

United States Government



memorandum

Carlsbad Field Office
Carlsbad, New Mexico 88221**DATE:** January 2, 2002**REPLY TO
ATTN OF:** CBFO:QA:MAI:KJB 02-0602**SUBJECT:** Audit Report A-02-05, Rocky Flats Environmental Technology Site (RFETS) Characterization of Waste Audit**TO:** John Schneider, Assistant Manager for Environment and Compliance

The Carlsbad Field Office (CBFO) conducted an audit of the Rocky Flats Environmental Technology Site (RFETS) waste characterization activities. The audit was conducted on November 27-30, 2001. The audit team concluded that the RFETS technical and quality assurance programs for these activities were adequate in accordance with the WIPP Hazardous Waste Facility Permit, the CBFO QAPD. The audit team also concluded that overall the RFETS procedures were being satisfactorily implemented and the evaluated processes were effective.

As a result of the audit five (5) CBFO Corrective Action Reports (CARs) were forwarded under separate cover.

If you have any questions or comments, please contact me at (505) 234-7484.

/s/ signature on file
Dr. Inés R. Triay
Manager

Attachment

020101



John Schneider

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cc w/attachments:

K. Watson, CBFO *ED

C. Zvonar, CBFO *ED

L. Chism, CBFO

J. Jefferies, RFFO *ED

M. Eagle, EPA *ED

S. Monroe, EPA *ED

S. Zappe, NMED *ED

B. Walker, EEG *ED

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C. Ferrera, RFETS *ED

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*ED Denotes Electronic Distribution

**U.S. DEPARTMENT OF ENERGY
CARLSBAD FIELD OFFICE**

AUDIT REPORT

OF THE

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

GOLDEN, COLORADO

AUDIT NUMBER A-02-05

November 27-30, 2001

AUDIT REPORT OF WASTE CHARACTERIZATION ACTIVITIES



Prepared By: /s/ signature on file
Charles L. Riggs
Audit Team Leader

Date: 01-02-02

Approved By: _____ /s/ signature on file
Marc A. Italiano
Acting QA Manager

Date: 01-02-02

1.0 EXECUTIVE SUMMARY

Carlsbad Field Office (CBFO) Audit A-02-05 was conducted to evaluate the adequacy, implementation, and effectiveness of the Rocky Flats Environmental Technology Site (RFETS) transuranic (TRU) waste characterization activities for debris waste relative to the requirements detailed in the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit (HWFP) and the Quality Assurance Program Document (QAPD).

The audit scope included Summary Category Group S5000 debris waste, in particular, activities for newly generated debris wastes.

The audit was conducted at the RFETS facility November 27-30, 2001. The audit team concluded that the overall adequacy of the RFETS technical and Quality Assurance (QA) programs, as applicable to audited activities, was satisfactory in meeting requirements. The audit team also concluded that the defined QA and technical programs for these activities were being implemented in accordance with the RFETS Quality Assurance Project Plan (QAPJP) and the applicable implementing procedures and that the processes were effective.

However, the audit team was not able to complete its checklist for confirmatory testing since no Headspace Gas (HSG) for newly generated debris waste was available. Furthermore, the audit team was not able to fully verify implementation and effectiveness of the electronic Waste Stream and Residue Identification and Characterization (WSRIC) activities. These activities will be addressed in future CBFO surveillance/audit activities.

The audit team was unable to determine the adequacy, implementation, and effectiveness of the Los Alamos National Laboratory (LANL) headspace gas unit process. These conditions should be resolved by the completion of the corrective actions for Corrective Action Reports (CARs) 02-026 and 02-027.

The audit team identified five (5) conditions adverse to quality resulting in the issuance of five (5) CBFO CARs concerning: unclear changes without explanation on Visual Verification (VV) packaging data entry forms; discrepancies between net weights determined during VV and Nondestructive Assay (NDA); Visual Examination (VE) operators training inaccuracies; the use of incorrect reference spectra for comparison to probable Target Analyte compounds; and inaccuracies in Headspace Gas (HSG) Sampling and Analysis procedures. Four (4) isolated deficiencies requiring only remedial corrective actions were Corrected During the Audit (CDA). There were three (3) Observations and four (4) Recommendations identified. The CARs, CDAs, Observations, and Recommendations are described in Section 6.0.

2.0 SCOPE AND PURPOSE

2.1 Scope

The audit team evaluated the adequacy, implementation, and effectiveness of the RFETS TRU waste characterization processes for newly generated debris waste. HSG and Visual Examination (VE) of Standard Waste Boxes (SWBs) and a new LANL HSG unit were also examined.

The following elements were evaluated:

Technical

- Acceptable Knowledge (AK)
- Project Level Verification and Validation
- Headspace Gas
- Visual Examination
- Electronic Waste Stream and Residue Identification and Characterization (WSRIC)

The evaluation of RFETS TRU waste activities and documents was based on current revisions of the following documents:

Waste Isolation Pilot Plant Hazardous Waste Facility Permit

Quality Assurance Program Document, CAO-94-1012

RFETS Quality Assurance Project Plan for the Transuranic Waste Characterization Program, 95-QAPjP-0050

RFETS Transuranic Waste Management Manual, 1-MAN-008-WM-001

Related RFETS technical and quality assurance implementing procedures

2.2 Purpose

Audit A-02-05 was conducted to assess the level of compliance of RFETS newly generated debris waste characterization activities and characterization activities associated with the SWBs (i.e. HSG and VE).

3.0 AUDIT TEAM AND OBSERVERS

AUDITORS/TECHNICAL SPECIALISTS

Charlie Riggs

Audit Team Leader, CTAC

Steve Calvert	Auditor, CTAC
Wayne Ledford	Auditor, CTAC
Steve Davis	Auditor, CTAC
Tom Putnam	Auditor-in-Training, CTAC
Karen Gaydosch	Technical Specialist, CTAC
BJ Verret	Technical Specialist, CTAC
Dick Blauvelt	Technical Specialist, CTAC
Cliff Watkins	Technical Specialist-inTraining, CTAC

OBSERVERS

Steve Holmes	NMED
Will Fetner	NMED
Phillis Stevens	NMED
Connie Walker	TechLaw Inc. (NMED)
Jim Channell	Environmental Evaluation Group (EEG)

4.0 AUDIT PARTICIPANTS

RFETS individuals contacted during the audit process are identified in Attachment 1. A pre-audit meeting was held at RFETS Building 460 on November 27, 2001. A daily meeting was held with RFETS management and staff to discuss the issues and potential deficiencies of the previous day. The audit was concluded with a post-audit meeting held at RFETS Building 460 on November 30, 2001

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Adequacy and Implementation

The audit team concluded that the applicable RFETS TRU waste characterization activities, as described in the associated RFETS implementing procedures, satisfactorily meet requirements except as described below. Audit activities, including objective evidence reviewed, are described below and in CBFO checklists and/or Objective Evidence Reviewed forms maintained as QA records. Attachment 3 contains a list of RFETS procedures included in the audit.

5.2 Technical Activities

The following sections describe the technical activities reviewed during the audit.

5.2.1 Acceptable Knowledge

The audit team reviewed the entire RFETS AK process, beginning with the collection and review of AK records and the assignment of required waste matrix codes, waste material parameters, hazardous waste numbers and other relevant/required AK

information. The AK portion of the audit focussed on newly generated debris waste. However, no headspace gas sampling data were available for these waste streams. These data cannot be collected until the appropriate drum age criteria (DAC) time has passed, as required by the Hazardous Waste Facility Permit. Other areas of the AK process that were examined include supplemental information, reassessment procedures, and records and databases.

Several concerns were raised by the audit team:

The audit team noted that procedure PRO-484-WIPP-003, *Collection, Review, and Confirmation of Acceptable Knowledge Documentation*, Section 6.1.1, contained information that should be deleted from the procedure and is missing the list of information that must be included as part of the AK written record (see CDA 1).

The audit team also noted that 1) an example of implementation of newly generated waste confirmation results should be examined to assure that newly generated waste being assigned to existing waste streams is appropriate and supportable, 2) the WSRIC waste characterization work sheets need to include required supporting information (analytical results, references to existing process information), and 3) the AK waste stream summaries need to include the rate and quantity of newly generated waste production. These summaries should be revised to specifically indicate quantities attributable to newly generated waste (see Observations 1, 2, and 3). Three Recommendations were provided to RFETS management (see recommendations 2, 3, and 4).

The audit team was not able to complete its checklist for confirmatory testing since no HSG data were available. Furthermore, although levels one and two data validation had been performed, there was no comparison of that data to AK. These activities will be addressed in future Carlsbad Field Office audit/surveillance activities.

RFETS AK documentation was judged by the audit team to be adequate. However, because of the need to perform a follow-up audit/surveillance, AK program implementation and effectiveness for newly generated debris waste is judged to be indeterminate at this time.

5.2.2 Verification and Validation

Verification and validation (V&V) at the Project level was reviewed during the audit. several batch data reports were reviewed to assess Site Project Office data review, verification, and validation.

The audit team noted that 1) Visual Verification packaging data entry forms had changes that are unclear and no explanation had been provided for the changes,

2) for three SWBs examined during the audit, the net weight of the contents determined during the visual verification process did not agree with the net weight determined during the NDA process, and 3) there is also an inconsistency in the gross weights recorded on Form 1B and 1C of visual verification (see CARs 23 and 24).

Overall, verification and validation were determined to be adequate, satisfactorily implemented, and effective. However, because of the need to perform a follow-up audit/surveillance, V&V implementation and effectiveness for newly generated debris waste is judged to be indeterminate at this time.

5.2.3 Headspace Gas

HSG using LANL System

The audit team reviewed procedures and data packages. The automated sampling and analytical system was evaluated and the software QA procedure was examined. Software QA documentation was also examined.

It was noted that 1) Target Compound identification verification in data package HGAS-DP-00004 used incorrect reference spectra for comparison to probable Target Analyte compounds, and 2) three out of four procedures for HSG Sampling and Analysis had inaccuracies in work processes and/or responsibilities (see CARs 26 and 27).

Overall, the adequacy, implementation, and effectiveness of HSG using the LANL System was judged by the audit team to be indeterminate.

HSG Sampling of SWBs

The audit team reviewed procedures and data packages. A walkthrough demonstration of the sampling process was observed. Training and records control was verified. No discrepancies were noted.

Overall, the HSG Sampling of SWBs activities were determined to be adequate, satisfactorily implemented, and effective.

5.2.4 Visual Examination

The audit team evaluated the program for performing visual examination on standard waste boxes at RFETS. This review included looking at Batch Data Report VE-2002-001 and associated videotapes that included data for the examination of two standard waste boxes. Also during the examination, training content and personnel training records were reviewed. It was noted that the workers inside the radiation enclosure who were removing and identifying the waste from the SWB were not trained in visual

examination (see CAR 02-025). The visual examination experts were the only trained personnel and they were outside the enclosure.

The audit team also noted that 1) raw data was not consistently attached as part of the data package, 2) QC Duplicate weight measurements were not performed in accordance with the procedure, and 3) the number of layers of confinement for waste packages were incorrectly identified (see CDAs 2, 3, and 4). Multiple forms are used to record waste items and waste matrix parameter category weights during visual examination. The audit team recommended that the totals from each form be combined to summarize the MPC weights for the container (see Recommendation 1).

The audit team also evaluated the visual verification operations (Visual Examination Technique) for newly generated waste at RFETS. This review included observation of operations in Building 771 and Building 371 and a review of five data packages. Also, training content and personnel training records were reviewed. There were no discrepancies noted.

Overall, the Visual Examination activities were determined to be adequate, satisfactorily implemented, and effective.

5.2.5 Electronic WSRIC

The audit team evaluated the electronic WSRIC process for access control, training, verification signature control, traceability for changes, the appropriate delegation of authority, and records. The audit team noted that the electronic WSRIC process has not been fully implemented and the necessary training has not been provided.

The Electronic WSRIC process was determined to be adequate. However, the implementation and effectiveness of the Electronic WSRIC process were indeterminate.

6.0 CORRECTIVE ACTIONS, OBSERVATIONS, and RECOMMENDATIONS

6.1 Corrective Action Reports

6.1.1 CBFO CAR 02-023

Visual Verification packaging data entry form reviewed had changes that are unclear and no explanation has been provided for the changes.

Package #S00922 estimated weight percents were changed from "Organic Matrix" to "other inorganic materials" This change was not performed by the original validator, originator, or data reviewer.

Package #S00858 estimated weight percent was changed from 25% to 23% for "Plastics"

6.1.2 CBFO CAR 02-024

For three SWBs examined during the audit, the net weight of the contents determined during the visual verification process did not agree with the net weight determined during the NDA process. It was determined that the tare weight used by both NDA SWB counters is incorrect. There is also an inconsistency in the gross weights on Form 1B and 1C of visual verification.

6.1.3 CBFO CAR 02-025

Workers performing VE and identifying waste items are not trained in VE. Workers inside the enclosure identify items to the VE Experts who are stationed outside of the enclosure.

6.1.4 CBFO CAR 02-026

Target Compound identification verification in data package HGAS-DP-00004 used incorrect reference spectra for comparison to probable Target Analyte compounds. This error was not identified during any of 3 reviews (ITR, TS, or QAO).

6.1.5 CBFO CAR 02-027

Three out of four procedures for HSG Sampling and Analysis had inaccuracies in work processes and/or responsibilities. The three procedures are L-4231-D, L-4053-D, and L-4321-C.

6.2 Deficiencies Corrected During the Audit

A deficiency Corrected During the Audit (CDA) is an isolated deficiency that does not require a root cause determination or actions to preclude recurrence, and the correction of the deficiency was verified by the audit team prior to the end of the audit.

CDA 1

Procedure PRO-484-WIPP-003, Section 6.1.1 contains information that should be deleted from the procedure and is missing the list of information that must be included as part of the AK written record.

DCF-CHG-01 was issued to procedure PRO-484-WIPP-003, Rev. 3, *Collection, Review, and Confirmation of Acceptable Knowledge Documentation* on November 28, 2001. The DCF corrected the identified procedure inadequacies.

CDA 2

In VE data package VE-2002-001, the Visual Examination Log Forms were typed. Raw data was not attached as part of the data package.

The raw data was retrieved by RFETS and added to the data package.

CDA 3

Procedure PRO-1471-VE-771 states that QC Duplicate weights are performed after all waste items in the Waste Package have been weighed. They are currently doing a duplicate weight after each 10 items have been weighed.

Procedure PRO-1471-VE-771, *Visual Examination to Confirm RTR, B771*, was revised to reflect the actual practice.

CDA 4

In batch report VE-2002-001, container # S00808, packages numbers 18 and 20 are identified as having 1 layer of confinement. These packages actually have 2 layers of confinement. Also, for this container, the weight of the glovebox in the SWB was calculated incorrectly in the batch report.

Corrections were made to batch data report VE-2002-001, to reflect the actual conditions.

6.3 Observations

An Observation documents marginally acceptable conditions that, if not controlled, might later escalate into a deficiency.

Observation 1

An example of implementation of newly generated waste confirmation results should be examined to assure that newly generated waste being assigned to existing waste streams is appropriate and supportable.

Observation 2

The WSRIC waste characterization work sheets need to include required supporting information (analytical results, references to existing process information).

The WSRIC work sheet provides the basis for AK hazardous waste determinations that are made prior to waste generation. This information should be complete and thorough.

Observation 3

The AK waste stream summaries need to include the rate and quantity of newly generated waste production. These summaries should be revised to specifically indicate quantities attributable to newly generated waste.

This will be useful in the case of newly generated waste not associated with a current retrievably stored waste stream.

6.3 Recommendations

A Recommendation is a suggestion that is directed toward identifying opportunities for improvement and enhancing methods of implementing requirements.

Recommendation 1

Visual Examination uses multiple forms to record waste items and waste matrix parameter category weights. It is recommended that the totals from each form be combined to summarize the MPC weights for the container. A total for the column on the form labeled "QC Duplicate Weight" is not necessary.

Recommendation 2

It is recommended that RFETS consider updating project level documents (QAPjP) to clearly define the newly generated process. It is assumed that newly generated and retrievably stored waste AK data will be generated following the same process. It would be beneficial if documentation explained how newly generated waste will be characterized.

Recommendation 3

It is recommended that certification documents (i.e. procedures) specify applicability to newly generated and retrievably stored waste. It is inferred that certification procedures apply to all TRU Waste.

Recommendation 4

It is recommended that RFETS consider differentiating the "accuracy" of newly generated waste from retrievably stored waste in the AK accuracy report.

7.0 LIST OF ATTACHMENTS

- Attachment 1: Personnel Contacted during the Audit
- Attachment 2: Summary Table of Audit Results
- Attachment 3: Table of Audited RFETS Implementing Procedures

PERSONNEL CONTACTED DURING THE AUDIT

RFETS PERSONNEL CONTACTED DURING AUDIT A-02-05				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Ballenger, R. J.	TRU Program; Audit Program	X	X	X
Barone, Gary S.	Building 371		X	
Beeler, Dewitt L.	KH/QP; Site QA Manager			X
Bentsen, Ernie	771 Closure Project; Waste SME/Supervisor	X	X	
Civcci, John	Mat Stwd; Waste Operations	X		X
Cox, Chris	371; HRT		X	
Dreher, David	NDA OPS, Manager			X
Edrich, Pam	Waste Systems; Tech Mgr		X	
Eschenbaum, R. A.	TRU Program; WIPP Audit Coordinator	X		X
Ferguson, Jim	GTSD/TRU Project; Engineer	X	X	X
Ferrera, Carol	KH TWCP QAO	X	X	X
Garcia, Earl	TRU Programs; Tech Support		X	
Gianzero, Rich	SSOC/Waste Ops; Manager/Supervisor		X	
Gillespie, Doye	KH; Acting Quality Program Manager	X		
Gorman, D. Lee	MTL ST; WRR/WRG	X	X	
Grady, Frank	RMRS/TRU Waste Projects; TRU Project Engineer	X	X	X
Gregory-Frost, Laurie A.	371; Waste Lead		X	

RFETS PERSONNEL CONTACTED DURING AUDIT A-02-05				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Harris, Mike	Rad Labs; Chemist			X
Harrison, Jeff	Wastren/TRU Programs; Engineer	X	X	X
Henderson, Kristy K.	Labs; Lab QA	X	X	X
Hobbs, R. Scott	VV;QAO	X		X
Hoffman, Gayle	771; Originator		X	
Kirschenmann, Harley	SMQA; Acting Manager	X		X
Lee, Chris	771 Waste; Manager		X	
Leifer, John	GTSD/TRU Waste Project		X	X
Leitner, Randy	771 Waste; Manager		X	
Maxwell, David	RFFO; TRU Programs	X		
McGavin, Andrew	Source One; Manager			X
Miles, Paul E.	Omega; RISS QA	X		X
Mirenda, D. Sue	Duratek/Waste Ops; Tech Support		X	
Nolan, Cliff	Labs; Lab Tech			X
O'Leary, Jerry	KH/TRU Waste Project Manager	X		X
Papp, Michael J.	Waste Systems (AK); Project Manager		X	
Peters, G.	Rad. Ops.; RCT		X	
Pigeon, Paul	Material Stewardship; TWCP Training Officer	X	X	X
Plappert, Robert	KH; RISS Ops Spt.	X		X
Reynolds, Joe	B559 Labs; LPQAO	X	X	

RFETS PERSONNEL CONTACTED DURING AUDIT A-02-05				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Robledo, Ron	SME VEE		X	
Rodgers, Alan	KH/WM; Mgr.			X
Rolston, Greg	771 VE Support		X	
Rucker; Cheryl	371; Technical Supervisor		X	
Sands, Gina	371; V&V Operator		X	
Schafer, Steve	Wastren/Waste Systems; Project Manager		X	
Schoen, Jim	WASTREN/Waste Systems; WSRIC Pgm Manager		X	
Schoen, Mary	WASTREN/Waste Systems; Programmer		X	
Sendelweck, Vivian	TRU Programs; AK Engineer	X	X	X
Smart, Kim	KH/IRM; Manager	X		X
Stueckvath, Robert	Rad Safety; Supervisor		X	
Thiel, R.D.	Rad Lab; Sr. Prin Chemist	X	X	X
Thompson, Ty	Waste Systems; Engineer		X	
Tressell, John	MSQA; TRU Waste QA, PQAO Alternate	X	X	X
Turner, Charles A.	Laboratory Manager	X	X	X
Wiebe, K. Mark	B-371 Waste Ops; Waste Characterization SME		X	
Wolfe, Mike	SOM; Waste Records Manager	X		
Xuan, Lam	DOE/RFFO/ERWM; WIPP Coordinator			X

RFETS PERSONNEL CONTACTED DURING AUDIT A-02-05				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Zeigler, Marion	771; Validator		X	

Summary Table of Audit Results

Documents	Concern Classification				QA Evaluation		Technical
	CARs	CDAs	Obs	Rec	Adequacy	Implementation	Effectiveness
Activity							
ACCEPTABLE KNOWLEDGE		1	1,2,3	2,3,4	A	I	I
HEADSPACE GAS USING LANL SYSTEM	02-026 02-027				I	I	I
HEADSPACE GAS OF SWBS					A	S	E
VISUAL EXAMINATION OF SWBS	02-025	2,3,4		1	A	S	E
VISUAL EXAMINATION TECHNIQUE OF NEWLY GENERATED WASTE					A	S	E
VERIFICATION AND VALIDATION	02-023 02-024				A	I	I
TRAINING					A	S	E
ELECTRONIC WSRIC					A	I	I
TOTALS					A	S/I	E/I

Definitions

E = Effective
S = Satisfactory
I = Indeterminate
M=Marginal

CAR = Corrective Action Report
CDA = Corrected During Audit
NE = Not Effective

Obs = Observation
Rec = Recommendation
A = Adequate
NA = Not Adequate

RFETS PROCEDURES AUDITED FOR A-02-05

No.	Procedure Number	Title
1.	PLN-97-007	TRU Waste Characterization Program Training Implementation Plan
2.	PRO-940-WIPP-010	WIPP TRU Waste Characterization Project Level Data Review and Reporting
3.	95-QAPjP-0050	TRU Waste Characterization Program Quality Assurance Project Plan (TWCP QAPjP)
4.	1-MAN-008-WM-001	Transuranic (TRU) Waste Management Manual (TWMM)
5.	L-4231	Headspace Gas Sampling and Analysis Using an Automated Manifold
6.	L-4031	Software Quality Assurance Plan for the Radiological Laboratories
7.	L-4006	Lab Records
8.	PRO-1360-440-GGSS	Gas Generation Sampling Ops
9.	L-4053	LANL Cart Headspace Gas Validation & Verification
10.	PRO-1031-WIPP-1112	Visual Verification of Newly Generated TRU Waste
11.	PRO-1351-440-SWB	Room 113 Perma-Con Operations
12.	PRO-1357-440-HSGS-FAC	Facility Headspace Gas Sampling
13.	PRO-1471-VE-771	Visual Examination to Confirm RTR, B771
14.	4-H19-WSRIC-001	WSRIC Characterization and Reverification
15.	PRO-1003-WSRIC-ADMIN	WSRIC Administration Guidance