

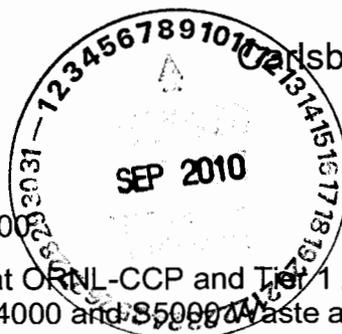
United States Government

Department of Energy

**memorandum**

Carlsbad Field Office

Carlsbad, New Mexico 88221



DATE: September 8, 2010

REPLY TO  
ATTN OF: CBFO:NTP:NC:GS:10-1497:UFC 5900.00

SUBJECT: Recertification of CH and RH Activities at ORNL-CCP and Tier 1 Approval for the use of Visual Examination to Characterize CH TRU S4000 and S5000 Waste at Oak Ridge National Laboratory Central Characterization Project

TO: John Eschenberg, DOE-OR  
M. Farok Sharif, Washington TRU Solutions General Manager

The Carlsbad Field Office (CBFO) conducted Recertification Audit A-10-08 of the Central Characterization Project (CCP) contact-handled (CH) and remote-handled (RH) TRU waste program deployed at the Oak Ridge National Laboratory (ORNL) (hereinafter referred to as ORNL-CCP) and to include the use of visual examination (VE) to characterize CH TRU S4000 and S5000 waste categories. Audit A-10-08 was conducted February 9-11, 2010. The characterization activities were determined to be adequate, satisfactorily implemented, and effective.

On January 27, 2010 in CBFO letter CBFO:NTP:NC:GS:10-0727:UFC 5900.00 to Mr. Tom Peake, Environmental Protection Agency (EPA), from Mr. Donald C. Gadbury, Director, CBFO Office of the National TRU Program, CBFO requested a Tier 1 change for the use of visual examination (VE) to characterize CH TRU S4000 and S5000 waste categories at ORNL-CCP. The EPA conducted their evaluation in Oak Ridge, Tennessee on February 23-24, 2010. The EPA approved this Tier 1 baseline inspection report on March 30, 2010 (Docket No: A-98-49, II-A4-125).

The CCP Quality Assurance Program (QAP) was audited during Audit A-09-10 on February 24-26, 2009 in Carlsbad, New Mexico. The CCP QAP was found to adequately address the upper-tier requirements of the CBFO Quality Assurance Program Document (QAPD) and is being effectively implemented.

CCP CH and RH transportation activities were evaluated in Carlsbad, New Mexico on September 29 through October 1, 2009 during Audit A-09-27. Technical and quality assurance aspects of the transportation problem were found to be effectively implemented.

The audit team determined that the ORNL-CCP TRU programs were in compliance with the Waste Analysis Plan (WAP) of the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit (HWFP), the QAPD, the Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant (WIPP WAC), and the CH and RH TRAMPAC, RH TRU 72B Safety Analysis Report (SAR), TRUPACT-II Certification of Compliance, Remote-Handled Transuranic Waste Characterization Program Implementation Plan (WCPIP). The audit team determined that the procedures/documents were effectively implemented.

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Based on the results of Audits A-10-08, A-09-10 and A-09-27, and conditions and limitations provided by the New Mexico Environment Department (NMED) and the U.S. EPA, the CBFO is authorizing the use of VE to characterize CH TRU soils/gravel (S4000) and debris (S5000) waste categories at the ORNL-CCP, and continue authority at the ORNL-CCP for characterization, certification, and transportation activities for CH retrievably stored soils/gravel (S4000), retrievably stored debris (S5000) and RH retrievably stored debris waste (S5000) as identified in Table 1.

<b>Processes</b>	<b>CH S4000 Soils</b>		<b>CH S5000 Debris</b>		<b>RH S5000 Debris</b>	
	<b>Newly generated</b>	<b>Retrievably- Stored</b>	<b>Newly generated</b>	<b>Retrievably- Stored</b>	<b>Newly generated</b>	<b>Retrievably- Stored</b>
Acceptable Knowledge	N/A	Approved	N/A	Approved	N/A	Approved
Load Management	N/A	N/A	N/A	N/A	N/A	N/A
Project-Level Data Validation and Verification (V&V)	N/A	Approved	N/A	Approved	N/A	Approved
Visual Examination	N/A	Approved	N/A	Approved	N/A	Approved
Solids Sampling and Analysis	N/A	N/A	N/A	N/A	N/A	N/A
Soils Sampling and Analysis <sup>1</sup>	N/A	Approved	N/A	N/A	N/A	N/A
Headspace Gas Sampling (SUMMA) <sup>2</sup>	N/A	N/A	N/A	Approved	N/A	Approved
Nondestructive assay (NDA) (SGS, DWAS/IPAN, & IQ3)	N/A	Approved	N/A	Approved	N/A	N/A
Radiological Characterization	N/A	N/A	N/A	N/A	N/A	Approved
Real-time Radiography	N/A	Approved	N/A	Approved	N/A	N/A
WIPP Waste Information System	N/A	Approved	N/A	Approved	N/A	Approved

<sup>1</sup> Sampling is performed by Advanced Mixed Waste Treatment Project (AMWTP). Analysis is performed by the Idaho National Laboratory (INL), which is approved under a separate certification.

<sup>2</sup> Analysis performed by the INL, which is approved under a separate certification.

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



David C. Moody  
Manager

Attachment(s)

cc: w/attachments

- O. Vincent, CBFO \*ED
- D. Gadbury, CBFO ED
- W. Mackie, CBFO ED
- M. Brown, CBFO ED
- J. R. Stroble, CBFO ED
- N. Castaneda, CBFO ED
- C. Fesmire, CBFO ED
- A. Holland, CBFO ED
- D. Miehls, CBFO ED
- M. Navarrete, CBFO ED
- G. Basabilvazo, CBFO ED
- S. McCauslin, CBFO ED
- J. Edwards, EPA ED
- M. Eagle, EPA ED
- T. Peake, EPA ED
- E. Feltcorn, EPA ED
- R. Joglekar, EPA ED
- A. Perrin, EPA ED
- R. Lee, EPA ED
- J. Bearzi, NMED ED
- M. Percy, WTS ED
- D. Ploetz, WTS ED
- M. Sensibaugh, WTS ED
- L. Porter, WTS ED
- I. Quintana, WTS ED
- C. Weston, WTS ED
- R. Kantrowitz, WTS ED
- J. Vernon, WTS ED
- C. Kirkes, WTS ED
- J. Harvill, WTS ED
- D. Kump, WTS ED
- D. Speed, WTS ED
- C. Luoma, WTS ED
- R. Chatfield, WTS ED
- D. Hofer, WTS ED
- M. Strum, WTS ED
- A. Johnson, WTS ED
- B. Nieman, WTS ED
- D. Standiford, WTS ED
- P. Gilbert, LANL ED
- G. Lyshik, LANL ED
- P. Martinez, CTAC ED
- S. Percy, SM Stoller ED
- CTAC Document Coordinator
- WIPP Operating Record
- CBFO M&RC

\*ED denotes electronic distribution

## CENTRAL CHARACTERIZATION PROJECT AT OAK RIDGE NATIONAL LABORATORY CERTIFICATION PROGRAM STATUS

The CBFO Director of the Office of the National TRU Program and the CBFO Quality Assurance Manager have evaluated the documentation supporting the compliance of the Central Characterization Project (CCP) TRU waste program deployed at the Oak Ridge National Laboratory (ORNL). Attachments 2, 3, and 4 provide complete lists of certified processes, procedures, documents, and systems deployed at the ORNL-CCP.

### PROGRAM STATUS

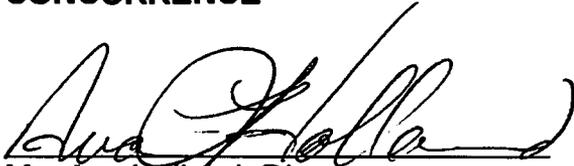
- All program elements remain complete.
- The following site documents are current and demonstrate how the CCP complies with the CBFO requirements from A-10-08.
  - **QAPjP – CCP-PO-001, Revision 18 - CCP Transuranic Waste Characterization Quality Assurance Project Plan** (Approved June 29, 2010 – CBFO:NTP:CF:GS:10-1422:UFC 5900.00).
  - **WCP - CCP-PO-002, Revision 24 - CCP Transuranic Waste Certification Plan** (Approved June 29, 2010 – CBFO:NTP:NC:GS:10-1428:UFC 5900.00).  
**QAP** - Section 4.0 of CCP-PO-002.
  - **TRAMPAC – CCP-PO-003, Revision 11, CCP TRUPACT-II Authorized Method for Payload Control** (Approved June 3, 2009 – CBFO:NTP:CF:GS:09-0987:UFC:5900.00).
  - **RH-TRAMPAC – CCP-PO-505, Revision 0, CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control** (CBFO:NTP:CF:GS:06-1355:UFC 5900.00 dated September 20, 2006)
- Certified Systems - see Attachment 2 for the complete list of certified systems used by the CCP at the ORNL
- Standard operating procedures - see Attachment 3 for the complete list of certified procedures used by the CCP at the ORNL
- Tiering of TRU Waste Characterization Processes implemented by CCP at ORNL (based on EPA Baseline Inspections) - see Attachment 4

- CCP participated in the following performance demonstration programs (PDPs) for Audit A-10-08:
  - **HSG PDP (CCP INL)** For CH waste, SUMMA sampling is performed by CCP; analysis is performed by the Idaho National Laboratory, which is approved under a separate certification.
  - **NDA PDP** – Cycle 17A approved for radioanalysis of TRU waste drums using the system identified as IQ3, PDP System Registration OR02/ORG1, and the operating procedure identified as CCP-TP-047, Revision 9 and the system identified as DWAS/IPAN/SGS, PDP System Registration OR01/ORN1, and the operating procedure identified as CCP-TP-166, Revision 3 and CCP-TP-169, Revision 2. Memo CBFO:NTP:MRB:GS:10-1447:UFC 5900.00 dated July 15, 2010.
- CBFO conducted the CH and RH Recertification Audit A-10-08 of the ORNL-CCP on February 9-11, 2010.
  - CARs 10-017 and 10-018 were issued on February 22, 2010.
  - CARs 10-017 and 10-018 were closed on June 24, 2010.
  - NMED Observer Inquiry issued on February 17, 2010.
  - Interim Audit Report was issued March 11, 2010.
  - CBFO Response to Observer Inquiry issued April 16, 2010.
  - Final Audit Report was issued to NMED on June 28, 2010.
- CBFO requested a Tier 1 change to include the IQ3 Gamma Assay System and a Tier 2 change to add VE of CH waste to the ORNL-CCP certification on December 17, 2009. (CBFO:NTP:NC:GS:09-2065:UFC:5900.00)
  - EPA issued a determination that the request of VE of CH waste was a Tier 1 change on January 6, 2010.
  - CBFO requested the Tier 1 change for VE of CH waste on January 27, 2010. (CBFO:NTP:NC:GS:10-0727:UFC:5900.00)
  - CBFO received EPA's approval of the IQ3 and VE of CH waste on March 30, 2010
- CBFO conducted CH and RH Transportation Audit A-09-27 for all sites on September 29-October 1, 2009.
  - Audit Report was issued on October 14, 2009.
- CBFO conducted a Quality Assurance Program Audit A-09-10 on February 24-26, 2009.
  - Audit Report was issued on March 4, 2009.
- EPA issued concurrence on the draft CBFO recertification memo on September 7, 2010.

**RECOMMENDATION**

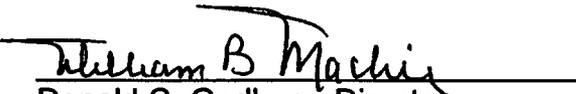
The recommendation to the CBFO Manager is for ORNL-CCP to include the use of VE to characterize CH TRU soils/gravel (S4000) and debris (S5000) waste categories in their certified program and continue having authority for characterization, certification, and transportation of CH TRU soils/gravel (S4000) and debris (S5000) waste and RH TRU debris (S5000) waste at the ORNL. Attachments 2, 3, and 4 list the systems and procedures that constitute the bounds of this authority.

**CONCURRENCE**



Ms. Ava Holland, Director  
Quality Assurance Manager

9/2/10  
Date

*for*   
Donald C. Gadbury, Director  
Office of the National TRU Program

9/7/2010  
Date

<b>CENTRAL CHARACTERIZATION PROJECT</b>					
<b>LIST OF CH AND RH CERTIFIED EQUIPMENT AND PROCESSES AT OAK RIDGE NATIONAL LABORATORY</b>					
WIPP WWIS #	Site Equipment # or Title	Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
<b>Headspace Gas (HSG)</b>					
N/A	HSG	SUMMA Sampling process on selected waste containers from waste stream lots.  Analysis is performed by the Idaho National Laboratory (INL), which is approved under a separate certification. (12HE4, 12HE5, 12HE6, 12HE9)	As identified in CCP-TP-093	As identified in CCP-TP-093	N/A
<b>Solids Sampling</b>					
N/A	Solids	Solids Sampling process on selected waste containers from waste stream lots.  Sampling is performed by the Advanced Mixed Waste Treatment Project.  Analysis is performed by the INL, which is approved under a separate certification. (12HA12, 12HA13, 12HA10, 12HA3, 12HA14, 12HA8, 12HM10, 12HM3, 12HM11, 12HM8, 12HM12, and 12HM9)	As identified in CCP-TP-181, CCP-TP-182, CCP-TP-183, CCP-TP-184, CCP-TP-185, CCP-TP-186, CCP-TP-187	As identified in CCP-TP-181, CCP-TP-182, CCP-TP-183, CCP-TP-184, CCP-TP-185, CCP-TP-186, CCP-TP-187	N/A
<b>Nondestructive Assay (NDA)</b>					
16SG1	DWAS/IPAN/SGS-01	Drum Waste Assay System /Imaging Passive/Active Neutron/Segmented Gamma Scanner – 55 gallon drums	<input type="checkbox"/> Coaxial detector with collimator <input type="checkbox"/> LEGe detector with collimator <input type="checkbox"/> Digital signal processors <input type="checkbox"/> 3 He Neutron detectors	<input type="checkbox"/> NDA 2000 <input type="checkbox"/> Genie 2000 <input type="checkbox"/> DWAS.exe <input type="checkbox"/> DWASAnalysis.exe <input type="checkbox"/> DNGI.exe	The SGS component is described in MV-SGS-0101-CAL-001, <i>Segmented Gamma Scanner-01 (SGS-01-01) Calibration, Confirmation and Verification Report</i> , with a matrix density range of 0.0 to

CENTRAL CHARACTERIZATION PROJECT					
LIST OF CH AND RH CERTIFIED EQUIPMENT AND PROCESSES AT OAK RIDGE NATIONAL LABORATORY					
WIPP WWIS #	Site Equipment # or Title	Description	Components	Software	NDA Calibrated Range, Operating Range and TMU
		Procedures CCP-TP-166, CCP-TP-167, CCP-TP-168, CCP-TP-169, CCP-TP-172	<input type="checkbox"/> Neutron generator system <input type="checkbox"/> Shielded assay chamber with turntable	<input type="checkbox"/> DWAS_SGS_QC.exe <input type="checkbox"/> FRAM44.exe	1.72 g/cm <sup>3</sup> and an upper calibration range of 220.4 grams total plutonium. The Total Measurement Uncertainty (TMU) is described in CI-SGS01-TMU, <i>Total                      Measurement Uncertainty for                      the MCS Melton Valley                      Segmented Gamma Scanner.</i>  The DWAS IPAN neutron component is described in BII- 5183-CVR-001, <i>Calibration                      and Validation Report DWAS                      IPAN.</i> For passive mode, the operational range is from lower limit of detection (LLD) to 72.5133 g <sup>240</sup> Pu <sub>EFF</sub> with a MOD index range from 1.045 to 17.572. For active mode, the operational range is from LLD to 14.710 g <sup>239</sup> Pu <sub>EFF</sub> with an ABSMOD index range from 22.251 to 276.800 in terms of matrix. The TMU is described in BII-TMU-5183-001, <i>Total                      Measurement Uncertainty                      Report DWAS IPAN.</i>
16IQ1	IQ3	Canberra Mobile Qualitative and Quantitative Drum Counter with Isotopics (IQ3)  Procedure CCP-TP-046, CCP-TP-047, CCP-TP-048	<input type="checkbox"/> High Sensitivity Gamma Waste Assay System <input type="checkbox"/> 3 HPGe Coaxial Detectors <input type="checkbox"/> 3 LEGe Detectors	<input type="checkbox"/> Gamma Waste Assay System (GWAS) Analysis Software	The calibration of the IQ3 is documented in MCS-IQ3- CALIB-2009, Revision 0, "Calibration Report for the MCS IQ3", MCS-IQ3-TMU- 2009, Revision 0. Uncertainty of MCS IQ3 rewritten for site independence.

<b>CENTRAL CHARACTERIZATION PROJECT</b>					
<b>LIST OF CH AND RH CERTIFIED EQUIPMENT AND PROCESSES AT OAK RIDGE NATIONAL LABORATORY</b>					
<b>WIPP WWIS #</b>	<b>Site Equipment # or Title</b>	<b>Description</b>	<b>Components</b>	<b>Software</b>	<b>NDA Calibrated Range, Operating Range and TMU</b>
<b>Dose-to-Curie (DTC)</b>					
16DTC1	Dose-to-Curie	Radiological characterization process  Procedure CCP-TP-504	As identified in CCP-TP-504	As identified in CCP-TP-504	N/A
<b>Nondestructive Examination (NDE)</b>					
16RR1	MCS RTR #6	Real-Time Radiography Mobile Characterization System RTR #6 – 55 gallon drums  Procedure CCP-TP-053, CCP-TP-165	<input type="checkbox"/> Shielded x-ray enclosure with a hydraulic drum loading door and manually opened personnel door <input type="checkbox"/> Conveyer cart including drum manipulation equipment <input type="checkbox"/> X-ray imaging system including x-ray tube, image intensifier, and video camera <input type="checkbox"/> Video/audio recording equipment <input type="checkbox"/> Mobile platform	N/A	N/A
<b>Visual Examination (VE)</b>					
16RHVE1	Visual Examination	Visual Examination Procedure CCP-TP-500	N/A	N/A	N/A
16VE1	Visual Examination	Visual Examination Procedure CCP-TP-113	N/A	N/A	N/A

<b>CENTRAL CHARACTERIZATION PROJECT</b>		
<b>CH AND RH LIST OF PROCEDURES AT OAK RIDGE NATIONAL LABORATORY</b>		
#	Procedure No.	Procedure Title
1.	CCP-PO-001	CCP Transuranic Waste Characterization Quality Assurance Project Plan
2.	CCP-PO-002	CCP Transuranic Waste Certification Plan
3.	CCP-PO-003	CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)
4.	CCP-PO-005	CCP Conduct of Operations
5.	CCP-PO-008	CCP Quality Assurance Interface with the WTS Quality Assurance Program
6.	CCP-PO-016	CCP Gas Generation Testing Program Quality Assurance Project Plan
7.	CCP-PO-026	CCP Configuration Management Plan
8.	CCP-PO-027	CCP/TRU Waste Processing Center/Oakridge National Laboratory Interface Document
9.	CCP-PO-505	CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)
10.	CCP-QP-001	CCP Graded Approach
11.	CCP-QP-002	CCP Training and Qualification Plan
12.	CCP-QP-004	CCP Corrective Action Management
13.	CCP-QP-005	CCP TRU Nonconforming Item Reporting and Control
14.	CCP-QP-006	CCP Corrective Action Reporting and Control
15.	CCP-QP-008	CCP Records Management
16.	CCP-QP-010	CCP Document Preparation, Approval, and Control
17.	CCP-QP-011	CCP Laboratory Logbooks
18.	CCP-QP-014	CCP Quality Assurance Trend Analysis and Reporting
19.	CCP-QP-015	CCP Procurement
20.	CCP-QP-016	CCP Control of Measuring and Testing Equipment
21.	CCP-QP-017	CCP Identification and Control of Items
22.	CCP-QP-018	CCP Management Assessment
23.	CCP-QP-019	CCP Quality Assurance Reporting to Management
24.	CCP-QP-021	CCP Surveillance Program
25.	CCP-QP-022	CCP Software Quality Assurance Plan
26.	CCP-QP-023	CCP Handling, Storage and Shipping
27.	CCP-QP-025	CCP Lessons Learned Program Management Control Procedure
28.	CCP-QP-026	CCP Inspection Control
29.	CCP-QP-027	CCP Test Control
30.	CCP-QP-028	CCP Records Filing, Inventorying, Scheduling, and Dispositioning
31.	CCP-QP-030	CCP Written Practice for the Qualification of CCP Helium Leak Detection Personnel
32.	CCP-QP-036	CCP Qualification of Acceptable Knowledge for Remote-Handled Transuranic Waste Through a Quality Assurance Equivalency Demonstration
33.	CCP-TP-001	CCP Project Level Data Validation and Verification
34.	CCP-TP-002	CCP Reconciliation of DQOs and Reporting Characterization Data
35.	CCP-TP-003	CCP Data Analysis for S3000, S4000, and S5000 Characterization
36.	CCP-TP-005	CCP Acceptable Knowledge Documentation
37.	CCP-TP-028	CCP Radiographic Test and Training Drum Construction
38.	CCP-TP-030	CCP CH TRU Waste Certification and WWIS/WDS Data Entry
39.	CCP-TP-033	CCP Shipping of CH TRU Waste
40.	CCP-TP-046	CCP Mobile IQ3 System Calibration Procedure

<b>CENTRAL CHARACTERIZATION PROJECT CH AND RH LIST OF PROCEDURES AT OAK RIDGE NATIONAL LABORATORY</b>		
#	Procedure No.	Procedure Title
41.	CCP-TP-047	CCP Mobile IQ3 Gamma Scanner Operation
42.	CCP-TP-048	CCP Mobile IQ3 System Data Reviewing, Validating, and Reporting Procedure
43.	CCP-TP-053	CCP Standard Real-Time Radiography (RTR) Inspection Procedure
44.	CCP-TP-055	CCP Varian Porta-Test Leak Detector Operations
45.	CCP-TP-058	CCP NDA Performance Demonstration Program
46.	CCP-TP-068	CCP Standardized Container Management
47.	CCP-TP-082	CCP Preparing and Handling Waste Containers for Headspace Gas Sampling
48.	CCP-TP-083	CCP Gas Generation Testing
49.	CCP-TP-086	CCP CH Packaging Payload Assembly
50.	CCP-TP-093	CCP Sampling of TRU Waste Containers
51.	CCP-TP-106	CCP Headspace Gas Sampling Batch Data Report Preparation
52.	CCP-TP-113	CCP Standard Contact-Handled Waste Visual Examination
53.	CCP-TP-138	CCP Execution of Long-Term Objective for the Unified Flammable Gas Test Procedure
54.	CCP-TP-162	CCP Random Selection of Containers for Solids and Headspace Gas Sampling and Analysis
55.	CCP-TP-165	CCP Real-Time Radiography #6 Operating Procedure
56.	CCP-TP-166	CCP Drum Waste Assay System Imaging Passive/Active Neutron Operations
57.	CCP-TP-167	CCP Drum Waste Assay System Imaging Passive/Active Neutron Calibration
58.	CCP-TP-168	CCP Drum Waste Assay System Imaging Passive/Active Neutron/Segmented Gamma Scanner Data Generation Level Validation
59.	CCP-TP-169	CCP Operating the Mobile Segmented Gamma Scanner
60.	CCP-TP-172	CCP Calibrating the Mobile Segmented Gamma Scanner
61.	CCP-TP-180	CCP Analytical Sample Management
62.	CCP-TP-500	CCP Remote-Handled Waste Visual Examination
63.	CCP-TP-504	CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste
64.	CCP-TP-506	CCP Preparation of Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report
65.	CCP-TP-507	CCP Shipping of Remote-Handled Transuranic Waste
66.	CCP-TP-509	CCP Remote-Handled Transuranic Container Tracking
67.	CCP-TP-530	CCP RH TRU Waste Certification And WWIS/WDS Data Entry

<b>CH Tiering of TRU Waste Characterization Processes Implemented by CCP at ORNL                      (Based on November 13-15, 2007 EPA Baseline Inspection No. EPA-ORNL-CCP-CH-11.07-8)                      EPA DOCKET NO. A-98-49, II-A4-103</b>		
<b>(Changes based on Tier 1 Evaluation on September 2009 EPA Docket # A-98-49, II-A4-117)</b>		
WC Process Elements	ORNL-CCP WC T1 Changes	ORNL-CCP WC T2 Changes <sup>a</sup>
Acceptable Knowledge (AK) and Load Management	Implementation of load management.  Implementation of AK for wastes other than retrievably- stored debris and soils/gravel (i.e., solids or any type of newly-generated waste)  Implementation to include soil from NFS burial trench in Waste Stream OR-NFS-CH-SOIL.	The elements listed as T2 changes below apply to all approved ORNLCCP CH TRU waste streams and waste summary category groups.  Notification to EPA upon completion of AK accuracy reports and, upon completion of new versions or updates/substantive changes <sup>b</sup> of the following:  - AK-NDA memoranda - Site AK procedure CCP-TP-005 - AK accuracy reports - AK-AK and AK-NDA/NDE Discrepancy Resolution Reports - Attachments 4 and 6 and associated memoranda - WSPFs and AK summaries and related attachments for all new waste streams, including change notices - "Add Container" memoranda
Non Destructive Assay (NDA)	New equipment or physical modifications to approved equipment.  Extension or changes to approved calibration range for approved equipment.	Notification to EPA upon completion of changes to software for approved equipment, operating range(s), and site procedures that require CBFO approval.
Real-Time Radiography (RTR)	N/A	Notification to EPA upon the following:  - Implementation of new RTR equipment or substantive changes <sup>c</sup> to approved RTR equipment  - Completion of changes to site RTR procedures that require CBFO approval
Visual Examination (VE)	N/A	Notification to EPA upon the following:  - Changes to site procedures requiring Carlsbad Field Office (CBFO) approvals.
WIPP Waste Information System (WWIS)	Implementation of load management.	Notification to EPA upon the following:  - Completion of changes to WWIS procedure(s) requiring CBFO approvals

<sup>a</sup> Upon receiving EPA approval, ORNL-CCP will report all T2 changes to EPA at the end of each fiscal quarter.

<sup>b</sup> "Substantive changes" are changes with the potential to impact the site's WC activities or documentation thereof, excluding changes that are solely related to ES&H, nuclear safety, or RCRA, or that are editorial in nature.

<sup>c</sup> Modifications to approved equipment include all changes with the potential to affect NDA data relative to waste isolation and exclude minor changes, such as the addition of safety-related equipment.

**CH AK Tiers*****(Changes based on September 2009 EPA Docket # A-98-49, II-A4-117)***

Based on the results of this T1 evaluation, EPA has revised the T1 and T2 designations assigned to AK during the ORNL-CCP baseline approval, as reflected in the Tiering Table above. There is one new AK T1 change and slight modifications to the AK T2 elements. All of the T2 elements listed under AK in the Tiering Table apply to all approved CH TRU waste streams and SCGs at ORNL-CCP.

**Tier 1 AK Changes** will require EPA review and approval prior to implementation and will apply to any new waste category not evaluated during the baseline inspection. These include the following:

- Implementation of load management
- Implementation of AK for wastes other than retrievably-stored debris (i.e., retrievably-stored solids and soil/gravel and/or any newly-generated waste)

ORNL-CCP must report and submit documentation on T1 changes when it is ready for EPA review. Upon initial review, EPA will inform ORNL-CCP and CBFO whether a site inspection is necessary. EPA may request additional information, choose to conduct a desktop review, and/or confer with ORNL-CCP personnel. Upon evaluation (with or without site inspection), EPA will issue an approval letter, and only upon receiving the EPA approval can ORNL-CCP dispose of the new waste at the WIPP or implement the activity deemed to be a T1 change.

**Tier 2 AK Changes** do not require EPA approval before implementation but require that ORNL-CCP provide notification to EPA upon completion of the following:

- Notification to EPA upon completion of new versions or updates/substantive modifications to AK accuracy reports (prepared annually)
- Notification to EPA upon completion of new versions or updates/substantive modifications to AK-NDA communications and memoranda for Waste Stream OR-NFS-CH-HET and/or forthcoming waste streams
- Notification to EPA upon completion of new versions or updates/substantive modifications to site AK procedures
- Notification to EPA upon completion of new versions or updates/substantive modifications to all AK Summaries that describe wastes beyond the 144 containers described in this report and updates to the existing Waste Stream OR-NFS-CH-HET summary
- Notification to EPA upon completion of new versions or updates/substantive modifications to Radiological DRRs (AK-AK and AK-NDA) pertinent to Waste Stream OR-NFS-CH-HET
- Notification to EPA upon completion of new versions or updates/substantive modifications to completed Attachment 4 and Attachment 6 for Waste Stream OR-NFS-CH-HET
- Notification to EPA upon completion of AK accuracy reports, new WSPFs, or revisions to existing WSPFs (and attachments)

Following EPA approval, at the end of each fiscal quarter, ORNL-CCP must provide EPA with information on T2 changes. EPA will evaluate these changes and inform ORNL-CCP whether the changes raise any concerns and require a response or if ORNL-CCP can continue to implement those changes.

### **CH NDA Tiers**

**Tier 1 NDA Changes** require EPA review and approval prior to implementation. They include the following:

- New NDA equipment other than the DWAS IPAN/SGS and IQ3 system<sup>1</sup>
- Physical modifications to the DWAS IPAN/SGS NDA system approved<sup>2</sup>
- Extension or changes of the approved calibration range(s) for the DWAS IPAN/SGS system

The last bulleted item above refers to the extension of a system's approved calibration range with respect to determination of the disintegration rate (activity) or physical characteristics (matrix) of any of the two NDA systems approved as a result of this inspection. An EPA technical inspection involves the evaluation of several characteristics of a measurement system. A key characteristic is the range of conditions for which the instrument is capable of producing technically defensible data with respect to the following two aspects:

- Activity—the nuclear disintegration rate of specific radiation types (neutron or gamma), typically special nuclear material or TRU radionuclides; units of activity and mass are interchangeable
- Physical characteristics—the physical attributes of waste matrices as they relate to a radiometric system (i.e., how the matrix's physical properties interact with the radiations that originate within the sample and affect the system's ability to detect them); examples include attenuation of photons (gamma) and moderation and absorption of neutrons

<sup>1</sup> New NDA equipment refers to a system or component not previously evaluated by EPA at ORNL-CCP. Specifically, this is defined as a physically distinct or different system or apparatus; an assay system that is reported to be the equivalent of or identical to a previously approved system, but which EPA has not formally inspected and approved, is a new system and EPA must approve it prior to its implementation to characterize WIPP wastes.

<sup>2</sup> Physical modification to the DWAS IPAN/SGS system includes all changes and/or modifications to this system that have the potential to affect the quality of NDA data used for the purposes of WC and/or waste isolation. This does not include minor changes or safety-related changes (e.g., addition of handrails) that do not have the potential to affect WC data.

During the inspection, the system's technical capabilities being evaluated represent the conditions observed, and they define the operational envelope in which WIPP measurements will occur. Changes to a system's calibrated range with respect to disintegration rate and/or matrix may represent an essentially different set of conditions from those evaluated during the inspection. For this reason, a change to a system's calibrated range is considered a T1 change. A system's operating range is generally, but not always, a subset of a calibration range; that is, systems that are calibrated to make valid neutron measurements from 0.36 g to 30.1 g  $^{240}\text{Pu}_{\text{EFF}}$  may operate in a subset of this range. This typically occurs when a system is calibrated for material control and accountability (MC&A) measurements as well as for WIPP assays, as is the case with many NDA systems used for TRU assays. Provided the system's calibrated range is valid, a site can designate a different operating range(s) within the calibrated range as a T2 change (i.e., a subset of the calibrated range).

Similarly, for physical characteristics, NDA systems are often calibrated with respect to a range of sample attributes—for example, a matrix density range upper limit of 1.72 g/cm<sup>3</sup> for the DWAS SGS component or an ABSMOD index range of 22.251 to 276.800 for the active neutron mode of the DWAS IPAN, discussed earlier in this report. This range may include materials that are commonly referred to using terms such as “debris (S5000),” which is within the calibrated density range and would be expected to be within the ABSMOD range. Actual waste assays may be restricted to a portion or subset of this range for a variety of technical and/or administrative reasons. Changing the calibrated range by extending the density range beyond 1.72 g/cm<sup>3</sup> for the DWAS SGS unit, the MOD range beyond 1.045 to 17.572, or the ABSMOD range beyond 22.251 to 276.800 for the DWAS IPAN unit is a T1 change. Provided the original approved density range is valid, changing the operational range(s) of an approved NDA system—that is, decreasing it relative to the originally approved range—is a T2 change, as discussed below.

ORNL-CCP will report and submit documentation for T1 changes when it is ready for EPA review. In the case of the first two T1 NDA changes listed above, CBFO should assume that an EPA inspection is likely. In the case of the last T1 NDA change, EPA will inform ORNL-CCP and CBFO whether a site inspection is necessary. EPA may request additional information, choose to conduct a desktop review, and/or confer with ORNL-CCP NDA personnel. Upon evaluation (with or without site inspection), EPA will issue an approval letter. Only upon receiving the EPA approval can ORNL-CCP continue to use the equipment affected by the change.

**Tier 2 NDA Changes** do not require prior EPA approval but do require ORNL-CCP to notify EPA upon implementation of such changes and to submit a brief description of the changes. These include the following:

- Changes to software for the DWAS IPAN/SGS system
- Changes to the approved operating range(s) for either the SGS or IPAN operating range(s) (see discussion above)
- Changes to procedures that address the DWAS IPAN/SGS system's calibration and/or operation that require CBFO approval

Examples of changes to software would include the following:

- Changing a system's operating system (e.g., first use of NDA 2000, MGA, or PCFRAM)
- Identification of a systematic problem with a software package and subsequent modifications to address the problem, (e.g., use of an incorrect value for a radionuclide's transition probability or branching ratio in the data reduction software)
- Introduction of a new version of an existing software package beyond what is in currently
- Use

Regarding changes to the approved operating ranges, reducing a system's operating range because of performance-related problems or equipment failure would be a T2 change. For example, if the DWAS failed to pass a PDP cycle for a specific matrix or activity range and ORNL-CCP or CBFO formally restricted its use as a result of those, this would be a T2 change.

Any changes to the WC activities from the date of the baseline inspection must be reported to and approved by EPA according to Table 1. Following EPA approval, ORNL-CCP will provide EPA with information concerning T2 changes at the end of each fiscal quarter. EPA will evaluate these changes and communicate with ORNL-CCP as to whether the changes raise any concerns and require an ORNL-CCP response, or whether ORNL-CCP can continue to implement the changes. Consistent with EPA's authority under 40 CFR 194.24(h), the agency may request information relative to these changes if EPA deems the information is necessary to ensure continued compliance with EPA regulations.

***(Changes based on September 2009 EPA Docket # A-98-49, II-A4-117)***

***Changes to NDA Tiering***

*There were no changes to NDA T1 and T2 change designations.*

**CH RTR Tiers**

**Tier 1 RTR Changes** require EPA review and approval prior to implementation. There are no T1 RTR changes at this time.

**Tier 2 RTR Changes** that do not require EPA approval prior to implementation but require reporting and submission of documentation discussing changes by ORNL-CCP include the following:

New RTR equipment or substantive changes to approved RTR equipment

Changes made to ORNL-CCP RTR procedure(s) that require CBFO approval

Every 3 months from the date of EPA approval, ORNL-CCP will provide information concerning T2 changes. If new RTR equipment is in use, an EPA inspection may be necessary. EPA will evaluate changes and communicate with ORNL-CCP whether the changes raise any concerns and require a response from ORNL-CCP, or whether ORNL-CCP can continue to implement the changes.

**VE Tiers**

**Tier 1 VE Changes – None.**

**Tier 2 VE Changes** that do not require EPA approval prior to implementation but require reporting and submitting documentation is changes made to VE procedures(s) that require CBFO approval.

***(Changes based on September 2009 EPA Docket # A-98-49, II-A4-117)***

***Changes to RTR Tiering***

*There were no changes to RTR T1 and T2 change designations.*

**CH WWIS Tiers**

**Tier 1 WWIS Changes** that require EPA review and approval prior to implementation include the following:

- Addition of load management for CH TRU containers at ORNL-CCP

ORNL-CCP will report and submit documentation for T1 changes when it is ready for EPA review. Upon initial review, EPA will inform ORNL-CCP and CBFO whether a site inspection is necessary. EPA may request additional information, choose to conduct a desktop review, and/or confer with ORNL-CCP WWIS personnel. Upon evaluation (with or without site inspection), EPA will issue an approval letter. Only upon receiving the EPA approval can ORNL-CCP implement the load management or any other activity deemed to be a T1 change for WIPP wastes.

**Tier 2 WWIS Changes** that do not require EPA approval prior to implementation but that require reporting and submitting documentation include the following:

- Changes made to WWIS procedure(s) that require CBFO approval

Every 3 months from the date of EPA approval, ORNL-CCP will provide information concerning T2 changes. EPA will evaluate changes and communicate with ORNL-CCP whether the changes raise any concerns and require ORNL-CCP response, or whether ORNL-CCP can continue to implement the changes.

***(Changes based on September 2009 EPA Docket # A-98-49, II-A4-117)***

***Changes to WWIS Tiering***

*There were no changes to WWIS T1 and T2 change designations.*

<b>RH Tiering of TRU Waste Characterization Processes Implemented by CCP at ORNL Based on June 30-July 2, 2008 EPA Baseline Inspection No. EPA-ORNL-CCP-RH-06.08-8, EPA DOCKET NO. A-98-49, II-A4-111 Tier 1 including SETF Time Period Waste, EPA DOCKET NO. A-98-49, II-A4-120</b>		
<b>RH WC Process Elements</b>	<b>ORNL-CCP RH WC T1 Changes</b>	<b>ORNL-CCP RH WC T2 Changes</b>
Acceptable Knowledge (AK)	<p>Addition of any new waste streams not approved under this baseline</p> <p>Modification of the approved population of the OR-REDC-RH-HET wastes to include any containers not included in the CCP-AK-ORNL-501, Revision 1 analysis</p> <p>Modification(s) resulting from incorporation of new information specific to the approved RH debris waste (OR-REDC-RH-HET) population to the following documents: CSSF; CCP-AK-ORNL-501; CCP-AK-ORNL-500; AKSR; CTP; AK Accuracy Reports; and the WSPF**</p> <p>Implementation of load management</p>	<p>Notification to EPA when updates are made to the documents included in AK-1, AK-2, AK-3, AK-4, AK-6, AK-9, AK-13, AK-14 and AK-15, outside of the specific T1 changes listed in the previous column**</p> <p>Notification to EPA of availability of and/or revisions to Add Container Memoranda</p> <p>Notification to EPA of availability of documentation of RH sample reclassified as CH and subject to confirmatory analyses via NDA</p> <p>Notification to EPA of availability of DRF(s) or data limitation information pertaining to CCP's assessment of ORNL's original radiological characterization of wastes generated post-1999</p>
Radiological Characterization, Dose-to-Curie (DTC) and the application of radionuclide-specific scaling factors	<p>Application of new scaling factors for isotopic determination other than those documented in CCP-AK-ORNL-501</p> <p>Use of any alternate radiological characterization procedure other than DTC, with established scaling factors as documented in CCP-TP-504, Revision 6, or substantive modification of the DTC procedure ***</p> <p>Any new waste stream not approved under this baseline or addition of containers to Waste Stream OR-REDC-RH-HET that requires changing the documented radionuclide scaling factors in CCP-AK-ORNL-501</p>	<p>Revisions of CCP-AK-ORNL-501 or CCP-TP-504 that require CBFO approval**</p> <p>Results from the any RH TRU container(s) that qualify as CH and are subject to NDA</p>
Visual Examination (VE)	Implementation of VE by any system other than two operators performing VE****	<p>Changes to VE procedure(s) that require CBFO approval**</p> <p>Addition of new Summary Category Groups to the VE process that is subject to this proposed approval</p>
WIPP Waste Information System (WWIS)	None at this time	<p>Changes to WWIS procedure that require CBFO approval**</p> <p>Changes to the Excel spreadsheet titled WWIS Data Entry Summary Characterization and Certification</p>
<p>* Upon receiving EPA approval, ORNL-CCP will report all T2 changes to EPA every three months</p> <p>** Excluding changes that are editorial in nature or are required to address administrative concerns</p> <p>*** <i>Substantive modification</i> refers to a change with the potential to affect ORNL-CCP's RH WC process, e.g., the use of an inherently different type of measurement instrument system or a gamma probe not described in CCP-TP-504</p> <p>**** This approval is limited to actual execution of VE using two operators at the TWPC as opposed to viewing a previously recorded VE event</p>		

## **RH AK Tiers**

T1 AK changes will require EPA review and approval prior to implementation, and will apply to any new waste category not evaluated during the baseline inspection. These include the following:

- Any new waste streams including pre-1991 RH debris waste not approved under this baseline
- Modification of the approved population of the OR-REDC-RH-HET wastes as defined above, to include any containers not included in the CCP-AK-ORNL-501, Revision 1 analysis
- Modification(s) or current revisions of:
  - CCP-AK-ORNL-500 (Acceptable Knowledge Summary Report [AKSR])
  - CCP-AK-ORNL-501 (Radiological Characterization) or CCP-AK-ORNL-502 (Confirmatory Test Plan [CTP])
  - AK Accuracy Reports
  - Correlation and Surrogate Summary Form
  - The Waste Stream Profile Form to accompany any modification of the OR-REDC-RH-HET population proposed for approval
- Implementation of load management for any ORNL RH waste stream

ORNL-CCP must report and submit documentation on T1 changes when it is ready for EPA review. Upon initial review, EPA will inform ORNL-CCP and CBFO whether a site inspection is necessary. EPA may request additional information, choose to conduct a desktop review, and/or confer with ORNL-CCP personnel. Upon evaluation with or without a site inspection, EPA will issue a decision. Only upon receiving EPA written approval may ORNL-CCP implement T1 changes.

**T2 AK changes** do not require EPA approval before implementation, but require that ORNL-CCP provide notification to EPA upon completion of the following:

- Updates made to the CCP-AK-ORNL-500, CCP-AK-ORNL-501, CCP-AK-ORNL-502, AK Summary Reports, AK Accuracy Reports, WSPF, and CSS form(s) outside of the T1 requirements
- Availability of Discrepancy Resolutions (DRs) or data limitation information pertaining to CCP's Assessment of ORNL's Original Radiological Characterization of waste generated post-1999
- Availability of Add Container Memoranda

Following EPA approval, ORNL-CCP will provide EPA with information concerning T2 changes on a quarterly basis, including a brief description of the available information. EPA will evaluate these changes and communicate with ORNL-CCP as to whether the changes raise any concerns and require an ORNL-CCP response, or whether ORNL-CCP can continue to implement the changes. Consistent with EPA's authority under 194.24(h), EPA may request information relative

to these changes if EPA deems the information is necessary to ensure continued compliance with EPA regulations.

### **RH Radiological Characterization Tiers**

**T1 radiological characterization changes** will require EPA review and approval prior to implementation, and will apply to any new waste category not evaluated during the baseline inspection. These include the following:

- Application of new scaling factors for isotopic determination other than those documented in CCP-AK-ORNL-501
- Use of any radiological characterization procedure other than DTC with established scaling factors, as documented in CCP-TP-504, Revision 6, or substantive modification of the DTC procedure
- Any new waste stream not approved under this baseline or addition of containers to Waste Stream OR-REDC-RH-HET that requires changing the documented radionuclide scaling factors in CCP-AK-ORNL-501

ORNL-CCP must report and submit documentation on T1 changes when they are ready for EPA review. Upon initial review, EPA will inform ORNL-CCP and CBFO whether a site inspection is necessary. EPA may request additional information, choose to conduct a desktop review, and/or confer with ORNL-CCP personnel. Upon evaluation with or without a site inspection, EPA will issue a decision. Only upon receiving EPA written approval may ORNL-CCP implement T1 changes.

**T2 radiological characterization changes** do not require EPA approval before implementation, but require that ORNL-CCP provide notification to EPA upon completion of the following:

- Revisions of CCP-AK-ORNL-501 or CCP-TP-504 that require CBFO approval
- Generation of measurement data for any RH TRU container(s) that subsequently qualifies as CH and is subject to NDA

ORNL-CCP will provide EPA with information concerning T2 changes on a quarterly basis, including a brief description of the available information. EPA will evaluate these changes and communicate with ORNL-CCP as to whether the changes raise any concerns and require an ORNL-CCP response, or whether ORNL-CCP can continue to implement the changes. Consistent with EPA's authority under 194.24(h), EPA may request information relative to these changes if EPA deems the information is necessary to ensure continued compliance with EPA regulations.

### **RH VE Tiers**

**T1 VE changes** will require EPA review and approval prior to implementation, and will apply to any new waste category or process that was not evaluated during the baseline inspection. The one T1 change is performance of VE by any method other than using two trained operators.

ORNL-CCP must report and submit documentation on T1 changes when they are ready for EPA review. Upon initial review, EPA will inform ORNL-CCP and CBFO whether a site inspection is necessary. EPA may request additional information, choose to conduct a desktop review, and/or confer with ORNL-CCP personnel. Upon evaluation with or without a site inspection, EPA will issue a decision. Only upon receiving EPA written approval may ORNL-CCP implement T1 changes.

**T2 VE changes** that do not require EPA approval prior to implementation, but require ORNL-CCP to report and submit documentation, include the following:

- Changes made to VE procedure(s) that require CBFO approval
- Addition of new Summary Category Group (SCG) to the VE processes that are subject to this approval

ORNL-CCP will provide EPA with information concerning T2 changes on a quarterly basis, including a brief description of the available information. EPA will evaluate these changes and communicate with ORNL-CCP as to whether the changes raise any concerns and require an ORNL-CCP response, or whether ORNL-CCP can continue to implement the changes. Consistent with EPA's authority under 194.24(h), EPA may request information relative to these changes if EPA deems the information is necessary to ensure continued compliance with EPA regulations.

### **RH WWIS Tiers**

**T1 WWIS changes** will require EPA review and approval prior to implementation, and will apply to any new waste category or process that was not evaluated during the baseline inspection. There are no T1 changes at this time.

**T2 WWIS changes** that do not require EPA approval prior to implementation, but require ORNL-CCP to report and submit documentation, include the following:

- Changes to WWIS procedure(s) that require CBFO approval
- Changes to the Excel spreadsheet titled WWIS Data Entry Summary Characterization and Certification

ORNL-CCP will provide EPA with information concerning T2 changes on a quarterly basis, including a brief description of the available information. EPA will evaluate these changes and communicate with ORNL-CCP whether the changes raise any concerns and require an ORNL-CCP response, or whether ORNL-CCP can continue to implement the changes. Consistent with EPA's authority under 194.24(h), EPA may request information relative to these changes if EPA deems the information is necessary to ensure continued compliance with EPA regulations.