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United States Government **Department of Energy**

memorandum

Carlsbad Field Office
Carlsbad, New Mexico 88221

DATE: July 13, 2001

REPLY TO ATTN OF: CBFO:QA:MLC:VW:01-1414:UFC:2300

SUBJECT: CBFO Audit Report A-01-16 Characterization Activities at the Hanford Site Plutonium Finishing Plant (PFP)

TO: Todd Shrader, RL

The Carlsbad Field Office (CBFO) conducted an audit of the Hanford Site waste characterization activities being performed at the PFP during June 11-15, 2001. The audit team concluded that the Hanford Site PFP procedures were adequate. The audit team also concluded that the visual examination technique and repackaging processes were being satisfactorily implemented and were effective. The audit team determined that the evaluated process for nondestructive assay being used at PFP was unsatisfactorily implemented and ineffective. The CBFO audit report is attached.

There were two CBFO corrective action reports issued as a result of the audit. They have been forwarded to you under separate cover. No Observations or Recommendations were identified during the audit.

If you have any questions or comments concerning this report, please contact me at (505) 234-7423.

Lea Chism

for Samuel A. Vega
Quality Assurance Manager

Attachment

cc: w/attachment
I. Triay, CBFO
K. Watson, CBFO
L. Chism, CBFO
D. Winters, DNFSB
S. Monroe, EPA
M. Eagle, EPA
S. Zappe, NMED
E. Bilson, RL
B. Walker, EEG
P. Crane, FH
J. Maupin, FH
M. Gerle, WTS
T. Bowden, CTAC

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U.S. DEPARTMENT OF ENERGY
CARLSBAD FIELD OFFICE

AUDIT REPORT

OF THE

HANFORD SITE

RICHLAND, WASHINGTON

AUDIT NUMBER A-01-16

JUNE 11- 15, 2001

TRU WASTE CHARACTERIZATION ACTIVITIES AT THE PLUTONIUM FINISHING PLANT

Prepared By: _____ **Date:** 7/12/01
Steven D. Calvert
Audit Team Leader

Approved By: for _____ **Date:** 07/13/01
Samuel A. Vega
CBFO QA Manager

1.0 EXECUTIVE SUMMARY

Carlsbad Field Office (CBFO) Audit A-01-16 was conducted to evaluate the adequacy, implementation, and effectiveness of the applicable technical and quality assurance activities related to the Hanford Site Transuranic (TRU) Waste Characterization activities performed at the Plutonium Finishing Plant (PFP). Hanford procedures, and processes for assay, visual examination, and repackaging of waste at the PFP as applied to retrievably stored debris (S5000) and homogenous solid (S3000) waste were examined during this audit.

The audit was conducted at the Hanford Site during the week of June 11-15, 2001. The audit team concluded that the Hanford technical and quality assurance (QA) procedures are adequate relative to the flow down of requirements from the CBFO Quality Assurance Program Document (QAPD), the Waste Analysis Plan (WAP) of the Hazardous Waste Facility Permit (HWFP), and the Waste Acceptance Criteria (WAC).

The audit team concluded that the Hanford QA program satisfactorily met the requirements of the QAPD, WAP, and WAC. The audit team also concluded that the QA program is being satisfactorily implemented. The adequacy, implementation, and effectiveness of the Hanford QA program was verified and documented during recertification audit A-01-03, which was conducted at the same time as this audit. The audit team determined except for the area of nondestructive assay, that the Hanford technical processes evaluated for PFP are satisfactorily implemented and effective.

The audit team identified three conditions adverse to quality that resulted in the issuance of two CBFO corrective action reports (CARs), which require corrective action in the area of nondestructive assay. One isolated deficiency requiring only remedial corrective action was corrected during the audit (CDA). The CARs, and CDA are described in section 6.0.

2.0 SCOPE

The audit team evaluated the adequacy, implementation, and effectiveness of technical and QA processes related to the Hanford Site Transuranic (TRU) Waste Characterization and Certification Programs. Hanford procedures, and processes for assay, visual examination, and packaging of waste at the Plutonium Finishing Plant (PFP) as applied to retrievably stored debris (S5000) and homogenous solid (S3000) waste were examined during this audit.

The following elements being performed at PFP were evaluated in accordance with the CBFO QAPD:

QA Program Implementation
Personnel Qualification and Training

Document Control
Records Management
Nonconformance Control
Corrective Action
Measuring and Test Equipment

Note: The QA program was evaluated and documented during recertification audit A-01-03

The following CBFO technical characterization elements were evaluated in accordance with the WAP and WAC:

Visual Examination Technique (VET)
Waste Packaging

Evaluation of Hanford TRU Waste Characterization Program documents was based on current revisions of the following documents:

Hanford Site Quality Assurance Project Plan (QAPjP) for the Transuranic Waste Characterization Program
Hanford Site Transuranic Waste Certification Plan
Related Hanford (PFP) technical and QA implementing procedures

3.0 AUDIT TEAM, INSPECTORS, AND OBSERVERS

AUDITORS/TECHNICAL SPECIALISTS

Samuel Vega	CBFO QA Manager
Steven Calvert	Audit Team Leader, CTAC
Wayne Ledford	Auditor, CTAC
Patrick Kelly	Technical Specialist, CTAC

OBSERVERS/INSPECTORS

Mike Eagle	EPA Inspector
Dave Stuenkel	EPA/Trinity Engineering Inspector
June Dreith	NMED/TechLaw Observer
Bob Thielke	NMED/TechLaw Observer
Steve Zappe	NMED Observer
Steve Holms	NMED Observer
James Channell	EEG Observer

4.0 AUDIT PARTICIPANTS

Hanford individuals involved in the audit process are identified in Attachment 1. A preaudit meeting was held at the 2420 Stevens Dr. Building, Conference Room 153, on June 11, 2001. A daily meeting was held with Hanford management and staff to discuss issues and potential deficiencies. The audit was concluded with a postaudit meeting held in Conference Room 153 of the 2420 Stevens Dr. Building on June 15, 2001.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Adequacy, Implementation, and Effectiveness

The audit team concluded that the Hanford QA program satisfactorily met the requirements of the CBFO QAPD, revision 3; the WIPP WAP, effective date November 27, 1999; and the WAC, revision 7. The audit team also concluded that the QA program was being satisfactorily implemented (reference audit A-01-03 for results of the evaluation of the Hanford QA program). The Hanford PFP technical processes evaluated by the audit team were determined to be satisfactorily implemented and effective except in the area of nondestructive assay (NDA).

5.2 QA Program Audit Activities

Details of audit activities, including specific objective evidence reviewed, are contained in the checklists for audit A-01-03, which are maintained as QA records. The quality assurance program procedures evaluated during this audit are provided in Attachment 2 of audit report A-01-03.

5.3 Technical Activities

Evaluations of applicable Hanford technical activities are summarized below. Technical procedures evaluated during the audit are provided in Attachment 2 of this report.

5.3.1 Nondestructive Assay

The audit team evaluated the Segmented Gamma Assay System (SGSAS) located in the Plutonium Finishing Plant (PFP) at the Hanford site. This system is used for assaying TRU wastes packaged in small containers (pewter or billet cans) containing weapons grade plutonium. This instrument has a calibration that is not Item Description Code (IDC) specific but instead keys on the density of the materials being assayed. The audit team evaluated the applicable PFP procedures to ensure they were consistent with the upper level CBFO requirements. Using the reviewed Hanford

procedures, a checklist was prepared and used to evaluate the PFP NDA process as follows:

- Operatabilty and condition of equipment
- Instrument calibration and traceability of calibration sources
- Applicability of calibration to waste type and radionuclide content
- Implementation and effectiveness of instrument/measurement controls
- Verification that Hanford procedures are executed
- Completed data packages to ensure data are reported and reviewed as required
- Data storage and retrievability

The audit team interviewed Hanford and contractor personnel, observed equipment operations and examined records. The audit team identified issues that resulted in the issuance of two Corrective Action Reports (CARs). The first CAR (01-042) identified a deficiency in the area of quantifying U234. The second CAR (01-043) identified a deficiency relating to the operation of equipment that was not correctly calibrated and a lack of identifying this issue in the form of a nonconformance report.

The audit concluded that the written procedures for the SGSAS were adequate. The audit team determined that due to the issuance of the CARs that the PFP NDA process has been unsatisfactorily implemented and is ineffective.

5.3.2 Visual Examination Technique and Repackaging

The audit team evaluated visual examination technique (VET) operations applied to retrievably stored debris and homogeneous solid waste in the Plutonium Finishing Plant (PFP). The specific waste summary categories subject to the VET were "Rocky Flats Ash" (S3000, homogenous solids) and "Plutonium/Aluminum (Pu/Al) Alloys" (S5000, debris). The VE technique requirements for use at Hanford on TRU waste is promulgated to the waste generators by the TRU Site Project Office by way of procedure WMP-400, section 7.1.10, *TRU Waste Visual Examination Technique*. This is a generic procedure that applies to any waste generator performing VET of TRU waste for purposed of WIPP characterization at Hanford. The PFP has developed two procedures based on the requirements of WMP-400, section 7.1.10. Procedure ZO-160-080, *Pipe-N-Go Operations,* provides the instructions for repackaging and performing VET on residues. Implementation of this procedure at the time of the audit had been limited to Rocky Flats Ash. It is intended that this procedure be applied to other residues, such as Hanford Incinerator Ash, during future repackaging campaigns. The procedure requires that the residues be crushed and sieved during repackaging, the residues are also "blended down" with silica sand to reduce Pu concentrations. Procedure ZO-160-081, *Pu/Al Alloys Operations* is limited to repackaging and performing VET on Pu/Al alloys. Hanford intends to develop other procedures that meet the requirements of WMP-400, section 7.1.10 for other waste types in various facilities.

During the audit repackaging and VET operations were witnessed in PFP. These included the VE of Pu/Al alloy plates, the repackaging of these plates into billet cans, and the packaging of the billet cans into a pipe overpack component (POC). Hanford had completed the repackaging campaign for Rocky Flats Ash before the start of the audit. Several testing batch data reports were reviewed that documented the VE of Rocky Flats Ash repackaged in PFP.

The training of the VET operators was reviewed and found to meet the requirements of the TRU Waste Program. No deficiencies were identified in the area of VET and repackaging in PFP. The audit team determined that the written procedures for VET and repackaging was adequate. The audit team concluded that the VET and repackaging processes were satisfactorily implemented and effective.

6.0 Corrective Action Reports (CARs) and Corrected During the Audit (CDA)

6.1 CARs

6.1.2 CARs Initiated as a Result of CBFO Audit A-01-16

The following two CARs, initiated as a result of Audit A-01-16, have been transmitted to Hanford under separate cover. A brief description of each CAR is provided below.

6.1.2.1 CBFO CAR 01-042

The WIPP Waste Acceptance Criteria and ZA-400-301 require that NDA systems be recalibrated after major repairs. HNF-2600, Section 5.3 requires that conditions adverse to quality be identified and documented. On October 27, 2000 the SGSAS was adjusted by a service technician. This adjustment caused the instrument to go out of measurement control. The instrument was not calibrated until March 27, 2001. No NCR or CAR was written by Hanford to control the data generated by the instrument in the period between October 27, 2000 and March 27, 2001

6.1.2.2 CBFO CAR 01-043

DOE/WIPP-069, Revision 7, Section 3.3.1 requires that TRU waste generators report values for U-234. PFP does not currently quantify and report values for U-234.

6.2 Deficiencies Corrected During the Audit

One deficiency, requiring remedial action only, was identified during the audit. The issue was corrected before the completion of the audit. The CDA is identified on the applicable completed audit checklist and documented on a "Corrected During the Audit

Form," which are maintained as QA records. A brief description of the CDA is provided below:

1. ZA-400-302, Step 6.6.3 did not provide adequate direction for how to apply default isotopics when valid MGA measurements are not obtained. The origin or deviation of the values used for default isotopics were not documented and was not tied to the AK information. The procedure was amended during the audit to include information on how to apply default isotopics.

7.0 LIST OF ATTACHMENTS

Attachment 1: Personnel Contacted During the Audit
Attachment 2: Table of Procedures Audited

PERSONNEL CONTACTED DURING THE AUDIT

HANFORD PERSONNEL CONTACTED				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST AUDIT MEETING
Ailes, Sid	Duratek Consultant	X	X	X
Aromi, Ed	FH/WMP/Vice President	X		X
Bartus, Dave	EPA Region 10	X		
Blackford, L.	FHI/WMP/Manager Waste Services	X		X
Brooks, Patti	FH Clerk		X	X
Campbell, Jim	Transportation Specialist			X
Cantaloub, Michael	FD/NDA/Engineer	X		X
Clinton, Richard	AK Data Collector	X		X
Colly, Briana	FH Plant Engineer	X		X
Crane, Paul J.	TRU Site Project Manager	X	X	X
DeRosa, David	FH SPM	X	X	X
Djang, Lincoln	FH Statistics Analyst			X
Dougherty, Leslie A.	TRU Records Specialist			X
French, Mark	DOE-RL Manager	X	X	X
Garcia, Art	WMP Manager			X
Gillespie, Bruce	Canberra, Scientist	X	X	
Greager, Eric	FH TRU Project	X	X	X
Greager, Tim	TRU Program/Alternate Site Project Manager	X		X

HANFORD PERSONNEL CONTACTED				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST AUDIT MEETING
Guercia, Rudy	DOE-RL/Acting Director Waste Management			X
Hale, Joe	FH Scientist	X		X
Heath, Nettie	FH records Specialist			X
Higgins, Ron	DOE-RL/WRAP Facility Representative	X		
Huggins, Stewart	TRU QA/QC Engineer		X	X
Hutchins, Les	FH Plant Engineer		X	X
Ibatuan, Mark	FH Manager			X
Jamisen, Fred	WM Project Manager			X
Jasen, William	FH Sr. Project Manager		X	
Jones, Pat	FH PFP Operator		X	
Kidder, Bryan	Duratek/Communications	X		
Kooiker, Susan	FH Engineer	X		
Kover, Karola	FH Waste Certification Official Alternate	X		X
Leonard, Kathy	Transportation Certification Official	X		X
Maupin, Jim	Site Quality Assurance Officer	X	X	X
Meier, Kirsten	Facility Quality Assurance Officer/WSCF	X		X
Nance, Sheri	FH Alternate SQAO	X		X
Skeels, Brian	FH PFP Project Manager		X	X

HANFORD PERSONNEL CONTACTED				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST AUDIT MEETING
Srader, Todd	DOE-RL Program Manager	X	X	X
Stauffer, Markus	COGEMA/Scientist	X		X
Sutter, Caroline	FH PFP Residues Manager	X	X	X
Svoboda, Ken	FH WCO	X		X
Thackaberry, W.R.	WRAP/Facility Quality Assurance Officer			X
Thomas, Debra	FH Training Administrator			X
Van Slyke, Jan	FH Procedure Writer			X
Westsik, George	FH Scientist	X	X	
Widhalm, Cherie Ann	FH Records Specialist	X		
Woodford, Barbara	FH PFP Operator		X	
Wright, Allison	DOE-RL Residues PM	X	X	X
Yale, Chris	FH PFP Operator		X	
Yoakum, A. K.	FH Maintenance Manager	X		

HANFORD PFP PROCEDURES AUDITED

NUMBER	PROCEDURE NUMBER	TITLE
1.	WMH-400, Section 7.1.10	TRU Waste Visual Examination Technique
2.	FSP-PFP-5-8, 16.1	Quality Assurance Objectives for NDA at PFP
3.	FSP-PFP-5-8, 16.2	Data Management
4.	ZA-400-301	SAS Energy and Efficency Setup and Baseline Determination
5.	ZA-400-302	Calculation of Assay Results
6.	ZA-948-385	NDA Using the Segmented Gamma Assay System (SGSAS)
7.	ZO-160-080	Pipe-N-Go Operations
8.	ZO-160-081	Plutonium/Aluminum Alloy Operations