	S15, S16
P133	MEL Scrap Fuel Program	D.E. Overs	MEL(G)-2-7	Rev. 2, 2/16/1987	PR4, WS9, S2
P134	Activity Calculation for MEL Central Cell Bank Waste	R. Pfeifer	RM-AG-071	0, 3/4/1996	WS11
P135	1957 Nuclear Engineering and Science Congress: The Bettis Fission Gas Apparatus	R.C. Koch, J.E. Eck, F.S. Susko	WAPD-T-437 56745536	March 10-16, 1957	PR4, PR7, WS5
P136	Replication of Non-Irradiated and Irradiated Specimens	R.E. Bright	MEL(T) 3-12	0, 6/14/85	WS8
P137	Fuel Element Puncturing for Containment of Evolved Gasses	V.J. Figliolia	HLP #30	Original, 11/19/1973	WS4, S2
P138	Results of Testing Metallographic (Met) Mounts for the Presence of Sodium, Performed in the Alpha Gamma Hot Cell Facility (AGHCF) at Argonne National Laboratory	D. Pancake	NOD-215-00-00	0, 5/1/2010	WS12, S12

Attachment 4 - Acceptable Knowledge Source Document Reference List (continued)

Source Document Tracking Number ^{a/c}	Title	Author	Document # ^b	Document Revision # and Date	AK # (from Att 1)
P139	Alpha Facility Procedure Manual	NA	WAPD-CL-(RC)-1821	Rev. 2, October 1983	WS4, WS8, S2
U201	News Release: Bettis Atomic Power Laboratory Celebrates 50th Anniversary	B.J. Schramm	BET-3-U	NA	PR2, PR4, WS7
U207	Hot Lab and Alpha Facility Floor Plan Drawings	NA	NA	NA	WS2
U208	Technical Work Records: Back-up Data for TRU Waste Forecast Request by Radioactive Materials	R. Pfeifer	TWR 20536, 21716, and 21894	10/15/94 and 11/16/2002	WS1, WS11
U209	Phase I of the Metallographic Process for the East Cell Bank	NA	NA	NA	PR4, WS4, WS8, WS9
U210	Sludge Radiation Log Sheet	D. Spano	NA	2/24/87	WS10
U211	Bettis Irradiation Test Planning Guide	Irradiation Material Technology	WAPD-MT(I)-244	3, August 1989	WS4, WS10
U212	Operation Record of Met Cell Equivalent Gram Loss	NA	Book #2 and #3	3/3/82 through 11/11/86	WS10
U213	Grinding Equivalent Gram Loss Logbook No. 1	NA	Book #1	2/77 through 2/81	WS3, S4
U214	Book #1 Ultrasonic Cleaning Logbook	Various	Book 1	3/12/1975	WS4, WS8, S4, S11
U216	Book #1 Fuel Crush & Etching Data Records Logbook	Various	Book #1	3/77 through 8/79	WS3, WS8, S2, S11
U217	Logbook COW #3, Old Slow Speed COW, Waste Disposal Log Cell 12	NA	COW #3	3/17/1980	WS3, S4
U219	Sludge Information Data Sheet	W.G.Smart	NA	3/22/1993	WS3, S4
U220	Technical Work Record No. 70084 - Depletion Reviews	Terry Carper	TWR 70084	May 1995	WS11
U223	Technical Work Record No. Z02397 - MEL TRU Nuclide Distribution	M. J. Bobuk	TWR No. Z02397	9/27/2005	WS1, WS11
U224	Flow Charts for MEL Waste	NA	NA	NA	WS4, WS5, WS8
U225	Route Card M-894	J.J. Korinko	M-894	8/13/1982	WS8, S2
U226	Route Card G-468 - Barium Hydroxide	B. Kammerzind	G-468	4/28/1981	WS8, S2, S5

Attachment 4 - Acceptable Knowledge Source Document Reference List (continued)

Source Document Tracking Number ^{a/c}	Title	Author	Document # ^b	Document Revision # and Date	AK # (from Att 1)
U227	Route Card F-676	C. Sphar	F-676	6/25/1981	WS8, S2, S5
U229	Route Card M-823, Metallographic Exam of Three Specimens	P.H. Kreyns	M-823	4/15/1981	PR5, WS8, S2
U231	Sludge Information Data Sheet	W.G. Smert	NA	3/18/93	WS3, S4
U232	Route Card F-655, Preparation of Special Fuel Transport/Crushing	D.A. Mertz	F-655	10/11/78	WS8, S2, S5
U233	Route Card F-650	D.A. Mertz	F-650	1, 7/20/78	WS8, S2, S5
U234	Route Card F-643, Clad UT Examinations	D.A. Mertz	F-643	4/3/78	WS8, S2, S5
U235	Route Card M895, Met Exam	S. Porembka	M895	11/2/1982	WS8, S2
U236	COW Logbook #2, Waste Disposal Log	NA	COW #2	1/73 through 11/79	WS3, S4
U237	Logbook, COW (Diamond) Waste Disposal Log, Cell 12, Start 2/25/1982	NA	NA	2/82 through 3/85	WS3, S4
U238	MEL Processes	NA	NA	NA	WS4
U239	Interview with D. Chapas - Operations - Chemicals - Pre-NAC	NA	NA	NA	WS8
U240	Standardized Wording for the Form 5 MEL QA Packaging Procedure for TRU Materials	R.E. Bright	NA	12/29/2005	WS2, WS4, S4
U241	Specimens Which Contributed to Sludge Activity	NA	NA	2/29/1992	WS3
U243	Miscellaneous Maps of Bettis, MEL Floor Plans and Photos	NA	NA	NA	PR1, WS5
U244	Actions to Resolve I-131 Related to MEL	B.J. Schramm	WAPD-DLO(MEL)-1260	11/24/1982	WS8, WS11
U245	Attachment 1, HIP-41 Container Packaging Data Log	NA	HLP 433 Attachment 1	0, 12/05 through 1/06	WS1, WS3, S4
U246	Handwritten Notes on the Packaging of HIPs	NA	NA	1/7/2006	WS1, WS8, WS9, S4
U247	Technical Work Record 22277, TRU Repackaging in MEL 12/05 to 1/19/2006	S.A. Varacalli	TWC 22277	1/21/2006	PR8, WS1, WS3, WS9, WS10, S4

Attachment 4 - Acceptable Knowledge Source Document Reference List (continued)

Source Document Tracking Number ^{a/c}	Title	Author	Document # ^b	Document Revision # and Date	AK # (from Att 1)
U250	Sample Numbers of Waste from Alpha Facility	NA	NA	NA, NA	WS3
U251	Technical Work Record 12314	M.W. Weisfield	TWR 12314	1/8/1981	PR7, WS2, WS3, S2
U252	Logbook #2 for Fuel Crush Etching CIAD Rinse	M. Monico	NA	8/17/1979	PR7, WS2, WS3, WS8, S11
U253	List of Samples in AC-93-1 to AC93-7	NA	NA	NA	PR7, WS2, WS3, WS6, S4
U254	Route Card G492, Specimens For Fission Gas Sampling	R. Mallory	G-492	3/8/1982	WS2, WS3, S2
U255	Trouble Record Response, Evaluation of Radiation Effects on Organics/Plastics in Containers in MEL Cell Banks	P.K. Sadhir	TRR-ECF(FP291)FPO10 36-TR1	NA	WS8
U256	Bettis Experimental Facilities, Bettis Hot Laboratory, November 1978	NA	NA	11/1978	PR1, PR2, PR3, WS2
U258	Fission Gas Drilling Operations	NA	NA	2/11/1983 to 3/20/1983	PR7, WS3
U259	Containers - HIPs and Waste Cans	NA	NA	4/6/92	WS10, S4, S6, S16
U260	Route Card G-502, Fuel Specimens from alt clad R.B. Trans #1	G.J. Powell	G-502	9/29/1982	WS2, WS3, S2
U261	Route Card G503, Fuel Specimens from Type 6 Transient #1	G.J. Powell	G503	9/29/1982	WS2, S2
U262	Route Card, G518, Transverse MET Sections in Most Severe Overload Regions	G.J. Powell	G518	4/26/1983	WS2, WS3, S2
U263	Route Card G543, Prime Specimens 76-7821 from AHT TR#3	G.J. Powell	G543	7/27/1983	WS2, WS3, S2
U264	Personnel Interview with Ron Minkus and Ron Pfeifer	J.W. Luginbyhl	NA	3/10/2010	WS2, WS4, WS7, WS8, WS12, S7
U265	Miscellaneous MSDSs	NA	NA	NA	WS12, S8, S10
U266	Bettis Atomic Power Laboratory, EPA Region 3 Baseline Corrective Action Facility	NA	NA	12/30/2008	PR3

Attachment 4 - Acceptable Knowledge Source Document Reference List (continued)

Source Document Tracking Number ^{a,c}	Title	Author	Document # ^b	Document Revision # and Date	AK # (from Att 1)
U267	Technical Work Record 23070, HIP Contents Examination	S.P. Ruzicka	TWR 23070	12/2/2009	WS1, WS9
U268	Technical Work Record 22754, Calculations to Support Splitting HIP-41-06	M. Brown	TWR 22754	5/7/2010	WS11, S9
U269	Visual Exam of HIPs	NA	NA	NA	S16
U270	HIP Material Parameters	NA	NA	NA	WS9
U360	Record of Communication with Donna DiRenna re: Hazardous Waste Numbers Assigned to the Bettis Waste Stream	Mark Doherty	U360	04/19/2011	WS12, S7
U361	Record of Communication with Michael Brown re: Hazardous Waste Numbers Assigned to the Bettis Waste Stream	Mark Doherty	U361	04/19/2011	WS12, S7
U390	Response to EPA Finding	Jene Vance	NA	4/22/2011	WS11
U396	Technical Work Record 23219: Memo from BAPL re: TWR 23120 Completion Date (for drum splitting operations)	BAPL	23219	04/20/2011	S4, S7, S16
U397	Technical Work Record re: Splitting of MEL East Transuranic Waste in HIP-41-06 into Additional Containers	BAPL	23120	08/03/2010	WS4, WS11, S16
U398	Fuel Type in MEL TRU Material	R. Pfeifer	TWR 23008	4/15/2011	WS11
U399	Calculation	Jene Vance	NA	NA	WS11

^a From Acceptable Knowledge Source Document Summaries (Attachments 3)

^b Or publisher's document number if available

^c In the case where a AK Summary Report has been revised based on information in Attachment 11- Acceptable Knowledge Source Document Discrepancy Resolution form, identify the tracking number.

Acceptable Knowledge Expert: James Luginbuhl James Luginbuhl Date: 4/27/2010
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