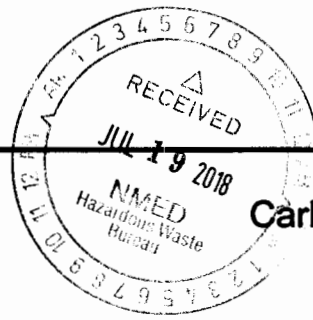


United States Government


**ENTERED**  
 Department of Energy

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**memorandum**

 Carlsbad Field Office  
 Carlsbad, New Mexico 88221
**DATE:** JUL 19 2018**REPLY TO  
ATTN OF:** CBFO:OQA:DCG:JM:18-1940:UFC 2300.00**SUBJECT:** Recertification Audit A-18-04 of the AMWTP Transuranic Waste Characterization and Certification Program**TO:** Jim Malmø, DOE-ID

Please be advised that an audit team from the U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) will conduct a recertification audit of the Advanced Mixed Waste Treatment Project (AMWTP) at the Sawtelle Street Facility in Idaho Falls, Idaho, and at the Idaho National Laboratory near Idaho Falls, August 27 – 30, 2018.

The AMWTP characterization activities for Contact-Handled Transuranic Waste Summary Category Group (SCG) S3000 homogeneous solids waste, SCG S4000 soils/gravel, and SCG S5000 debris waste will be evaluated during the audit.

The audit will be conducted in accordance with the attached audit plan. Representatives from CBFO, DOE Office of Environmental Management, and the New Mexico Environment Department may be present to observe the audit. In addition, the U.S. Environmental Protection Agency may conduct an independent inspection of the AMWTP and/or an inspection of the CBFO audit process.

Your representatives are requested to coordinate with the audit team to develop the necessary documentation for the audit team to gain access to the AMWTP facilities, conduct the audit, and have appropriate access to necessary documentation and records. Please provide meeting rooms for the entrance and exit meetings, and work rooms for the audit team and observers. The audit team will need a full set of documentation applicable to the AMWTP characterization activities for waste to be transported to the Waste Isolation Pilot Plant, including procedures.

If you have any questions or comments concerning the audit, please contact me at (575) 234-7372.



Donald C. Gadbury, Director  
 CBFO, Office of Quality Assurance

Attachment

cc: w/attachment	
J. Carswell, CBFO	*ED
K. Princen, CBFO	ED
D. Miehlis, CBFO	ED
M. Navarrete, CBFO	ED
M. Stapleton, CBFO	ED
H. Cruickshank, CBFO	ED
R. Murray, EM-43	ED
J. Zimmerman, DOE-ID	ED
T. Jenkins, DOE-ID	ED
J. Vliet, DOE-ID	ED
D. Pruitt, DOE-ID	ED
G. Byram, AMWTP	ED
J. McCoy, AMWTP	ED
E. Gulbransen, AMWTP	ED
E. Dumas, AMWTP	ED
J. Floerke, AMWTP	ED
G. Tedford, AMWTP	ED
A. Morse, AMWTP	ED
J. Walsh, EPA	ED
J. Ellis, EPA	ED
T. Peake, EPA	ED
E. Felcorn, EPA	ED
J. Kieling, NMED	ED
R. Maestas, NMED	ED
D. Biswell, NMED	ED
H. Tellez, NMED	ED
M. McLean, NMED	ED
T. Runyon, CTAC	ED
P. Martinez, CTAC	ED
M. Leroch, CTAC	ED
C. Castillo, CTAC	ED
J. Vernon, CTAC	ED
D. Harvill, CTAC	ED
G. White, CTAC	ED
Site Documents	ED
CBFO QA File	
CBFO M&RC	
*ED denotes electronic distribution	

**CARLSBAD FIELD OFFICE  
AUDIT PLAN**

**Audit Number:** A-18-04

**Organization to be Audited:** Advanced Mixed Waste Treatment Project (AMWTP)

**Organizations to be Notified:** Fluor Idaho  
U.S. Department of Energy – Idaho Operations Office (DOE-ID)  
New Mexico Environmental Department (NMED)  
U.S. Environmental Protection Agency (EPA)  
Defense Nuclear Facilities Safety Board (DNFSB)

**Date and Location:** August 27 – 30, 2018  
AMWTP Idaho National Laboratory (INL) Site near Idaho Falls, and  
AMWTP Sawtelle Street, Idaho Falls, Facility

**Audit Team:**

Martin Navarrete	Carlsbad Field Office (CBFO) Office of Quality Assurance (QA) Management Representative
Dennis Miehl	CBFO QA Representative
Jim Vernon	Audit Team Leader, CBFO Technical Assistance Contractor (CTAC), Auditor (Organization/QA Program)
Cindi Castillo	Auditor, CTAC (NDA/PDP)
Harley Kirschenmann	Auditor, CTAC (Procurement, Graded Approach)
Bobby Hunt	Auditor, CTAC (Management and Independent Assessments)
Ricardo Chavez	Auditor, CTAC (AK)
John Fernandez	Auditor, CTAC (C6 QA, Training)
Jim Schuetz	Auditor, CTAC (C6 QA, WWISWDS, SQA)
Charlie Riggs	Auditor, CTAC (VE)
Prissy Yanez	Auditor, CTAC (C6 QA, Document Control, Records)
Porf Martinez	Auditor, CTAC (RTR)
B.J. Verret	Auditor, CTAC (Container Management, M&TE, Instrumentation)
Roger Vawter	Auditor, CTAC (C6 QA, Quality Improvement, Corrective Actions, Non-Conformances)
Dustin Stegman	Technical Specialist, CTAC (RTR)
Paul Gomez	Technical Specialist, CTAC (PL V&V)
Dick Blauvelt*	Technical Specialist, CTAC (AK)
Randy Fitzgerald	Technical Specialist, CTAC (AK)
Rhett Bradford	Technical Specialist, CTAC (VE)
Jim Oliver	Technical Specialist, CTAC (NDA/PDP)
Michael Hall	Technical Specialist, CTAC (NDA/PDP)

Joe Lopez

Technical Specialist, CTAC (WWIS/WDS,  
SQA)

\*Indicates team member working via teleconference.

**Audit Scope:**

The audit team will evaluate the continued adequacy, implementation, and effectiveness of the AMWTP technical and QA activities performed for characterizing contact-handled (CH) transuranic waste. The QA and technical activities implemented at AMWTP for CH Summary Category Group (SCG) S3000, homogeneous solids, SCG S4000 soils/gravel and CH SCG S5000 debris will be evaluated.

The audit team will also verify that a technical review of the generator site's processes has been performed and any issues identified during the technical review have been resolved per DOE/WIPP-16-3564, *Generator Site Technical Review Procedure*.

The audit will evaluate the Enhanced Acceptable Knowledge (AK) process in accordance with DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant (WAC)* Appendix H and I. Surveillance S-18-16, conducted prior to audit A-18-04, determined that AMWTP has implemented the Enhanced AK process for waste stream BNINW216 (SCG S3000) in accordance with the WAC Appendices H and I.

The audit will also evaluate the adequacy, implementation and effectiveness of the mobile *In-Situ* Object Counting System (ISOCS) for Nondestructive Assay (NDA). The ISOCS system is new equipment that will be evaluated for full capabilities by the audit team.

A list of the equipment and processes to be evaluated is attached to this plan (see Attachment 1).

**Governing Documents/Requirements:**

Evaluation of the overall program adequacy, implementation, and effectiveness of AMWTP documents will be based on the current revisions of the following documents:

- CBFO Management Procedure 5.2, *TRU Waste Program Certification/Recertification*
- DOE/CBFO-94-1012, *Quality Assurance Program Document*
- Waste Isolation Pilot Plant Hazardous Waste Facility Permit NM4890139088-TSDF
- DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*
- DOE/WIPP-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis (Chapter 18)*

Programmatic and technical checklists will be developed from the current revisions of the following documents:

- PLN-5198, *Certification Plan for INL Transuranic Waste*
- PLN-5199, *Quality Assurance Project Plan*
- Related AMWTP QA and technical implementing procedures

**Activities to be Audited:**

General

- Results of Previous Audits
- Changes in Programs or Operations
- New Programs or Activities Being Implemented
- Changes in Key Personnel

C6-1 through C6-4 and general QA program elements as applicable

- Organization/QA Program
- Nonconformances
- Personnel Qualification and Training
- Measuring and Test Equipment (M&TE)
- Software Version Installation
- Quality Improvement
- Work Processes
- Procurement
- Audits/Assessments
- Records
- Container Management

Technical Activities

- Project-level Data Validation and Verification (PLV&V)
- AK, including waste certification
  - Including, but not limited to, Chemical Compatibility Evaluation Memorandum, Basis of Knowledge, AK Assessments, AK Briefings, Interface Waste Management Documents List
- Real-time Radiography (RTR)
- Visual Examination (VE)
- (NDA), including Performance Demonstration Program (PDP)
- WIPP Waste Information System/Waste Data System (WWIS/WDS)  
Including, but not limited to, Statistical Approach to Material at Risk

**Schedule of Audit Activities:**

A pre-audit conference is scheduled for 8:30 a.m., Monday, August 27 2018, in the AMWTP Sawtelle St. Facility, Idaho Falls, Idaho.

Audit team caucuses will be held at 3:30 p.m., Monday, August 27, through Wednesday, August 29, 2018, and at 1:00 p.m. on Thursday, August 30, 2018.

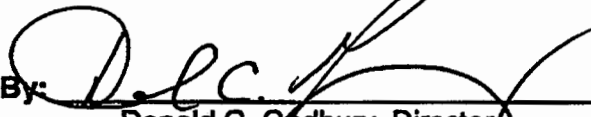

The audit team leader will meet with AMWTP management (as needed) to discuss audit concerns and audit progress at 8:30 a.m., Tuesday, August 27 through Thursday, August 30, 2018, in the AMWTP Sawtelle St. Facility, Idaho Falls, Idaho.

A post-audit conference is scheduled for 3:00 p.m., Thursday, August 30, 2018, in the AMWTP Sawtelle St. Facility, Idaho Falls, Idaho.

All meeting locations will be identified on the daily audit schedule.

Approved By:   
Jim Vernon, CTAC  
Audit Team Leader

Date: 7-16-18

Approved By:   
Donald C. Gadbury, Director  
CBFO Office of Quality Assurance  


Date: 7-16-18

7-16-18

AMWTP LIST OF EQUIPMENT/PROCESSES					
WIPP #	Site Equipment #	Equipment Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
<b>NONDESTRUCTIVE ASSAY</b>					
9DA1	Z-211-102	<p>Canberra Integrated Waste Assay System (IWAS) for assay and isotopics on 55-gallon and 83/85-gallon drums</p> <p>DAS -102 - PDP Registration # AM01/AMN1 Method described in procedure TPR-8094</p> <p>Location: WMF-634</p>	<ul style="list-style-type: none"> <li>• Broad Energy Germanium (BEGe) gamma detectors</li> <li>• 122 helium-3 tubes used in passive neutron coincidence counting modality and the active neutron differential die-away modality</li> <li>• Cf-252/Cs-137 Add-A-Source (AAS) correction source</li> <li>• 14 MeV neutron generator</li> <li>• Fast Neutron Detector Packs (FNDP)</li> </ul>	<ul style="list-style-type: none"> <li>• NDA 2000</li> <li>• Canberra's Genie 2000</li> <li>• Multi-Group Analysis (MGA)</li> <li>• Multi-Group Analysis-Uranium (MGA-U)</li> </ul>	<p>The calibration of IWAS system was verified and documented in the site acceptance reports CI-IDA-NDA-0051 through CI-IDA-NDA-0054</p> <p>The calibration of the IWAS was verified and documented in CI-IDA-NDA-0035. Calibration Verification and Confirmation Procedure for the IWAS at AMWTP</p> <p>The determination of TMU for the IWAS unit is documented in CI-IDA-NDA-0055, Total Measurement Uncertainty for the AMWTP Integrated Waste Assay Systems</p>
9DA2	Z-211-103	<p>Canberra Integrated Waste Assay System (IWAS) for assay and isotopics on 55-gallon and 83/85-gallon drums</p> <p>DAS-103 - PDP Registration # AM02/AMN2 Method described in procedure TPR-8094</p> <p>Location: WMF-634</p>	<ul style="list-style-type: none"> <li>• Broad Energy Germanium (BEGe) gamma detectors</li> <li>• 122 helium-3 tubes used in passive neutron coincidence counting modality and the active neutron differential die-away modality</li> <li>• Cf-252/Cs-137 Add-A-Source (AAS) correction source</li> <li>• 14 MeV neutron generator</li> <li>• Fast Neutron Detector Packs (FNDP)</li> </ul>	<ul style="list-style-type: none"> <li>• NDA 2000</li> <li>• Canberra's Genie 2000</li> <li>• Multi-Group Analysis (MGA)</li> <li>• Multi-Group Analysis-Uranium (MGA-U)</li> </ul>	<p>The calibration of IWAS system was verified and documented in the site acceptance reports CI-IDA-NDA-0051 through CI-IDA-NDA-0054</p> <p>The calibration of the IWAS was verified and documented in CI-IDA-NDA-0035. Calibration Verification and Confirmation Procedure for the IWAS at AMWTP</p> <p>The determination of TMU for the IWAS unit is documented in CI-IDA-NDA-0055, "Total Measurement Uncertainty for the AMWTP Integrated Waste Assay Systems"</p>

AMWTP LIST OF EQUIPMENT/PROCESSES					
WIPP #	Site Equipment #	Equipment Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
9DA3	Z-390-100	<p>Canberra Integrated Waste Assay System (IWAS) - DAS3 – 55 gallon drums</p> <p>DAS-100 – PDP Registration # AM03/AMN3 Method described in TPR-8025</p> <p>Location: WMF-676</p>	<ul style="list-style-type: none"> <li>• Broad Energy Germanium (BEGe) gamma detectors</li> <li>• 122 helium-3 tubes used in passive neutron coincidence counting modality and the active neutron differential die-away modality</li> <li>• Cf-252/Cs-137 Add-A-Source (AAS) correction source</li> <li>• 14 MeV neutron generator</li> <li>• Fast Neutron Detector Packs (FNDP)</li> </ul>	<ul style="list-style-type: none"> <li>• NDA 2000</li> <li>• Canberra's Genie 2000</li> <li>• Multi-Group Analysis (MGA)</li> <li>• Multi-Group Analysis-Uranium (MGA-U)</li> </ul>	<p>The calibration of IWAS system was verified and documented in the site acceptance reports CI-IDA-NDA-0051 through CI-IDA-NDA-0054</p> <p>The calibration of the IWAS was verified and documented in CI-IDA-NDA-0035. Calibration Verification and Confirmation Procedure for the IWAS at AMWTP</p> <p>The determination of TMU for the IWAS unit is documented in CI-IDA-NDA-0055, Total Measurement Uncertainty for the AMWTP Integrated Waste Assay Systems</p>



AMWTP LIST OF EQUIPMENT/PROCESSES					
WIPP #	Site Equipment #	Equipment Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
9DA4	Z-390-101	<p>Canberra Integrated Waste Assay System (IWAS) - DAS4 – 55 gallon drums</p> <p>DAS-101 – PDP Registration # AM04/AMN4 Method described in TPR-8025</p> <p>Location: WMF-676</p>	<ul style="list-style-type: none"> <li>Broad Energy Germanium (BEGe) gamma detectors</li> <li>122 helium-3 tubes used in passive neutron coincidence counting modality and the active neutron differential die-away modality</li> <li>Cf-252/Cs-137 Add-A-Source (AAS) correction source</li> <li>14 MeV neutron generator</li> <li>Fast Neutron Detector Packs (FNDP)</li> </ul>	<ul style="list-style-type: none"> <li>NDA 2000</li> <li>Canberra's Genie 2000</li> <li>Multi-Group Analysis (MGA)</li> <li>Multi-Group Analysis-Uranium (MGA-U)</li> </ul>	<p>The calibration of IWAS system was verified and documented in the site acceptance reports CI-IDA-NDA-0051 through CI-IDA-NDA-0054</p> <p>The calibration of the IWAS was verified and documented in CI-IDA-NDA-0035. Calibration Verification and Confirmation Procedure for the IWAS at AMWTP</p> <p>The determination of TMU for the IWAS unit is documented in CI-IDA-NDA-0055, Total Measurement Uncertainty for the AMWTP Integrated Waste Assay Systems</p>
9RBAS1	Z-212-105	<p>Retrieval Box Assay System (RBAS)</p> <p>BAS-105- PDP Registration #AM05/AMN5 Method described in TPR-8095</p> <p>Location: WMF-634.</p>	<ul style="list-style-type: none"> <li>Broad Energy Germanium (BEGe) gamma detectors</li> <li>84 six foot helium-3 tubes used in passive neutron coincidence counting modality and the active neutron differential die-away modality</li> <li>Eu-152 Source Gamma check source</li> <li>14 MeV neutron generator</li> <li>4 Flux monitor assemblies</li> </ul>	<ul style="list-style-type: none"> <li>PSC RBAS.exe</li> <li>PSC RWARS software package</li> </ul>	<p>The calibration of the RBAS was verified and documented in PSC-5431-CCR-001, Calibration Confirmation Report. The determination of TMU for the RBAS unit is documented in BII-5112-TMU-001, AMWTP Retrieval Box Assay System Total Measurement Uncertainty Report</p>

AMWTP LIST OF EQUIPMENT/PROCESSES					
WIPP #	Site Equipment #	Equipment Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
9WAGS1	WAGS-610	Waste Assay Gamma Spectrometer (WAGS)  WAGS – PDP Registration # AM07/AMG2 Method described in TPR-8093  Location: WMF-610	<ul style="list-style-type: none"> <li>• Broad Energy Germanium (BEGe) gamma detectors</li> <li>• Barium Transmission Source</li> </ul>	<ul style="list-style-type: none"> <li>• NDA 2000</li> <li>• Canberra's Genie 2000</li> <li>• Multi-Group Analysis (MGA)</li> <li>• Multi-Group Analysis-Uranium (MGA-U)</li> </ul>	The calibration of the WAGS was verified and documented in CCP-INL-WAGS-001 and CCP-INL-WAGS-003, Waste Assay Gamma Spectrometer (WAGS) Calibration, Confirmation, and Verification Reports, The determination of TMU for the WAGS is documented in CCP-INL-WAGS-002, Total Measurement Uncertainty for the WAGS System
9SGRS1	SGRS-610	SWEPP Gamma-Ray Spectrometer (SGRS)  SGRS – PDP Registration # AM06/AMG1 Method described in TPR-8092).  Location: WMF-610	<ul style="list-style-type: none"> <li>• Broad Energy Germanium (BEGe) gamma detectors</li> </ul>	<ul style="list-style-type: none"> <li>• NDA 2000</li> <li>• Canberra's Genie 2000</li> <li>• Multi-Group Analysis (MGA)</li> <li>• Multi-Group Analysis-Uranium (MGA-U)</li> </ul>	The calibration of the WAGS was verified and documented in CCP-INL-SGRS-001 SWEPP Gamma-Ray Spectrometer (SGRS) Calibration, Confirmation, and Verification Report, The determination of TMU for the SGRS is documented in CCP-INL-SGRS-002, Total Measurement Uncertainty for the SGRS System
	Z-295-100	In-situ Object Counting System (ISOCS)  ISOCS – PDP Registration # AM08/AMG3 Method described in TPR-8182  Location: WMF-635	<ul style="list-style-type: none"> <li>• Broad Energy Germanium (BEGe) gamma detector</li> </ul>	<ul style="list-style-type: none"> <li>• NDA 2000</li> <li>• Canberra's Genie 2000</li> <li>• Multi-Group Analysis (MGA)</li> <li>• Multi-Group Analysis-Uranium (MGA-U)</li> </ul>	Drum Assay  The calibration of the ISOCS was verified and documented in 10000008684, ISOCS Calibration, Confirmation and Verification Report. The determination of TMU for the ISOCS is documented in 10000008683, Total Measurement Uncertainty for ISOCS

AMWTP LIST OF EQUIPMENT/PROCESSES					
WIPP #	Site Equipment #	Equipment Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
	Z-295-101	In-situ Object Counting System (ISOCS)  ISOCS – PDP Registration # AM09/AMG4 Method described in TPR-8182  Location: WMF-635	<ul style="list-style-type: none"> <li>• Low Energy Germanium (LEGe) gamma detector</li> </ul>	<ul style="list-style-type: none"> <li>• NDA 2000</li> <li>• Canberra's Genie 2000</li> <li>• Multi-Group Analysis (MGA)</li> <li>• Multi-Group Analysis-Uranium (MGA-U)</li> </ul>	<p>Drum Assay</p> <p>The calibration of the ISOCS was verified and documented in 10000008684, ISOCS Calibration, Confirmation and Verification Report. The determination of TMU for the ISOCS is documented in 10000008683, Total Measurement Uncertainty for ISOCS</p>
	Z-295-200	In-situ Object Counting System (ISOCS)  ISOCS – PDP Registration AM010/AMG5 Method described in TPR-8182  Location: WMF-635	<ul style="list-style-type: none"> <li>• Broad Energy Germanium (BEGe) gamma detector</li> </ul>	<ul style="list-style-type: none"> <li>• NDA 2000</li> <li>• Canberra's Genie 2000</li> <li>• Multi-Group Analysis (MGA)</li> <li>• Multi-Group Analysis-Uranium (MGA-U)</li> </ul>	<p>Box Assay</p> <p>The calibration of the ISOCS was verified and documented in 10000008684, ISOCS Calibration, Confirmation and Verification Report. The determination of TMU for the ISOCS is documented in 10000008683, Total Measurement Uncertainty for ISOCS</p>
	Z-295-201	In-situ Object Counting System (ISOCS)  ISOCS – PDP Registration # AM011/AMG6 Method described in TPR-8182  Location: WMF-635	<ul style="list-style-type: none"> <li>• Low Energy Germanium (LEGe) gamma detector</li> </ul>	<ul style="list-style-type: none"> <li>• NDA 2000</li> <li>• Canberra's Genie 2000</li> <li>• Multi-Group Analysis (MGA)</li> <li>• Multi-Group Analysis-Uranium (MGA-U)</li> </ul>	<p>Box Assay</p> <p>The calibration of the ISOCS was verified and documented in 10000008684, ISOCS Calibration, Confirmation and Verification Report. The determination of TMU for the ISOCS is documented in 10000008683, Total Measurement Uncertainty for ISOCS</p>

AMWTP LIST OF EQUIPMENT/PROCESSES					
WIPP #	Site Equipment #	Equipment Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
<b>NON-DESTRUCTIVE EXAMINATION</b>					
9RR1	Z-213-101	Real-Time Radiography System Method described in TPR-8 Location: WMF-634	RTR System	Waste Tracking System (WTS)	N/A
9RR2	Z-213-106	Real-Time Radiography System Method described in procedure in TPR-8089. Location: WMF-634	RTR System	Waste Tracking System (WTS)	N/A
9RR3	RTR-RTR-1001	Real-Time Radiography System Method described in procedure TPR-8120. Location: WMF-610	RTR System	Waste Tracking System (WTS)	N/A
<b>VISUAL EXAMINATION</b>					
9VE2	N/A	Visual Examination (in lieu of RTR) (VEC) Method described in TPR-8103. Location: WMF-634.	N/A	Waste Tracking System (WTS)	N/A
9VE3	N/A	Newly Generated Waste Visual Examination Closure (VNC) Method described in TPR-8103. Location: WMF-634.	N/A	Waste Tracking System (WTS)	N/A
9VE6	N/A	Newly Generated Waste Visual Examination Closure (VNC) Method described in TPR-8041. Location: WMF-676	N/A	Waste Tracking System (WTS)	N/A
9VE7	N/A	Box Line Visual Examination (VEB) – Box to drum repackaging Method described in TPR-8041. Location: WMF-676	N/A	Waste Tracking System (WTS)	N/A
9VE8	N/A	Box Line Visual Examination (VEB) – Drum to new drum repackaging Method described in TPR-8041. Location: WMF-676	N/A	Waste Tracking System (WTS)	N/A
9VE12	N/A	Visual Examination: ARP Packaging Stations (VEA and VEP). Newly-generated waste from retrieval of buried waste at the INL. Method described in TPR-7997. Location: -ARP/SRP	N/A	Waste Tracking System (WTS)	N/A