



United States Government

Department of Energy

memorandum

Carlsbad Field Office

Carlsbad, New Mexico 88221

DATE: August 5, 2008

REPLY TO
ATTN OF: CBFO:NTP:CF:GS:08-0808:UFC 5900.00

SUBJECT: Recertification of the CH Central Characterization Project at the Los Alamos National Laboratory (A-07-12 and A-07-13)

TO: George Rael, LASO
Farok Sharif, General Manager, WTS

The Carlsbad Field Office (CBFO) has completed the annual recertification audit of the Central Characterization Project (CCP) TRU waste program deployed at the Los Alamos National Laboratory (LANL) (hereinafter referred to as LANL-CCP). Audit A-07-12 was conducted on May 22-24, 2007, and Audit A-07-13 was conducted on May 15-17, 2007, by CBFO to evaluate the adequacy, implementation, and effectiveness of the LANL-CCP technical and quality assurance programs. The audit teams determined that the LANL-CCP programs were in compliance with the "Waste Analysis Plan" (WAP) of the *WIPP Hazardous Waste Facility Permit*, the *Quality Assurance Program Document (QAPD)*, and the *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant (WIPP WAC)*. The audit teams also determined that the procedures were effectively implemented.

Based on the results of Audits A-07-12 and A-07-13 and conditions and limitations provided by the New Mexico Environment Department (NMED) and the U.S. Environmental Protection Agency (EPA), the CBFO is continuing the LANL-CCP authority for characterization and re-certification, and transportation for contact-handled (CH) homogeneous solids (S3000) and debris (S5000) waste at LANL as identified in Table 1 on page 2 of this memo. CBFO is also re-certifying the processes associated with the Off-Site Recovery Program (OSRP) that include the characterization of sealed sources using Acceptable Knowledge (AK) and Visual Examination (VE).

Transportation of contact-handled waste was audited during the LANL-CCP Audit A-07-13 at the Los Alamos National Laboratory on May 15-17, 2007 for the CCP transportation activities. Transportation was found to be adequate and effectively implemented. Surveillance S-07-25 was conducted for the Flammable Gas Sampling and Analysis activities at LANL-CCP on July 25-31, 2007. The LANL-CCP Flammable Gas Sampling and Analysis program was determined to be adequate, satisfactorily implemented, and effective.

Audit A-08-07 was conducted for the CCP Quality Assurance Program (QAP) activities on January 14-18, 2008. The Quality Assurance Program continues to adequately address the upper-tier requirements of the CBFO Quality Assurance Program Document (QAPD). The program was determined to be adequate, satisfactorily and effectively implemented.

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	S3000 Homogeneous Solids		S5000 Debris	
	Newly generated	Retrievably- Stored	Newly generated	Retrievably- Stored
Acceptable Knowledge	N/A	Approved	Approved ¹	Approved
Load Management	N/A	Approved	Approved ¹	Approved
Project-Level Data Validation and Verification	Approved	Approved	Approved	Approved
Headspace gas sampling ²	Approved	Approved	Approved	Approved
Non-destructive assay (HENC1, HENC2) drum	N/A	Approved	N/A	Approved
Real-Time Radiography	N/A	Approved	N/A	Approved
Solids sampling and analysis ³	Approved	Approved	N/A	N/A
Visual Examination	N/A	Approved ⁴	Approved ¹	Approved
WIPP Waste Information System	Approved	Approved	Approved	Approved

¹Off Site Recovery Program (OSRP) Activities-includes characterization of sealed sources for newly generated debris waste
²HSG samples are shipped to the IN Laboratory for analysis.
³Solid sampling and analysis done by IN Laboratory.
⁴Pending CBFO surveillance of VE.

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



David C. Moody
Manager

Attachment(s)

cc: w/attachments

V. Daub, CBFO	*ED
C. Gadbury, CBFO	ED
C. Fesmire, CBFO	ED
J.R. Stroble, CBFO	ED
N. Castaneda, CBFO	ED
A. Holland, CBFO	ED
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T. Peake, EPA	ED
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CTAC Controlled Document Coordinator
WIPP Operating Record
CBFO M&RC
*ED denotes electronic distribution

**CENTRAL CHARACTERIZATION PROJECT DEPLOYMENT AT
LOS ALAMOS 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 continued compliance of the Central Characterization Project (CCP) TRU waste program deployed at the Los Alamos National Laboratory (LANL) (hereinafter referred to as LANL-CCP).

STATUS

- All program elements remain complete.
- The following site documents are current and demonstrate how the CCP complies with the CBFO requirements.
 - **QAPJP – CCP-PO-001, Revision 16 - CCP Transuranic Waste Characterization Quality Assurance Project Plan** (Approved October 30, 2007 – CBFO:NTP:DCG:GS:07-1824:UFC 5900.00)
 - **WCP - CCP-PO-002, Revision 20 - CCP Transuranic Waste Certification Plan** (Approved November 1, 2007 - CBFO:NTP:DCG:07-1826:UFC: 5900.00).
QAP - Section 4.0 of CCP-PO-002.
 - **TRAMPAC – CCP-PO-003, Revision 10, CCP Transuranic Authorized Method for Payload Control** (Approved November 07, 2006 – CBFO:NTP:CF:GS:06-1668:UFC5822)
- CCP participated in the following performance demonstration programs (PDPs):

HSG PDP - Cycle 21A (INL ECL)

Approved for analysis at IN Laboratory of VOCs in headspace gas samples using the GC/MS on the analytical systems identified as GC/MS-E, GC/MS-F, GC/MS-G, GC/MS-H, GC-1, GC-2, and GC-7.

Memo CBFO:NTP:MRB:MAG:07-0878:UFC 5900.00 dated May 8, 2007.

NDA PDP - Cycle 14A

Approved for analysis of TRU waste drums containing weapons grade plutonium and heat source plutonium by nondestructive assay using the HENC#1 (LA06/LAN5).

Conditionally Approved for analysis of TRU waste drums containing weapons grade plutonium at all certified activity levels; and heat source plutonium at levels below 2 total TRU alpha curies in low density drums less than 100lbs in weight by nondestructive assay using the HENC#2 (LA07/LAN6).

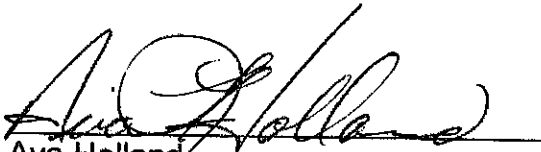
Memo CBFO:NTP:MRB:GS:08-0937:UFC 5900.00 dated June 13, 2007.

- CBFO conducted the recertification audit A-07-12 on May 22-24, 2007 and issued the interim audit report on June 13, 2007. The final audit report was issued to NMED on July 25, 2007.
 - CBFO issued CAR 07-015 on May 31, 2007 and was closed on July 24, 2007.
- CBFO conducted the recertification audit A-07-13 on May 15-17, 2007 and the final audit report was issued on June 14, 2007.
- NMED approved Final Audit Report A-07-12 on June 2, 2008.
- The EPA issued the quality assurance inspection report on June 12, 2007.
- EPA issued the Baseline Inspection Report on June 21, 2007.
- The EPA concurred with the CBFO draft recertification letter on July 28, 2008.

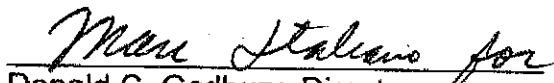
RECOMMENDATION

The recommendation to the CBFO Manager is to continue the CCP authority for certification, characterization, and transportation of contact-handled homogeneous solids (S3000) and debris waste (S5000) and continue the authority for the processes associated with the Off-site Recovery Program at the LANL. Attachments 2, 3 and 4 list the systems and procedures that constitute the bounds of this authority.

CONCURRENCE


Ava Holland
CBFO Quality Assurance Manager

7/21/08
Date


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

7/21/08
Date

CENTRAL CHARACTERIZATION PROJECT LIST OF CERTIFIED EQUIPMENT and PROCESSES AT LANL				
WIPP WWIS #	Site Equipment # or Title	Description	Components	Software
Flammable Gas				
11HG2	HSG-FGA-02	N/A	Analytical System consisting of: <input type="checkbox"/> GC/MS	<input type="checkbox"/> Agilent Technology Enhanced Chemstation (G1701CA) <input type="checkbox"/> Flammable Gas Analysis, MDL Spreadsheet
Non-destructive Assay				
11HC1	HENC1 LA06/LAN5	Canberra Industries High Efficiency Neutron Counter mounted in a transportation container. PDP Cycle 14A Procedures: CCP-TP-063	<input type="checkbox"/> cadmium gamma ray filter and the Add-A-Source (AAS) <input type="checkbox"/> Canberra Neutron Multiplicity Counter <input type="checkbox"/> Canberra Digital Signal Processor <input type="checkbox"/> (1) Broad range HPGe detector <input type="checkbox"/> Analysis equipment	<input type="checkbox"/> Canberra NDA 2000 <input type="checkbox"/> Genie 2000 <input type="checkbox"/> Multi Group Analysis (MGA) Isotopics
11HC2	HENC2 LA07/LAN6	Canberra Industries High Efficiency Neutron Counter mounted in a trailer. Cycle 14A Procedures: CCP-TP-063	<input type="checkbox"/> cadmium gamma ray filter and the Add-A-Source (AAS) <input type="checkbox"/> Canberra Neutron Multiplicity Counter <input type="checkbox"/> Canberra Digital Signal Processor <input type="checkbox"/> (1) Broad range HPGe detector <input type="checkbox"/> Analysis equipment	<input type="checkbox"/> Canberra NDA 2000 <input type="checkbox"/> Genie 2000 <input type="checkbox"/> Multi Group Analysis (MGA) Isotopics

CENTRAL CHARACTERIZATION PROJECT LIST OF CERTIFIED EQUIPMENT and PROCESSES AT LANL				
WIPP WWIS #	Site Equipment # or Title	Description	Components	Software
Non-destructive Examination				
11RR1	RTR1	Real-Time Radiography Mobile Characterization System RTR- [built by VJ Technologies] – 55-gallon drums Procedure CCP-TP-053 and CCP-TP-028	<input type="checkbox"/> Control and Data Acquisition console/station <input type="checkbox"/> X-ray producing component with controls <input type="checkbox"/> Shielded X-ray enclosure <input type="checkbox"/> waste container handling system with turntable dolly assembly <input type="checkbox"/> Conveyor cart, drum handling equipment (forklift with container grapple) X-ray imaging system <input type="checkbox"/> Video/Audio recording equipment	NA
11RR2	RTR2	Real-Time Radiography Mobile Characterization System RTR [built by VJ Technologies] – 55-gallon drums Procedure CCP-TP-053 and CCP-TP-028	<input type="checkbox"/> Control and Data Acquisition console/station <input type="checkbox"/> X-ray producing component with controls <input type="checkbox"/> Shielded X-ray enclosure. <input type="checkbox"/> waste container handling system with turntable dolly assembly <input type="checkbox"/> Conveyor cart, drum handling equipment (forklift with container grapple) X-ray imaging system <input type="checkbox"/> Video/Audio recording equipment	NA
Visual Examination				
11VE1	VE (Pending CBFO surveillance of VE for S3000 only)	Visual Examination Procedure CCP-TP-113 Description: Standard Waste VE	N/A	N/A
11VE2	VE in lieu of RTR	Visual Examination Technique (Off-Site Source Recovery Program) Procedure CCP-TP-069 and CCP-TP-101 Description: Characterization performed utilizing VE and AK	N/A	N/A

List of Deactivated Equipment				
WIPP #	Site Equipment #	Description	Components/Software	Date Deactivated
11PT1	PTGS/FRAM System 1 PTGS/FRAM System 3 LA05/LAG5	Portable Tomographic Gamma Scanner (PTGS) - The data from this system is used along with the relative isotopic data from the FRAM systems to generate quantitative isotopic information for each waste container.	<input type="checkbox"/> Components: Portable Tomographic Gamma Scanner; HPGe Detector; EG&G Ortec solid state photon detector; EG&G Ortec spectroscopy system; Drum turntable <input type="checkbox"/> Software: Maestro spectroscopy software; PC/FRAM software; ANTECH MasterScan; ANTECH MasterAnalysis	January 8, 2007
11HG1	Agilent GC/MS	N/A	<input type="checkbox"/> Components: Two Entech 7032-L MiniCan autosamplers (Units A - DB-624 column; and B - GS-Mole Sieve Particle Lined Open Tubular (PLOT) column) with autoloop systems with independent pressurization ports <input type="checkbox"/> Software: SmartLab; Agilent Technologies EnviroQuant ChemStation G1701BA (Version D.00.00.38, or higher); Nomad® Data Logger Software; DicksonWare®; LabSmart MiniCan Autosampler	2006

CENTRAL CHARACTERIZATION PROJECT LIST OF CERTIFIED PROCEDURES AT LANL		
No.	Procedure Number	DOCUMENT TITLE
1.	LANL/WTS SOW	Los Alamos National Laboratory (LANL) Statement of Work for Characterization of LANL TRU Waste
2.	CCP-PO-001	CCP Transuranic Waste Quality Assurance Project Plan
3.	CCP-PO-002	CCP Transuranic Waste Certification Plan
4.	CCP-PO-003	CCP Transuranic Authorized Methods for Payload Control (CCP CH TRAMPAC)
5.	CCP-PO-005	CCP Conduct of Operations
6.	CCP-PO-006	CCP Conduct of Operations Matrix
7.	CCP-PO-008	CCP Quality Assurance Interface with WTS QA Program
8.	CCP-PO-012	CCP/LANL Interface Document
9.	CCP-QP-001	CCP Graded Approach
10.	CCP-QP-002	CCP Training and Qualification Plan
11.	CCP-QP-004	CCP Corrective Action Management
12.	CCP-QP-005	CCP TRU Nonconforming Item Reporting and Control System
13.	CCP-QP-006	CCP Corrective Action Reporting and Control
14.	CCP-QP-008	CCP Records Management
15.	CCP-QP-010	CCP Document Preparation, Approval and Control
16.	CCP-QP-011	CCP Notebooks & Logbooks
17.	CCP-QP-014	CCP Data Analysis and Trending
18.	CCP-QP-015	CCP Procurement
19.	CCP-QP-016	CCP Control of Measuring, Testing, and Data Collection Equipment
20.	CCP-QP-017	CCP Identification and Control of Items
21.	CCP-QP-018	CCP Management Assessment
22.	CCP-QP-019	CCP Quality Assurance Reporting to Management
23.	CCP-QP-021	CCP Surveillance Program
24.	CCP-QP-022	CCP TRU Software Quality Assurance Plan
25.	CCP-QP-023	CCP Handling, Storage, and Shipping
26.	CCP-QP-026	CCP Inspection Control
27.	CCP-QP-027	CCP Test Control
28.	CCP-QP-028	CCP Records Filing, Inventorying, Scheduling, and Dispositioning
29.	CCP-QP-030	CCP Written Practice for the Qualification of CCP Helium Leak Detection Personnel
30.	CCP-TP-001	CCP Project Level Data Validation and Verification
31.	CCP-TP-002	CCP Reconciliation of DQOs and Reporting Characterization Data
32.	CCP-TP-003	CCP Data Analysis for S3000, S4000, S5000 Characterization
33.	CCP-TP-005	CCP Acceptable Knowledge Documentation
34.	CCP-TP-028	CCP Radiographic Test and Training Drum Requirements
35.	CCP-TP-030	CCP CH TRU Waste Certification and WWIS Data Entry
36.	CCP-TP-033	CCP Shipping of CH TRU Waste
37.	CCP-TP-043	CCP Chain of Custody for SUMMA® Canister Sampling Using the INL Lab
38.	CCP-TP-053	CCP Standard Real-Time Radiography (RTR) Inspection Procedure
39.	CCP-TP-054	CCP Adjustable Center of Gravity Lift Fixture Preoperational Checks and Shutdown

CENTRAL CHARACTERIZATION PROJECT LIST OF CERTIFIED PROCEDURES AT LANL		
No.	Procedure Number	DOCUMENT TITLE
40.	CCP-TP-055	CCP Varian Porta-Test Leak Detector Operations
41.	CCP-TP-056	CCP HSG Performance Demonstration Plan
42.	CCP-TP-058	CCP NDA Performance Demonstration Plan
43.	CCP-TP-063	CCP Operating the High Efficiency Neutron Counter Using NDA 2000
44.	CCP-TP-064	CCP Calibrating the High Efficiency Neutron Counter Using NDA 2000
45.	CCP-TP-069	CCP Sealed Source Visual Examination and Packaging
46.	CCP-TP-082	CCP Preparing and Handling Waste Drums for Headspace Gas
47.	CCP-TP-086	CCP CH Packaging Payload Assembly
48.	CCP-TP-093	CCP Sampling of TRU Waste Containers
49.	CCP-TP-098	CCP Installation of the NucFil HSG Sample Port
50.	CCP-TP-101	CCP Off-Site Source Recovery Project Sealed Source Radiological Characterization
51.	CCP-TP-103	CCP Data Reviewing, Validating and Reporting Procedure for the High Efficiency Neutron Counter Using NDA 2000
52.	CCP-TP-106	CCP Headspace Gas Sampling Batch Data Report Preparation
53.	CCP-TP-113	CCP Standard Waste Visual Examination
54.	CCP-TP-120	CCP Container Management

#	Deactivated Procedure #	Deactivated Procedure Title	Date Deactivated
	CCP-QP-009	CCP Work Control Process	10/13/06
	CCP-TP-123	CCP Calibrating the Tomographic Gamma Scanning System	1/8/07
	CCP-TP-124	CCP Determining Isotopic Ratios in Waste Containers Using the RANT PC/FRAM Assay System	1/8/07
	CCP-TP-125	CCP Verification and Validation of NDA Data Using a Manual Review Method	1/8/07
	CCP-TP-126	CCP Waste Assay using the Portable Tomographic Gamma Scanner	1/8/07

CH Tiering of TRU WC Processes Implemented by CCP at LANL (Based on May 23-25, 2006 EPA Baseline Inspection, August 22, 2006 OSRP Inspection and March 6, 2007 Evaluation) (Inspection No. LANL-CCP-05.06-08, EPA Docket No. A-98-49, II-A4-88)		
CH WC Process Elements	LANL-CCP CH WC Tier 1 Changes	LANL-CCP CH WC Tier 2 Changes*
Acceptable Knowledge (AK) and Load Management	<p>Any new waste category, or new OSRP wastes addressed in AK Summaries separate from CCP-AK-008</p> <p>Implementation of Load Management for waste streams other than AK-009</p>	<p>Notification to EPA upon completion of AK Accuracy reports</p> <p>Notification to EPA upon completion of updates to or substantive modifications*** of the following:</p> <ul style="list-style-type: none"> - AK Reassessment Memoranda and combination of waste streams that were distinct at the time of this inspection - AK-VE Memoranda related to VE and/or RTR techniques - AK-NDA Memoranda - AK Accuracy Reports - Site procedures requiring CBFO approval - AK Summary CCP-AK-008, if changed since the baseline inspection and/or following the addition of new sealed sources - Change Notices used to modify and update WSPFs, including additions to waste stream(s) within an approved waste category
Nondestructive Assay (NDA)	<p>New equipment or physical modifications to approved equipment**</p> <p>Extension or changes to approved calibration range for approved equipment</p>	<p>Notification to EPA upon completion of changes to software for approved equipment, operating range(s) and site procedures that require CBFO approval</p>
Real-Time Radiography (RTR)	N/A	<p>Notification to EPA upon the following:</p> <ul style="list-style-type: none"> - Implementation of new equipment or substantive changes*** to approved equipment - Completion of changes to site procedures requiring CBFO approvals
Visual Examination (VE) and Visual Examination Technique (VET), including OSRP Wastes (Sealed Source VET or SSVET)	N/A	<p>Notification to EPA upon the following:</p> <ul style="list-style-type: none"> - Completion of changes to site VE and VET procedures requiring CBFO approvals, including OSRP VET procedure
WIPP Waste Information System (WWIS)	N/A	<p>Notification to EPA upon the following:</p> <ul style="list-style-type: none"> - Completion of changes to WWIS procedure(s) requiring CBFO approvals - Changes to the Excel spreadsheet, WWIS data entry summary, characterization and certification*** that require CBFO approval

* Upon receiving EPA approval, LANL-CCP will report all Tier 2 changes to EPA at the end of each fiscal year quarter.

** 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.

*** Substantive changes means changes with the potential to impact the site's waste characterization activities or documentation thereof, excluding changes that are solely related to Environmental Safety & Health (ES&H), nuclear safety, the Resource Conservation and Recovery Act (RCRA) or are editorial in nature.

AK Tiers

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:

- Any new waste category or new OSRP wastes addressed in AK Summaries separate from CCP-AK-008
- Implementation of Load Management for waste streams other than AK-009

Tier 2 AK changes do not require prior EPA approval but require LANL-CCP to notify EPA upon implementation of such changes and submit a brief description of the changes. Notification to EPA must be made upon completion of updates to or substantive modifications of the following:

- AK Reassessment Memoranda and combination of waste streams that were distinct at the time of this inspection
- AK-VE Memoranda related to VE and/or RTR techniques (see Section 8.4 for specific details regarding the content of this memo and relationship to AK)
- AK-NDA Memoranda
- Site procedures requiring CBFO approval
- AK Summary CCP-AK-008, if changed since the baseline inspection and/or following the addition of new sealed sources
- Completion of AK Accuracy Reports
- Change Notices used to modify and update WSPFs, including additions to waste stream(s) within an approved waste category

NDA Tiers

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

- New NDA equipment¹
- Physical modifications to approved equipment²
- Extension or changes of an approved calibration range(s) for approved equipment

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

¹New NDA equipment refers to a system or component not previously evaluated by EPA. 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 has not been formally inspected and approved by EPA, is a new system and must be approved by EPA prior to implementation to characterize WIPP wastes.

²Changes to existing NDA equipment include all changes and/or modifications to approved equipment 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 measurements from 0 to 200 g of WG Pu or total plutonium typically operate in a smaller range, the system's LLD to 177 g for WIPP. 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 2.1 g/cm³ for the LANL HENC systems discussed earlier in this report. This range may include materials that are commonly referred to using terms such as "debris (S5000)" and "solids (S3000)," both of which are within the calibrated density range. Actual waste assays may be restricted to a portion or subset of this range (i.e., debris only, for a variety of technical and/or administrative reasons). Changing the calibrated range by extending it beyond 2.1 g/cm³ for either of the LANL HENC systems would constitute a T1 change. Provided the original density range is valid, changing the operational range(s) of an approved NDA system—that is, decreasing it relative to the originally approved density range—is a T2 change, as discussed below.

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

- Changes to software for approved equipment
- Changes to the approved operating range(s) of approved NDA systems upon CBFO approval (see discussion above)
- Changes to procedures that require CBFO approval

Examples of the first bulleted item above would include the following:

- Changing a system's operating system (e.g., first use of Canberra NDA 2000)
- 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 (branching ratio) in NDA 2000)
- Introduction of a new version of an existing software package beyond what is in current use

Regarding the second bulleted item above, reducing a system's operating range because of performance-related problems or equipment failure would be a T2 change. For example, if the HENC failed to pass a PDP cycle for a specific matrix or activity range and its use for those were formally restricted by the site or CBFO, this would be a T2 change.

RTR Tiers

Tier 1 RTR changes: None.

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

- New RTR equipment or modifications to approved equipment
- Changes made to RTR procedure(s) that require CBFO approval

VE Tiers

Tier 1 VE changes: None.

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

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

Item below is listed as a T2 item under the AK section but is based on a VE concern:

- AK-VE Memoranda related to VE and/or RTR techniques

Sealed Source VET Tiers

Tier 1 VET changes: None.

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

- Changes made to the VET procedure for OSRP wastes that require CBFO approval

WWIS Tiers

Tier 1 WWIS changes: None.

Tier 2 WWIS changes do not require prior EPA approval but do require LANL-CCP to notify EPA upon implementation of such changes and submit a brief description of the changes. These changes were added to provide a greater specificity in an attempt to identify and focus on the key elements relevant to waste isolation and include the following:

- Changes to WWIS procedure(s) that require CBFO approval
- Changes to the Excel spreadsheet, WWIS data entry summary—characterization and certification