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Department of Energy

memorandumCarlsbad Area Office
Carlsbad, New Mexico 88221

DATE: October 26, 1999

REPLY TO
ATTN OF: CAO:QA:SAV 99-1179 UFC 2300SUBJECT: CAO Audit Report A-99-17, Rocky Flats Environmental Technology Site (RFETS) TRU
Waste Characterization of Salt, Dry, Ash, and Wet Combustible Residue Repackaging
Activities


TO: Joseph Legare, RFFO

The Carlsbad Area Office (CAO) conducted an audit of RFETS Salt, Dry, Ash, and Wet Combustible Residue Repackaging activities on September 13-17, 1999. The audit team concluded that, overall, the RFETS technical and quality assurance programs for these activities were adequate in accordance with the CAO QAPD and QAPP. The audit team also concluded that the RFETS procedures were being satisfactorily implemented and the evaluated processes were effective. The evaluation of the areas of Field Sample QC and Segmented Gamma Scanner (SGS) counter were determined to be indeterminate.

Four CAO Corrective Action Reports have been forwarded under separate cover.

Four observations and seven recommendations were identified during the audit. Neither the observations nor the recommendations require a response.

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


for Samuel A. Vega
Quality Assurance Manager

Attachment



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Joseph Legare

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October 26, 1999

cc w/original attachment:

L. Chism, CAO

cc w/attachment:

B. Bennington, CAO

B. Stroud, CAO

S. Vega, CAO

T. Bowden, CTAC

C. Riggs, CTAC

D. Winters, DNFSB

B. Walker, EEG

M. Eagle, EPA

S. Monroe, EPA

✓ S. Zappe, NMED

M. Castagneri, RFETS

G. O'Leary, RFETS

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1999
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**U.S. DEPARTMENT OF ENERGY
CARLSBAD AREA OFFICE**

AUDIT REPORT

OF THE

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

GOLDEN, COLORADO

AUDIT NUMBER A-99-17

September 13-17, 1999

**TRU WASTE CHARACTERIZATION OF SALT, DRY, WET, AND ASH
RESIDUE REPACKAGING ACTIVITIES**



Prepared By: Charles L. Riggs
Charles L. Riggs
Audit Team Leader

Date: 10/26/99

Approved By: Samuel A. Vega
for Samuel A. Vega
CAO QA Manager

Date: 10/26/99

1.0 EXECUTIVE SUMMARY

Carlsbad Area Office (CAO) Audit A-99-17 was conducted to evaluate the adequacy, implementation, and effectiveness of the Rocky Flats Environmental Technology Site (RFETS) Transuranic (TRU) waste characterization activities associated with Salt, Dry, Wet, and Ash Residue Repackaging.

The audit was conducted at the RFETS facility September 13-17, 1999. The audit team concluded that the adequacy of the RFETS technical and Quality Assurance (QA) Programs, as applicable to these activities, was satisfactory in meeting CAO Quality Assurance Program Description (QAPD) and Quality Assurance Program Plan (QAPP) 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 RFETS implementing procedures and that, for the technical areas evaluated, the RFETS processes were effective with the exception of the Segmented Gamma Scanner (SGS) Can Counters and Field Sample QC Data Calculations, which were indeterminate.

The audit team identified six conditions adverse to quality resulting in the issuance of four Corrective Action Reports (CARs) that require corrective action in the areas of semi-annual verification of a Method Performance Sample, Total Measurement Uncertainty associated with the SGS Drum Counter, QA Officer review of Quality Assurance Objectives, and Continuous Bias Correction Data associated with the SGS can counters. Five deficiencies, isolated in nature and requiring only remedial corrective actions, were Corrected During the Audit (CDA). Seven Recommendations are being offered for management consideration and action. Four Observations were identified. CARs, CDAs, Observations, and Recommendations are described in Section 6.0 of this report.

2.0 SCOPE

The audit team evaluated the adequacy, implementation, and effectiveness of technical and quality assurance processes related to the RFETS TRU Waste characterization activities associated with the Salt, Dry, Wet, and Ash Residue Repackaging processes.

The following quality assurance program elements were evaluated in accordance with the CAO QAPD:

Personnel Qualification and Training	Control of Nonconforming Items
Documents and Records	Procurement
Measuring and Test Equipment	Software
Assessments	

The following technical elements were evaluated in accordance with the CAO QAPP:

Acceptable Knowledge	Gas Generation
VOCs and SVOCs	SGS Drum Counter
Visual Examination	SGS Can Counter
TGS Mobile	

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

RFETS QAPjP for the Transuranic Waste Characterization Program, 95-QAPjP-0050

RFETS Salt Stabilization, Building 707 Process Control Qualification Plan, RS-020-006

RFETS Transuranic Waste Management Manual, 3-MAN-008-WM-001

Related RFETS technical and quality assurance implementing procedures

3.0 AUDIT TEAM AND OBSERVERS

AUDITORS/TECHNICAL SPECIALISTS

Samuel Vega	Quality Assurance Manager, CAO
Charlie Riggs	Audit Team Leader, CTAC
Steve Hans	Auditor, CTAC
Amy Arceo	Auditor, CTAC
Wayne Ledford	Auditor, CTAC
Earl Bradford	Auditor, CTAC
Dave Kimbro	Auditor, CTAC
Norm Frank	Auditor, CTAC
Trey Greenwood	Technical Specialist, CTAC
Mark Doherty	Technical Specialist, CTAC
William (BJ) Verret	Technical Specialist, CTAC
Ken Coop	Technical Specialist, CTAC
Jim Bresson	Technical Specialist, CTAC
Tom Bearden	Technical Specialist, CTAC
Bill Blanton	Technical Specialist, CTAC

OBSERVERS

Ben Walker	EEG
John Gran	WID
Patrick Kelly	EPA Support Contractor

4.0 AUDIT PARTICIPANTS

RFETS individuals contacted during the audit process are identified in Attachment 1. A preaudit meeting was held at RFETS Building 460 on September 13, 1999. A daily meeting was held with RFETS management and staff to discuss issues and potential deficiencies. The audit was concluded with a postaudit meeting held at RFETS Building 460 on September 17, 1999.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Adequacy, Implementation, and Effectiveness

The audit team concluded that the adequacy of the RFETS QA Program, as described in the RFETS implementing procedures for these activities, satisfactorily meets the requirements of the CAO QAPD, Revision 2 and the QAPP, Revision 0 and Interim Changes 2/96 and 11/96. The audit team concluded that the QA program was being satisfactorily implemented. For the technical processes evaluated, the RFETS program was determined to be effective. Attachment 3 identifies the RFETS implementing procedures that were included in the audit.

5.2 QA Program Audit Activities

The elements listed in Section 2.0 were evaluated and found to adequately address the QAPD requirements.

A summary table of audit results is provided as Attachment 2. Details of audit activities, including specific objective evidence reviewed, are contained within the audit checklists. Checklists are retained as CAO quality records.

5.3 Technical Activities

5.3.1 Gas Generation

The audit team examined the Gas Generation Testing Program (GGTP) activities including drum selection and batching, gas generation calculation, and gas test canister operations. The audit team also reviewed the gas generation data reporting process, the data packages, the GGTP records, and the GGTP training records. There were no conditions adverse to quality observed.

Overall, the Gas Generation Testing Program was found to be adequate, satisfactorily implemented, and effective.

5.3.2 Dry Residue Repackaging: Visual Examination

The audit team witnessed glovebox operations in Building 707 and reviewed a series of batch data reports from earlier dry residue repackaging operations. The team reviewed the only completed batch data report. However, the audit team determined that the

report was thorough and complete and was sufficient to demonstrate the ability to prepare batch reports. There were no concerns identified with this report.

The team witnessed glovebox operations for the dry residue repackaging process that included removing the dry residues from storage cans, sieving, batching and blending, size reduction (as necessary), visual examination, and repackaging into new containers. The team also witnessed a demonstration of sampling of the residues. The sampling operation demonstrated that a representative sample was packaged in sample containers and labeled. The team also witnessed the operators preparing process and sampling documentation as the work was completed.

Overall, dry residue repackaging was found to be adequate, satisfactorily implemented, and effective.

5.3.3 Wet Residue Repackaging: Visual Examination

The team witnessed glovebox operations in Building 371 and reviewed a series of batch data reports from earlier combustible residue (also known as “wet residue”) repackaging operations. The team reviewed several completed batch data reports. There were no concerns identified with these reports.

The team witnessed glovebox operations for the combustible residue repackaging process. The team witnessed glovebox processing of the residues that included removing the residues from drums, sorting, size reduction (as necessary), visual examination, and repackaging into new containers. The team also witnessed the operators preparing process documentation as the work was completed.

Overall, wet residue repackaging was found to be adequate, satisfactorily implemented, and effective.

5.3.4 Ash Residue Repackaging: Visual Examination

The team witnessed glovebox operations in Building 707 and reviewed a series of batch data reports from earlier ash residue repackaging operations. The team reviewed several completed batch data reports. There were no concerns identified with these reports.

The team witnessed glovebox operations for the ash residue repackaging process that included removing the ash from storage cans, batching and blending, size reduction (as necessary), visual examination, and repackaging into new containers. The team also witnessed actual sampling of the residues. The sampling operation used the “cone and quarter” method to thoroughly mix the material and to separate out a representative sample that was packaged in sample containers and labeled. The team also witnessed the operators preparing process and sampling documentation as the work was completed.

Overall, ash residue repackaging was found to be adequate, satisfactorily implemented, and effective.

5.3.5 Salt Residue Repackaging: Visual Examination (Building 707)

The audit team witnessed glovebox operations in Building 707, and reviewed a series of batch data reports from earlier salt residue repackaging operations. The team reviewed several completed batch data reports. There were no concerns identified with these reports.

The team witnessed glovebox operations for the salt residue repackaging process that included removing the salts from storage cans, batching and blending, size reduction (as necessary), visual examination, and repackaging into new containers. The team also witnessed a simulated sampling of the residues using actual waste; a representative sample was packaged and labeled. The team also witnessed the operators preparing process and sampling documentation as the work was completed.

Overall, salt residue repackaging in Building 707 was found to be adequate, satisfactorily implemented, and effective.

5.3.6 Salt Residue Repackaging: Visual Examination (Building 371)

The audit team witnessed glovebox operations in Building 371, and reviewed a series of batch data reports from earlier salt residue repackaging operations. The team reviewed several completed batch data reports. There were no concerns identified with these reports.

The team witnessed glovebox operations for the salt residue repackaging process that included removing the salts from storage cans, batching and blending, size reduction (as necessary), visual examination, and repackaging into new containers. The team also witnessed a simulated sampling of the residues using actual waste; a representative sample was packaged and labeled. The team also witnessed the operators preparing process and sampling documentation as the work was completed.

Overall, salt residue repackaging in Building 371 was found to be adequate, satisfactorily implemented, and effective.

5.3.7 VOCs and SVOCs

The audit team examined volatile organic compound (VOC) analysis and semi-volatile organic compound (SVOC) extraction and analysis activities including Gas Chromatograph/Mass Spectrometer GC/MS determination of VOCs, extraction of total SVOCs for GC/MS analysis, and GC/MS determination of total SVOCs. The audit team also reviewed the VOCs and SVOCs data reporting process, the data packages, the VOCs and SVOCs records, and the associated training records. There were no significant conditions adverse to quality observed.

RFETS was three months overdue on the semi-annual verification for Method Performance Samples (CAO CAR 99-112). The team recommended the use of SW-846 procedures for log keeping and laboratory records (Recommendation 3). Minor paperwork deficiencies were identified and corrected during the audit (CDA 4)

Overall, VOCs and SVOCs were found to be adequate, satisfactorily implemented, and effective.

5.3.8 SGS Drum

The audit team evaluated the operation of the Segmented Gamma Scanner (SGS) Drum Counter and reviewed the data packages generated by the system. It had not met the requirements of the QAPjP for total measurement uncertainty, background and resolutions check measurements, and documentation of the activity range over which it can be operated (CAO CAR 99-113).

The SGS Drum Counter, with a new detector and calibration, has not participated in the NDA Performance Demonstration Program (Observation 1). Three recommendations in the areas of preventing misinterpretation of the variation of Minimum Detectable Concentration (MDC) with matrix density, establishing a method of obtaining updated user documentation for vendor software, and documenting the error associated with AK isotopics, were provided (Recommendations 1, 4, and 6).

Overall, the SGS Drum Counter was found to be adequate, satisfactorily implemented, and effective.

5.3.9 SGS Can

The audit team evaluated the operation of the Segmented Gamma Scanner (SGS) Can Counters and commenced reviewing the data packages generated by them. RFETS provided additional documents on Thursday afternoon addressing total measurement uncertainty (TMU), TMU calculations and documentation, and criteria for determining whether assay results are acceptable, however the audit team did not have sufficient time during the audit to critically review these documents.

Safeguards and Accountability performs bias correction calculations for SGS can counters and may manipulate bias corrections accordingly. The procedure provided to CAO requires continuous bias correction program measurements data to be retained as a WIPP record. It is not clear that the data developed by the safeguards organization is included in the WIPP records. This condition is documented on CAO CAR 99-115.

Procedure PRO-697-MLC-00013 does not clearly classify the records generated as a result of performing the functions within the procedure. The audit team recommended the procedure be revised to clarify the records requirements. (Recommendation 7)

The adequacy, implementation, and effectiveness of the SGS Can Counter Systems were found to be indeterminate.

5.3.10 TGS Mobile

The audit team evaluated the Tomographic Gamma Scanner (TGS) system (Mobile TGS Unit from Los Alamos National Laboratory). The evaluation included an assessment of the adequacy and implementation of the LANL procedures applicable to this system including the Interface Document (TWCP-TWID-RFETS-001, Revision 1) with RFETS. Calibration data, quality assurance objective (QAO) verification data, and assay data packages were reviewed.

The TGS operations and records were reviewed and evaluated and determined to comply with applicable LANL and RFETS procedures. Assay data package records are prepared on forms that accurately reflect requirements in the operating and calibration procedures. The data are assembled on a batch basis and traceable to individual waste containers. Assay data packages were determined to comply with applicable WIPP reporting requirements.

Overall, operation of the TGS Mobile Unit was found to be adequate, satisfactorily implemented, and effective.

5.3.11 Acceptable Knowledge

Acceptable knowledge (AK) for the four subject processes (salt residue repack, ash residue repack, dry residue repack, and wet residue repack), was reviewed and found to be satisfactory. The AK record for two waste streams was traced from the AK summary documentation, to a randomly selected drum of that waste stream, through the AK references, and finally to the original waste characterization. The two waste streams were RF001.01 (S5000) for a wet combustible drum and RF009.01 (S3000) for a salt repack drum. The AK record was complete and readily available from the AK record. AK discrepancy reports and reassessments were reviewed, AK personnel training was reviewed, and limitations on the information in documents in the AK record were evaluated. Minor deficiencies noted during the reviews resulted in two CDAs and an Observation (CDA 3 and 5, and Observation 2). RFETS audits of their AK program were reviewed. These areas were found to be satisfactory. The procedures for AK compilation and reporting and for characterization of newly generated waste were found to be adequate. An observation (Observation 3) was written to address the need for procedure 1-M12-WO-4034, *Solid Radioactive Waste Packaging Requirements* to include the list of prohibited items found in the WAP. Training to the WAP AK requirements was not detailed and both an Observation (Observation 4) and a Recommendation (Recommendation 5) were written to help preclude a potential problem in the future. There was no objective evidence showing that the RFETS and DOE/RFFO auditors who audited AK were knowledgeable in the subjects required by the QAPP and WAP. Memoranda and documentation were provided during the audit to address this discrepancy (CDA 2).

The documentation provided to support the use of AK for the assignment of radionuclide gram quantities for Phase I LECO crucibles was evaluated to ensure that it was sufficient to support those quantities reported. The audit verified that the measurement uncertainty (CDA 1) was defensible, that the hazardous waste determinations were converted from a crucible basis to a drum basis, and that the reliability of the information in the SAN database was documented.

Overall, AK was found to be adequate, satisfactorily implemented, and effective.

5.3.12 Software

The audit team evaluated the software associated with NDA systems which included the Segmented Gamma Scanners (SGS) for Drums and Cans; the Mobile Tomographic Gamma Scanner; and the CalGamma. The audit team also evaluated the software utilized for analyzing VOCs and SVOCs by the Radiological Laboratories.

The Software QA requirements that were evaluated include:

- Procurement Controls for the Mobile Tomographic Gamma Scanner;
- Configuration Management for all the software systems;
- Development of Software under other QA systems;
- Spreadsheet data base application validated by hand calculations;
- User documentation,
- Problem reporting and change control,
- Installation testing,
- Maintenance of Quality records.

No non-compliance or ineffectiveness issues were identified with the evaluated systems.

Overall, software was found to be adequate, satisfactorily implemented, and effective.

5.3.13 Field Sample QC Data Calculations

The procedure used to calculate the relative percent difference (RPD) and the F-test to demonstrate the QAO for co-located sample pairs was evaluated. The procedure was found to be adequate; however, a recommendation (see Recommendation 2) was made to change the frequency of data queries such that it is not overly prescriptive. The data entry procedures and reports for RPD were reviewed and found to be acceptable. QC calculation batch reports were reviewed and found to be acceptable (these reports do not include the F-test because this test requires several completed batch reports). It was not clear that the documentation of the QA Officer's signature release identifies or provides acceptance criteria for QAOs. This concern was documented on CAO CAR 99-114. Because the site has not completed a sufficient

number of batch reports to support a calculation of the F-test, this area could not be audited.

Overall, Field Sample QC Data Calculations were found to be marginally adequate, and the implementation and effectiveness were indeterminate.

6.0 CORRECTIVE ACTIONS, OBSERVATIONS, and RECOMMENDATIONS

6.1 Corrective Action Reports

6.1.1 CARs Initiated as a Result of CAO Audit A-99-17:

The following four CARs, initiated as a result of Audit A-99-17, have been transmitted to RFETS under separate cover. A brief description of each CAR is provided below.

6.1.1.1 CAO CAR 99-112

The semi-annual SVOC method performance sample was three months overdue.

6.1.1.2 CAO CAR 99-113

The SGS Drum Counter has not met the requirements of the QAPP for total measurement uncertainty, for background and resolution check measurements, and for documentation of the activity range over which the SGS drum counter can be operated.

6.1.1.3 CAO CAR 99-114

There is no objective evidence that the documentation of the QA Officer's signature release identifies or provides acceptance criteria for the QAOs addressed in Section 4.1 of procedure PRO-604-RC-001, *Field Sample QC Data Calculation, Review, and Validation Batch Reports*.

6.1.1.4 CAO CAR 99-115

Safeguards and Accountability performs bias correction calculations for SGS can counters and may manipulate bias corrections accordingly. The procedure provided to CAO requires continuous bias correction program measurements data to be retained as a WIPP record. It is not clear that the data developed by the safeguards organization is included in the WIPP records.

6.1.2 CARs Previously Issued

6.1.2.1 CAO CAR 99-041 Revision 1

The audit team verified that the following actions had been taken:

- Procedures L-4028, *Sample Administration for the Radiological Laboratories*, and PRO-543-ASD-002, *Initiation and Preparation of the Chain-of-Custody Forms*, were revised to ensure that only person to person custody transfers occur and that the condition of the sample as well as agreement between the Chain-of-Custody (COC) Form and sample is noted.
- PRO-543-AAD-002, Section 6 [12] was revised to state that “whenever a sample custody transfer occurs, the receiving party provides a copy of the signed COC form to the relinquishing party.”
- L-4028, Section 3.1.4 was revised to state “the sample coordinator always receives samples for the laboratory”. Section 3.3.3 was revised to state “the original COC will stay with the sample coordinator until the sample has been dispositioned. The sample coordinator will transfer the original COC to the TRU Waste Characterization Office”.
- L-4028, Section 3.1.2 address sample inspection. This section was revised to state that “unresolved discrepancies are evaluated using a nonconformance report per 1-A65-ADM-15.01”.
- PRO-543-ASD-002, Appendix 2 and 4-W84-RS-0114, Appendix 11 were revised to ensure all of the items listed in the QAPP section 6.3.2 are included on the sample COC forms.

Based on the above it is recommended that this CAR be closed.

6.2 Deficiencies Corrected During the Audit (CDA)

1. LECO equivalencies documentation did not show total measurement uncertainty (95% UCL) to be calculated as 1.96 sigma (now using 2 sigma). LECO equivalencies documentation did not clarify how the random component of uncertainty was derived. The reports were revised to address the concerns during the audit.
2. There was no objective evidence that the RFETS auditors were knowledgeable of the required acceptable knowledge information, nor the RCRA regulations and EPA guidance regarding the use of acceptable knowledge for waste characterization, nor any of the hazardous waste determinations, matrix parameter categories, waste material parameters, and QAPP requirements. Additional documentation was

provided by RFETS and DOE/RFFO to adequately demonstrate the appropriate knowledge of the RFETS auditors during the audit.

3. The "RFETS TRU/TRM Waste Project Acceptable Knowledge Accuracy Report," Second Quarter – 1999, Rev. 1, did not include trend analysis nor was it issued on a quarterly basis. Procedure WIPP 003 was changed during the audit to produce trend analysis reports "at least four times per year" and the requirement to perform trending was deleted.
4. Data Package SSOA-DP-00004 contained an incomplete NCR (No. SSOC-99-0097). The "Close-Out Block" did not contain the Final QA Review signature. The Independent Technical Review Checklist had one block incorrectly filled in. The NCR was signed off and the Independent Technical Review Checklist was corrected during the audit.
5. The map of the site did not include TRU Waste Storage and Treatment buildings. A revised map of the site was added to procedure RF/RMRS-97-018 during the audit.

6.3 Observations

The observations document marginally acceptable conditions that, if not controlled, might later escalate into a deficiency.

1. The SGS drum counter, with a new detector and calibration, has not participated in the NDA PDP. RFETS has not been presented with PDP drums appropriate for the waste forms measured with the SGS drum counter. RFETS does not plan to ship waste measured on this counter to WIPP until successful participation in the PDP program. RFETS has requested participation in PDP Cycle 6B.
2. The quarterly discrepancy report provides percentages of "discrepancies" that includes items which would not be defined as a discrepancy by the TRU Waste Program (such as site specific issues). RFETS should consider calculating the percentages for TRU Waste Program discrepancies only. RFETS should consider clarifying the presentation of the material to allow each waste stream to be evaluated.
3. 1-M12-WO-4034, *Solid Radioactive Waste Packaging Requirements*, should be revised to include the list of prohibited items found in the WAP. It should include a statement that the rate and quantity of newly generated waste can be found in WIPP-98-100.
4. The training of the AK specialists should be revised to include specific training on the AK requirements of the WAP.

6.4 Recommendations

The following Recommendations are presented for RFETS management consideration:

1. Canberra documents may not provide enough information about the variation of the Minimum Detectable Concentration (MDC) with matrix density to prevent misinterpretation. It is recommended that RFETS add a table showing how the MDC varies with density, weight, etc. Particularly, show under what conditions they can meet the 60 nCi/g requirement for sorting LLW/TRU.
2. Procedure PRO-604-RC-001, *Field Sample QC Data Calculation, Review, and Validation Batch Reports* requires the querying of Residue Projects every 2 weeks and the WIPP Records Center every week for the status of Sample Batch Report Data Packages. Recommend this requirement be relaxed to a non specific period to avoid a potential audit trap. The query should also be limited to those residue projects with active sampling programs.
3. Recommend that RFETS adopt the procedures for record keeping and review recommended in SW-846, Chapter 1, pg. 21, Section 4.6 for Volatile Organic Analysis (VOA) and Semi-Volatile Analysis (SVOA) analytical run logs, maintenance logs, and standards preparation log books.
4. The RMRS NDA SGS Drum System is currently using Genie-PC Software Version 2.5. The currently available user documentation is for Version 2.3. Recommend RMRS establish a method of getting updated user documentation from their vendor Canberra. The current user documentation for Genie-PC Version 2.3 was reviewed and found to be acceptable.
5. Course H, *RCRA/Waste Generator Annual Training* is the annual refresher training for courses D, *Waste Generator All Areas Initial Qualification*, D-1, *Waste Generator All Areas Qualification – Theoretical Knowledge Verification Section Only*, D-2, *Waste Generator All Areas Qualification – Waste Characterization Subject Matter Expert*, and D-3, *Waste Generator Qualification Addendum 1 (Pipe Overpack Component)*. Recommend that a footnote be added to Course Code H to indicate the initial courses to which this retraining course applies.
6. RFETS should determine and document the error associated with AK isotopics used in the SGS System (drum counter) and describe this in the TMU documentation, even though this error is not expected to be significant in view of the large errors in other components. If RFETS demonstrates that it is not significant, a statement to this effect is sufficient.
7. Procedure PRO-697-MLC-00013 does not clearly classify the records generated as a result of performing the functions within the procedure, i.e. the 11 attached appendices. Recommend revising the record section to address the 11 appendices

or adding clarification of the contents of the "Metrology Calibration Package" which is identified as a WIPP QA Record.

7.0 LIST OF ATTACHMENTS

Attachment 1: Personnel Contacted During the Audit

Attachment 2: Summary Table of Audit Results

Attachment 3: Table of RFETS Implementing Procedures Audited

PERSONNEL CONTACTED DURING THE AUDIT

RFETS PERSONNEL CONTACTED DURING AUDIT A-99-17				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Adams, Brad	SSOC; Ash Residue QA	X	X	
Ailes, Sid	SAIC/KH; SQA Consultant		X	X
Alonzo, Ernie	SSOC; Process Specialist		X	
Anderson, Brian	SSOC/NDA; Sr. Elec. Engr		X	
Anderson, Eddie	RMRS/NDA		X	
Anderson, Scott	KH/Waste Ops; Program Manager	X	X	X
Anderson, Sheldon	KH/Nuc Ops; Project Mgr	X		
Antimary, Steve	SSOC/Wet Comb Project		X	
Arnold, Pat	RMRS/Waste Ops; Mgr Waste Gen		X	
Atencio, Leonard A.	KH/Dry Repack; RRT		X	
Ater, Ed	SAIC/RMRS; TRU Program Technical Specialist	X	X	X
Baldwin, Chuck	RMRS/NDA; Sr. Eng	X	X	
Ballenger, R. J.	SSOC/WIPP; Residue Compliance Manager	X	X	X
Bell, Al	RFFO/Engr; Program Analyst/SQA	X		
Betts, Stephen	LANL; LANL NDA (TGS)	X		
Blunn, Don	KH/Dry Repack; RRT		X	
Bowick, Jeff	SSOC; SME		X	
Bowser, Barry	SSOC/LATA; QA		X	
Campbell, Georgianne	SSOC; Chemist Cal/Gamma	X	X	
Cantonwine, Flo	SSOC/Wet Comb Project; Process Operator		X	
Cariker, Linda	RFCSS/Contracts; Mgr		X	
Carson, Pete	RMRS/LATA/TRU Waste;	X	X	X

RFETS PERSONNEL CONTACTED DURING AUDIT A-99-17				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
	Scienttist/Engineer			
Castagneri, Mark	RMRS/QA; TWCP QAO	X	X	X
Castillo, Paul	KH/SSOC; Lab Tech		X	
Ciocchetti, Dennis	SSOC; Supervisor		X	
Cirelli, Joseph F.	KH/Procurement; Contracts Manager		X	
Corlett, Charles D.	SSOC/IFORM; TGS Lead	X	X	X
Coulter, W. L.	KH; NDA Programs			X
Cox, Carl	SSOC; President	X		X
Crandall, Karin	LATA; LPQAO	X	X	
Cross, Don Skip	KH/RRT Labs; RRT		X	
Crowe, J. K.	KH/Closure Projects; Division Manager	X		
D'Amico, Eric	RMRS/Waste Projects; Environmental Scientist		X	
Dahl, Dave	SAIC/SSOC NDA	X	X	
Davidson, Dorothy R.	Canberra/NDA; VP NDA Services	X		X
Davis, Robert E.	KH CP E&I/Special Projects	X	X	X
DiSalvo, Rick	DOE/RFFO/OCC	X		X
Dreher, David	SSOC/NDA; Manager	X	X	
Dustin, Don	SSOC/Wet Comb Project		X	
Eberlein Susan	SSOC/Product Quality; Department Manager	X	X	X
Edmiston, Douglas	LATA; Gas Gen	X	X	
Elmont, Tim	SSOC/NDA; Cal Gamma	X	X	
Enockson, Kate C.	KH/Wet Comb; Proc. Spec.		X	
Erickson, David S.	SSOC/Wet Combustibles;		X	

RFETS PERSONNEL CONTACTED DURING AUDIT A-99-17

NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
	Foreman			
Eschenbaum, R. A.	SSOC/LATA/WIPP/Residue Compliance; Senior Eng	X		
Fairchild, Karen	RMRS/Procurement; Subcon Admin		X	
Ferguson, Jim	RMRS/GTS/TRU Project; Engineer		X	X
Ferrera, Carol	Horne Engineering; TRU Waste Certification Official	X	X	X
Ferrera, Ken	KH/707 Project Dir	X		X
Fischer, Sherrie	SSOC; ALWPFC		X	
Fisher, A. J.	SSOC; QA Manager	X		X
Fisher, Doug C.	SSOC; Salt Stab/Eng		X	
Fleissner, John G.	Canberra; Sen. Scientist	X	X	X
Floerke, Jim	KH/Nuc Ops; KH B371	X		X
Florez, Herman	SSOC; Process Specialist		X	
Fox, Janet	SSOC/Ash Program	X	X	
Franco, Johnna	RMRS/NDA	X	X	
Freeburg, Jeff	Tenera; Gas Gen	X		
Freiboth, Cameron J.	The IT Group/RFETS Residue 3; Engineer		X	X
French, David M.	Residues QA/QC; Consultant	X	X	X
Fulton, John	KH; VP Nuc Ops			X
Gatliffe, Tom R.	Statistical Applications Group; Staff Statistician		X	
Gavett, Marji	LANL/E-ET; LANL Site Project QA Officer	X	X	
Gillespie, Bruce	Canberra; Sr. Scientist		X	X
Grady, Frank	RMRS/TRU Waste Projects;	X	X	

RFETS PERSONNEL CONTACTED DURING AUDIT A-99-17				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
	TRU Project Engineer			
Gray, Chris	LATA; Dry Repack Tech Support	X	X	
Gris, J. A. 'Art'	SSOC/Product Quality; Mgr	X		X
Grover, David	DNFSB; RFETS Site Rep			X
Hadacek, M. W.	KH/Quality Program; Sr Quality Engineer	X	X	
Hansen, Sonja	RMRS/TRU Waste; Admin Assistant	X		
Hanson, Robert	SSOC/QA; QE Dry Residue	X	X	
Harris, Mike	SSOC; Chemist		X	
Harris, Mike	SSOC; Chemist		X	
Harrison, Jeff	Wastren/RMRS; Engineer		X	
Hedahl, Tim	KH/Closure Project; KH Deputy VP	X		X
Hernandez, Jaun	RMRS/QA; QA Manager	X		X
Hershey, Jim	RFCSS/RC&I; Supervisor		X	
Hickman, Bobbie	SSOC/Tenera; support Eng	X	X	
Higley, Jeff	KH; Program Manager	X		
Hillman, Dan	LATA; LPQAO	X	X	
Holwager, Lee Ann	SSOC/I H&S		X	
Holwager; Lee Ann	SSOC/Ind. Hygiene & Safety; Ind Hygienist		X	
Horning, Pam	SSOC/Ash Program	X	X	
Horseman, Marlin	IT/ICF Kaiser; Consultant	X	X	
Hunter, Duane	SSCO/Labs; Manager	X		
Jarvis, Anthony	SSOC; Process Specialist		X	
Jeffries, James	RFFO/DOE; Director	X		X

RFETS PERSONNEL CONTACTED DURING AUDIT A-99-17

NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
	Quality Program Division			
Jensen, Roger	SSOC; Lab Tech		X	
Johnson, Laura	SSOC; Sample Coordinator		X	
Johnson, Micky	SSOC/Salts; Senior Principal Engineer Technical Support	X	X	X
Kangas, Mark	SSOC/WIPP Residue Compliance	X	X	X
Karas, Ted M.	LATA/SSOC/Dry Repack Project Support	X		X
Kercher, Ann	RMRS/TRU Waste Project; Engineer	X	X	
Kirschenmann, Harley	MACTEC/RMRS/TWCP; Engineer	X	X	
Klein, Michael D.	SSOC; Wet WIPP Lead	X	X	X
Krupp, Gene	LATA/WIPP Residue Compliance; Sr. Chemical Engineer	X	X	
Lantz, Walter	SSOC/Dry; Foreman		X	
Legare, Joe	RFFO; Assistant Manager	X		X
Lehew, John	KH/Nuc Ops; Nuc Ops P. M.	X		X
Leifer, John	RMRS/GTS/Scientist		X	X
Long, Jerry W.	KH/CPE&I; Senior Principal Specialist	X	X	
Madsen, P. A. (Drew) Jr.	SSOC; 371 Salt Mgr.	X	X	
Malloy, Randy	LATA/Dry Repack Project; Lead	X	X	X
McGavin, Andrew	Source One; Manager	X	X	X
McInroy, Larry	SAIC/SSOC/QC; SWQA	X	X	X
McKinney, Ruth	Source One; Executive Vice President/Acting Program Manager	X	X	

RFETS PERSONNEL CONTACTED DURING AUDIT A-99-17				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
McLellan, Jeana	SOM; Records Liason II		X	
Miko, David	LANL/NDA; Operator		X	
Mohr, Ken	LATA/Tech Sup GCTCOP		X	
Morales, Bart	SSOC; NDA Tech Engineering Lead		X	
Mullins, Neal	RFCSS/Contracts; SN Sub K Admin		X	
Muscatello, Tony	LANL/KH; Mobile TGS LNAL Interface	X	X	
Myers, Carla G.	SSOC/Product Quality; Admin Technician		X	
Nishimoto, Gregg	DOE/RFFO; RFFO Residue Mgr.	X		X
O'Conner, Brian G.	SSOC/LATA; LPQAO	X	X	
O'Leary, Jerry	RMRS/TRU Waste Project Manager	X	X	X
Onderco, Kate	SSOC/Trng and Qual Coord	X	X	
Owen, Don	DNFSB; RFETS Site Rep			X
Pazier, Cheryl	LATA/Ash; Prod Support		X	
Peters, Kevin	Wastren/RMRS/Waste Systems Support		X	
Pigeon, Paul	RMRS/Training Programs; TWCP Training Officer	X	X	
Plankinton, Mike	SSOC/Ash Project; Production Lead		X	
Price, David	SSOC; NDA QA Officer		X	
Raaz, R. D.	SSOC; Vice President	X		X
Reed, Charles	SSOC/Ash Program	X	X	
Reinke, William C.	KH/RRT Labs; RRT		X	

RFETS PERSONNEL CONTACTED DURING AUDIT A-99-17				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Reynolds, Joe	LATA/SSOC; LPQAO Metals	X	X	X
Rivera, Mike	LATA/SSOC/WIPP Residue Compliance; Engineer	X	X	X
Robbins, Elver	DOE/RFFO/QPD			X
Rodgers, Alan	KH/Closure Project; Manager	X		X
Rodgers, Gail	LATA/SSOC/Dry Residue Repack	X	X	
Rowlison, Dale	Jacobs/CSS; Quality Mgr.	X		
Rune, Donna	KH; RRT Risk Reduction Tech		X	
Russell, R. A.	B707 Salt Deputy	X		
Ryan, John	SSOC/Wet Comb Project; Foreman		X	
Sax, Scott M.	SSOC; 371/4 Project Mgr	X		
Schafer, Ben	SSOC/Procurement; Subcon Admin		X	
Schafer, Steve	Wastren/RMRS/Waste Systems; Env Scientist		X	
Schierloh, John	LATA/GG; Engineer		X	
Schoen, Jim	RMRS/Waste Systems; Environmental Scientist		X	
Sendelweck, Vivian	SSOC/WIPP Residue Compliance	X	X	X
Sgrignoli, R. D.	Residue Programs; Gas Gen Program	X	X	X
Shiflett, Shawn	Tenera; Engineer		X	
Simmons, Bill	SSOC/Labs; Chemist		X	
Singh, Mike	KH/Nuc Ops; KH Nuc Oper Integrator	X		

RFETS PERSONNEL CONTACTED DURING AUDIT A-99-17				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Smart, Kim	KH/IRM; Manager	X	X	
Smith, Barbara	SSOC; Process Specialist		X	
Smith, L. C.	KH/Quality Program Mgr	X	X	X
Speer, Rhett	TENERA	X		X
Sprenger, G.	SSOC/Wet Comb; Team Lead		X	
Sprenger, Greg	SSOC; Team Lead Wet	X	X	X
Stewart, Dan	SSOC/Salt; QAE		X	X
Stewart, Judith	SAIC/SSOC; NDA Engineer	X	X	X
Stoddard, Ann	Source One; DC Lead		X	
Sullivan, Doug	SAIC/Safeguards; Statistician		X	
Swartz, J. Mike	SSOC/Dry Repack 707 Project; Lead	X		
Swenson, Barbara	KH; SSSO & I	X		
Taylor, L. P.	Metrology; Manager	X	X	
Timbers Peter J.	LATA/SSOC/559 Lab; Chemist		X	
Tomlinson, Phillip F.	Informatics/SSOC/Lead Data V&V Lead	X	X	X
Torczon, Dave	KH/PQA; PQA Lead		X	
Transue, Martin	SSOC/LATA/Laboratory QA Officer (WIPPLPQAO)	X		X
Tressell, John	RMRS/QA; QA Eng.	X	X	
Troilo, Brian	KH/Wet Comb; Proc. Spec.		X	
Turner, Charles A.	SSOC/Laboratory Manager	X		
Tyler, Laura	RMRS/DC and Records; Manager		X	
Van Duzer, John	SSOC; Dry Repack Mgr	X	X	X

RFETS PERSONNEL CONTACTED DURING AUDIT A-99-17				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Velez, Tom	Tenera/SSOC/Ash; SME/Foreman		X	
Voorhets, Gary	KH; KH Nuc Ops Deptuy	X		
Wachter, Joe	Canberra; NDA			X
West, John	SSOC/559 Lab; Chemist		X	
Willey, Jim	SSOC/Labs; Chemist		X	
Williams, Linda M.	RMRS/Williams and Associates/PDCO	X	X	
Wolfe, Mike	SOM; Waste Records Center Manager	X	X	X
Xuan, Lam	DOE/RFFO/EC/General Engineer/WIPP Interface	X		X
Ziemek, Norbert	RMRS/NDA		X	

AUDIT SUMMARY TABLE A-99-17

Documents	Concern Classification				QA Evaluation		Technical
	CARs	CDAs	Obs	Rec	Adequacy	Implementation	Effectiveness
Activity							
MANAGEMENT ASSESSMENT					A	S	E
TRAINING					A	S	E
DOCUMENT CONTROL					A	S	E
PROCUREMENT					A	S	E
NONCONFORMANCES					A	S	E
QA RECORDS					A	S	E
FIELD SAMPLE QC	99-114			2	M	I	I
ACCEPTABLE KNOWLEDGE		1,2,3,5	2,3,4	5	A	S	E
M&TE					A	S	E
SOFTWARE QA					A	S	E
SALT REPACK 371					A	S	E
TGS					A	S	E
SGS DRUM	99-113		1	1,4,6	A	S	E
SGS CAN	99-115			7	I	I	I
SALT REPACK					A	S	E
ASH REPACK					A	S	E
DRY REPACK					A	S	E
WET REPACK					A	S	E
GAS GENERATION					A	S	E
VOCS & SVOCS	99-112	4		3	A	S	E
CHAIN OF CUSTODY					A	S	E
TOTALS	4	5	4	7	A	S	E

Definitions

E = Effective
S = Satisfactory
I = Indeterminate

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-99-17		
No.	Procedure Number	Title
1	PRO-264-RS-0141 Rev 2	Data Review and Validation of Salt Residue Batch Reports
2	4-W84-RS-0114 Rev 4	Salt Residue Stabilization/Repack, Bldg. 707
3	RS-020-021 Rev 0	Salt Residue Direct Repack PCP
4	RS-012-004 Rev. 1	Salt Residue Process Sampling and Analysis Plan
5	PRO-603-RS-0152 Rev 0	Data Review and Verification of Salt Residue Repack Sampling Batch Reports
6	PRO-544-SALT REPACK-371 Rev 0	Salt Residue Repack, Building 371
7	PRO-X32-RS-0128 Rev 3	Dry Residue Repackaging (Graphite), Bldg. 707
8	PRO-446-RS-0150 Rev 1	Data Review and Verification of Dry Residue Repack Sampling Batch Reports
9	RS-020-013 Rev 0	Dry Residue Repackaging PCP
10	RS-0148 Rev 1	Sampling and Analysis Plan WIPP Solid Sampling of Dry Residues
11	PRO-X56-RS-0123 Rev 3	Ash Residue Repack, Bldg. 707
12	PRO-404-RS-0145 Rev 2	Data Review and Verification of Ash Residue Repack Batch Report
13	PRO-428-RS-0146 Rev 1	Data Review and Validation of Ash Residue Repack Sampling Batch Reports
14	RS-020-012 Rev 0	Ash Residue Repack PCP
15	RS-012-005 Rev 1	Ash Residue Repack Project Solid Sampling and analysis Plan
16	PRO-X28-RS-0116 Rev 1	Combustible Residue Repack Rm. 3701, GB-1509
17	PRO-374-REPACK-001 Rev 3	Combustible Residue Repackaging Procedure
18	RS-020-018 Rev 0	Combustible Residue Repack PCP
19	L-4038-B	Data Review and Validation VOCs Solids
20	L-4039-B	Data Review and Validation SVOC Solids
21	L-4165-F	GC/MS of Volatile Organic Compounds (Solids, Liquids, and TCLP Extracts)
22	L-4214-B	Extraction of Total SVOCs for GC/MS Analysis for WIPP
23	L-4215-B	GC/MS Determination of Total SVOCs for WIPP
24	L-4031-G	Software Quality Assurance Plan for the Radiological Laboratories
25	3-U36-NDA-2000	Software Management for Nondestructive Assay Systems
26	PRO-543-ASD-002 Rev 1	Initiation, Preparation, and Implementation of Chain-of-Custody forms
27	PRO-604-RC-001 Rev 0	Field Sample QC Data Calculation, Review, and Validation Batch Reports
28	TWCP-TWID-RFETS-001, Rev 1	Interface Document
29	TWCP-DTP-1.2-011 Rev 1	Waste Assay Using the TGS
30	TWCP-DTP-1.2.016 Rev 1	Calibrating the TGS
31	TWCP-DTP-1.2-029 Rev 4	Detailed Technical Instructions for Determining the Isotopic Ratios in Waste Containers Using the RANT PC FRAM Assay System
32	TWCP-QP-1.1-006 Rev7	Software Management
33	RS-020-001 Rev 1	Gas Generation PjP
34	PRO-440-RS-0149 Rev 1	GGTP Drum Selection and Batching
35	PRO-NO1-RES-030-001 Rev 3	Gas Test Canister Operations
36	L-4042-C	Gas Generation Calculations for Gas Generation Test Program
37	L-4043-C	Gas Generation Data Reporting for GGTP
38	L-4044-C	Data Validation – Data Generation Level – for Gas Generation Test Program (GGTP)
39	PRO-236-SGS-001 Rev 3	Operating the Canberra Segmented Gamma Scan Can Counter
40	PRO-548-SSOC-SQA Rev 1	Software Management for SSOC Nondestructive Assay Systems
41	PRO-420-SGS-008 Rev 2	Data Validation and Verification for NDA Measurements
42	PRO-415-SGS-003 Rev 0	Segmented Gamma Scan (SGS) System Calibration
43	PRO-695-NDA-CBCP Rev 0	Continuous Bias Correction Program

RFETS PROCEDURES AUDITED FOR A-99-17

No.	Procedure Number	Title
44	707SGSCS03/IDC301u	SGS Qualification Report
45	707SGSCS02?IDC301U	SGS Qualification Report
46	Addendum 1 707SGSCS02/IDC310	SGS Qualification Report
47	Addendum 1 707SGSCS03/IDC310	SGS Qualification Report
48	99-NDA-SGS-100 Rev 0	Qualification Plan for the Canberra Segmented Gamma Scan (SGS) Can Counter Instruments
49	PRO-697-MLC-00013 Rev 0	Preparation and Certification of NDA Standards and Sources
50	4-PRO-174-5227Rev 0	Operating Building 371 SGS Drum Counter
51	3-Q22-NDA-3000 Rev 2	Review of Nondestructive Assay Sheets
52	3-MAN-006-NDA-1000 Rev 0	NDA Calibration and Validation Program Manual
53	4-PRO-173-NDA-1020 Rev 0	Calibration of Gamma Assay Systems
54	L-1000-Q	Requirements for Formal Analytical Laboratories
55	MAN-001-SDRM Rev 2	Site Document Requirements Manual
56	MAN-063-DC Rev 0	Document Control Program
57	L-4026-H	Records Handling, Storage, and Retrieval for the WIPP Project File
58	1-PRO-077-WIPP-005 Rev 1	Management of WIPP Information Prior to Transmittal to the WIPP Project File
59	WIPP-003 Rev 4	Collection, Review, and Confirmation of Acceptable Knowledge Documentation
60	RMRS-WIPP-98-100 Rev 4	Acceptable Knowledge TRU/TRM Waste Stream Summaries
61	L-1006-E	Maintenance Records for Analytical Instrumentation
62	MAN-092-M&TEM	Measuring and Test Equipment Management Manual
63	RMRS-QA-09.01 Rev 4	Management Assessments
64	1-A65-ADM-15.01 Rev 3	Control of Nonconforming Items
65	PRO-U76-WC-4030 Rev 1	Control of Waste Nonconformances
66	1-W36-APR-111 Rev 1	Acquisition Procedure for Requisitioning Commodities and Services
67	1-J55-ADM-08.10 Rev 0	Subcontractor Supplier Quality Evaluations
68	4-J44-RC&I-6600	Non-weapons Procured Item Acceptance and Certification
69	96-RF/T&Q-0005 Rev 0	Training and Qualification Program
70	PLN-97-007 Rev 5	Waste Characterization Program Training Implementation Plan