Mr. John E. Kieling, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Subject: Transmittal of Audit Plan and Notification of Assigned Auditors for CBFO Audit
A-18-04 of the Advanced Mixed Waste Treatment Project

Dear Mr. Kieling:

This letter transmits the audit plan for Carlsbad Field Office (CBFO) Recertification Audit A-18-04 of the Advanced Mixed Waste Treatment Project (AMWTP) at the Idaho National Laboratory (INL) for Transuranic Waste Characterization Activities for Contact-Handled Waste. The audit will be conducted as required by the Waste Isolation Pilot Plant Hazardous Waste Facility Permit, and will be held at the Sawtelle Facility in Idaho Falls, Idaho, and at the AMWTP INL site near Idaho Falls, August 27 – 30, 2018. The audit plan identifies the audit team members, as required by the Permit.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please contact CBFO Office of Quality Assurance, Senior Quality Assurance Specialist, Mr. Martin Navarrete, at (575) 234-7483, should you have any questions concerning this notification.

Sincerely,

Todd Shrader, Manager
Carlsbad Field Office

Enclosure

cc: w/enclosure
J. Carswell, CBFO
C. Gadbury, CBFO
K. Princen, CBFO
C. Fesmire, CBFO
M. Navarrete, CBFO
D. Miehls, CBFO
M. Stapleton, CBFO
M. Brown, CBFO
H. Cruickshank, CBFO
R. Murray, EM-43
R. Maestas, NMED

D. Biswell, NMED
H. Tellez, NMED
M. McLean, NMED
T. Runyon, CTAC
P. Martinez, CTAC
M. Leroch, CTAC
C. Castillo, CTAC
D. Harvill, CTAC
G. White, CTAC
J. Vernon, CTAC
A. Urquidez, RES
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
- 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 Miehls: 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, WWIS/WDS, 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)
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
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 (PL/V&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 (WVIS/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: [Signature]
Jim Vernon, CTAC
Audit Team Leader

Date: 7-16-18

Approved By: [Signature]
Donald C. Cadbury, Director
CBFO Office of Quality Assurance

Date: 7-16-18
### AMWTP List of Equipment/Processes

<table>
<thead>
<tr>
<th>WIPP #</th>
<th>Site Equipment #</th>
<th>Equipment Description</th>
<th>Components</th>
<th>Software</th>
<th>NBA Calibrated Range, Operating Range and TMU</th>
</tr>
</thead>
</table>
| 9DA1   | 2-211-102        | Canbera Integrated Waste Assay System (IWAS) for assay and isotopes on 55-gallon and 83/65-gallon drums | - Broad Energy Germanium (BEGe) gamma detectors  
- 122 helium-3 tubes used in passive neutron coincidence counting modality and the active neutron differential decay modality  
- Cf-252/Ca-137 Add-A-Source (AAS) correction source  
- 14 MeV neutron generator  
- Fast Neutron Detector Packs (FNDP) | NDA 2000  
- Canberra's Genie 2000  
- Multi-Group Analysis (MGA)  
- Multi-Group Analysis-Uranium (MGA-U) | The calibration of IWAS system was verified and documented in the site acceptance reports CI-IDA-NDA-0051 through CI-IDA-NDA-0054. Calibration Verification and Confirmation Procedure for the IWAS at AMWTP. 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. |
| 9DA2   | 2-211-103        | Canbera Integrated Waste Assay System (IWAS) for assay and isotopes on 55-gallon and 83/65-gallon drums | - Broad Energy Germanium (BEGe) gamma detectors  
- 122 helium-3 tubes used in passive neutron coincidence counting modality and the active neutron differential decay modality  
- Cf-252/Ca-137 Add-A-Source (AAS) correction source  
- 14 MeV neutron generator  
- Fast Neutron Detector Packs (FNDP) | NDA 2000  
- Canberra’s Genie 2000  
- Multi-Group Analysis (MGA)  
- Multi-Group Analysis-Uranium (MGA-U) | The calibration of IWAS system was verified and documented in the site acceptance reports CI-IDA-NDA-0051 through CI-IDA-NDA-0054. Calibration Verification and Confirmation Procedure for the IWAS at AMWTP. 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." |
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<th>Site Equipment #</th>
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</tr>
</thead>
<tbody>
<tr>
<td>823</td>
<td>2-380-100</td>
<td>Canberra Integrated Waste Assay System (IWAS) - DAS3 - 55 gallon drums</td>
<td>- Broad Energy Germanium (BEGe) gamma detectors</td>
<td>NDA 2000</td>
<td>The calibration of IWAS system was verified and documented in the site acceptance reports CI-IDA-NDA-2001 through CI-IDA-NDA-2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DAS-100 - PDP Registration # AM03/AM04 Method described in TPR-8020</td>
<td>- 122 helium-3 tubes used in passive neutron coincidence counting modality and the active neutron differential decay modality</td>
<td>Canberra's Genie 2005</td>
<td>The calibration of the IWAS was verified and documented in CI-IDA-NDA-3035. Calibration Verification and Confirmation Procedure for the IWAS at AMWTP</td>
</tr>
<tr>
<td>WPP #</td>
<td>Site Equipment #</td>
<td>Equipment Description</td>
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<td>NDA Calibrated Range, Operating Range and TMU</td>
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</tr>
</tbody>
</table>
• 122 helium-3 tubes used in passive neutron coincidence counting modality and the active neutron differential die-away modality  
• Cf-252/Ca-137 Add-A-Source (AAS) correction source  
• 14 MeV neutron generator  
• Fast Neutron Detector Packs (FNDP) | • NDA 2000  
• Canberra’s Genie 2000  
• Multi-Group Analysis (MGA)  
• Multi-Group Analysis-Uranium (MGA-U) | The calibration of IWAS system was verified and documented in the site acceptance reports CI-IDA-NDA-0051 through CI-IDA-NDA-0054  
The calibration of the IWAS was verified and documented in CI-IDA-NDA-0055. Calibration Verification and Confirmation Procedure for the IWAS at AMWTP  
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 |
| RBAS1 | Z-212-105       | Retrieval Box Assay System (RBAS) | • Broad Energy Germanium (BEG6) gamma detectors  
• 84 six foot helium-3 tubes used in passive neutron coincidence counting modality and the active neutron differential die-away modality  
• Eu-152 Source Gamma check source  
• 14 MeV neutron generator  
• 4 Flux monitor assemblies | • PSC RBAS.exe  
• PSC RWARS software package | The calibration of the RBAS was verified and documented in PSC-5431-CC-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 |
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</tr>
</thead>
<tbody>
<tr>
<td>Z-295-100</td>
<td>ISOCS-435</td>
<td>In-situ Object Counting System (ISOCS)</td>
<td>Broad Energy Germanium (BEGe) gamma detector</td>
<td>NDA 2000, Canberra’s Genie 2000, Multi-Group Analysis (MGA), Multi-Group Analysis-Uranium (MGA-U)</td>
<td>The calibration of the ISOCS was verified and documented in 10000008664, ISOCS Calibration, Confirmation and Verification Report. The determination of TMU for the ISOCS is documented in 10000008663. Total Measurement Uncertainty for ISOCS.</td>
</tr>
</tbody>
</table>
### AMWTP LIST OF EQUIPMENT/PROCESSES

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</thead>
</table>
| Z-295-101 | In-situ Object Counting System (ISOCS) | ISOCS - PDP Registration # AM09/AMG4 Method described in TPR-8182 Location: WMF-635 | - Low Energy Germanium (LEGe) gamma detector | - NDA 2000  
- Canberra's Genie 2000  
- Multi-Group Analysis (MGA)  
- Multi-Group Analysis-Uranium (MGA-U) | 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 |
| Z-295-200 | In-situ Object Counting System (ISOCS) | ISOCS - PDP Registration AM010/AMG5 Method described in TPR-8182 Location: WMF-635 | - Broad Energy Germanium (BEGe) gamma detector | - NDA 2000  
- Canberra's Genie 2000  
- Multi-Group Analysis (MGA)  
- Multi-Group Analysis-Uranium (MGA-U) | Box 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 |
| Z-295-201 | In-situ Object Counting System (ISOCS) | ISOCS - PDP Registration # AM011/AMG6 Method described in TPR-8182 Location: WMF-635 | - Low Energy Germanium (LEGe) gamma detector | - NDA 2000  
- Canberra's Genie 2000  
- Multi-Group Analysis (MGA)  
- Multi-Group Analysis-Uranium (MGA-U) | Box 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

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<tbody>
<tr>
<td><strong>NON-DESTRUCTIVE EXAMINATION</strong></td>
<td></td>
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</tr>
<tr>
<td>9RR1</td>
<td>Z-213-101</td>
<td>Real-Time Radiography System</td>
<td>RTR System</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
</tr>
<tr>
<td>9RR2</td>
<td>Z-713-108</td>
<td>Real-Time Radiography System</td>
<td>RTR System</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
</tr>
<tr>
<td>9RR3</td>
<td>RTR-RTR-1001</td>
<td>Real-Time Radiography System</td>
<td>RTR System</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>VISUAL EXAMINATION</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>9VE2</td>
<td>N/A</td>
<td>Visual Examination (In lieu of RTR) (VEC)</td>
<td>N/A</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
</tr>
<tr>
<td>9VE3</td>
<td>N/A</td>
<td>Newly Generated Waste Visual Examination Closure (VNC)</td>
<td>N/A</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
</tr>
<tr>
<td>9VE5</td>
<td>N/A</td>
<td>Newly Generated Waste Visual Examination Closure (VNC)</td>
<td>N/A</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
</tr>
<tr>
<td>9VE7</td>
<td>N/A</td>
<td>Box Line Visual Examination (VEB) – Box to drum repackaging</td>
<td>N/A</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
</tr>
<tr>
<td>9VE9</td>
<td>N/A</td>
<td>Box Line Visual Examination (VEB) – Drum to new drum repackaging</td>
<td>N/A</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
</tr>
<tr>
<td>9VE12</td>
<td>N/A</td>
<td>Visual Examination: ARP Packaging Stations (VEA and VEP), Newly-generated waste from retrieval of buried wastes at the INL</td>
<td>N/A</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
</tr>
</tbody>
</table>