

CCP-TP-403

Revision 4

CCP

Review of Nondestructive Assay Data for Transportation Purposes

EFFECTIVE DATE: 04/21/2010

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PRINTED NAME

APPROVED FOR USE

RECORD OF REVISION

| Revision Number | Date Approved | Description of Revision |
|-----------------|---------------|---|
| 0 | 10/28/2008 | Initial Issue. |
| 1 | 11/18/2008 | Revised to submit historical container information to Acceptable Knowledge Expert (AKE). |
| 2 | 02/16/2009 | Revised to address U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) Corrective Action Report (CAR) Number 09-012, to streamline the data review process, and to make editorial corrections. |
| 3 | 08/06/2009 | Revised to include Decay Heat Total Measurement Uncertainties (TMU) requirements and to provide direction on nondestructive assay (NDA) data analysis in regards to the limitations of Central Characterization Project (CCP) certified NDA equipment at the intermediate site. |
| 4 | 04/21/2010 | Revised to clarify responsibilities of nondestructive assay (NDA) Technical Reviewer in obtaining historical data. |

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1.0 PURPOSE

To establish a process whereby waste characterization data generated by nondestructive assay (NDA) activities are reviewed for compliance with CCP-PO-401, *CCP Contact-Handled Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC) for Intersite Shipments*.

1.1 Scope

This procedure describes the requirements for the appropriate review of NDA data. Successful completion of this review may allow shipment from a site, such as a small quantity site (SQS), to another site, such as an intermediate site for waste characterization. This procedure is applicable to personnel performing data review. Compliance with this procedure documents that the NDA data meet the data requirements of the CCP CH-TRAMPAC.

2.0 REQUIREMENTS

2.1 References

Referenced Documents

- *Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC)*, U.S. Department of Energy
- CCP-PO-401, *CCP Contact-Handled Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC) for Intersite Shipments*
- CCP-QP-002, *CCP Training and Qualification Plan*
- CCP-QP-008, *CCP Records Management*
- CCP-QP-022, *CCP Software Quality Assurance Plan*

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 Software
 - RadAssay Check.xls
- 2.4 Precautions and Limitations
 - 2.4.1 None
- 2.5 Prerequisite Actions
 - 2.5.1 None
- 2.6 Definitions
 - 2.6.1 None

3.0 RESPONSIBILITIES

NOTE

Implementation of this procedure requires the following positions within CCP: Small Quantity Site Waste Certification Official (SQS WCO), NDA Technical Reviewer, and CCP Records Custodian. For the purposes of data review, the NDA Technical Reviewer will be cognizant of this procedure and its requirements.

3.1 Small Quantity Site Waste Certification Official (SQS WCO)

3.1.1 Submits Host site NDA data (historical container information) to Acceptable Knowledge Expert (AKE).

3.1.2 Assists NDA Technical Reviewer in obtaining historical NDA Data.

3.2 NDA Technical Reviewer

3.2.1 Reviews the NDA data generated or acquired for each waste container prior to the waste container being shipped to another site.

3.2.2 Ensures that Attachment 1, CCP Nondestructive Assay Data Review Checklist, is complete.

3.2.3 Ensures data are properly reported (e.g., data are reported in the correct units, correct significant figures, and correct qualifying flags).

3.2.4 Compiles original and supporting data, along with Attachment 1, for submittal to CCP Records.

3.2.5 Releases, by signature and date, Attachment 1.

3.2.6 Examines available data to determine if the waste container can be reasonably expected to have a successful assay on CCP certified NDA equipment.

3.2.7 Rejects any data that are incomplete, indefensible, or inadequately documented.

3.2.8 Calculates Pu-239 fissile gram equivalent (FGE) and FGE error for the container.

3.3 CCP Records Custodian

3.3.1 Receives, processes, and maintains Attachment 1 in accordance with CCP-QP-008, *CCP Records Management*.

4.0 PROCEDURE

SQS WCO

4.1 Host Site NDA Data Submittal

- 4.1.1 Submit Host site NDA data (historical container information) to AKE.

NOTE

In addition to the radioassay data, the NDA Technical Reviewer may require additional information such as copies of operational procedures, calibration documents, measurement control information, and Quality Assurance (QA) documentation such as Corrective Action Reports and Nonconformance Reports.

NDA Technical Reviewer

4.2 NDA Technical Reviewer Data Review

NOTE

Section 4.2 must be completed for 100 percent of the containers with NDA data and will be performed on a container-by-container basis.

A comprehensive review of the NDA data (e.g., correct units, significant figures, and qualifying flags are met, as well as ensuring that data assessment criteria are met) will be performed.

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- 4.2.1 Retrieve applicable copy of NDA data (historical container information) provided from CCP Records, SQS WCO, or AKE.
- 4.2.2 Initiate an Attachment 1 by recording the container ID and the Site at the top of the sheet.
- 4.2.3 Record the measurement date at the top of Attachment 1.
- 4.2.4 Verify that data are within established data assessment criteria and meet all applicable quality assurance objectives (QAOs): Precision, Accuracy, Completeness, Comparability, and Representativeness.

NOTE

To answer questions regarding specific criteria being met (i.e., QAOs, quality controls [QCs]), the NDA Technical Reviewer must ensure that the NDA data meet the requirements identified in the CCP CH-TRAMPAC.

Measurement uncertainties will be obtained from the NDA results from the sites. Any propagation of uncertainties beyond those provided in the site's results will be combined in quadrature. Any software used to combine the uncertainties will be maintained under CCP-QP-022, *CCP Software Quality Assurance Plan*.

- 4.2.5 Answer each question on Attachment 1 after verifying that the specific criteria have been met.
 - 4.2.6 **IF** any question is answered NA or **NO**, **THEN** provide justification in the Comments/Qualifiers section of Attachment 1.
-

NOTE

The computed FGE and FGE uncertainty values are compared with the original values in the Radioassay Datasheet to demonstrate that the values have been calculated in accordance with program requirements. However, the values in the Radioassay Datasheet will be used on Attachment 1, unless a discrepancy is noted for resolution by the site.

- 4.2.7 Compute the Pu-239 FGE and FGE error manually using the worksheet listed in step 2.3.1.
-

NOTE

Editorial corrections may be made to the NDA data by the NDA Technical Reviewer or a Designee. The extent of editorial corrections permitted by a Designee is identified in CCP-QP-008. Data-affecting changes are **ONLY** made by site personnel. Any data-affecting changes made by site personnel shall require a re-review by the NDA Technical Reviewer. Site personnel shall perform corrections, as needed, and resubmit corrected pages to the CCP Records Custodian in accordance with CCP-QP-008.

- 4.2.8 Examine available data to determine if the waste container can be reasonably expected to have a successful assay on CCP certified NDA equipment.

NOTE

The following, non inclusive list, describes the type of data that may be looked at:

- Compare radionuclide data to the appropriate PK documentation.
 - Examine the full data report to determine the presence of potentially interfering nuclides, such as Cesium-137, Uranium- 232, Curium-244, Californium-252, etc.
 - Inspect the record of the counting configuration and associated dead time, keeping in mind that all CCP certified NDA equipment employs fixed counting configurations.
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4.2.9 **IF** mistakes, omissions, errors, discrepancies, inadequate documentation, or potential problems with subsequent CCP certified assays are noted during the NDA Technical Reviewer review,
THEN GO TO Section 4.3.

4.2.10 Verify that all criteria have been met and the review is complete.

4.2.11 Print name, sign, and enter date completed on Attachment 1 in the review signature area.

NOTE

Additional information is information that is added to the back of Attachment 1. Additional information can be in the form of e-mail authorizations for administrative changes, letters, or e-mails of clarification to posed questions. This list is not inclusive.

4.2.12 **IF** additional information is placed after Attachment 1,
THEN indicate on Attachment 1, in the appropriate comment section, that additional information is being provided, **AND** paginate the inserted document (e.g., NDATR-1).

4.2.13 Forward the completed Attachment 1, **AND** any additional information, to the CCP Records Custodian.

CCP Records Custodian

4.2.14 Receive, process, and maintain Attachment 1 in accordance with CCP-QP-008.

NDA Technical Reviewer

4.2.15 **IF** any data-affecting changes are made to data that has already been reviewed,
THEN GO TO Section 4.4.

4.3 NDA Data Correction

4.3.1 Notify the SQS WCO of required corrections, **AND** document the issue in the Comments section of Attachment 1.

SQS WCO

4.3.2 Notify the Host site of required corrections.

4.3.3 Obtain corrected data from Host site.

4.3.4 Submit corrected data to AKE.

NDA Technical Reviewer

4.3.5 Obtain a copy of the corrected data (historical container information) from CCP Records, SQS WCO, or AKE.

4.3.6 **IF** mistakes, omissions, errors, discrepancies, or inadequate documentation still exist,
THEN return to step 4.3.1.

4.3.7 Verify that all criteria have been met and the review is complete.

4.3.8 Print name, sign, and enter date completed on Attachment 1 in the review signature area.

NOTE

Additional information is information that is added to the back of Attachment 1. Additional information can be in the form of e-mail authorizations for administrative changes, letters, or e-mails of clarification to posed questions. This list is not inclusive.

4.3.9 **IF** additional information is placed after Attachment 1, **THEN** indicate on Attachment 1, in the appropriate comment section that additional information is being provided, **AND** paginate the inserted document (e.g., NDATR-1).

4.3.10 Forward the completed Attachment 1, **AND** any additional information, to the CCP Records Custodian.

CCP Records Custodian

4.3.11 Receive, process, and maintain Attachment 1 in accordance with CCP-QP-008.

NDA Technical Reviewer

4.3.12 **IF** any data-affecting changes are made to data that has already been reviewed, **THEN GO TO** Section 4.4.

4.4 NDA Data Re-Review

4.4.1 Perform a re-review of the revised data.

4.4.2 Verify all criteria are met and that the re-review is complete.

4.4.3 Print name, sign, and date Attachment 1 in the re-review signature area.

4.4.4 Forward the re-signed Attachment 1, **AND** any additional information, to the CCP Records Custodian.

CCP Records Custodian

4.4.5 Receive, process and maintain Attachment 1 in accordance with CCP-QP-008.

5.0 RECORDS

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

5.1.1 QA/Nonpermanent

[A] Attachment 1, CCP Nondestructive Assay Data Review Checklist

| Container ID: _____ | | Measurement Date: _____ | | |
|---|---------------|-------------------------|----|-------------------------------------|
| Site: _____ | | | | |
| Information Reviewed | Criteria Met? | | | Comments/Qualifiers |
| | YES | NO | NA | |
| 1. Is there evidence that background measurements were performed and recorded daily? | | | | |
| 2. Is there evidence that efficiency/energy calibration and resolution checks were performed and recorded daily? | | | | |
| 3. Were the performance and background checks done prior to the analysis of the samples? | | | | |
| 4. Were the performance and background checks within acceptable limits? | | | | |
| 5. Is there reference to or copy of any associated Nonconformance Reports, Corrective Action Reports, or similar documentation? | | | | |
| 6. Is the method equipment and procedure used for radioassay identified? | | | | |
| 7. Is the method of expressing total measurement uncertainty (TMU) specified? (1-sigma, 2-sigma, 95% CI, etc.) | | | | |
| 8. If U-235 is reported, is it included in the calculation of fissile gram equivalent (FGE)? | | | | |
| 9. Is the transuranic (TRU) alpha activity concentration (TAAC) and associated TMU reported for the container? List the reported TAAC and the 1-sigma TMU. | | | | TAAC (nCi/g) = TMU (nCi/g) = |

Attachment 1– CCP Nondestructive Assay Data Review Checklist
(Continued)

| Container ID: _____ | | Measurement Date: _____ | | |
|--|---------------|-------------------------|-------|---|
| Site: _____ | | | | |
| Information Reviewed | Criteria Met? | | | Comments/Qualifiers |
| | YES | NO | NA | |
| 10. Is the Total Pu-239 FGE (g) and associated TMU reported for the container? List the Total Pu-239 FGE, the 1-sigma TMU, and the FGE value plus twice the TMU | | | | Pu-239 FGE (g) = TMU (g) = Pu-239 FGE + 2TMU(g) = |
| 11. Is the decay heat and associated TMU reported for the container? List the Decay Heat value and the 1-sigma TMU | | | | Decay Heat (w) = TMU (w) = |
| 12. Is the total Pu-239 equivalent activity (PE-Ci) reported for the container? List the PE-Ci Value | | | | PE-Ci (Ci) = |
| 13. Are the operator and reviewer signatures and dates included for the container? | | | | |
| 14. Have available data been examined such that the container can be reasonably expected to have a successful assay on CCP certified NDA equipment? | | | | |
| Comments: _____ _____ _____ _____ _____ _____ | | | | |
| The container QC checks were properly performed and meet the appropriate criteria. Proper procedures were followed during data reduction and analysis. | | | | |
| _____ | _____ | | _____ | |
| Printed Name | Signature | | Date | |
| Re-review | | | | |
| _____ | _____ | | _____ | |
| Printed Name | Signature | | Date | |