



ERID-219596

**Quality Assurance Division**

Institutional Quality, QA-IQ

P. O. Box 1663, MS C339

Los Alamos, New Mexico 87545

505-665-5437/Fax 505-665-4660

Date: November 4, 2011

Refer To: QA-IQ:12-012

R. Gregory Geisinger, NTS RWAP Manager  
National Security Technologies  
U. S. Department of Energy, NNSA/NSO  
P. O. Box 98518  
Las Vegas, NV 89193-8518

Subject: Transmittal of Los Alamos National Laboratory Audit Report #AR(11)-039.000, Nevada Test Site Waste Acceptance Criteria, Low Level Waste Disposition

Dear Greg,

This letter is to provide you with a copy of the Los Alamos National Laboratory's Low Level Waste Certification Program audit report consistent with the requirements of DOE/NV-325. This audit was conducted from September 6 through September 23, 2011.

The audit team used the checklist endorsed by the National Nuclear Security Administration. The bases of the audit was DOE Order 435.1, *Radioactive Management*, EP-DIR-QAP-001, *Quality Assurance Plan for the Environmental Programs Directorate*, NQA-1, *Nuclear Quality Assurance*, and most specifically the Nevada Test Site Waste Acceptance Criteria (DOE/NV-325)

Summary of Results

The results of this audit determined that the organization that generates, characterizes, packages, inspects, assesses, ships, and performs support functions have implemented the NNSS program and have sufficiently flowed down requirements into LANL implementing documents such that, when certified by the LANL Waste Certification Official, reasonable assurance is provided that NNSS requirement have been met or exceeded.

Results of this audit are attached and include five (5) findings adverse to quality, two (2) opportunities for improvement and two (2) noteworthy practices identified by the audit team. All items have been entered in the LANL Performance Feedback and Issues Tracking System (PFITS), to ensure timely corrective actions.

Should you have any questions, please contact Paul E. Lowe the Lead Auditor, at 505-606-2345 or [plowe@lanl.gov](mailto:plowe@lanl.gov).

Sincerely,

Paul E. Lowe,  
Audit Team Leader

PEL:rla

Attachment: LANL Audit Report AR(11)-039.000

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**QUALITY ASSURANCE (QA) DIVISION**

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**Audit Report**

**AR(11)-039.00**

**Nevada Test Site Waste Acceptance Criteria**

**Low Level Waste Disposition**

**Audit Dates**

**September 6 - September 23, 2011**

**PFITS#2011-2202**

**Lead Auditor: *Paul E Lowe, PE***

**Signature:**

**Date:**

***October 25, 2011***

Not for general release to the public domain. Supplier evaluations performed by LANL personnel are intended to ensure that suppliers satisfy criteria specified in relevant procurement documents. The evaluation reflects the professional judgment of trained evaluators using DOE requirements and appropriate consensus standards as guides. The conditions described in this report reflect conditions existing at the time of the evaluation.

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DOE/NSA

## 1. PURPOSE

The purpose was to complete an annual independent audit of the Off-Site Waste Certification Program (WCP) at Los Alamos to determine LANL's compliance/performance to the Nevada Test Site (NNSS) WCP requirements. The audit was performed by the EP-Quality Assurance Team as an independent assessment as requested by the Waste Disposition Project's Low Level Waste Disposition Group. Results of the audit indicate that the Low-Level Waste (LLW) Certification Program is in place and continues to ensure LLW shipments to the NNSS will be compliant with NNSS waste acceptance criteria.

## 2. QUALITY REQUIREMENTS

- 10CFR830, Subpart A, *Quality Assurance Requirements*
- DOE Order 414.1C, *Quality Assurance*
- DOE Order 435.1, *Radioactive Waste Management*
- DOE/NV-325-Rev.7-01, May 2009, *Nevada Test Site Waste Acceptance Criteria*
- EP Directorate QAP and its implementing procedures

## 3. SCOPE

The independent audit of the Off-Site Waste Program (WCP) was performed at Los Alamos at area TA-21, and at selected waste sites, to verify Los Alamos National Laboratory's (LANL) compliance and performance to the Nevada National Security Site (NNSS) requirements. The audit was performed by an Environmental Program Quality Assurance (QA) team for the "Independent Assessment Group," LANL QA Division.

The following processes and procedures were included:  
Environmental Program procedures implementing the NNSS requirements  
Training/qualifications of personnel  
Inspection of field containers for proper marking and proper paperwork  
Waste containers, receiving, inspection, engineering  
Organization charts and structure of the waste program

The following sections from the NNSSWAC were evaluated

Section 2.0 Approval Process looking at approved NNSS Waste Profiles and all AK pkgs  
Section 4.0 Waste Characterization  
Section 4.1 Process Knowledge  
Section 4.2 Sampling and Analysis  
Section 4.2.1 Data Validation  
Section 5.4 Documents and Records  
Section 5.5 Work process  
Section 5.8 Inspection and Acceptance Testing  
Section 6.3 Shipping documentation  
Section 6.3.1 Accountable or Special Nuclear Material Shipments  
Section 6.3.3 PSDR Submittal

#### 4. ASSESSMENT TEAM

Paul E Lowe, EP-QA (QA-IQ), Audit Team Leader  
Robert Trujillo, EP-QA (QA-IQ), Audit Team Member/SME  
Larry Maassen, EP-QA (QA-IQ), Audit Team Member  
Doris Quintana, EP-QA (QA-IQ), Audit Team Member/technical specialist

#### 5. PERSONNEL CONTACTED DURING THE ASSESSMENT

Name	Title	Entrance	Conduct	Exit
Jody Armijo	WDP-LLWD/WC Official	X	X	X
Doris Quintana	EPQA-IQ/NTS QA Support	X	X	
Glen Siry	Characterization engineer		X	X
Joanna Hardin	Portage, Records Management		X	
Benito Maestas	WPC		X	
Matthew Duran	WPC		X	
Paul Gonzales	WPC		X	X
Dominic Archuleta	WCP		X	X
Charles Hunt	data characterization engineer		X	
Dave Yost	data characterization engineer		X	
Ernie Bentsen	data characterization engineer		X	
Vicki Radovich	Records Information Mgt. Specialist		X	
Henry Sandoval	Waste Verifier		X	
Barbara Lindsay	Records Manage Data Team member		X	
Gilbert Montoya	Hazardous and Mixed Low Level Waste			X
Amanda Narango-Suazo	Waste Package Certifier		X	X
Andy Baumer	Waste Project and Services Director			X

#### 6. AUDIT METHOD

The audit methods included an examination of documents, records and interviews of personnel associated with the generation, characterization, packaging, inspection, and assessment of support functions for LLW. The audit team reviewed documents for requirements flow down, program development and program compliance, interviewed personnel responsible for program compliance, and checked performance of selected areas by evaluation of achievement of process objectives.

An audit entrance meeting was conducted September 12, 2011 at which the audit plan and objectives were presented to enable identification of initial contacts. The auditors stated that results would be communicated with responsible management as significant results were identified and that warranted actions and open items would be resolved by mutual agreement where possible. An audit exit meeting was conducted September 26, 2011 at which the results of the audit were presented and discussed.

## **7 QA PROGRAM ELEMENTS EVALUATED / SUMMARY OF RESULTS**

Requirements used in this audit were primarily drawn from DOE/NV-325-Rev. 7-01, May 2009, Nevada Test Site Waste Acceptance Criteria, with emphasis on the communication of those requirements to LLW Waste Management Coordinators and LLW Generators dealing with compactable LLW. An objective was to determine if LANL's LLW generators and generator support services were properly implementing NNSS requirements. Also reviewed were the LANL implementing procedures.

The audit team determined that the program was effectively implemented and in compliance. The issues identified in this report need to be corrected to ensure better compliance to specific requirements identified in DOE/NV-325 and related procedures.

NNSSWA C Section	Section Description	QA Requiremen ts Formalized	QA Program Implemente d	Audit Results Comments
2.0	Approval Process looking at approved NNSS Waste Profiles and all AK pkgs	S	S	
4.0	Waste Characterization	S	S	See finding #3
4.1	Process Knowledge	S	S	See finding#5
4.2	Sampling and Analysis	S	S	
4.2.1	Data Validation	S	S	
5.4	Documents and Records	S	U	See finding #4 will require including more documents as records
5.5	Work process	S	S	See finding #2
5.10	Independent Assessment (Reviewed evidence of QA Surveillance)	S	S	NWP-2
5.8	Inspection and Acceptance Testing	S	S	NWP-1
6.3	Shipping documentation	S	S	
6.3.1	Accountable or Special Nuclear Material Shipments	S	S	
6.3.3	PSDR Submittal	S	S	
5.0	QA NIC	S	S	See finding #1 corrected during audit to sat
5.1	Program	S	S	See OFI #2

Results Legend: S = Satisfactory, U = Unsatisfactory, N/O = Not Observed, N/A = Not Applicable,  
NWP = Noteworthy Practice, F = Finding, OFI = Opportunity for Improvement

## 8. SUMMARY OF NOTEWORTHY PRACTICES, FINDINGS, OPPORTUNITIES FOR IMPROVEMENT

The audit results are also addressed in Attachment A to this audit report. Five (5) findings adverse to quality, two (2) opportunities for improvement and two (2) Noteworthy practices were identified by the audit team.

Noteworthy practices included the waste acceptance & shipping group checking each other's work, which showed excellent team work. This is an outstanding way to ensure quality of program implementation. The Internal Surveillances/MOVs/Assessments performed and documented showed good coverage and follow-up to correct issues. These reviews have helped make certain high operational performance.

Findings identified include record and procedure issues:

Finding (1) During a review of the references listed in the various sections of EP-AP-0906, it was noted that some of the references were either incorrect or outdated. One reference had been superseded by a different procedure and many of the procedure sections did not match the reference section listed in the NNSS-NIC.

Finding (2) Unapproved procedural deviations were noted. The actions may be acceptable, but were not documented in procedure EP-AP-0903, R6

Finding (3) The form(s) utilized to document the required peer review is unapproved, unclear, and non transparent. It is ambiguous that the engineers' signatures on the form constitute their review and approval of the characterization package. The Peer review documentation needs to be reevaluated.

Finding (4) Various data characterization records are not being captured, and in some cases are not being reviewed and signed by authorized personnel.

Finding (5) EP-AP-0905, contains requirements from the NNSSWAC that are not explained or are improperly identified as written in the procedure: As an example the responsibility and method of statistical analysis of waste is unclear.

## 9. **CONCLUSIONS**

The audited organization was very cooperative and supportive. Personnel were very informative and willing to answer or obtain answers to audit questions.

The NNSSWAC is implemented at LANL in the areas reviewed during this audit/assessment. The procedure and record enhancement delineated in this report need improvement as stated in the finding and opportunities for improvement.

All auditors have reviewed this report and concur on results, there are no minority opinions.

## 10. **ATTACHMENTS**

- A. Noteworthy Practices, Findings, and Opportunities for Improvement
- B. Results of Technical Area 21 review



**Attachment A**  
**Noteworthy Practices, Findings, & Opportunities for Improvement**

Item Type & No.	Practices that exceed performance expectations.	Comments
Noteworthy Practice (NWP 1)	The waste acceptance & shipping group checked each other's work, and showed excellent team work.	The audit team found the professionalism of the teams very commendable.
Noteworthy Practice (NWP 2)	Internal Surveillances/MOVs/Assessments performed and documented showed good coverage and follow-up to correct issues.	
Item Type & No.	Practices that may lead to more adverse conditions if not improved.	Comments
Finding (1)	<p><b>Requirement:</b>  NNSS WAC, Section 5.0 QA "Requirements for Waste Certification Programs states: The NIC <i>shall</i> reference the applicable quality-affecting procedures, processes, or methods and the organization or group directly responsible for implementation."</p> <p><b>Issue:</b>  During a review of the references listed in the various sections of EP-AP-0906, it was noted that several of the references were either incorrect or outdated. One reference had been superseded by a different procedure and many of the procedure sections did not match the reference section listed in the NIC.</p>	<p>All incorrect or outdated information should be corrected</p> <p>The audit organization stated these entries would be corrected within 30 days.</p>
Finding (2)	<p>DOE/NV-325- R. 8-01, <i>Nevada National Security Site Waste Acceptance Criteria</i>, Section 5.5, Work Processes, states: "Work shall be planned and performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means. EP-AP-0903, R6, <i>LLW Packaging Oversight of</i></p> <p><i>Waste Disposal at the NNSS</i>, Section 8.2[4], directs the user to enter the container serial number in Section 1 of the Waste Package Certifier (WPC) Checklist."</p>	

<p>Finding (2) continued</p>	<p><b>Issues:</b> The following unapproved procedural deviations were noted. The actions may be acceptable, but were not documented in procedure EP-AP-0903, R6</p> <ul style="list-style-type: none"> <li>• For Supersack (or supersac) waste containers, the LANL ID# is entered in Section 1 of the WPC checklist instead of a serial number.</li> <li>• Upon initial use of the Supersack, a sequential ID number is assigned for initial tracking purposes, consisting of enclosure number, date, and a daily sequential sack number, e.g., 1209141103. This information is recorded in the comments section of the checklist to aid in Supersack tracking prior to the LANL ID# being assigned.</li> </ul> <hr/>	<p>EP-AP-0903 should be updated to include how supersacks are numbered and tracked.</p>
<p>Finding (3)</p>	<p><b>Requirement:</b> DOE/NV-3.25-R. 8-01, <i>Nevada National Security Site Waste Acceptance Criteria</i>, Section 4.0, Waste Characterization, states, "The characterization methods and procedures employed by the generator <b>shall</b> ensure that the physical, chemical, and radiological characteristics of the waste are recorded and known during all stages of the waste management process. Methods selected by the generator for waste characterization <b>shall</b> undergo a documented peer review."</p> <p><b>Issues:</b> The form(s) utilized to document the required peer review is an unapproved, inaccurate, and ambiguous. It is not clear that the engineers' signatures on the form constitute their review and approval of the characterization package. Further, the traveler portion of the form is not utilized.</p> <hr/>	<p>Peer review documentation should be made more transparent, formalized, and properly documented in a procedure.</p>

Finding (4)	<p><b>Requirement:</b> DOE/NV-3.25-R. 8-01, <i>Nevada National Security Site Waste Acceptance Criteria</i>, Section 5.4, Documents and Records, states: "Records documenting compliance with waste certification criteria shall be specified, prepared, reviewed, and signed by authorized personnel. Records shall be compiled into a records management system that includes provisions for transmittal, distribution, retention, handling, correction, disposition, retrievability. Completed records shall be protected from damage, loss, and deterioration".</p> <p><b>Issue:</b> Numerous data characterization records are not being captured, and in some cases are not being reviewed and signed by authorized personnel. For example:</p> <ul style="list-style-type: none"> <li>• <i>MDA B Radiological Waste Characterization Using MAR Gamma Spectroscopy, R1</i> – This document defines the basis and calculation for defining the MDA B waste stream. This document is key to the waste profile and waste characterization.</li> <li>• An unsigned, unidentified document titled, <i>AK for NNSS</i>, which is a Waste Disposal Profile that specifies how excavated wastes from MDA B will be characterized and managed as required by the NNSS WAC.</li> <li>• There are numerous, one-of-a-kind data packages in file drawers in the Characterization Engineers' office that are at risk.</li> </ul> <hr/>	Records that are not now captured need to be captured and processed as required. In addition a list should be developed of all project records and a determination made of categorization, where these records are to be maintained, and retention requirements (how long the records must be kept
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Finding (5)	<p>EP-AP-0905, R4, <i>Characterization of Waste for Disposal at the NNSS</i>, Section 4.1, Verify Completeness and Adequacy of LANL Characterization. This section of this procedure requires that the WCO verify and ensure numerous data characterization requirements from the NNSS WAC (DOE/NV-325- R. 8-01).</p> <p><b>Issue</b> There is no documentation that these procedural steps have been preformed.</p>	Redraft procedure EP-AP-0905 and address requirements such as, statistical analysis, in this procedure or in another procedures or plans.
OFI (1)	<p>Procedures utilized for the NNSS waste acceptance program need some editorial work and revision. For example:</p> <ul style="list-style-type: none"> <li>• These procedures contain Notes that should be action steps within the procedure.</li> <li>• These procedures were updated in August 2011. The LANL procurement procedure was revised in May 2011, yet the NNSS procedures were not updated to incorporate the revised LANL procurement processes.</li> <li>• AP-0903 provides requirements for vendor assessment and Lead Auditor responsibilities, which are inappropriate for this procedure.</li> <li>• In some instances, responsibilities for implementation are unclear.</li> <li>• Some records are not listed in the records section.</li> </ul>	<p>When these procedures are revised, current writing guides should be followed.</p> <p>Corrections should be made</p>

OFI (2)	<p>NNSS WAC, section 5.1 states:  “The chart <i>shall</i> identify the organizations that generate, characterize, package, inspect, assess, ship, and perform support functions (i.e., procurement, document control, RCRA oversight, and training).”  None of the documents reviewed contained an organizational chart that shows that level of detail. The WCO stated that LANL management is working on developing a new organizational chart that will meet this NNSS requirement more clearly. Once the new chart is developed, it will be incorporated into one of the LANL procedures that address NNSS requirements.</p>	<p>Supply the audit team with current organizational charts, when they are available.</p>
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## Attachment B

### Results of Technical Area 21 evaluation

#### Personnel Interviewed

Jody Armijo, WCO  
Glen Siry, Characterization engineer  
Joanna Hardin, Portage, Records Management  
Benito Maestas, WPC  
Matthew Duran, WPC  
Paul Gonzales, WPC  
Dominic Archuleta, WPC  
Charles Hunt, data characterization engineer  
Dave Yost, data characterization engineer  
Ernie Bentsen, data characterization engineer  
Vicki Radovich, Records Information Management Specialist  
Henry Sandoval, Waste Verifier  
Barbara Lindsay, Records Management Data Team member

#### Documents Reviewed

- EP-GUIDE-0991, R5, *LANL Off Site NNSS Implementation Crosswalk (NIC)*
- DOE/NV-325- R. 8-01, *Nevada National Security Site Waste Acceptance Criteria*
- EP-AP-0901, R4, *Preparing NNSS Package Shipment and Disposal Requests*
- EP-AP-0902, R3, *Preparing NNSS Waste Profiles*
- EP-AP-0903, R6, *LLW Packaging Oversight of Waste Disposal at the NNSS*
- EP-AP-0904, R5, *Transportation of Waste for Disposal at the NNSS*
- EP-AP-0905, R4, *Characterization of Waste for Disposal at the NNSS*
- EP-AP-0906, R6, *LANL Off-Site Waste Certification and Administrative Processes*
- EP-DIR-SOP-4001, *Document Control*
- EP-DIR-SOP-4003, R3, *Records Management*
- P330-2, *Control of M&TE*
- P330-8, *Inspection and Test for Acceptance*
- P930-1, LANL WAC

#### Records Examined

- DAR forms for procedures utilized by NNSS Radioactive Waste Acceptance Program Personnel
- Records package: LAL 11226 NNSS Shipment of Item numbers 10161601, 10161602, 10161619
- Records package: LAL11233 NNSS Shipment of Item numbers 10161648, 10161649, 10161650
- LANL EP Directorate Records Transmittal form dated 08/10/11
- WPC checklist for Supersacks LANL ID 10159708
- Characterization Package to WDR Traveler, Characterization Batch 49

- Email – Charles Hunt to Glenn Siry, 9/20/20, Characterization of MDA B Contaminated Fill via the MAR and Historic GEL Data
- TA21-MDAB-RPT-00001, Due Diligence Review for Excavation Materials from MDA B
- Standardized Waste Profile Sheet: TAA-21 MDA-B Excavation Soils and Debris containing Beryllium
- Standardized Waste Profile Sheet: TAA-21 MDA-B Excavation Soils and Debris
- MDA B Radiological Waste Characterization Using MAR Gamma Spectroscopy, R1
- AK for NNSS, [This paper has no distinguishing identification. Glenn Siry tells me he authored this paper for Profile 009]
- Letter dated May 12, 2011, from E. Frank Di Sanza to Milton L. Bishop, Subject: Approval to Ship Los Alamos National Laboratory Low-Level Radioactive Waste to the Nevada National Security Site
- Chemical Waste Disposal Request (CWDR) 89090 and associated data package

#### Work Activities Witnessed

- EP-AP-0903. *LLW Packaging Oversight of Waste Disposal at NNSS*, Attachment 1, WPC Checklist  
 9/13 – Observed WPC (Benito Maestas) fill out WPC Checklist as he monitored LATA waste removal operation at TA-21, Area H. Operation consisted of excavation of contaminated soil with a backhoe. The WPC observed the waste as it was placed into a Supersack. Upon conclusion of the day's waste excavation activities, the Supersack was closed and a temporary TID was placed on the Supersack. The Supersack will be used again for the small amount of waste expected to be excavated from Area A at a later date.
- EP-AP-0903  
 9/14 – Observed labeling of waste packages for 6 shipments (i.e., six different trucks) tomorrow. The SSs were loaded onto flatbeds in the parking lot. 3 SSs per flatbed. I reviewed paperwork and double checked labeling for shipment # LA11392, packages 110828, 110829, and 110830. Labeling was found to be in accordance with paperwork. I'm told paperwork and labeling will be double checked again tomorrow morning prior to shipment leaving the site. Matt Duran, Benito Maestas, Paul Gonzales, and Dominic Archuleta were on site doing the labeling.  
 9/15 – Observed SSs being removed from enclosure 12 and WPCs filling out the checklist and the WPCs applying TIDs to the waste package. LANL IDs were obtained from the waste verifier (Henry Sandoval) and applied to the bag, attached by laminated barcode through the TID. I also learned that an initial sequential number is applied to the SS when it is first used.



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Symbol: QA-IQ:12-011  
Date: Nov 3, 2011

**Subject: Quality Assurance Audit Report AR(11)-039.00, NNSS Waste Acceptance Criteria Compliance**

This memorandum is to provide you with a copy of the QA Institutional Quality Group (QA-IQ) audit report AR(11)-039.00, of LANL's compliance to Nevada National Security Site NNSS (Low Level) Waste Acceptance Criteria. This audit was requested by the Waste Disposition Project's Disposition Group, consistent with their requirements in Procedure *EP-AP-0906*, which requires an independent audit of the Waste Certification program that is to be performed on an annual basis and reported back to NNSS Radioactive Waste Acceptance Program management. This audit was conducted from September 6 through September 23, 2011.

The audit team used the checklist endorsed by the National Nuclear Security Administration. The bases of the audit was DOE Order 435.1, *Radioactive Management*, EP-DIR-QAP-001, *Quality Assurance Plan for the Environmental Programs Directorate*, NQA-1, *Nuclear Quality Assurance*, and most specifically the *Nevada Test Site Waste Acceptance Criteria (DOE/NV-325)*

Summary of Results

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Should you have any questions, please contact Paul E. Lowe the Lead Auditor, at 505-606-2345 or [plowe@lanl.gov](mailto:plowe@lanl.gov).

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**Audit Report**

**AR(11)-039.00**

**Nevada Test Site Waste Acceptance Criteria  
Low Level Waste Disposition**

**Audit Dates**

**September 6 - September 23, 2011**

**PFITS#2011-2202**

**Lead Auditor: *Paul E Lowe, PE***

**Signature:**

**Date:**

***October 25, 2011***

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- 10CFR830, Subpart A, *Quality Assurance Requirements*
- DOE Order 414.1C, *Quality Assurance*
- DOE Order 435.1, *Radioactive Waste Management*
- DOE/NV-325-Rev.7-01, May 2009, *Nevada Test Site Waste Acceptance Criteria*
- EP Directorate QAP and its implementing procedures

## 3. SCOPE

The independent audit of the Off-Site Waste Program (WCP) was performed at Los Alamos at area TA-21, and at selected waste sites, to verify Los Alamos National Laboratory's (LANL) compliance and performance to the Nevada National Security Site (NNSS) requirements. The audit was performed by an Environmental Program Quality Assurance (QA) team for the "Independent Assessment Group," LANL QA Division.

The following processes and procedures were included:  
Environmental Program procedures implementing the NNSS requirements  
Training/qualifications of personnel  
Inspection of field containers for proper marking and proper paperwork  
Waste containers, receiving, inspection, engineering  
Organization charts and structure of the waste program

The following sections from the NNSSWAC were evaluated

Section 2.0 Approval Process looking at approved NNSS Waste Profiles and all AK pkgs  
Section 4.0 Waste Characterization  
Section 4.1 Process Knowledge  
Section 4.2 Sampling and Analysis  
Section 4.2.1 Data Validation  
Section 5.4 Documents and Records  
Section 5.5 Work process  
Section 5.8 Inspection and Acceptance Testing  
Section 6.3 Shipping documentation  
Section 6.3.1 Accountable or Special Nuclear Material Shipments  
Section 6.3.3 PSDR Submittal

#### 4. ASSESSMENT TEAM

Paul E Lowe, EP-QA (QA-IQ), Audit Team Leader  
Robert Trujillo, EP-QA (QA-IQ), Audit Team Member/SME  
Larry Maassen, EP-QA (QA-IQ), Audit Team Member  
Doris Quintana, EP-QA (QA-IQ), Audit Team Member/technical specialist

#### 5. PERSONNEL CONTACTED DURING THE ASSESSMENT

Name	Title	Entrance	Conduct	Exit
Jody Armijo	WDP-LLWD/WC Official	X	X	X
Doris Quintana	EPQA-IQ/NTS QA Support	X	X	
Glen Siry	Characterization engineer		X	X
Joanna Hardin	Portage, Records Management		X	
Benito Maestas	WPC		X	
Matthew Duran	WPC		X	
Paul Gonzales	WPC		X	X
Dominic Archuleta	WCP		X	X
Charles Hunt	data characterization engineer		X	
Dave Yost	data characterization engineer		X	
Ernie Bentsen	data characterization engineer		X	
Vicki Radovich	Records Information Mgt. Specialist		X	
Henry Sandoval	Waste Verifier		X	
Barbara Lindsay	Records Manage Data Team member		X	
Gilbert Montoya	Hazardous and Mixed Low Level Waste			X
Amanda Narango-Suazo	Waste Package Certifier		X	X
Andy Baumer	Waste Project and Services Director			X

#### 6. AUDIT METHOD

The audit methods included an examination of documents, records and interviews of personnel associated with the generation, characterization, packaging, inspection, and assessment of support functions for LLW. The audit team reviewed documents for requirements flow down, program development and program compliance, interviewed personnel responsible for program compliance, and checked performance of selected areas by evaluation of achievement of process objectives.

An audit entrance meeting was conducted September 12, 2011 at which the audit plan and objectives were presented to enable identification of initial contacts. The auditors stated that results would be communicated with responsible management as significant results were identified and that warranted actions and open items would be resolved by mutual agreement where possible. An audit exit meeting was conducted September 26, 2011 at which the results of the audit were presented and discussed.

## **7 QA PROGRAM ELEMENTS EVALUATED / SUMMARY OF RESULTS**

Requirements used in this audit were primarily drawn from DOE/NV-325-Rev. 7-01, May 2009, Nevada Test Site Waste Acceptance Criteria, with emphasis on the communication of those requirements to LLW Waste Management Coordinators and LLW Generators dealing with compactable LLW. An objective was to determine if LANL's LLW generators and generator support services were properly implementing NNSS requirements. Also reviewed were the LANL implementing procedures.

The audit team determined that the program was effectively implemented and in compliance. The issues identified in this report need to be corrected to ensure better compliance to specific requirements identified in DOE/NV-325 and related procedures.

NNSSWA C Section	Section Description	QA Requiremen ts Formalized	QA Program Implemente d	Audit Results Comments
2.0	Approval Process looking at approved NNSS Waste Profiles and all AK pkgs	S	S	
4.0	Waste Characterization	S	S	See finding #3
4.1	Process Knowledge	S	S	See finding#5
4.2	Sampling and Analysis	S	S	.
4.2.1	Data Validation	S	S	
5.4	Documents and Records	S	U	See finding #4 will require including more documents as records
5.5	Work process	S	S	See finding #2
5.10	Independent Assessment (Reviewed evidence of QA Surveillance)	S	S	NWP-2
5.8	Inspection and Acceptance Testing	S	S	NWP-1
6.3	Shipping documentation	S	S	
6.3.1	Accountable or Special Nuclear Material Shipments	S	S	
6.3.3	PSDR Submittal	S	S	
5.0	QA NIC	S	S	See finding #1 corrected during audit to sat
5.1	Program	S	S	See OFI #2

Results Legend: S = Satisfactory, U = Unsatisfactory, N/O = Not Observed, N/A = Not Applicable,  
NWP = Noteworthy Practice, F = Finding, OFI = Opportunity for Improvement

## 8. SUMMARY OF NOTEWORTHY PRACTICES, FINDINGS, OPPORTUNITIES FOR IMPROVEMENT

The audit results are also addressed in Attachment A to this audit report. Five (5) findings adverse to quality, two (2) opportunities for improvement and two (2) Noteworthy practices were identified by the audit team.

Noteworthy practices included the waste acceptance & shipping group checking each other's work, which showed excellent team work. This is an outstanding way to ensure quality of program implementation. The Internal Surveillances/MOVs/Assessments performed and documented showed good coverage and follow-up to correct issues. These reviews have helped make certain high operational performance.

Findings identified include record and procedure issues:

Finding (1) During a review of the references listed in the various sections of EP-AP-0906, it was noted that some of the references were either incorrect or outdated. One reference had been superseded by a different procedure and many of the procedure sections did not match the reference section listed in the NNSS-NIC.

Finding (2) Unapproved procedural deviations were noted. The actions may be acceptable, but were not documented in procedure EP-AP-0903, R6

Finding (3) The form(s) utilized to document the required peer review is unapproved, unclear, and non transparent. It is ambiguous that the engineers' signatures on the form constitute their review and approval of the characterization package. The Peer review documentation needs to be reevaluated.

Finding (4) Various data characterization records are not being captured, and in some cases are not being reviewed and signed by authorized personnel.

Finding (5) EP-AP-0905, contains requirements from the NNSSWAC that are not explained or are improperly identified as written in the procedure: As an example the responsibility and method of statistical analysis of waste is unclear.

## **9. CONCLUSIONS**

The audited organization was very cooperative and supportive. Personnel were very informative and willing to answer or obtain answers to audit questions.

The NNSSWAC is implemented at LANL in the areas reviewed during this audit/assessment. The procedure and record enhancement delineated in this report need improvement as stated in the finding and opportunities for improvement.

All auditors have reviewed this report and concur on results, there are no minority opinions.

## **10. ATTACHMENTS**

- A. Noteworthy Practices, Findings, and Opportunities for Improvement
- B. Results of Technical Area 21 review

**Attachment A**  
**Noteworthy Practices, Findings, & Opportunities for Improvement**

Item Type & No.	Practices that exceed performance expectations.	Comments
Noteworthy Practice (NWP 1)	The waste acceptance & shipping group checked each other's work, and showed excellent team work.	The audit team found the professionalism of the teams very commendable.
Noteworthy Practice (NWP 2)	Internal Surveillances/MOVs/Assessments performed and documented showed good coverage and follow-up to correct issues.	
Item Type & No.	Practices that may lead to more adverse conditions if not improved.	Comments
Finding (1)	<p><b>Requirement:</b>  NNSS WAC, Section 5.0 QA "Requirements for Waste Certification Programs states: The NIC <i>shall</i> reference the applicable quality-affecting procedures, processes, or methods and the organization or group directly responsible for implementation."</p> <p><b>Issue:</b>  During a review of the references listed in the various sections of EP-AP-0906, it was noted that several of the references were either incorrect or outdated. One reference had been superseded by a different procedure and many of the procedure sections did not match the reference section listed in the NIC.</p>	<p>All incorrect or outdated information should be corrected</p> <p>The audit organization stated these entries would be corrected within 30 days.</p>
Finding (2)	<p>DOE/NV-325- R. 8-01, <i>Nevada National Security Site Waste Acceptance Criteria</i>, Section 5.5, Work Processes, states: "Work shall be planned and performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means. EP-AP-0903, R6, <i>LLW Packaging Oversight of</i></p> <p><i>Waste Disposal at the NNSS</i>, Section 8.2[4], directs the user to enter the container serial number in Section 1 of the Waste Package Certifier (WPC) Checklist."</p>	

<p>Finding (2) continued</p>	<p><b>Issues:</b> The following unapproved procedural deviations were noted. The actions may be acceptable, but were not documented in procedure EP-AP-0903, R6</p> <ul style="list-style-type: none"> <li>• For Supersack (or supersac) waste containers, the LANL ID# is entered in Section 1 of the WPC checklist instead of a serial number.</li> <li>• Upon initial use of the Supersack, a sequential ID number is assigned for initial tracking purposes, consisting of enclosure number, date, and a daily sequential sack number, e.g., 1209141103. This information is recorded in the comments section of the checklist to aid in Supersack tracking prior to the LANL ID# being assigned.</li> </ul> <hr/>	<p>EP-AP-0903 should be updated to include how supersacks are numbered and tracked.</p>
<p>Finding (3)</p>	<p><b>Requirement:</b> DOE/NV-3.25-R. 8-01, <i>Nevada National Security Site Waste Acceptance Criteria</i>, Section 4.0, Waste Characterization, states, "The characterization methods and procedures employed by the generator <b>shall</b> ensure that the physical, chemical, and radiological characteristics of the waste are recorded and known during all stages of the waste management process. Methods selected by the generator for waste characterization <b>shall</b> undergo a documented peer review."</p> <p><b>Issues:</b> The form(s) utilized to document the required peer review is an unapproved, inaccurate, and ambiguous. It is not clear that the engineers' signatures on the form constitute their review and approval of the characterization package. Further, the traveler portion of the form is not utilized.</p> <hr/>	<p>Peer review documentation should be made more transparent, formalized, and properly documented in a procedure.</p>



Finding (4)

**Requirement:**

DOE/NV-3.25-R. 8-01, *Nevada National Security Site Waste Acceptance Criteria*, Section 5.4, Documents and Records, states: "Records documenting compliance with waste certification criteria shall be specified, prepared, reviewed, and signed by authorized personnel. Records shall be compiled into a records management system that includes provisions for transmittal, distribution, retention, handling, correction, disposition, retrievability. Completed records shall be protected from damage, loss, and deterioration".

**Issue:**

Numerous data characterization records are not being captured, and in some cases are not being reviewed and signed by authorized personnel. For example:

- *MDA B Radiological Waste Characterization Using MAR Gamma Spectroscopy*, R1 – This document defines the basis and calculation for defining the MDA B waste stream. This document is key to the waste profile and waste characterization.
  - An unsigned, unidentified document titled, *AK for NNSS*, which is a Waste Disposal Profile that specifies how excavated wastes from MDA B will be characterized and managed as required by the NNSS WAC.
  - There are numerous, one-of-a-kind data packages in file drawers in the Characterization Engineers' office that are at risk.
- 

Records that are not now captured need to be captured and processed as required. In addition a list should be developed of all project records and a determination made of categorization, where these records are to be maintained, and retention requirements (how long the records must be kept

Finding (5)	<p>EP-AP-0905, R4, <i>Characterization of Waste for Disposal at the NNSS</i>, Section 4.1, Verify Completeness and Adequacy of LANL Characterization. This section of this procedure requires that the WCO verify and ensure numerous data characterization requirements from the NNSS WAC (DOE/NV-325- R. 8-01).</p> <p><b>Issue</b> There is no documentation that these procedural steps have been preformed.</p>	Redraft procedure EP-AP-0905 and address requirements such as, statistical analysis, in this procedure or in another procedures or plans.
OFI (1)	<p>Procedures utilized for the NNSS waste acceptance program need some editorial work and revision. For example:</p> <ul style="list-style-type: none"> <li>• These procedures contain Notes that should be action steps within the procedure.</li> <li>• These procedures were updated in August 2011. The LANL procurement procedure was revised in May 2011, yet the NNSS procedures were not updated to incorporate the revised LANL procurement processes.</li> <li>• AP-0903 provides requirements for vendor assessment and Lead Auditor responsibilities, which are inappropriate for this procedure.</li> <li>• In some instances, responsibilities for implementation are unclear.</li> <li>• Some records are not listed in the records section.</li> </ul>	<p>When these procedures are revised, current writing guides should be followed.</p> <p>Corrections should be made</p>

OFI (2)	<p>NNSS WAC, section 5.1 states:          "The chart <i>shall</i> identify the organizations that generate, characterize, package, inspect, assess, ship, and perform support functions (i.e., procurement, document control, RCRA oversight, and training)."</p> <p>None of the documents reviewed contained an organizational chart that shows that level of detail. The WCO stated that LANL management is working on developing a new organizational chart that will meet this NNSS requirement more clearly. Once the new chart is developed, it will be incorporated into one of the LANL procedures that address NNSS requirements.</p>	<p>Supply the audit team with current organizational charts, when they are available.</p>
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## **Attachment B**

### **Results of Technical Area 21 evaluation**

#### **Personnel Interviewed**

Jody Armijo, WCO  
Glen Siry, Characterization engineer  
Joanna Hardin, Portage, Records Management  
Benito Maestas, WPC  
Matthew Duran, WPC  
Paul Gonzales, WPC  
Dominic Archuleta, WPC  
Charles Hunt, data characterization engineer  
Dave Yost, data characterization engineer  
Ernie Bentsen, data characterization engineer  
Vicki Radovich, Records Information Management Specialist  
Henry Sandoval, Waste Verifier  
Barbara Lindsay, Records Management Data Team member

#### **Documents Reviewed**

- EP-GUIDE-0991, R5, *LANL Off Site NNSS Implementation Crosswalk (NIC)*
- DOE/NV-325- R. 8-01, *Nevada National Security Site Waste Acceptance Criteria*
- EP-AP-0901, R4, *Preparing NNSS Package Shipment and Disposal Requests*
- EP-AP-0902, R3, *Preparing NNSS Waste Profiles*
- EP-AP-0903, R6, *LLW Packaging Oversight of Waste Disposal at the NNSS*
- EP-AP-0904, R5, *Transportation of Waste for Disposal at the NNSS*
- EP-AP-0905, R4, *Characterization of Waste for Disposal at the NNSS*
- EP-AP-0906, R6, *LANL Off-Site Waste Certification and Administrative Processes*
- EP-DIR-SOP-4001, *Document Control*
- EP-DIR-SOP-4003, R3, *Records Management*
- P330-2, *Control of M&TE*
- P330-8, *Inspection and Test for Acceptance*
- P930-1, LANL WAC

#### **Records Examined**

- DAR forms for procedures utilized by NNSS Radioactive Waste Acceptance Program Personnel
- Records package: LAL 11226 NNSS Shipment of Item numbers 10161601, 10161602, 10161619
- Records package: LAL11233 NNSS Shipment of Item numbers 10161648, 10161649, 10161650
- LANL EP Directorate Records Transmittal form dated 08/10/11
- WPC checklist for Supersacks LANL ID 10159708
- Characterization Package to WDR Traveler, Characterization Batch 49

- Email – Charles Hunt to Glenn Siry, 9/20/20, Characterization of MDA B Contaminated Fill via the MAR and Historic GEL Data
- TA21-MDAB-RPT-00001, Due Diligence Review for Excavation Materials from MDA B
- Standardized Waste Profile Sheet: TAA-21 MDA-B Excavation Soils and Debris containing Beryllium
- Standardized Waste Profile Sheet: TAA-21 MDA-B Excavation Soils and Debris
- MDA B Radiological Waste Characterization Using MAR Gamma Spectroscopy, R1
- AK for NNSS, [This paper has no distinguishing identification. Glenn Siry tells me he authored this paper for Profile 009]
- Letter dated May 12, 2011, from E. Frank Di Sanza to Milton L. Bishop, Subject: Approval to Ship Los Alamos National Laboratory Low-Level Radioactive Waste to the Nevada National Security Site
- Chemical Waste Disposal Request (CWDR) 89090 and associated data package

### **Work Activities Witnessed**

- EP-AP-0903, *LLW Packaging Oversight of Waste Disposal at NNSS*, Attachment 1, WPC Checklist  
 9/13 – Observed WPC (Benito Maestas) fill out WPC Checklist as he monitored LATA waste removal operation at TA-21, Area H. Operation consisted of excavation of contaminated soil with a backhoe. The WPC observed the waste as it was placed into a Supersack. Upon conclusion of the day's waste excavation activities, the Supersack was closed and a temporary TID was placed on the Supersack. The Supersack will be used again for the small amount of waste expected to be excavated from Area A at a later date.
- EP-AP-0903  
 9/14 – Observed labeling of waste packages for 6 shipments (i.e., six different trucks) tomorrow. The SSs were loaded onto flatbeds in the parking lot. 3 SSs per flatbed. I reviewed paperwork and double checked labeling for shipment # LA11392, packages 110828, 110829, and 110830. Labeling was found to be in accordance with paperwork. I'm told paperwork and labeling will be double checked again tomorrow morning prior to shipment leaving the site. Matt Duran, Benito Maestas, Paul Gonzales, and Dominic Archuleta were on site doing the labeling.  
 9/15 – Observed SSs being removed from enclosure 12 and WPCs filling out the checklist and the WPCs applying TIDs to the waste package. LANL IDs were obtained from the waste verifier (Henry Sandoval) and applied to the bag, attached by laminated barcode through the TID. I also learned that an initial sequential number is applied to the SS when it is first used.