

United States Government

Department of Energy

# memorandum

Carlsbad Field Office  
Carlsbad, New Mexico 88221

**DATE:** September 07, 2022

**REPLY TO  
ATTN OF:** CBFO:QAD:JL:JM:22-0882

**SUBJECT:** Audit Plan for Recertification Audit A-23-01, AMWTP Transuranic Waste Characterization Activities for Contact-Handled Waste

**TO:** Mr. Doug Pruitt, Department of Energy - Idaho

Please be advised that an audit team from the U.S. Department of Energy Carlsbad Field Office (DOE CBFO) will conduct Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit Attachment C6 Audit A-23-01 for recertification of the Advanced Mixed Waste Treatment Project (AMWTP) to conduct characterization activities for contact-handled (CH) transuranic waste. The audit is scheduled for October 10–13, 2022, and will be conducted in accordance with the attached audit plan.

The AMWTP characterization activities for CH Summary Category Groups S3000 homogeneous solids, S4000 soils/gravel, and S5000 debris wastes will be evaluated during the audit. In addition, the audit team will verify compliance with WIPP Waste Acceptance Criteria requirements. Representatives from the DOE CBFO and the New Mexico Environment Department may be present to observe the audit.

Your representatives are requested to coordinate with the audit team to provide access to AMWTP facilities and to supply the necessary documentation and records for the audit team to conduct the audit. Please arrange to have cognizant personnel available to support the audit.

If you have any questions or comments, please contact me at (575) 200-0716.

Joe Lopez

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by Joe Lopez  
Date: 2022.09.06  
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Joe Lopez,  
Senior Quality Assurance Specialist  
Quality Assurance Division  
Carlsbad Field Office

Attachment

cc: w/attachment

J. Lorence, EM-3.113	*ED	D. Ivey, NWP/QA	ED
R. Toro, EM-3.113	ED	V. Ballew, NWP/QA	ED
R. Knerr, CBFO	ED	S. Saiz, NWP/QA	ED
M. Bollinger, CBFO	ED	A. Boyea, NWP/QA	ED
E. Garza, CBFO	ED	G. Byram, AMWTP	ED
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M. Stapleton, CBFO	ED	J. Kettel, AMWTP	ED
J. Montemayor, CBFO	ED	A. Morse, AMWTP	ED
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M. Toothman, CBFO	ED	I. Joo, AMWTP	ED
D. Bamper, CBFO	ED	J. Ellis, EPA	ED
M. Luckey, CBFO	ED	T. Peake, EPA	ED
W. Iqbal, CBFO	ED	E. Feltcorn, EPA	ED
D. Smith, CBFO	ED	R. Shean, NMED	ED
C. Fluor, DOE-ID	ED	R. Maestas, NMED	ED
T. Jenkins, DOE-ID	ED	D. Biswell, NMED	ED
J. Mitchell, DOE-ID	ED	M. McLean, NMED	ED
A. Wichmann, DOE-ID	ED	S. Kopp, CTAC	ED
M. Brown, DOE-ID	ED	W. Ledford, CTAC	ED
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S. Dunagan, NWP	ED	S. Gomez, CTAC	ED
M. Percy, NWP	ED	D. Stegman, CTAC	ED
C. Lockhart, NWP	ED	D. Harvill, CTAC	ED
R. Taylor, NWP	ED	J. Maupin, CTAC	ED
S. Strong, NWP	ED	G. White, CTAC	ED
K. Stone, NWP/CCP	ED	Site Documents	ED
R. Lee, NWP/CCP	ED	WWIS Database Admin.	ED
R. Reeves, NWP/CCP	ED	S. Sifuentes, SNL	ED
D. Wade, NWP/CCP	ED	CBFO M&RC	ED
B. Pace, NWP/CCP	ED	CBFO QA File	
K. Gentry, NWP/CCP	ED		
J. Carter, NWP/CCP	ED		

\*ED denotes electronic distribution

**CARLSBAD FIELD OFFICE  
AUDIT PLAN**

**Audit Number:** A-23-01

**Organization to be Audited:** Advanced Mixed Waste Treatment Project (AMWTP), Idaho Environmental Coalition LLC (IEC)

**Organizations to be Notified:** IEC  
U.S. Department of Energy-Idaho Operations Office  
New Mexico Environment Department  
U.S. Environmental Protection Agency  
Nuclear Waste Partnership LLC Central Characterization Program

**Date and Location:** October 10 – 13, 2022  
Idaho Falls, ID, Carlsbad, NM, and via remote capabilities

**Audit Team:** **Joe Lopez\*\*** Carlsbad Field Office (CBFO)  
Quality Assurance Division (QAD), Quality Assurance Lead (QAL)  
**Darren Jolley\*\*** CBFO QAD Director, QAL support  
**Dustin Stegman\*\*** Audit Team Leader, CBFO Technical Assistance Contractor (CTAC)

<b>Audited Process:</b>	<b>Auditors:</b>	<b>Technical Specialists:</b>
Organization, Quality Assurance (QA) Program, Program Status	<b>Cindi Castillo**</b>	N/A
C6 QA WIPP Waste Information System/Waste Data System	Bob Blyth <b>Jay Montemayor**</b> (Auditor-In-Training)	N/A
C6 QA Training	<b>Tim Boswell**</b>	N/A
C6 QA Quality Improvement, Corrective Actions, Nonconformances	Rick Castillo	N/A
C6 QA Document Control & Records	<b>Laura Jones**</b>	N/A
Software QA	<b>Joe Lopez**</b> <b>Jason Biesecker**</b> (Auditor-In-Training)	<b>Joe Lopez**</b>
Management & Independent Assessments	Kathy Hood	N/A
Procurement & Graded Approach	Bob Prentiss	N/A
Container Management, Measuring & Test Equipment, Instrumentation	<b>Paul Gilbert**</b>	N/A
Acceptable Knowledge & Load Management	Maria Escarcega	Dick Blauvelt Randy Fitzgerald
Visual Examination	<b>Wayne Ledford**</b>	<b>Shelly Gomez**</b>
Real-Time Radiography	<b>Dale Dover**</b>	<b>Eric Lyles**</b>
Nondestructive Assay/Performance Demonstration Program	<b>Steve Shafer**</b>	<b>Jim Oliver**</b> <b>Michael Collins**</b>
Project-Level Verification & Validation	<b>Paul Gomez**</b>	<b>Paul Gomez**</b>

**Bold\*\*** Indicates team members traveling to the AMWTP site to perform the audit. These technical and QA objective evaluations are to be performed on-site as required by the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit, Waste Analysis Plan, Attachment C6, *Audit and Surveillance Program*.

### **Audit Scope:**

The audit team will evaluate the continued adequacy, implementation, and effectiveness of the technical and QA activities performed by the AMWTP for characterization of contact-handled transuranic summary category groups S3000 homogeneous solids, S4000 soils/gravel, and S5000 debris wastes.

Some audit activities will be conducted at the AMWTP site in Idaho Falls, ID, with team members also working remotely via teleconference, or in Carlsbad, NM, at the Skeen-Whitlock Building, as described in the daily schedule.

Transportation activities will not be included in the scope of this audit. A list of processes to be evaluated is attached to this plan (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:

- DOE/CBFO-94-1012, *CBFO 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, *Characterization 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
- Quality Improvement/Nonconformances
- Personnel Qualification and Training
- Measuring and Test Equipment
- Software Version Installation
- Records
- Procurement
- Audits/Assessments

**Technical Activities**

- Project-level Data Validation and Verification
- Acceptable Knowledge
- Visual Examination
- Nondestructive Assay, including Performance Demonstration Program
- Container Management
- WIPP Waste Information System/Waste Data System
- Real-Time-Radiography

**Schedule of Audit Activities:**

***Please note all times listed are Mountain Daylight Time.***

A pre-audit conference is scheduled for Monday, October 10, 2022, at 8:30 a.m.

If needed, the audit team leader will conduct a management briefing with appropriate AMWTP management at 8:30 a.m. on Tuesday, Wednesday, and Thursday, October 11 – 13, 2022.

A post-audit conference is scheduled for Thursday, October 13, 2022, at 3:00 p.m.

All meetings will take place according to the daily schedule.

Prepared by: DUSTIN  
STEGMAN  
(Affiliate)

 Digitally signed by DUSTIN  
STEGMAN (Affiliate)  
Date: 2022.08.29 14:16:28  
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Dustin Stegman  
CTAC Audit Team Leader

Date: \_\_\_\_\_

**Concurred by:** \_\_\_\_\_  
Joe Lopez, CBFO  
Quality Assurance Lead

Joe Lopez  
Digitally signed by Joe Lopez  
Date: 2022.09.06 13:01:53 -06'00'

**Date:** \_\_\_\_\_

**Approved by:** \_\_\_\_\_  
Darren Jolley, Director  
CBFO Quality Assurance Division

Joe Lopez  
for Darren Jolley  
Digitally signed by Joe Lopez for Darren Jolley  
Date: 2022.09.06 13:03:54 -06'00'

**Date:** \_\_\_\_\_

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	Canberra Integrated Waste Assay System (IWAS) for assay and isotopics on 55-gallon and 83/85-gallon drums  DAS -102 - PDP Registration # AM01/AMN1 Method described in procedure TPR-8094  Location: WMF-634	<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 C-I-IDA-NDA-0051 through C-I-IDA-NDA-0054</p> <p>The calibration of the IWAS was verified and documented in C-I-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 C-I-IDA-NDA-0055, Total Measurement Uncertainty for the AMWTP Integrated Waste Assay Systems,</p>
9DA2	Z-211-103	Canberra Integrated Waste Assay System (IWAS) for assay and isotopics on 55-gallon and 83/85-gallon drums  DAS-103 - PDP Registration # AM02/AMN2 Method described in procedure TPR-8094  Location: WMF-634	<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 C-I-IDA-NDA-0051 through C-I-IDA-NDA-0054</p> <p>The calibration of the IWAS was verified and documented in C-I-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 C-I-IDA-NDA-0055, "Total Measurement</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 di-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 (FNDFP)</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>Uncertainty for the AMWTP Integrated Waste Assay Systems"</p> <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

AMWTP LIST OF EQUIPMENT/PROCESSES					
WIPP #	Site Equipment #	Equipment Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
9ISOCS1	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 1000008684, ISOCS Calibration, Confirmation and Verification Report. The determination of TMU for the ISOCS is documented in 1000008683, Total Measurement Uncertainty for ISOCS
9ISOCS2	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>	Drum Assay  The calibration of the ISOCS was verified and documented in 1000008684, ISOCS Calibration, Confirmation and Verification Report. The determination of TMU for the ISOCS is documented in 1000008683, Total Measurement Uncertainty for ISOCS
9ISOCS3	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>	Box Assay  The calibration of the ISOCS was verified and documented in 1000008684, ISOCS Calibration, Confirmation and Verification Report. The determination of TMU for the ISOCS is documented in 1000008683, Total Measurement Uncertainty for ISOCS

AMWTP LIST OF EQUIPMENT/PROCESSES					
WIPP #	Site Equipment #	Equipment Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
9ISOCS4	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>	Box Assay  The calibration of the ISOCS was verified and documented in 1000008684, ISOCS Calibration, Confirmation and Verification Report. The determination of TMU for the ISOCS is documented in 1000008683, Total Measurement Uncertainty for ISOCS
<b>NON-DESTRUCTIVE EXAMINATION</b>					
9RR1	Z-213-101	Real-Time Radiography System Method described in TPR-8089 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-8089. Location: WMF-610.	RTR System	Waste Tracking System (WTS)	N/A
<b>VISUAL EXAMINATION</b>					
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

AMWTP LIST OF EQUIPMENT/PROCESSES					
WIPP #	Site Equipment #	Equipment Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
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). Newly-generated waste from retrieval of buried waste at the INL. SRP Packaging Stations (VEP). Drum to new drum repackaging. Method described in TPR-7997. Location: -ARP/SRP	N/A	Waste Tracking System (WTS)	N/A