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CCP-TP-058

Revision 3

CCP
NDA Performance Demonstration Program

EFFECTIVE DATE: 12/06/2010

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APPROVED FOR USE

RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
0	05/23/2002	Initial issue.
1	06/06/2002	Made revisions to Section 4.4.
2	11/16/2006	Revised to implement the Waste Isolation Pilot Plant Hazardous Waste Facility permit requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR), and to update the procedure to reflect the separation of activities performed by Central Characterization Project (CCP) and the Host site. Addressed Carlsbad Field Office (CBFO) Document Review Record (DRR) comments.
3	12/06/2010	Revised to align with titles and duties laid out in the revised Carlsbad Field Office (CBFO) performance demonstration program plans.

TABLE OF CONTENTS

1.0 PURPOSE 4
1.1 Scope 4

2.0 REQUIREMENTS 5
2.1 References 5
2.2 Training Requirements 5
2.3 Equipment List 5
2.4 Software 5
2.5 Precautions and Limitations 5
2.6 Prerequisite Actions 6
2.7 Definitions 6

3.0 RESPONSIBILITIES 7
3.1 NDA Operator 7
3.2 Measurement Organization Assay Coordinator (MOAC) 8
3.3 NDA Expert Analyst (EA) 9
3.4 Site Project Manager (SPM) 9
3.5 Facility Records Custodian 9

4.0 PROCEDURE 10
4.1 Analysis of PDP Sample 10
4.2 Approval Status Notification Memorandum 11
4.3 Requesting an Extension 12
4.4 Corrective Actions 12

5.0 RECORDS 13

LIST OF ATTACHMENTS

Attachment 1 – Example PDP Report Form 14

1.0 PURPOSE

The purpose of the Nondestructive Assay (NDA) Performance Demonstration Program (PDP) is to demonstrate the capability of each participating measurement system and facility to meet the data quality objectives stated in the WIPP Waste Acceptance Criteria. The Central Characterization Project (CCP) implements these requirements through this procedure and CCP-PO-002, *CCP Transuranic Waste Certification Plan,* for assay of transuranic (TRU) waste. The Carlsbad Field Office (CBFO) manages this PDP as part of the assessment and approval process for the measurement facilities supplying characterization services for TRU waste. This procedure describes CCP's roles in meeting the PDP's requirements.

The management and control of PDP materials, such as sources, configuration containers, matrices, etc., are under the direction of CBFO and administered under the host site's programs. These are not managed by CCP. Similarly, the CBFO trains site personnel to perform the functions of the Sample Preparation Team whose responsibilities include assembling test containers and matrices, and loading designated sources under controlled conditions to assure a blind test program.

Acceptable performance in the PDP must be demonstrated by the participating facility prior to the certification of waste materials for disposal at the Waste Isolation Pilot Plant (WIPP). After initial acceptable performance is demonstrated through the PDP process, the characterization process will operate under normal conditions, and facilities will be evaluated annually. Once the CCP receives the scoring results, any required corrective actions will be initiated, based on these results.

For the drummed waste PDP, a simulated waste container consists of a 55-gallon matrix drum emplaced with radioactive standards and fabricated matrix inserts. These PDP sample components are distributed to the Host site. The NDA drum PDP materials are stored at the Host sites under secure conditions to protect them from loss, tampering, or accidental damage. For boxed wastes, the PDP is conducted similarly using radioactive sources and surrogate matrix Standard Waste Box (SWB)-style boxes.

1.1 Scope

This procedure provides the required elements to complete an NDA PDP and report PDP results. The referenced PDP plans include the criteria used to evaluate measurement facility performance.

2.0 REQUIREMENTS

2.1 References

Baseline Documents

- CCP-PO-002*, CCP Transuranic Waste Certification Plan*
- DOE/CBFO-01-3107, *Performance Demonstration Program Management Plan*
- DOE/CBFO-01-1005, *Performance Demonstration Program Plan for Nondestructive Assay of Drummed Wastes for the TRU Waste Characterization Program*
- DOE/CBFO-01-1006, *Performance Demonstration Program Plan for Nondestructive Assay of Boxed Waste for the TRU Waste Characterization Program*

Referenced Documents

- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-QP-002, *CCP Training and Qualification Plan*
- CCP-QP-006, *CCP Corrective Action Reporting and Control*
- CCP-QP-008, *CCP Records Management*

2.2 Training Requirements

2.2.1 Personnel performing this procedure will be trained and qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan*, prior to performing this procedure.

2.3 Equipment List

2.3.1 None.

2.4 Software

2.4.1 None.

2.5 Precautions and Limitations

2.5.1 None.

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2.6 Prerequisite Actions

2.6.1 None.

2.7 Definitions

2.7.1 Percent Recovery (%R) – The ratio of the mean of the measurement replicate set to the known value times 100%.

Percent Relative Standard Deviation (%RSD) – The standard deviation of the six replicate measurements divided by the known value times 100%.

Sample Preparation Team (SPT) – A two-person team, consisting of an NDA PDP standards custodian and PDP standards configuration attestant that prepare and certify NDA PDP samples for a given facility measurement organization. The SPT is responsible for ensuring that each NDA PDP sample is prepared according to the NDA PDP sample preparation procedures provided by the NDA PDP Coordinator. The SPT ensures proper disassembly and return to storage of all NDA PDP components after analysis by the facility measurement organization. The SPT completes and returns cycle documents as QA records.

Measurement Organization Assay Coordinator (MOAC) – The point-of-contact for cycle measurement results, corrective action process, review of draft approval status notification memoranda, and other activities related to the measurement operations of the NDA PDP cycle.

Qualified Measurement – A measurement determined by the NDA operator to meet the specifications of the approved procedure and thereby accepted for review by the expert analyst.

ASNM – Approval Status Notification Memorandum.

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NOTE

CBFO works with the NDA PDP Coordinator to ensure preparation, distribution and scoring of PDP results. The scoring report for each cycle is generated and distributed by CBFO.

NOTE

The NDA PDP Coordinator schedules the PDP for new CCP NDA facilities and then subsequent PDPs annually.

3.0 RESPONSIBILITIES

3.1 NDA Operator

3.1.1 Performs assay of TRU waste for disposal at WIPP.

3.2 Measurement Organization Assay Coordinator (MOAC)

NOTE

The following activities assigned to the MOAC in the PDP plans are associated with preparation of the configurations of matrices and sources, and are designated to be performed by personnel at the Host site by the MOAC.

- Accept PDP samples, ensuring adherence to chain-of-custody protocols, and confirm the accuracy of each Sample Custody Form during transfer of the PDP samples from the SPT of the custodial facility.
- Inspect the condition of the sample seals by checking the TIDs and ensuring they are intact. If a problem exists with the integrity of a TID, the MOAC or designee shall not accept the sample from the SPT member.
- Review, sign, and date the Sample Custody Form provided that the TIDs are intact and the Sample Custody Forms are properly completed. This custodial signature means that the measurement organization accepts the PDP sample for analysis.
- Document on PDP Sample Custody Form accompanying the PDP sample all subsequent transfers of the PDP sample within the measurement group and the return of the sample to the SPT.
- Ensure that the final signature on the Sample Custody Form is made by the SPT when the PDP sample is accepted by the SPT from the measurement organization for disassembly at the conclusion of assay system measurements.

NOTE

PDP Registration Forms are located in the respective PDP plans for boxes and drums.

3.2.1 Registers and maintains current documentation for each NDA system with the NDA PDP Coordinator in accordance with appropriate PDP plan.

3.2.2 Reports NDA PDP results to the Site Project Manager (SPM).

3.2.3 Tracks the 28-day clock for submittal of the results to the NDA PDP Coordinator.

3.2.4 Notifies the SPM and PDP Coordinator if the PDP analyses cannot be reported within 28 days.

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3.2.5 Reviews PDP results prior to submission to CBFO.

3.2.6 Coordinates correspondence with NDA PDP Coordinator and CBFO.

3.2.7 Serves as CCP central point-of-contact for administration and reporting PDP samples and results.

3.2.8 Takes corrective action in the event a deficiency is identified during the PDP.

3.2.9 Reviews the CBFO draft Approval Status Notification Memorandum.

3.2.10 Maintain all NDA PDP cycle records

NOTE

PDP matrix containers are loaded by trained Host site personnel. CCP personnel DO NOT perform these activities.

3.3 NDA Expert Analyst (EA)

3.3.1 Performs data analysis.

3.3.2 Records data on PDP Report Form(s).

3.4 Site Project Manager (SPM)

3.4.1 Reviews Batch Data Report (BDR).

3.4.2 Transmits results to the NDA PDP Coordinator after review.

3.5 Facility Records Custodian

3.5.1 Receives, processes, and transmits NDA PDP results to the CCP Record Custodian in accordance with CCP-QP-008, *CCP Records Management*.

4.0 PROCEDURE

4.1 Analysis of PDP Sample

NOTE

The BDR should be uniquely numbered to clearly indicate that the BDR contains PDP data only, no waste data.

NOTE

Since PDP containers measured on NDA systems are NOT considered waste containers, the operational requirements to obtain information from the RTR or VE datasheet or a traveler used to process the PDP containers (e.g., weight, percent full, and waste matrix code) are not applicable. The necessary information for processing PDP containers may be obtained, in writing, from the VPM.

NDA Operator

4.1.1 Perform six qualified measurements (assays) of each container using the approved methods and procedures for the assay equipment being tested.

4.1.2 Forward PDP assay data to the NDA Expert Analyst (EA).

NOTE

Performance criteria for the NDA container PDPs may be found in the appropriate PDP Plan.

NDA EA

4.1.3 Complete analysis of PDP assay data in accordance with approved procedures for the assay equipment being tested.

4.1.4 Record data on PDP Report Form(s).

4.1.5 Provide draft copies of the PDP Report Form(s) to the MOAC.

MOAC

4.1.6 Perform technical, procedural, and completeness reviews of the draft PDP Report Form(s).

4.1.7 **IF** the assay data and PDP Report Forms review are satisfactory, **THEN** notify the NDA EA that the signed PDP Report Forms may be submitted to the MOAC for submittal to the CCP Records Custodian.

4.1.8 Submit copies of the signed PDP Report Forms to CCP Records Custodian.

4.1.9 **IF** the data review is **NOT** satisfactory, **THEN** resolve issues with the NDA EA of the system.

4.1.10 Perform steps 4.1.6 through 4.1.8 until data are satisfactory.

NDA Operator

4.1.11 Complete BDR in accordance with accepted review and validation procedures for the assay equipment being tested.

4.1.12 Ensure the BDR and copies of the PDP Report Form(s) have been submitted to the Facility Records Custodian.

Facility Records Custodian

4.1.13 Receive, process, and transmit the PDP BDR in accordance with CCP-QP-008.

SPM

4.1.14 Review BDR in accordance with methods and procedures that have been approved for CCP use.

4.1.15 Obtain original signed PDP Report Form(s) from the MOAC.

4.1.16 Transmit original PDP Report Form(s) to the NDA PDP Coordinator.

4.2 Approval Status Notification Memorandum

MOAC

4.2.1 Review the CBFO Draft Approval Status Notification Memorandum and supply comments to the NDA PDP Coordinator via the Third Party Review Form from this NDA PDP Coordinator.

4.3 Requesting an Extension

MOAC

4.3.1 **IF** the PDP analyses will **NOT** be reported within the 28 days, **THEN** notify the SPM.

4.3.2 Notify CBFO and the NDA PDP Coordinator, **AND** request an extension in accordance with the appropriate PDP Plan.

4.4 Corrective Actions

NOTE

The CBFO will formally notify the facility of their approval status based upon NDA PDP results and other CBFO criteria. CBFO may authorize the NDA PDP coordinator to contact the participant regarding performance and the possible need for a corrective action.

NOTE

The NDA system will exceed an action limit when the results reported for total alpha activity deviate from the reference value by more than the amount specified using either percent recovery for bias for an interfering or non-interfering matrix, or percent standard deviation for precision for an interfering or non-interfering matrix.

4.4.1 **IF** the NDA system fails to satisfy one of the data reporting criteria, **THEN** perform one of the following actions:

[A] Inform CBFO and the NDA PDP Coordinator that the assay limitation identified by the assay failure will be accepted as a condition of performance, or

[B] Prepare a Corrective Action Report (CAR) in accordance with CCP-QP-006, *CCP Corrective Action Reporting and Control*.

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5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained as Quality Assurance (QA) records in accordance with CCP-QP-008. The records are the following:

5.1.1 <u>QA/Nonpermanent</u>

[A] PDP Report Form(s) (Attachment 1)

[B] PDP BDR (generated in accordance with the appropriate review and validation procedures)

Attachment 1 – Example PDP Report Form

Laboratory ID:_____ Assay Facility:_____

PDP Cycle:_____ Supplemental Cycle:_____Replicate:_____ of _____

Drum Serial No.:_____ Laboratory Sample ID:_____

Final Result Summary

Parameter	Final Result	Total Uncertainty (One Standard Deviation)
Total ^{239}Pu Fissile equivalent (g)		
Total alpha activity (curies)		
Thermal Power (W)		

Method Summary

	Identification	Classification	Associated SOP Identification (Including Revision No.)	Count Time (min)	Analysis	
					Date	Time
Method 1						
Method 2						
Method 3						

Individual Isotope Data

Isotope	Activity Result	Uncertainty		Method of Quantitation				Method Number (From Summary)
		Count	Total	Direct	Ratio	Scaling Isotope	Ratio Value	
^{238}Pu				☐	☐			
^{239}Pu				☐	☐			
^{240}Pu				☐	☐			
^{241}Am				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			

COMMENTS:

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