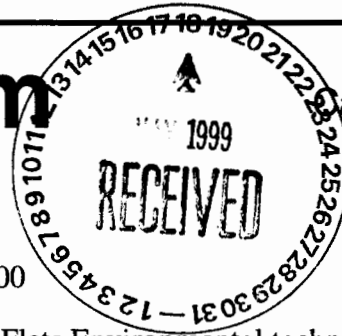


United States Government


  
Department of Energy

# memorandum

 Carlsbad Area Office  
 Carlsbad, New Mexico 88221


DATE: May 13, 1999

REPLY TO  
ATTN OF: CAO:QA:MAI:99-0828:UFC 2300.00

SUBJECT: CAO Audit Report A-99-09, Rocky Flats Environmental technology site (RFETS) TRU Waste Characterization of Salt Stabilization and LECO Crucible Repackaging Activities

TO: J. A. Legare, RFFO

The Carlsbad Area Office (CAO) conducted an audit of the Rocky Flats Environmental Technology site (RFETS) Salt Stabilization and LECO Crucible Repackaging activities on April 12-15, 1999. The audit team concluded that the RFETS technical and QA programs for these activities were adequate in accordance with the CAO QAPD and QAPP. The audit team also concluded that RFETS procedures were being satisfactorily implemented and the evaluated processes were effective.

Two (2) CAO Corrective Action Reports have been forwarded under separate cover.

Three (3) observations and one recommendation were identified during the audit. Please provide a response to Observation 1 to CAO by June 7, 1999.

If you have any questions or comments concerning this report, please contact Mary E. Bennington, Waste Certification Manager, at (505) 234-7482.



Marc A. Italiano  
 Quality Assurance Manager

## Attachment

cc:

- L. Xuan, RFFO
- I. Triay, CAO
- M. Bennington, CAO
- L. Chism, CAO
- M. Eagle, EPA
- S. Zappe, NMED
- D. Winters, DNFSB
- T. Bowden, CTAC
- B. Walker, EEG
- M. Castagneri, RFETS
- G. O'Leary, RFETS
- J. R. Stroble, WID

990507



U.S. DEPARTMENT OF ENERGY  
CARLSBAD AREA OFFICE

AUDIT REPORT

OF THE

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

GOLDEN, COLORADO

AUDIT NUMBER A-99-09

April 12-15, 1999

TRU WASTE CHARACTERIZATION OF SALT STABILIZATION AND  
LECO CRUCIBLE REPACKAGING ACTIVITIES



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

Date: 5/12/99

Approved By: *Marc A. Italiano*  
Marc A. Italiano  
CAO QA Manager

Date: 5/13/99

## 1.0 EXECUTIVE SUMMARY

Carlsbad Area Office (CAO) Audit A-99-09 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 Stabilization and LECO Crucible Repackaging.

The audit was conducted at the RFETS facility April 12-15, 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.

The audit team identified two conditions adverse to quality resulting in the issuance of two Corrective Action Reports (CARs) that require corrective action in the areas of personnel qualifications and the Chain-of-Custody process. Fifteen deficiencies, isolated in nature and requiring only remedial corrective actions, were Corrected During the Audit (CDA). One Recommendation is being offered for management action and consideration. Three Observations were identified. The audit team noted an Exemplary Practice being performed by RFETS personnel. CARs, CDAs, Observations, Recommendations, and Exemplary Practices 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 Residue Stabilization and LECO Crucible Repackaging processes.

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

Organization	Control of Processes
Personnel Qualification and Training	Control of Nonconforming Items
Documents and Records	Corrective Action
Measuring and Test Equipment	Procurement
Assessments	Sample Control
Software	

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

Acceptable Knowledge	Pipe Overpacks
Sampling Plan	Performance Demonstration Program (PDP)
Calorimetry	Metals Preparation and Analysis
Waste Treatment	Validation and Verification
Visual Examination	Hazardous Waste Number Assignment
Cal/Gamma testing	

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**

Beth Bennington	Audit Manager, CAO
Samuel Vega	Management Representative, CAO
Butch Stroud	Management Representative, CAO
George Basabilvazo	Management Representative, CAO
Charlie Riggs	Audit Team Leader, CTAC
Steve Hans	Auditor, CTAC
Dee Scott	Auditor, CTAC
Wayne Ledford	Auditor, CTAC
Earl Bradford	Auditor, CTAC
Vann Bynum	Technical Specialist, LANL
Mark Doherty	Technical Specialist, CTAC
William (BJ) Verret	Technical Specialist, CTAC
Richard Blauvelt	Technical Specialist, CTAC
Howard Seeley	Technical Specialist, CTAC
William Weston	Technical Specialist, WID

#### **OBSERVERS**

Ben Walker	EEG
Mark Coffman	NMED
Robert Thielke	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 460 Building on April 12, 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 460 Building on April 15, 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. The evaluation resulted in the issuance of a Corrective Action Report for signatures not being used on Chain-of-Custody forms (CAR 99-041) and two Observations, one for several problems associated with Nonconformance Reports (Observation 1) and another for problems with Document Control (Observation 2). Some corrective actions for CAO CAR 99-035 in the Document Control area have not yet been implemented resulting in the audit team determining the implementation and effectiveness to be marginal. These areas will be given special emphasis during the next RFETS audit.

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 Pipe Overpack**

Assembly of the 55-gallon drum pipe overpack component was observed and found to be satisfactory. The pipe component parts are properly procured, inspected, and assembled according to the design drawings. The assembly process was determined

to be effective; however, one record keeping issue was Corrected During the Audit (CDA 1). The pipe overpack area was determined to be implemented and effective.

### **5.3.2 Dry Residue Repackaging: Visual Examination**

Residue repackaging operations in Buildings 707 and 776 were observed and found to satisfactorily address program requirements for waste characterization and certification of the waste form (see Exemplary Practice). Actual repackaging of LECO crucibles was observed in both buildings, as was loading a pipe overpack in Building 707 using the waste packaging and waste generating instructions for a can of IDC 433. The Drum Traveler is partially completed by computer (the appendices can be printed as required with much of the standard data already completed) which has resulted in a more efficient operation for pipe overpack packaging. It was noted that the SOP requires all listed equipment be checked as being in calibration, whether or not that piece of equipment will be used for the activity (CDA 12). This process was determined to be implemented and effective.

### **5.3.3 Calorimetry/Gamma Assay**

The operation of the calorimetry/gamma isotopic system was evaluated and data packages generated by the assay were reviewed by the audit team. Assay results from this system are used in the calorimetry calculations. The system is operated in accordance with the applicable national consensus standard; ASTM C1030-95. It was determined that, 1) the person performing the technical supervisor's review of the Calorimetric Assay data packages is not qualified to determine the technical reasonableness of the data based upon lack of significant knowledge of the measuring technique (CAO CAR 99-042); and, 2) the correction of calorimetry/gamma system total measurement uncertainty documentation deficiencies identified in CAO CAR 98-082 is still not totally complete. The total measurement uncertainty method for the gamma portion of the assay was reviewed and found to be complete and will adequately address the gamma portion of CAR 98-082. The documentation describing the lower detection limit for the calorimeters does not include a conversion calculation that converts the wattage limit to a nanocurie per gram equivalent (see Recommendation). The calorimetry/gamma process was determined to be implemented and effective.

### **5.3.4 Sampling Design**

RFETS' sampling program as it is applied to the salt residues characterization process was reviewed and found to adequately address relevant program requirements. The Process Control Plan and the RFETS Sampling Plan are well coordinated and complete. Samples are randomly selected and documentation exists to demonstrate that an acceptable number of samples were collected for the process batch. As a

result, the sampling design program at RFETS was determined to be implemented and effective.

### **5.3.5 Sample Control**

Evaluation of the sample handling and control processes (through receipt, storage, transfer, and return) included a random sampling of external and internal Chain-of-Custody forms and the Inorganic Laboratory's sample receipt log. These activities were evaluated for compliance with the procedure, *Sample Administration for the Radiological Laboratory*, L-4028-H. A walk-through of the laboratory established that samples were being properly labeled and preservation requirements were being met. A review of data packages by the audit team demonstrated the effective tracking of analytical samples. However, Chain-of-Custody forms were not being signed by the Lab Representative (CAO CAR 99-041). As a result of the evaluation, the sample control program at RFETS was determined to be implemented and effective.

### **5.3.6 Metals Preparation and Analysis**

The activities performed by RFETS in support of metals sample preparation were evaluated for compliance with the *Total Metals Acid Digestion Procedure of Solid, Liquid, and TCLP Extract Samples*, L-4150-D. Evaluated activities included the preparation of samples and quality control standards. The preparation of metals samples and quality control standards was not being performed by the Inorganic Laboratory at the time of the audit. A walk-through of the laboratory provided a step-by-step explanation of the preparation processes used by the laboratory analysts. It was determined during this walk-through that the analysts executing the procedures were implementing the procedural steps and meeting the quality assurance/quality control requirements. The required standards and reagent preparation logbooks were available and were being properly maintained. This area was determined to be implemented and effective.

Neither volatile organic compound nor semi-volatile organic compound analyses of homogeneous solids were within the scope of this audit due to an exemption granted for salt residues processed at temperatures in excess of 800°C and in the presence of oxidants. As a result, the audit team focused on activities performed in support of metals analysis. These activities were evaluated in accordance with the requirements of Section 15 of the QAPP, the Methods Manual, and RFETS implementing procedures. Implementing procedures included *Waste Analysis by Atomic Absorption Spectroscopy*, L-4151-D; *Mercury Analysis in Waste (Cold-Vapor Technique)*, L-4152-E; and *Trace Metals by ICP Spectrometry (Solids, Liquids, and TCLP Extracts)*, L-4153-D. Metals analysis was not being performed by the Inorganic Laboratory, however, a walk-through of the laboratory provided a review of the analytical processes being implemented. Data collection, recording, reduction, review, and reporting were

evaluated. Applicable documentation was also reviewed and included the results of the method performance demonstration, the standards logbook, instrument maintenance logbook, instrument run logbook, and several data packages. The metals analysis procedures were determined to be adequate and implemented. Corresponding metals analysis processes were determined to be effective.

### **5.3.7 Hazardous Waste Number Assignment**

The activities performed by RFETS in support of making hazardous waste number assignments for stabilized salts were evaluated for compliance with the procedure entitled *RCRA Characterization of TRU Waste to be Disposed of at WIPP*, WIPP-009, Revision 0, 1/29/99. The audit team determined that the methods used for making applicable toxicity characteristic EPA hazardous waste number assignments to the waste stream were per the procedure and satisfied the requirements of the QAPP. These methods included the random selection of containers to be sampled, a determination of the number of containers to be sampled, evaluation of sample sufficiency, application of appropriate distribution tests, transformations, and calculations of UCL<sub>90</sub> for each constituent having a toxicity characteristic, and a determination of applicability of hazardous waste numbers via the comparison of the UCL<sub>90</sub> results with the regulatory threshold limits. Based on the objective evidence reviewed, it is the conclusion of the audit team that the methods used in the assignment of hazardous waste numbers are implemented and effective.

### **5.3.8 Data Validation and Verification**

The evaluation conducted by the audit team included an examination of a representative sample of data packages to ensure that Level I and Level II data validation/verification complies with procedures: *Data Review and Verification of Salt Residue Sampling Batch Reports*, 4-PRO-156-RS-0137, Revision 2, 1/29/99; *Data Review and Verification of Salt Residue Batch Reports*, PRO-264-RS-0141, Revision 1, 1/29/99; and *WIPP TRU Waste Characterization Project Level Data Review and Reporting*, WIPP-010, Revision 3, 3/9/99. A random sampling of batch data reports and run logbooks indicated that their contents and format met the requirements of the QAPP, the responsibilities of the reviewers (independent technical reviewer, technical supervisor, and QA Officer) had been effectively carried out, computations were correctly performed, and data transcription was verbatim. A review of Nonconformance Reports (NCRs) generated indicated the basis for their disposition to be technically adequate and defensible – thus ensuring data quality and usability. An isolated concern was identified during the audit that identified a failure to acquire equipment blanks for purposes of verifying cleanliness of sampling equipment prior to their first use (CDA 5). Inasmuch as the salt stabilization sampling and analysis activities had been essentially concluded, there was no longer a need for RFETS to prepare and implement a corrective action plan with respect to the future collection of equipment



blanks. In regard to past sampling and analysis results, RFETS disposition of this nonconformance as "accept as is with attached supporting documentation" was considered by the audit team to be sufficiently adequate for ensuring the quality and usability of the sampling analysis data generated prior to 4/8/99. Level I/Level II data validation and verification and associated processes was determined by the audit team to be implemented and effective.

### **5.3.9 Performance Demonstration Program (PDP)**

The activities performed by RFETS in support of the PDP were evaluated for compliance with the *Performance Demonstration Program Plan for RCRA Constituent Analysis of Solidified Wastes*, DOE/CAO-95-1077, Revision 1, March 1996. Although an actual PDP cycle was not observed during the audit, it was determined by the audit team via a review of several metals data packages that the prerequisite processes (sample control, sample preparation, sample analysis, data analysis, and data validation/verification) used by the Inorganic Laboratory for the PDP were adequate and effectively implemented. Cycle 5A and Cycle 6A scoring reports containing the laboratory pass/fail summary also indicated that RFETS' had the highest scores among the participating sites for VOCs, SVOCs, PCBs, and metals analysis associated with the past two cycles of the PDP for Resource Conservation and Recovery Act (RCRA) constituent analysis of solidified wastes. Based upon these PDP results, a review of the available laboratory resources (including instrumentation and personnel), the methods employed, the procedures followed, and the integration of the quality assurance and technical programs, this area was determined to be implemented and effective.

### **5.3.10 Salt Residue Stabilization Processing**

It was determined that the design of the process for pyro-oxidation stabilization of salt residues is technically sound with sufficient process controls. Salt Stabilization activities were observed, including; furnace operations, sampling, instrument calibration, and documentation of results. This area was determined to be implemented and effective.

### **5.3.11 Acceptable Knowledge**

The Acceptable Knowledge (AK) process and procedures, as applied to the LECO crucibles and stabilized salt waste streams, were evaluated and determined to adequately address CAO QAPP and RFETS QAPjP requirements.

The Waste Stream Summary for salts was reviewed and found to contain all required information. It was determined that the current generation waste volume was taken from a dynamic database. No documentation establishing the values derived from the database was in the record (CDA 11). The source document for the projected waste

volume contained two different values for the current generation, neither of which matches the WEMS database. This discrepancy had not been resolved (CDA 8). The pathway by which the projected waste stream volume was derived was not documented (CDA 10).

The Waste Stream Summary for the LECO Crucibles was reviewed. The supporting information for the current waste volume was taken from the WEMS database, but no record establishing what data were taken from WEMS was available (CDA 11). A discrepancy in the neptunium content in the waste stream was established in the record, but was not resolved (CDA 9). It was noted that there is no mechanism to ensure isotopes identified by assay but not originally identified by AK are acknowledged and reconciled (Observation 3).

This area was determined to be implemented and effective.

### **5.3.12 Software**

The audit team evaluated software configuration control, software verification and validation, and computer security and access controls for the calorimetry/gamma system. The calorimeter system utilizes three software packages; Antech calorimetry software; Trifid/EPics analyzer software; and Tutil software. These software packages are executable only. No modifications of the software packages are performed at RFETS. Individual users of Cal/Gamma Assay develop test plans when vendor modifications are made or if the users develop macros, spread sheets, etc. to manipulate data. Three (3) of 29 test plans were reviewed during the audit. No issues were identified during the audit. Additionally, the scheduled progress of RFETS CAP 1999-000264 was reviewed and found to be satisfactory.

The control processes for the calorimetry/gamma system software was determined to be implemented and effective.

## **6.0 CORRECTIVE ACTIONS, OBSERVATIONS, and RECOMMENDATIONS**

### **6.1 Corrective Action Reports**

#### **6.1.1 CARs Initiated as a Result of CAO Audit A-99-09:**

The following two CARs, initiated as a result of Audit A-99-09, have been transmitted to RFETS under separate cover. A brief description of each CAR is provided below.

#### **6.1.1.1 CAO CAR 99-041**

The person receiving the sample has not signed the Chain-of-Custody (COC) form indicating unbroken Chain-of-Custody for the sample. The condition of the sample is not noted, nor is there any indication that the sample label and COCs are in agreement. The tamper indicating device or glovebox designation is being used in lieu of a signature.

#### **6.1.1.2 CAO CAR 99-042**

The Quality Assurance Officer performing the technical supervisor's review of Calorimetric Assay data packages is required to verify that data are technically reasonable based on Knowledge of Measurement technique. For Testing Batch #99AR0215 in Package #CALG-OP-00270, the person performing the review is not qualified to determine the technical reasonableness of the data based upon lack of significant knowledge of the measuring technique.

### **6.1.2 CARs Previously Issued**

#### **6.1.2.1 CAO CAR 98-080**

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

- The interview records were verified.
- The Summary Reports for Salts and LECO were included in RMRS-WIPP-98-100 AK TRU/TRM Waste Stream Summary.
- The AK record for LECO was revised to include the quantitative radionuclide.
- The final Summary Report for Salt Stabilization now includes the projected waste generation values and dates.
- The Process Flow Diagram (PFD) in WSRIC 707-39-14 has been revised.
- The closure package from RFETS included documentation of implementation of the corrective action to preclude recurrence.

Based on the above the CAR should be able to be closed.

#### **6.1.2.2 CAO CAR 98-082**

A sufficient description of the Total Measurement Uncertainty (TMU) for the cal/gamma system was presented. Two computer programs are utilized for the calculation of gamma Peff (relative). It was found that the two programs gave slightly different answers. RFETS believes the difference is due to truncating an input value to one of the programs, but could not demonstrate this to be the case. When this is demonstrated the CAR should be able to be closed.

## 6.2 Deficiencies Corrected During the Audit (CDA)

1. The Pipe Overpack Component (POC) Log appears to be incomplete. Para 7 [27] of PRO-284-POC-001 requires the Mission Support Specialist to record the number of shims installed during the assembly. There are two options .25" and .50" thickness. Both sizes have an entry space in the POC Log. The column for the .25" is consistently left blank because the .25" is seldom needed or used. Assembly personnel believe the blank entry signifies "0" installed. This practice leads to a completed form with blank spaces.

A memo was written to amend 54 completed packages stating, "Any blank represented on Appendix 3 will be considered either N/A or a Zero Value." Training was provided to the Building 551 supervisor and operators.

2. NCR-199-000099 identified a problem with Appendix 13 of WIPP-010 and Appendix 5 of 4-PRO-156-RS-0137. Disposition and Rev 1 of RS-0137 required facility ID and Location. Rev 2 of RS-0137 removed facility ID/Location. The procedure was revised during the audit adding Facility Identification (ID) and Location to Appendix 5.
3. Five (5) waste nonconformance reports (NCRs) were not signed by the QAO as required by procedure 2-U76-WC-4030. The reports were signed by the QAO during the audit.
4. Four (4) waste NCRs were verified as closed before the NCR disposition was approved. The responsible Waste Inspector was counseled by RFETS management during the audit.
5. Certification of Cleanliness of sampling equipment is presently not being performed.

During the audit, NCR (SSOC-99-0056 WIPP) was written and dispositioned "accept as is" with attached supporting documentation. In regard to past sampling and analysis results; RFETS actions were considered by the audit team to be sufficiently adequate for ensuring the quality and usability of the sampling and analysis data generated prior to 4/8/99.

This is not a problem since no QA samples are being taken, per CAO guidance. In the future, however, duplicate samples will be taken to assess the QAO of precision. Failure to certify cleanliness may result in failure to meet the QAO of precision.

6. Procedure L-4193-G, sign-off page has the TWCP Project Manager concurrence signature space "lined out" and initialed by the Lab Organic Manager. Justification was that the TWCP Project Manager was on controlled distribution. No change was

processed. This condition was identified as part of corrective actions taken to resolve generic document control deficiencies during the RFETS recertification audit (CAR-99-035). The "lineout" is identified per an interoffice memorandum and was corrected during the audit.

7. Procedure L-4193-G identifies the use of a Trifid Gamma-Ray Isotopic System (GPC1) Instrument Repair Log. The Log is considered a quality record, but is not listed in the record section (8.7) of the procedure. The disposition of the record is unclear. Lab personnel indicated this log is to be kept in the lab area. The log was added to Section 8.7 of the procedure during the audit.
8. The source document for the current/projected generation for salts contained two different values for the current inventory, neither of which matched the value reported in the Waste Stream Summary. The concern was addressed during the audit.
9. The supporting documentation for the LECO Crucibles established a discrepancy in the neptunium content of a minor feed stream. This discrepancy was not resolved, and both values were not evaluated in further calculations. The concern was addressed during the audit. All required information was included and traceable to source documentation.
10. The pathway from which the Projected Waste Stream Volume (salts) was derived was not documented. The pathway was documented during the audit.
11. The current waste inventory was taken from the WEMS Database. However the WEMS database is dynamic and no output file was placed in the record. This concern was identified for both Salts and LECO Waste Stream Summary. This concern was addressed during the audit.
12. The SOP requires the calibration of all listed equipment to be checked. Often, some of the listed equipment is not necessary for the operation. The daily balance check weight verification is not documented on forms that accompany WIPP data, but does go to Nuclear Material Control (NMC).

The repack SOP in 776 requires a signature to indicate calibrations have been verified for several pieces of equipment (air flow meter, torque wrench, balance, gram estimator). The signature indicates that all equipment has been verified; however, all of the individual pieces are not used every time. The signature process needs to specify only the equipment that has been checked.

The SOP was revised during the audit to address all of the concerns expressed above.

13. Procedure L-4026-G, identifies an Analytical Laboratories WIPP Project File Coordinator (ALWPFC) who is responsible for various records keeping functions. In reality there are two other people performing some of the functions, i.e., storage and control of analytical lab records. The procedure should be revised to address the other individuals. The procedure was revised during the audit to "ALWPFCs" to reflect the multiple coordinators.
14. The RFETS TRU Waste Management Manual requires that when items do not conform to requirements, they be dispositioned in accordance with applicable NCR procedures. RFETS had accepted, but not yet received, 208 drums that did not meet the applicable ISPEC (1/16" too tall) but neither RFETS nor the vendor issued an NCR.

The deviation from the specification was evaluated by RFETS technical personnel prior to acceptance but no NCR was generated. A Quality Assurance Rejection Notice was received from the vendor during the audit demonstrating that the deficiency was in the vendor's corrective action system.

15. The root cause of site NCR SSOC-99-0046 was identified as "large workload", the corrective action was to provide additional training. The corrective action, as written, did not address the root cause. The NCR was revised during the audit to describe actions previously taken to assign and qualify additional personnel for data review and validation activities.

### **6.3 Observations**

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

1. Several discrepancies in the area of control of nonconforming items were identified during the audit. Although most of the discrepancies were corrected during the audit, they were of a sufficient number and similar nature to warrant an Observation. The specific discrepancies were:
  - Five (5) waste nonconformance reports (NCRs) were not signed by the QAO as required by procedure 2-U76-WC-4030.
  - Four (4) waste NCRs were verified as closed before the NCR disposition was approved.
  - The root cause of site NCR SSOC-99-0046 was identified as "large workload", the corrective action was to provide additional training. The corrective action, as written, did not address the root cause.

- Four (4) waste NCRs were dispositioned "use as is", but the technical justification did not contain sufficient information to demonstrate that "use as is" was an appropriate disposition.
- RFETS accepted 208 55 gallon drums that did not meet the applicable ISPEC (1/16" to tall) but neither RFETS nor the vendor issued an NCR.

These related discrepancies could demonstrate an adverse trend in the area of nonconformance control that could lead to noncompliance with requirements.

2. RFETS document control personnel indicated they were reviewing the current document control process and would implement identified improvement opportunities, including standardizing the various document control systems in use at RFETS. The audit team concurs that the document process being utilized should be reviewed to ensure that the system will accomplish what is expected and required and to standardize the systems used at RFETS.

Since document control corrective actions are currently being implemented as the result of CAO CAR-99-035, the audit team limited its review in this area. Future CAO audits will increase the emphasis in the document control area.

3. There is no mechanism to ensure isotopes identified by assay but not originally identified by Acceptable Knowledge (AK) are acknowledged and reconciled. A few instances of this situation have occurred and have been adequately addressed. Making this review a part of a procedure will ensure it does not get missed in the future.

#### **6.4 Recommendation**

The following Recommendation is presented for RFETS management consideration:

It is recommended that the documentation describing the lower detection limit for the calorimeters include a conversion calculation that converts the wattage limit to a nanocurie per gram equivalent that can be quickly compared to the 100 nanocurie per gram cutoff for TRU Waste to demonstrate that the levels measured are orders of magnitude higher.

#### **6.5 Exemplary Practice**

The Repack Team was extraordinarily well organized and professionally run. The work conditions provided adequate space to address the required documentation (many forms need to be filled out simultaneously). The operator took control of the area

around the glovebox to ensure there was no interference with the work; the RCT moved people to low dose areas after the evolution; and the procedure was used, with verbal acknowledgement, throughout the evolution. There is little chance to "miss" a step in the procedure because of the verbal acknowledgements. There is ample cross-checking of the documentation. The team is well trained for each of their roles and actively participate to ensure an efficient operation.

## **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**

<b>RFETS PERSONNEL CONTACTED DURING AUDIT A-99-09</b>				
<b>NAME</b>	<b>ORG/TITLE</b>	<b>PREAUDIT MEETING</b>	<b>CONTACTED DURING AUDIT</b>	<b>POST-AUDIT MEETING</b>
Aldrich, A. H.	Excalibur/SSOC/QA; QA Engineer	X		
Anderson, Scott	KH/Waste Ops; Program Manager	X		X
Ater, Ed	SAIC/RMRS; TRU Program Technical Specialist	X		X
Ballenger, R. J.	SSOC/WIPP; Residue Compliance Manager	X	X	X
Bell, Ben	LATA/SSOC; Cal/Gamma Engineer		X	
Bell, S.	Rad Ops; RCT		X	
Bradford, J. D.	KH/Closure Projects Mgr	X		
Brill, D. C.	NMH&P; Process Specialist		X	
Brugh, Mark	SSOC Labs/Mgr	X	X	X
Burger, Valerie	Lata/SSOC/NDA	X	X	X
Cable, J	M&TE		X	
Campbell, Georgianne	SSOC; Chemist Cal/Gamma	X	X	X
Cannon, Cynthia	KH/Quality Programs; PATS Lead		X	
Cantwell, Rob	SSOC; Salt Lead	X	X	X
Carson, Pete	RMRS/LATA/TRU Waste; Scientist/Engineer	X	X	X
Castagneri, Mark	RMRS/QA; TWCP QAO	X	X	X
Ciocchetti, Dennis	SSOC; Supervisor		X	
Cirelli, Joseph F.	KH/Procurement; Contracts Manager			X
Cissne, D. A.	Pu Ops 707; RRT		X	
Colbert, Debra L.	KH; Process Specialist		X	

<b>RFETS PERSONNEL CONTACTED DURING AUDIT A-99-09</b>				
<b>NAME</b>	<b>ORG/TITLE</b>	<b>PREAUDIT MEETING</b>	<b>CONTACTED DURING AUDIT</b>	<b>POST-AUDIT MEETING</b>
Collins, Miller	CSS/QA; Quality Engineer		X	
Compton, Barbara	Day and Zimmermann; Assistant to General Manager	X		X
Coriden, Michael	DOE/RFFO/OCC			X
Cox, Carl	SSOC; President	X		X
Cress, Arlene	WIPP Residue Compliance; Consultant			X
Crowe, J. K.	KH/Closure Projects; Division Manager	X		X
D'Amico, Eric	RMRS/Waste Projects; Environmental Scientist		X	X
Dahl, Dave	SAIC/SSOC NDA	X	X	
Davis, Robert E.	KH CP E&I/Special Projects	X		X
Demorest, Jan	KH/Transportation; CSS Transportation Oversight	X		
DiSalvo, Rick	DOE/RFFO/OCC			X
Doekter, Bobbie	RMRS/SWO; Process Specialist		X	
Eberlein Susan	SSOC/Product Quality; Department Manager	X		X
Edrich, Pamela W.	RMRS/Technical Manager	X	X	X
Elmont, Tim	SSOC/NDA; Cal Gamma	X	X	X
Eschenbaum, R. A.	SSOC/LATA/WIPP/Residue Compliance; Senior Eng	X		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

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<b>NAME</b>	<b>ORG/TITLE</b>	<b>PREAUDIT MEETING</b>	<b>CONTACTED DURING AUDIT</b>	<b>POST-AUDIT MEETING</b>
Fisher, A. J.	SSOC; QA Manager	X	X	X
Fisher, Doug	SSOC; Salt Stab/Eng		X	
Freiboth, Cameron J.	The IT Group/RFETS Residue 3; Engineer		X	
French, David M.	Residues QA/QC; Consultant	X	X	X
Fulton, John	KH; VP Nuc Ops	X		X
Gardner, Gary	SAIC/SSOC	X	X	
Gatliffe, Tom R.	Statistical Applications Group; Staff Statistician		X	
Getty, R. H.	LATA/Salts; Technical Support		X	
Gibbs, Frank	The IT Group/RFETS Residue Program; Engineer		X	
Gilliam, D. V.	NMH&P; Supervisor		X	
Gilmartin, Tom	KH/Nuc Ops; KH Salt Project Lead	X		X
Giron, Larry	SSOC/NMH&P Ops	X	X	X
Goade, Dan	RMRS/GTS; PQAO	X	X	
Grady, Frank	RMRS/TRU Waste Projects; TRU Project Engineer	X	X	
Gris, J. A. 'Art'	SSOC/Product Quality; Mgr	X		X
Grove, Kristy	SSOC/LATA/LP QAP	X	X	
Guthrie, Dave	SSOC/QA; Quality Engineer		X	
Hadacek, M. W.	KH/Quality Program; Quality Analyst	X	X	
Harrell, Bob	RMRS/SWP; Technical Support	X	X	
Harrison, Jeff	Wastren/RMRS; Engineer		X	

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Helgeson, Larry	RMRS/SWO; Process Specialist		X	
Hernandez, Jaun	RMRS/QA; QA Manager	X		X
Horseman, Marlin	IT/ICF Kaiser; Consultant	X		
Hunter, Duane	SSCO/Labs; Manager	X		X
Jeffries, James	RFFO/DOE; Director Quality Program Division	X		
Johnson, Laura	SSOC; Sample Coordinator		X	
Johnson, Micky	SSOC/Salts; Senior Principal Engineer Technical Support		X	X
Jordan, Bruce	KH/Labs; Lab Technician		X	
Kangas, Mark	SSOC/WIPP Residue Compliance	X		X
Karas, Ted	LATA/SSOC/Dry Repack Project Support	X		X
Kercher, Ann	RMRS/TRU Waste Project; Engineer	X	X	X
Kirby, Bill	SSOC/Product Qualification	X		X
Kirk, Nancy	LATA/SSOC/QA; Lead Auditor		X	
Kirschenmann, Harley	MACTEC/RMRS/TWCP; Engineer			X
Klanecky, Michael	SSOC/QA; Lead Assessor	X	X	
Krupp, Gene	LATA/WIPP Residue Compliance; Sr. Chemical Engineer	X	X	X
Kunz, Daniel E.	RFCSS/Logistics; Manger	X		
Legare, Joe	RFFO; Assistant Manager			X
Lehman, Mel	SSOC; Technical Supervisor		X	

**RFETS PERSONNEL CONTACTED DURING AUDIT A-99-09**

<b>NAME</b>	<b>ORG/TITLE</b>	<b>PREAUDIT MEETING</b>	<b>CONTACTED DURING AUDIT</b>	<b>POST-AUDIT MEETING</b>
Leifer, John	RMRS/GTS/Scientist	X	X	X
Linkus, Julie M.	NDA/Admin Support; Admin Technician		X	
Long, J. W.	KH/CPE&I; Senior Principal Specialist	X	X	X
Lorenzo, Kathy	KH/RFCSS; M Sup. I		X	
MacLeod, Adriенno	KH; Process Specialist		X	
Malloy, Randy	LATA/Dry Repack Project; Lead		X	X
Martin, Jennifer M.	Metrology; Engineer			X
Mattson, M.	M&TE		X	
Maxwell, Dave	DOE/RFFO/TRU Waste Program			X
Mazza, Yvonne	SSOC/Labs; Chemist	X	X	X
McGavin, Andrew	Source One; Manager		X	
McInroy, Larry	SAIC/SSOC/QC; SWQA	X	X	
McKinney, Ruth	Source One; Executive Vice President/Acting Program Manager	X	X	X
McLellan, Jeana	SOM; Records Liason II	X		
McTaggart, K.	NMH&P; Process Specialist		X	
Melvain, Andy	Source One/DC; Manager			X
Miranda, Andy	RMRS/KH/SWO; Process Specialist		X	
Monstermann, D. C.	KH; Process Specialist		X	
Myers, Carla G.	SSOC/Product Quality; Admin Technician		X	
Nelson, Rick	RFCSS; Supervisor		X	
Nicholson, Mike	RMRS/KH/SWO; Process		X	

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	Specialist			
Nolan, Cliff	KH/Labs; Lab Technician		X	
O'Leary, Jerry	RMRS/TRU Waste Project Manager	X	X	X
Onderco, Kate	SSOC/Trng and Qual Coord		X	
Parker, Alan	KH; Vice President	X		
Patterson, Jim	RFCSS/QA; QA Manager			X
Peters, Kevin	Wastren/RMRS/Waste Systems Support		X	X
Pfarr, Timothy	Pu Ops 707, RRT		X	
Pigeon, Paul	RMRS/Training Programs; TWCP Training Officer		X	X
Pope, Duronda	SSOC Labs		X	
Prochnow, David	SOM/ICM; TCM Manager			X
Putman, T. E.	Horne Engineering/WCO; Alternate TRU Waste Official		X	
Raaz, Dick	SSOC; Vice President	X		
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
Rodgers, Gail	LATA/SSOC/Dry Residue Repack	X		
Roth, John Jr.	KH/RFCSS; M Support I		X	
Saunders, J.	KH; Process Specialist		X	

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Sendelweck, Vivian	SSOC/WIPP Residue Compliance	X	X	X
Seyfert, Warren	DOE/RFFO; Engineer	X		X
Smart, Kim	KH/IRM; Manager	X	X	X
Smith, L. C.	KH/Quality Program Mgr	X	X	X
Steele, M. J.	Pu Ops 707; Process Spec		X	
Stewart, Dan	SSOC/Salt; QAE	X	X	
Stewart, Judith	SAIC/SSOC; NDA Engineer			X
Swartz, J. Mike	SSOC/Dry Repack 707 Project; Lead	X		X
Taylor, L. P.	Metrology; Manager		X	
Thorualdson, Bill	Dry Pack 776; Support Eng		X	X
Tomlinson, Phillip	Informatics/SSOC/Product Quality; Data V&V Lead		X	
Transue, Martin	SSOC/LATA/Laboratory QA Officer (WIPPLPQAO)	X	X	
Tressell, John	RMRS/QA; QA Eng.	X	X	X
Trujillo, M.	KH; Process Specialist		X	
Tuck, Cleve R.	RMRS/SWO; 776 Process Manager	X	X	
Turner, Charles A.	SSOC/Laboratory Manager		X	
Tyler, Laura	RMRS/DC and Records; Manager	X		X
Watson, Doug	776 Dry Residue; Technical Support		X	
Williams, Linda M.	RMRS/Williams and Associates/PDCO	X		X
Wolf, Kathy	RMRS/QAEC; Director QA and Environmental Compliance	X		X

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Xuan, Lam	DOE/RFFO/EC/General Engineer/WIPP Interface	X	X	X
Younger, Arlene	Residues QA Engineer	X	X	X
Zurey, Frank	SSOC/NDA; Manager			X



AUDIT SUMMARY TABLE A-99-09

Documents	Concern Classification				QA Evaluation		Technical
	CARs	CDAs	Obs	Rec	Adequacy	Implementation	Effectiveness
<b>Activity</b>							
AUDITS					A	S	E
TRAINING					A	S	E
DOCUMENT CONTROL			2		A	M	M
PROCUREMENT		14			A	S	E
CORRECTIVE ACTION		3, 4, 15	1		A	S	E
ASSESSMENT/ORG					A	S	E
QA RECORDS		13			A	S	E
SALT STABILIZATION			3		A	S	E
AK		8, 9, 10, 11			A	S	E
CALORIMETRY	99-042			1	A	S	E
VISUAL EXAMINATION		12			A	S	E
M & TE					A	S	E
SOFTWARE QA					A	S	E
SAMPLE DESIGN					A	S	E
PIPE OVERPACK		1			A	S	E
NDA		6, 7			A	S	E
DATA VALIDATION		2, 5			A	S	E
PDP					A	S	E
HAZ WASTE NUMBERS					A	S	E
WASTE TREATMENT					A	S	E
SAMPLE CONTROL	99-041				A	S	E
ANALYTICAL LABS					A	S	E
METALS ANALYSIS					A	S	E
TOTALS	9	15	3	1	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

<b>RFETS PROCEDURES AUDITED FOR A-99-09</b>		
<b>No.</b>	<b>Procedure Number</b>	<b>Title</b>
1	L-1000-P	Requirements for Formal Analytical Laboratories Procedures
2	MAN-001-SDRM, R2, Chg 2	Site Document Requirements Manual
3	MAN-063-DC, R0, Chg 2	Document Control Program
4	L-4026-G	Records Handling, Storage, and Retrieval for the WIPP Project File
5	WIPP-001, R0	WIPP Project Office Records
6	1-PRO-077-WIPP-005, R1	Management of WIPP Information Prior to Transmittal to the WIPP Project File
7	1-V41-RM-001, R0, Chg 5	Records Management Guidance for Records Sources
8	RS-020-006, R1	Salt Residue Stabilization, Building 707 Process Control/Qualification Plan
9	RS-020-017, R1, DCF 1	Salt Residue Stabilization, Building 707 Qualification Report
10	L-4031-D	Software QA Plan for Radiological Laboratories
11	4-D99-WO-1100, R1	Solid Radioactive Waste Packaging
12	PRO-J23-FO-0133, R2	Drum and Box Repack
13	4-W84-RS-0114, R2, DC-01, through DC-07	Salt Residue Stabilization, Bldg 707
14	4-W90-FO-0103, R0, DC-01 through DC-05	Balances
15	L-3007-E	Calorimetry/Gamma Ray Assay Calculation and Reporting of Results
16	L-4209-E	Calorimeter Procedure Using the Antech Airbath System in the Building 707 Cal/Gamma Laboratory
17	WIPP-003, R3	Collection, Review, and Confirmation of Acceptable Knowledge Documentation
18	L-4193-G	Gamma-Ray Isotopic Analysis of Pu-bearing Solids in the Building 707 Cal/Gamma Laboratory
19	PRO-232-DRR-776, R1, DC6	Dry Residue Repackaging
20	PRO-284-DCI, R0, 98-DCI-DCF-0035, -0041	Pipe Overpack Container Initial Assembly Process
21	L-1006-B	Maintenance Records for Analytical Instrumentation
22	1-I97-ADM-12.01, R0, Chg 1	Control of Measuring and Test Equipment
23	4-S72-QAA-10.01, R1, Chg 1	QA Audit Program
24	RMRS-QA-09.01, R2	Management Assessment
25	WIPP-010, R3	WIPP TRU Waste Characterization Project Level Data Review and Reporting
26	1-A65-ADM-15.01, R3, Chg 1	Control of Nonconforming Items
27	1-MAN-012-SCARM-97, R1, Chg 1	Site Corrective Actions Requirements Manual
28	2-U76-WC-4030, R0, Chg 1	Control of Waste Nonconformances
29	L-4034-E	Data Review and Validation for Calorimetric Assay for WIPP TRU Waste Characterization Program
30	G198070179C, G198070182C, G198070183C, G198070436C	Waste Generating Instructions
31	3-X31-CAP-001, R1, DCF X31-1A	Corrective Action Process
32	1-MAN-008-WM-001, R1, 99-RMRS-DCF-228	TRU Waste Management Manual

<b>RFETS PROCEDURES AUDITED FOR A-99-09</b>		
<b>No.</b>	<b>Procedure Number</b>	<b>Title</b>
33	1-W36-APR-111, RO, Chg 7	Acquisition Procedure for Requisitioning Commodities and Services
34	1-J55-ADM-08.10, RO, Chg 1	Subcontractor Supplier Quality Evaluations
35	RMRS-QA-07.01, R0	Evaluation of Suppliers
36	4-J44-RC&I-6600, R3, DCF-99-CSS-DCF-0017	Non-weapons Procured Item Acceptance and Certification
37	96-RF/T&Q-0005, R0, Chg 2	Training and Qualification Program
38	PLN-97-007, R4	Waste characterization Program Training Implementation Plan
39	WIPP-009, R0	RCRA Characterization of TRU Waste to be Disposed of at WIPP
40	4-PRO-156-RS-0137, R2, Chg 1	Data Review and Validation of Salt Residue Stabilization Sampling Batch Report
41	PRO-264-RS-0141, R1. DC-1	Data Review and Verification of Salt Residue Stabilization Sampling Batch Report
42	L-4028-I	Sample Administration for the Radiological Laboratory
43	L-4035-I	Data Review and Validation for Total Metals for WIPP-TRU Waste Characterization Program (TWCP) Data Generation Lever
44	L-4150-E	Total Metals Acid Digestion Procedure of Solid, Liquid, and TCLP Extract Samples
45	L-4151-F	Waste Analysis by Atomic Absorption Spectroscopy
46	L-4152-F	Mercury Analysis in Waste (Cold-Vapor Technique)
47	L-4153-E	Trace Metals by ICP Spectrometry (Solids, Liquids and TCLP Extracts)
48	PDP Plan, 11/97	Performance Demonstration Program Plan for RCRA Constituent Analysis of Solidified Wastes