

United States Government

Department of Energy

# memorandum

Carlsbad Field Office  
Carlsbad, New Mexico 88221

**DATE:** March 3, 2011

**REPLY TO  
ATTN OF:** CBFO:NTP:NC:GS:11-0167:UFC 2300.00

**SUBJECT:** Recertification INL AMWTP Audit A-10-24

**TO:** Mr. Mark Searle, Acting Deputy Manager, Idaho Cleanup Project



The Carlsbad Field Office (CBFO) has completed the annual recertification audit of the Idaho National Laboratory (INL) Advanced Mixed Waste Treatment Project's (AMWTP) Transuranic (TRU) waste program. Audit A-10-24 of the AMWTP was conducted on August 23-26, 2010, to evaluate the adequacy, implementation, and effectiveness of the AMWTP and continued compliance of AMWTP TRU waste characterization, and certification activities for Contact-Handled (CH) (S3000) homogeneous solids and (S5000) debris waste.

The audit team determined that the AMWTP TRU program was in compliance with the "Waste Analysis Plan" (WAP) of the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit (HWFP), the Quality Assurance Program Document (QAPD), and the Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant (WIPP WAC).

Based on the results of the audit and surveillance and conditions and limitations provided by the New Mexico Environment Department (NMED) and the U.S. Environmental Protection Agency (EPA), the CBFO grants continued authority at the AMWTP for characterization and certification activities for CH homogeneous solids (S3000) and CH debris (S5000) wastes as identified in Table 1. In addition, continuing the authority for sampling processes of S3000 and S4000 (soils/gravel).

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<b>Table 1-Approved Waste Characterization Processes</b>				
<b>Characterization Process</b>	<b>S3000 Homogeneous solids</b>		<b>S5000 Debris</b>	
	<b>Newly generated</b>	<b>Retrievably-Stored</b>	<b>Newly generated</b>	<b>Retrievably-Stored</b>
<b>Acceptable Knowledge</b>	N/A	Approved	Approved	Approved
<b>Load Management</b>	N/A	Approved	Approved	Approved
<b>Data Validation &amp; Verification (V&amp;V)</b>	Approved	Approved	Approved	Approved
<b>Visual Examination (VE)</b>	Approved	Approved	Approved	Approved
<b>Solid Sampling Activities<sup>1</sup></b>	Approved	Approved	N/A	N/A
<b>Headspace Gas Sampling &amp; Analysis (both canister &amp; online techniques)</b>	Approved	Approved	Approved	Approved
<b>Nondestructive assay (NDA)<sup>2</sup></b>	Approved	Approved	Approved	Approved
<b>Real-time Radiography (RTR)</b>	Approved	Approved	Approved	Approved
<b>WIPP Waste Information System (WWIS)</b>	Approved	Approved	Approved	Approved

<sup>1</sup>Solid Sampling Analysis is performed at the INL TWCP. Coring activities of soil/gravel (S4000) waste from other generator sites is approved, but is not certified to ship for disposal at WIPP.

<sup>2</sup>Nondestructive assay (NDA) of Newly generated S3000 waste is authorized for assaying using ONLY IWAS units Z-211-102 and Z-211-103.

TRU waste characterization and certification, using significantly revised or new processes, procedures, or systems must be evaluated by the CBFO prior to their implementation. Included in this memo are the following attachments:

- *Attachment 1* describes the AMWTP certification program status,
- *Attachment 2* contains the equipment certified at the site,
- *Attachment 3* contains the certified CCP procedures, and
- *Attachment 4* specific AMWTP waste characterization process elements that must be reported. These process elements are identified as Tier 1 changes and Tier 2 changes. The AMWTP shall not ship for disposal at WIPP any wastes affected by a Tier 1 process element change without prior CBFO approval, and AMWTP shall report Tier 2 changes to CBFO on a quarterly basis. AMWTP procedures shall be revised as necessary to incorporate this reporting and approval process.



Edward Ziemianski  
Acting Manager

Attachment(s)

Mr. Mark Searle

-3-

March 3, 2011

cc: w/attachments

V. Oba, CBFO	*ED
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CTAC Document Coordinator  
WIPP Operating Record  
CBFO M&RC

\*ED denotes electronic distribution

## AMWTP CERTIFICATION PROGRAM STATUS

The CBFO Director of the Office of the National TRU Program and the CBFO Quality Assurance Manager has evaluated the documentation supporting the compliance of the Advanced Mixed Waste Treatment Project (AMWTP) TRU waste program. Attachments 2 and 3 provide complete lists of certified processes, procedures, documents, and systems deployed at the AMWTP. Attachment 4 is the CH Tiering of TRU Waste Characterization Processes implemented by the AMWTP.

### PROGRAM STATUS

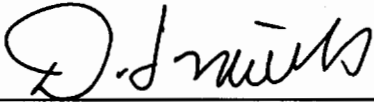
- All program elements remain complete.
- The following site documents are current and demonstrate how the CCP complies with the CBFO requirements.
  - **MP-TRUW-8.1** – *Certification Plan for INL Transuranic Waste*, (Approved June 24, 2010 - CBFO:NTP:NC:GS:10-1415:UFC 5822.00)
  - **MP-TRUW-8.2** – *Quality Assurance Project Plan*, (Approved May 27, 2010 - CBFO:NTP:DCG:GS:10-0856:UFC5400.00).
- Certified Systems - see Attachment 2 for the complete list of certified systems used by the AMWTP.
- Standard operating procedures - see Attachment 3 for the complete list of certified CCP procedures used at the AMWTP.
- Tiering of TRU Waste Characterization Processes implemented by AMWTP (based on EPA Baseline Inspections) - see Attachment 4.
- AMWTP participated in the following performance demonstration programs (PDPs):
  - **HSG PDP** – Cycle 24A Memo CBFO:NTP:MRB:GS:10-0828:UFC 5822.00 dated May 10, 2009 approving analysis of VOCs in headspace gas samples using the GC/MS analytical method on the analytical system identified as Z-221-001-A.
  - **NDA PDP** – Cycle 17A Memo CBFO:NTP:MRB:GS:10-1432:UFC 5822.00 dated June 30, 2010 approving analysis of TRU waste drums using the DAS-100 (AM03/AMN3) and DAS-101 (AM04/AMN4) with a limitation that these two systems cannot be used to characterize sludge-type waste. DAS-102 (AM01/AMN1) and DAS-103 (AM02/AMN2) are approved without NDA PDP performance imposed restrictions.

- CBFO conducted a recertification Audit A-10-24 of the AMWTP on August 23-26, 2010
  - No CARs were issued.
  - Interim Audit Report was issued on September 21, 2010.
  - Final Audit Report was issued to NMED on December 14, 2010.
  - NMED issued approval of the Final Audit Report on January 25, 2011.
  
- EPA concurred with the CBFO draft recertification on February 28, 2011.

**RECOMMENDATION**

The recommendation to the CBFO Manager is to continue the AMWTP authority for characterization and certification of contact-handled (CH) homogeneous solids (S3000) and CH debris (S5000) wastes at AMWTP as identified in the Table 1 of the memorandum. Attachments 2 and 3 list the systems and procedures that constitute the bounds of this authority. Attachment 4 is the CH Tiering of TRU Waste Characterization Processes implemented by AMWTP.

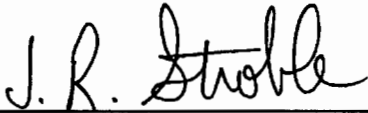
**CONCURRENCE**



Mr. Dennis Miehl, Acting Director  
Quality Assurance

2-22-11

Date



Mr. J. R. Stroble, Director  
CBFO Office of the National TRU Program

2-23-11

Date

### INL AMWTP LIST OF CERTIFIED EQUIPMENT AND PROCESSES

WIPP #	Site Equipment #	Equipment Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
<b>HEADSPACE GAS</b>					
9HG4	Z-221-001-A	Consonant Technology Inc. (CTI) –Gas Chromatography/Mass Spectrometry (GC/MS) System  PDP ID # CTI-HGAS-A-001 Method described in procedure INST-OI-43	Agilent 5973N Network Mass Selective Detector – Unit 001	HGAS Software, Version 1.23	N/A
<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 INST-OI-14	<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>	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 determination of TMU for the IWAS unit is documented in CI-IDA-NDA-0055, Total Measurement Uncertainty for the AMWTP Integrated Waste Assay Systems, Revision 1, July 30, 2003.
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 INST-OI-14	<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-</li> </ul>	NDA 2000  Canberra's Genie 2000  Multi-Group Analysis (MGA)  Multi-Group	The calibration of IWAS system was verified and documented in the site acceptance reports CI-IDA-NDA-0051 through CI-IDA-NDA-0054  The determination of TMU for the IWAS unit is documented in CI-IDA-NDA-0055, "Total

**INL AMWTP LIST OF CERTIFIED EQUIPMENT AND PROCESSES**

WIPP #	Site Equipment #	Equipment Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
			Source (AAS) correction source ➤ 14 MeV neutron generator ➤ Fast Neutron Detector Packs (FNDP)	Analysis- Uranium (MGA-U)	Measurement Uncertainty for the AMWTP Integrated Waste Assay Systems", Revision 1, July 30, 2003.
9DA3	Z-390-100	Canberra Integrated Waste Assay System (IWAS) - DAS3 – 55 gallon drums  DAS-100 – PDP Registration # AM03/AMN3  Method described in INST-FOI-01	➤ Broad Energy Germanium (BEGe) gamma detectors ➤ 122 helium-3 tubes used in passive neutron coincidence counting modality and the active neutron differential die-away modality ➤ Cf-252/Cs-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 determination of TMU for the IWAS unit is documented in CI-IDA-NDA-0055, Total Measurement Uncertainty for the AMWTP Integrated Waste Assay Systems, Revision 1, July 30, 2003.



**INL AMWTP LIST OF CERTIFIED EQUIPMENT AND PROCESSES**

<b>WIPP #</b>	<b>Site Equipment #</b>	<b>Equipment Description</b>	<b>Components</b>	<b>Software</b>	<b>NDA Calibrated Range, Operating Range and TMU</b>
9DA4	Z-390-101	Canberra Integrated Waste Assay System (IWAS) - DAS4 – 55 gallon drums  DAS-101 – PDP Registration # AM04/AMN4 (Approved)  Method described in INST-FOI-01	<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>	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 determination of TMU for the IWAS unit is documented in CI-IDA-NDA-0055, Total Measurement Uncertainty for the AMWTP Integrated Waste Assay Systems, Revision 1, July 30, 2003.
<b>NON-DESTRUCTIVE EXAMINATION</b>					
9RR1	Z-213-101	Real Time Radiography System – 55 gallon drums, 83 gallon drums and SWBs  Method described in INST-OI-12 and INST-OI-81	RTR System	Waste Tracking System (WTS)	N/A
9RR2	Z-213-106	Real Time Radiography System – 55 gallon drums, 83 gallon drums and SWBs  Method described in procedure INST-OI-12 and INST-OI-81	RTR System	Waste Tracking System (WTS)	N/A
<b>SOLIDS</b>					
9DC1	Z-250-802	Drum Coring and Sample Collection Glove Box  Method – BN-MDC  Method described in procedure INST-OI-16, INST-OI-73, and INST-OI-75	Drum Coring and Sample Collection Glove Box	Waste Tracking System (WTS)	N/A

### INL AMWTP LIST OF CERTIFIED EQUIPMENT AND PROCESSES

WIPP #	Site Equipment #	Equipment Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
<b>VISUAL EXAMINATION</b>					
9VE2	N/A	Visual Examination (in lieu of RTR) (VEC) Method described in INST-OI-34	N/A	Waste Tracking System (WTS)	N/A
9VE3	N/A	Newly Generated Waste Visual Examination Closure (VNC) Method described in INST-OI-34	N/A	Waste Tracking System (WTS)	N/A
9VE5	N/A	Visual Examination (in lieu of RTR) (VEC) Method described in INST-FOI-17	N/A	Waste Tracking System (WTS)	N/A
9VE6	N/A	Newly Generated Waste Visual Examination Closure (VNC) Method described in INST-FOI-17	N/A	Waste Tracking System (WTS)	N/A
9VE7	N/A	Box Line Visual Examination (VEB) – Box to drum repackaging Method described in INST-FOI-17	N/A	Waste Tracking System (WTS)	N/A
9VE8	N/A	Box Line Visual Examination (VEB) – Drum to new drum repackaging Method described in INST-FOI-17	N/A	Waste Tracking System (WTS)	N/A
9VE10	N/A	Box Line Visual Examination (VEB) – Drum to new drum repackaging Method described in INST-OI-34	N/A	Waste Tracking System (WTS)	N/A

<b>INL AMWTP DEACTIVATED EQUIPMENT LIST</b>			
<b>WIPP #</b>	<b>Site Equipment #</b>	<b>Equipment Description</b>	<b>Date Deactivated</b>
<b>HEADSPACE GAS</b>			
9HG1	Z-220-001A	Nuclear Filter Technology Drum Vent System – Mass Spectrometer, Unit A	8/6/06
9HG2	Z-220-001B	Nuclear Filter Technology Drum Vent System – Mass Spectrometer, Unit B	8/6/06
9HG3	Z-220-001C	Nuclear Filter Technology Drum Vent System – Mass Spectrometer, Unit C	8/6/06
9HG7	Z-221-001D	Consonant Technology Inc. (CTI) –Gas Chromatography/Mass Spectrometry (GC/MS) System	Currently being used for spare parts
9HG6	Z-221-001C	Consonant Technology Inc. (CTI) –Gas Chromatography/Mass Spectrometry (GC/MS) System	4/14/08
9HG5	Z-221-001B	Consonant Technology Inc. (CTI) –Gas Chromatography/Mass Spectrometry (GC/MS) System	4/14/08

<b>AMWTP LIST OF CERTIFIED PROCEDURES</b>		
<b>#</b>	<b>Procedure Number</b>	<b>Procedure Title</b>
1.	CI-IDA-NDA-0035	Calibration Verification & Confirmation Procedure for the Integrated Waste Assay (IWAS) at AMWTP, Canberra Industries
2.	CI-IDA-NDA-0055	Total Measurement Uncertainty for the AMWTP Integrated Waste Assay Systems, Canberra Industries
3.	RPT-TRUW-03	Drum Assay Technical Review Report
4.	INST-CD&M-11.1.2	Facility Modification Proposal Preparation
5.	INST-CD&M-11.2.1	Software Version Control
6.	INST-CD&M-11.2.2	Software Inventory Classification
7.	INST-CD&M-11.2.3	System Data Change Request
8.	INST-CMNT-10.5.1	Measuring and Test Equipment Program
9.	INST-CMNT-10.14.1	Testing In-Plant and Process Instrumentation
10.	INST-FOI-01	In-Plant Drum Assay Operations
11.	INST-FOI-17	Facility Visual Examination Operations
12.	INST-FOI-20	Supercompactor and Post-Compaction Operations
13.	INST-OI-09	Retrieval Enclosure Waste Container Extraction
14.	INST-OI-11	Waste Container Handling
15.	INST-OI-12	Real-Time Radiography Operations (Drum)
16.	INST-OI-14	Drum Assay Operations
17.	INST-OI-16	Drum Coring Operations
18.	INST-OI-34	Non-Facility Visual Examination Operations
19.	INST-OI-43	HGAS Sampling and Analysis Operations
20.	INST-OI-45	Drum Filter Installation
21.	INST-OI-50	WMF-615 Filter Insertion Operation
22.	INST-OI-73	Manual Drum Coring Operations
23.	INST-OI-75	Container-in-Container Sampling
24.	INST-OI-81	Real-Time Radiography Operations (For WIPP Certification Boxes)
25.	INST-TRUW-8.1.1	Drum Assay Post Maintenance Calibration & Verification
26.	LST-RTQP-03-IM	WIPP Training Requirements Implementation Matrix
27.	MP-CD&M-11.1	Change Control
28.	MP-CD&M-11.2	Software Quality Assurance
29.	MP-CMNT-10.5	Calibration of Measuring and Test Equipment Program
30.	MP-CMNT-10.14	In-Plant and Process Instrumentation Testing Program
31.	MP-DOCS-18.1	Developing Written Work Instructions
32.	MP-DOCS-18.2	Records Management
33.	MP-DOCS-18.3	Developing Management Procedures
34.	MP-DOCS-18.4	Document Control
35.	MP-M&IA-17.1	Management Assessment
36.	MP-M&IA-17.2	Independent Assessment
37.	MP-M&IA-17.3	Quality Assurance Surveillance

<b>AMWTP LIST OF CERTIFIED PROCEDURES</b>		
<b>#</b>	<b>Procedure Number</b>	<b>Procedure Title</b>
38.	MP-PCMT-15.1	Acquisition of Material and Services
39.	MP-PCMT-15.21	Material Management
40.	MP-Q&SI-5.1	Investigation and Root Cause Analysis
41.	MP-Q&SI-5.3	Corrective Action
42.	MP-Q&SI-5.4	Identification of Nonconforming Conditions
43.	MP-Q&SI-5.6	Graded Approach
44.	MP-Q&SI-5.8	Qualifying Supply Chain Inspectors, Auditors, Lead Auditors and Technical Specialists
45.	MP-RTQP-14.4	Personnel Qualification and Certification
46.	MP-RTQP-14.6	Job Analysis
47.	MP-RTQP-14.16	Training Program Evaluation
48.	MP-RTQP-14.19	Training Records Administration
49.	MP-RTQP-14.20	Training Implementation Matrix
50.	MP-TRUW-8.1	Certification Plan for INL Transuranic Waste
51.	MP-TRUW-8.2	Quality Assurance Project Plan
52.	MP-TRUW-8.5	TRU Waste Certification
53.	MP-TRUW-8.8	Level I Data Validation
54.	MP-TRUW-8.9	Level II Data Validation
55.	MP-TRUW-8.11	Data Reconciliation
56.	MP-TRUW-8.12	Waste Receipt and Shipping Inspection
57.	MP-TRUW-8.13	Collection, Review, and Management of Acceptable Knowledge Documentation
58.	MP-TRUW-8.14	Preparation of Waste Stream Profile Forms
59.	MP-TRUW-8.17	Co-located Core Sampling Control Charts
60.	MP-TRUW-8.25	Random Selection of Containers for Headspace Gas and Solids Sampling Analysis
61.	MP-TRUW-8.26	Reports to Management
62.	MP-TRUW-8.34	WIPP Sample Transfer

<b>AMWTP LIST OF CANCELLED/DEACTIVATED PROCEDURES</b>			
<b>#</b>	<b>Procedure Number</b>	<b>Procedure Title</b>	<b>Deactivation Date</b>
1.	MP-TRUW-8.6	Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH TRAMPAC) for HalfPACT (Incorporated into MP-TRUW-8.3)	12/04
2.	INST-OI-44	Sampling Port Installation	1/26/06
3.	INST-OI-48	Electronic TRUPACT-II Operations	2/2/06
4.	INST-CD&M-11.1.1	Facility Modification Screening	6/5/06
5.	MP-PCMT-15.4	Evaluation of Proposals (Superceded by MP-PCMT-15.21)	6/30/06
6.	MP-CMNT-10.3	Supply Chain Management (Superceded by MP-PCMT-15.21)	7/12/06
7.	MP-PCMT-15.6	Acceptance of Items and Services (Superceded by MP-PCMT-15.21)	7/12/06
8.	MP-Q&SI-5.7	Quality Inspections	7/12/06
9.	INST-OI-18	Gas Generation Testing Operations	8/15/06
10.	MP-TRUW-04-IM	TRU Waste Program Procedures Matrix for DOE-CBFO QAP	11/2/06
11.	INST-OI-49	Electronic Payload Assembly	12/11/06
12.	INST-TRUW-8.2.1	HSG Calibration	12/11/06
13.	MP-TRUW-8.19	RTR/VE Drum Selection	1/23/07
14.	MP-TRUW-8.16	WWIS Data Transfer (Incorporated into MP-TRUW-8.5)	7/3/07
15.	INST-OI-13	Drum Vent/Headspace Gas Sample Operations	8/07
16.	INST-OI-20	TRUPACT-II Operations	4/08
17.	INST-OI-21	Payload Assembly	4/08
18.	INST-OI-52	Re-Lidding and Over-pack Reconfiguration Operations	3/08
19.	MP-TRUW-8.3	Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC)	3/08
20.	MP-TRUW-8.4	Quality Assurance Project Plan for Gas Generation Testing Program	3/08
21.	MP-CMNT-10.10	TRUPACT-II Maintenance Program	4/08
22.	MP-TRUW-8.27	CH-TRUCON Management	3/08
23.	MP-TRUW-8.37	Long-Term Objective for Unified Flammable Gas Determination	3/08
24.	MP-PCMT-15.7	Vendor Qualification and Performance Evaluation	12/18/08

**Tiering of TRU Waste Characterization Processes Implemented by AMWTP  
(Based on March 28-30, 2006 EPA Baseline Inspection No. EPA-AMWTP-03.06-08)  
DOCKET # A-98-49; II-A4-66**

<b>WC Process Elements</b>	<b>AMWTP WC Process Specific T1 Changes</b>	<b>AMWTP WC Process Specific T2 Changes</b>	<b>AMWTP General T2 Changes</b>
AK including Load Management	Any new waste category group.  Load management of any unapproved waste stream  Changes to WWIS algorithms specific to load management.	Waste Stream Profile Forms including updates or additions to waste stream(s) within an approved waste category.  Changes in load management status of approved waste stream(s).	Changes to site procedures requiring CBFO approvals and other changes.
NDA	New equipment or physical modifications to approved equipment  Changes to approved calibration range for approved equipment.	Changes to software for approved equipment.  Changes to operating range upon CBFO approval.	Changes to site procedures requiring CBFO approvals and other changes.
RTR	N/A	New equipment or changes to approved equipment.	Changes to site procedures requiring CBFO approvals and other changes.
VE and VET	Changes in vendor performing VE and/or VET	Addition of new waste category.  Addition of new procedure or site equipment identifier	Changes to site procedures requiring CBFO approvals and other changes.
WWIS	N/A	N/A	Changes to site procedures requiring CBFO approvals and other changes.