ENTERED

**Department of Energy**
Carlsbad Field Office
P.O. Box 3090
Carlsbad, New Mexico 88221

FEB 19 2014

RECEIVED

FEB 24 2014

NMED
Hazardous Waste Bureau

Mr. John E. Kieling, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Subject: Transmittal of CBFO Responses to NMED Comments on the Final Audit Report for Recertification Audit A-14-01 of the AMWTP

Dear Mr. Kieling:

This letter transmits Carlsbad Field Office (CBFO) responses to New Mexico Environment Department (NMED) comments on the Final Audit Report for Recertification Audit A-14-01 of the Advanced Mixed Waste Treatment Project (AMWTP), as well as a hardcopy and electronic copy of one AMWTP procedure which was not transmitted previously (see response to Question 3).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions concerning these responses, please contact Mr. Michael R. Brown, Director of the CBFO Office of Quality Assurance, at (575) 234-7476.

Sincerely,

Jose R. Franco

Jose R. Franco, Manager
Carlsbad Field Office

Enclosures

CBFO:OQA:MPN:MAG:14-1033:UFC 2300.00

140232

cc: w/o enclosures

| | |
|---|---|
| D. Bryson, CBFO | *ED |
| M. Brown, CBFO | ED |
| M. Navarrete, CBFO | ED |
| D. Miehls, CBFO | ED |
| J.R. Stroble, CBFO | ED |
| G. Basabilvazo, CBFO | ED |
| M. Pinzel, CBFO | ED |
| N. Castaneda, CBFO | ED |
| T. Kliphuis, NMED | ED |
| S. Holmes, NMED | ED |
| R. Maestas, NMED | ED |
| C. Smith, NMED | ED |
| T. Peake, EPA | ED |
| L. Bender, EPA | ED |
| V. Daub, CTAC | ED |
| R. Allen, CTAC | ED |
| P. Martinez, CTAC | ED |
| C. Castillo, CTAC | ED |
| G. White, CTAC | ED |
| D. Harvill, CTAC | ED |
| A. Urquidez, RES | ED |

*ED denotes electronic distribution

cc: w/enclosures

| | |
|---|---|
| WIPP Operating Record | *EF |
| CTAC QA File | EF |
| CBFO M&RC | EF |

*EF denotes electronic file format

# DIVIDER

# PAGE

**RESPONSES TO NMED COMMENTS ON THE ADVANCED MIXED WASTE TREATMENT PROJECT (AMWTP) FINAL AUDIT REPORT A-14-01**

NMED's review indicated that the body of the Audit Report and the C6 checklists generally appear to address the applicable elements. NMED provides the following comment for the Permittees' consideration:

1. *Questions 10, 27, 28, and 152 of the C6 Checklist indicate that the procedural citation given, MP-TRU-8.13, Section 3.8, Notes 1-4 answers the question. MP-TRUW-8.13, Section 3.8 only has three Notes.*

   Response: As noted in Audit Report A-14-01, Attachment 6 - Procedure Revision Matrix, there was a revision change to MP-TRUW-8.13 from Rev. 24 to Rev. 25 on August 13, 2013, two months prior to the audit (October 1-3, 2013). The procedural citation with "Notes 1-4" is in Rev. 24, not Rev. 25 (current) of MP-TRUW-8.13. Rev. 24 was the correct revision of the procedure utilized at the time work was being performed; therefore, the citation of MP-TRUW-8.13, Section 3.8, Notes 1-4, is correct.

2. *IN AK-19 of the Audit Report, in the Attachment of AKR-05-236R2, there is a miss-typed brand name of a type of can. AK-19 has it spelled as "volrath can" (listed four times in the document) when the correct spelling should be "Vollrath can".*

   Response: The document referencing the misspelled brand name is an AMWTP document submitted as objective evidence to the audit team. CBFO cannot correct misspellings on AMWTP documents. AMWTP has been notified of this concern and if changes are required they will be incorporated in the next revision.

3. *Questions 26, 34, 144, 234, 235, 236, 237, 238, 239, 240, 241, 242,243, 245, 247, 265, 266, 267, and 278 of the C6 Checklist indicate that the procedural citation given, INST-OI-81 (All) answers the question. The procedure, INST-OI-81 was not included in the Audit Report in hardcopy or electronically.*

   Response: INST-OI-81 was not included in the hardcopy and electronic submittal. This procedure is attached.

4. *Questions 296, 297, 298, 298a, and 300 of the C6 Checklist indicate that the procedure given, QP-VE-0001, answers the question. NMED understands that QP-VE-0001 is the AMWTP Qualification Package for documenting VE training and was submitted under VE-2 objective evidence of the final audit report. In the future it would be helpful to NMED if a statement was included in the checklist comment column that indicates that QP-VE-0001 is not included with the list of procedures but is instead included with the objective evidence.*

   Response: In the future, a statement will be included in the checklist comment column which will indicate that QP-VE-0001 is not included with the list of procedures but is instead included with the objective evidence.

# DIVIDER

# PAGE

RECORD
11431
SWALKER
08/23/2012

AMWTP Advanced Mixed Waste Treatment Project

# DOCUMENT CHANGE REQUEST (DCR)

Form-1001
Rev.32
Effective: 07/25/12



Implementing Document: MP-DOCS-18.4

| Document ID: | INST-OI-81 | Current Rev. ID (Enter "NEW" if Creating): | 9 | DCR No: | 11431 |
|---|---|---|---|---|---|

1. **Document Title:** Real-Time Radiography Operations (for WIPP Certification of Boxes)

2. **Requester:** B. Warner **Phone:** 6318 **S #:(Required)** 85397

3. **Type of Action:** ☐ Create ☒ Revise ☐ Field Change ☐ Supersede ☐ Suspend ☐ Cancel ☐ Reinstate

4. **Proposed Action:** ☐ Additional changes are listed on continuation page.

| Item | Page No./ Section / Step | Description | Justification *Justification must be included for all listed changes.* |
|---|---|---|---|
| — | — | See original DCR (rev. 31) attached. DCR form revised during procedure revision process prior to 07/25/12. Owner approval signatures obtained through review process prior to 07/25/12 for procedure revision are captured on original DCR form. | — |
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5. **Field Change:** ☒ N/A If not a field change completing Block 5 is not required.

☐ Permanent? ☐ Temporary?. If temporary, duration/expiration date:_____

Refer to instructions in MP-DOCS-18.4 for processing field changes. Completion of Blocks 11 and 14 is required.

| | Print | Signature | Date |
|---|---|---|---|
| Criticality Safety Approval: | N/A | N/A | N/A |
| NFM Approval: | N/A | N/A | N/A |

Plant Manager Acknowledgement: N/A (Initials)

| Document ID: | INST-OI-81 | Current Rev. ID (Enter "NEW" if Creating): | 9 | DCR No: | 11431 |
|---|---|---|---|---|---|

**6.** **Minor Change?** ☒ Yes ☐ No (If yes, proceed per instructions.) ☐ N/A for Field Changes

**7.** **Document Owner Proposal** ☒ Accepted ☐ Rejected Printed Name: B. Warner

Is a Facility Modification Proposal (FMP) being processed that may be related to this document revision? ☐ Yes ☒ No
If yes, list FMP #N/A.

Is this document listed on LST-PAIT-01? ☒ Yes ☐ No If **YES**, a review by WTS personnel is required. (Use space provided for review and approval in Block11c).

**NOTE**: *If a proposed FC necessitates a WTS software change, the field change must be stopped and a revision initiated.*

If this change must coincide with a software/PVCS change, provide SDCR or SCR # N/A and implementation date: N/A

Document Owner:

1) Identify the reviewers for this document in Block 9 below, using Appendix A of MP-DOCS-18.4 for guidance.

2) Complete Block 14A for the USQ applicability review before submitting to Document Services

| If rejected, indicate the reason: Use Block 17 if more room is needed | Owner Signature: | See original DCR (rev 31) attached | Date: | 07/10/12 |
|---|---|---|---|---|

**8.** Does this action qualify as a **PERIODIC REVIEW?** ☐ Yes ☒ No

If **YES, or if document is NEW**, provide next periodic review due date. : ☒ N/A

**9.** **Required Reviewers:** (Determined by Document Owner with guidance from MP-DOCS-18.4, Appendix A).

☐ N/A If minor change or FC, completing Block 9 is not required.

☒ Yes ☐ No Are the reviewers listed below consistent with Appendix A of MP-DOCS-18.4?

**NOTE: Obtain Management approval if the reviewers identified below is not consistent with Appendix A.**

**Management Approval for modified required reviewers:**

| N/A | N/A | N/A |
|---|---|---|
| **Printed Name** | **Signature** | **Date:** |

| Discipline | Printed Name | | Signature or Method of Concurrence (mark E for Email) | Date | Comments Yes | Comments No |
|---|---|---|---|---|---|---|
| Changes from roundtables are included in the redlines attached to the Roundtable Attendance Roster | | | | | | |
| ES&H | David K. Young | ☐E | See original DCR form (Rev 31) for signatures | 07/19/12 | | X |
| NFM | B. Warner | ☐E | See original DCR form (Rev 31) for signatures | 07/19/12 | | X |
| NAO | David Sanderlin | ☐E | See original DCR form (Rev 31) for signatures | 07/19/12 | | X |
| QA | Gary LaBruyere | ☐E | See original DCR form (Rev 31) for signatures | 07/19/12 | X | |
| Criticality Safety | T Bolander | ☐E | See original DCR form (Rev 31) for signatures | 07/19/12 | | X |
| Nuclear Safety | T. Bolander | ☐E | See original DCR form (Rev 31) for signatures | 07/19/12 | | X |
| Engineering | Jeff Jensen | ☐E | See original DCR form (Rev 31) for signatures | 07/19/12 | | X |
| TRU Programs | Eric Schweinsberg | ☐E | See original DCR form (Rev 31) for signatures | 07/19/12 | | X |
| Maintenance | Rob Hamilton | ☒E | — | 08/02/12 | | X |
| LLW/MLLW | Bruno Zovi | ☒E | — | 08/03/12 | | X |
| ACL | Shelly Siemer Sailed | ☒E | — | 08/01/12 | | X |
| — | — | ☐E | — | — | — | — |
| — | — | ☐E | — | — | — | — |
| — | — | ☐E | — | — | — | — |

| Document ID: | INST-OI-81 | Current Rev. ID (Enter "NEW" if Creating): | 9 | DCR No: | 11431 |
|---|---|---|---|---|---|

**10a** **Validation:** Is this an INST? ☒ Yes ☐ No ☐ N/A

If a minor change, field change, or incorporating an approved field change, completing Block 10a is not required.

Is this a Form/Checklist used in conjunction with a revised INST? ☐ Yes ☒ No ☐ N/A (for Minor Changes)

Is this a Form/Checklist that independently directs work? ☐ Yes ☒ No ☐ N/A (for Minor Changes)

If any of the above are Yes, indicate procedure validation method and attach Form-1002, Procedure Validation Request:

☐ Limited Field Use ☐ Mockup ☒ Tabletop ☐ Walkdown (ACL/MIs Only)

Was the validation listed above a ☒ Complete validation or a ☐ Partial validation?

**10b** **Hazard Assessment:** ☐ **N/A**

If change is Minor Change, FC, incorporating an approved field change, or administrative procedure changes, completing Block 10b is not required.

Does this change **Introduce Any Safety Hazards** that have not previously been identified? ☐ Yes ☒ No

**If Yes**, a Hazard Assessment must be either completed or revised in accordance with INST-COPS-9.18.4, Hazard Assessment, and attach a copy of the completed Form-1444, Hazard Assessment Record Sheet attached.

Provide new or revised Hazard Assessment number: N/A

| SSWC Reviewer Name: David Capell | Signature: See original DCR (Rev 31) attached | Date: 07/19/12 |
|---|---|---|

**11a** **WIPP-Related Documents:**

a. Is document NEW? ☐ Yes ☒ No If NEW, should it be added to LST-Q&SI-01 per the QA and SPM review? ☐ Yes ☐ No

b. If this document is **NOT NEW**, is it **listed in LST-Q&SI-01**? ☒ Yes ☐ No ☐ N/A

c. If listed in LST-Q&SI-01, do these changes require CBFO review? ☐ Yes ☒ No ☐ N/A

**Site Project Manager (SPM):** Printed Name: Eric Schweinsberg

**Signature** (indicating review and approval): See original DCR (Rev 31) attached Date: 07/19/12

**11b** **NNSS Related Documents:** ☐ N/A If minor change, completing block 11b is not required.

a. If this document is **NEW**, should it be added to LST-LLW-03? ☐ Yes ☐ No ☒ N/A

b. If this document is **NOT NEW**, is it currently listed in LST-LLW-03? ☒ Yes ☐ No ☐ N/A

**NNSS Waste Certification Official (WCO) Approval:** Printed Name: Jared Dominick

**Signature** (indicating review and approval): See attached email Date: 07/16/12

**11c** **PAIT Related Documents:** ☐ N/A If change is Minor Change, completing Block 11c is not required.

a. If this document is **NEW**, should it be added to LST-PAIT-01? ☐ Yes ☒ No

b. If this document is **NOT NEW**, is it currently listed in LST-PAIT-01? ☒ Yes ☐ No ☐ N/A

**PAIT Approval:** Printed Name Jared Hawley

**Signature** (indicating review and approval): See attached email Date: 07/12/12

**12.** **RCRA**: Are there any regulatory/permit impacts? ☐ Yes ☒ No ☐ N/A If not a minor change or FC, completing Block 12 is not required.

| Greg Henrie | See original DCR (Rev 31) attached | 07/19/12 |
|---|---|---|
| Evaluator Printed Name | Signature | Date |

| Document ID: | INST-OI-81 | Current Rev. ID (Enter "NEW" if Creating): | 9 | DCR No: | 11431 |
|---|---|---|---|---|---|

**13. Training Requirements Determination:** ☐ N/A If a Field Change completing Block 13 is not required.

Document owner initials are required, indicating approval of the option selected below.

1. ☐ This is a minor change or strictly incorporation of approved FCs. Training Department review not required.

2. ☐ This change affects informational and non-implementing documents (i.e., RPT, PLN, etc.). The document owner will ensure that any operating and training requirements will be flowed down to implementing procedures. Training Department review not required.

3. ☐ This change to an implementing document does not introduce or change technical content that will require personnel to acquire new knowledge or to develop new skills to implement the change. Qualification packages, training objectives, or examination questions do not need to be changed.

4. ☒ This change to an implementing document does introduce or change technical content that will require personnel to acquire new knowledge, complete new training requirements, or develop new skills to implement the change. Qualification packages, training objectives, or examination questions will need to be changed.
Enter TrackWise AI number (from Form-1010) - 71778.

☒ If Box 4 is checked, is training needed BEFORE this document is issued? ☐ Yes ☒ No ☐ N/A

***Required only for Numbers 3 – 4:*** ☐ N/A (if Blocks 1 or 2 are checked, signature below not required)

Training Specialist Printed Name: Ted Simmons

Signature: See attached emails Date: 07/23/12 & 08/02/12

**14a.** **NOTE:** *Only one section (14a OR 14b) needs to be completed and signed.*

**USQ Process Applicability Review:** To be completed by the document owner.

☐ The change applies to a document or document type listed in LST-NSPC-02 **(considering noted exceptions).**
*(If checked, the change does not require a USQ evaluation. If not checked, signature is not required)*

| N/A | N/A | N/A |
|---|---|---|
| Document Owner | Signature | Date |

**14b.** **USQ Evaluation:** To be completed by a USQ evaluator in accordance with MP-NSPC-3.2, Unreviewed Safety Question Process.
*(Check only one box that applies)*

☒ A USQ **DOES NOT EXIST** based upon the results of a Categorical Exclusion Review.

☐ A USQ **DOES NOT EXIST** based upon the results of an approved USQ Determination.

☐ A USQ **EXISTS** based upon the results of an approved USQ determination.
**NOTE: This change to this document cannot be issued as long as a USQ exists.**
**NOTE: If a USQ exists, forward this DCR and case file with supporting documentation to Document Control.**

Categorical Exclusion Review Number: 71907 ☐ N/A

USQ Determination Number: — ☒ N/A

**Approval**

Printed Name: Kurt Zorn

Signature: OR ☒ Signature via TrackWise Notification 08/04/12

Date

| Document ID: | INST-OI-81 | Current Rev. ID (Enter "NEW" if Creating): | 9 | DCR No: | 11431 |
|---|---|---|---|---|---|

**15.** **Effective Date and Time:** After considering all impacts and implementation activities noted in Blocks 13, 14, 16, and 17, establish an effective date and time for the document: (If time is left blank, default time is 12:01am.) — Date: 08/23/12 Time: 0900

If document is a Temporary Operating Instruction (TOI), establish an expiration date, not to exceed 14 calendar days. ☒ N/A — Date: — Time: —

**16.** **Other Documents** and related forms affected by this action:

Form-1218

**17.** **Comments:**

Forms-1001, 1002, 1003 were revised during this review process. All signatures obtained through the review process, prior to 07/25/12 are captured and retained in this case file.

**18.** **Final Approval** (Document Owner):

Is a Required Read needed? ☐ Yes ☒ No If Yes, is it needed BEFORE this document is issued? ☐ Yes ☐ No

If needed before, initial indicating that an IMMEDIATE READ has been initiated per MP-COPS-9.12. _____

If not needed before, initial indicating that a regular required read has been initiated per MP-COPS-9.12. _____

Is a Tailgate Briefing needed? ☐ Yes ☒ No If yes, comply with MP-RTQP-14.11, Section 3.4, Delivery of Training.

Is the training required **BEFORE** this revision is implemented? ☐ Yes ☒ No/N/A If YES, obtain TrackWise AI# _____.

Does this document action require DOE-ID review and approval? ☐ Yes ☒ No (Refer to MP-DOCS-18.4, Appendix C.)

If document is NEW, complete Block 20 to indicate appropriate controlled hard copy distribution.

***Final document approval and signature indicates correct reviewers have been involved, the validation completed (if applicable), no pending USQ or RCRA actions exist, and confirms acknowledgement, verification, and accountability for ensuring that CBFO approval has been received prior to issuing this document if so required per Block 11.***

| | Printed Name | Signature | Date |
|---|---|---|---|
| Document Owner | Brain Warner | [signature] | 08/06/12 |
| Document Manager | Charles Stepzinski | [signature] | 08/08/2012 |

**19.** **Document released** and controlled copies have been transmitted for use: New Revision ID 10

Name S. Walker Signature: [signature] Date: 23 Aug 2012

**20.** **Controlled Hard Copy Distribution** (If distribution is the same as the previous revision enter "Same as Previous")

| Controlled Copy Location | Controlled Copy Location | Controlled Copy Location | Controlled Copy Location |
|---|---|---|---|
| Same as previous ✓ | | | |
| | | | |

**Delete/discard next page if not needed, and do not include instruction pages in the case file.**

7-10-12 up

| AMWTP Advanced Mixed Waste Treatment Project | DOCUMENT CHANGE REQUEST (DCR) | Form-1001 Rev.31 Effective: 9/14/11 Page 1 |
|---|---|---|

Implementing Document: MP-DOCS-18.4

| | | | | | | |
|---|---|---|---|---|---|---|
| Document ID: | INST-OI-81 | | Current Revision ID: | 9 | DCR No: | 11431 |
| 1. | Document Title: | Real-Time Radiography Operations (for WIPP Certification of Boxes) | | | | |
| 2. | Requester: | B. Warner | Phone: | 6318 | S #:(Required) | 85397 |

3. Type of Action: ☐ Create ☒ Revise ☐ Field Change ☐ Supersede ☐ Suspend ☐ Cancel

4. Proposed Action: ☐ Additional changes are listed on continuation page(s).

| Item | Page No./Section/Zone | Description | Justification |
|---|---|---|---|
| 1 | Multiple | Make changes per attached red-line mark-up | Revise OI for DSA/TSR updates. |
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5. Field Change: ☒ N/A ☐ Permanent? ☐ Temporary? If temporary, duration/expiration date:_____
Refer to instructions in MP-DOCS-18.4, Section 3.6, for processing. Completion of Blocks 11 and 14 is required.

| | Print | Signature | Date |
|---|---|---|---|
| Criticality Safety Approval: | N/A | N/A | |
| NFM Approval: | N/A | N/A | |

Plant Manager Acknowledgement: N/A
Initials

NOTE: *If the proposed FC necessitates a WTS software change, the FC must be stopped and a revision initiated.*

Is this INST listed on LST-PAIT-01? ☐ Yes ☐ No If YES, a review by WTS personnel is required (use review and approval space in Block 9). N/A

6. Minor Change? ☐ Yes ☒ No (If yes, proceed per instructions.) ☐ N/A for Field Changes

Retained for Block 4
RD 8/6/12

| AMWTP Advanced Mixed Waste Treatment Project | DOCUMENT CHANGE REQUEST (DCR) | Form-1001 Rev.31 Effective: 9/14/11 Page 2 |
|---|---|---|

Implementing Document: MP-DOCS-18.4

| Document ID: | INST-OI-81 | Current Revision ID: | 9 | DCR No: | 11431 |
|---|---|---|---|---|---|

**7. Document Owner Proposal Approval:** ☒ Accepted ☐ Rejected Printed Name: C. Stepzinski/B. Warner

Is a Facility Modification Proposal (FMP) being processed that may be related to this document revision? ☐ Yes ☒ No
If yes, list FMP # N/A.

Is this document listed on LST-PAIT-01? ☒ Yes ☐ No If YES, a review by WTS personnel is required. (Use space provided for review and approval in Block 9)

If this change must coincide with a software/PVCS change, provide SDCR or SCR # N/A and implementation Date: N/A

If rejected, indicate the reason: Use Block 17 if more room is needed

Owner Signature: [signature] Date: 07/10/2012

**8.** Does this action qualify as a **PERIODIC REVIEW?** ☐ Yes ☒ No If **YES**, provide new Periodic Review due date: N/A

**9. Reviewers:** (Refer to MP-DOCS-18.4, Appendix A, Document Review and Approval Matrix)
☐ N/A for minor change only

| Discipline | Printed Name | Signature or Method of Concurrence | Date | Comments? Resolved at Roundtable EO 7/24/12 Yes | No |
|---|---|---|---|---|---|
| ES&H | DAVID K. YOUNG | [signature] | 19 JULY 2012 | | X |
| Waste Services | Greg Henrie | [signature] | 7/19/12 | | X |
| NFM | THEODORE GRIFFIN | [signature] | 7/19/12 | | X |
| QA | GARY LABRUYERE | [signature] | 07/19/12 | X | |
| Crit Safety | T. Bolander | Thane Bolander | 7/19/12 | | X |
| Nuclear Safety | T Bolander | Thane Bolander | 7/19/12 | | X |
| Engineering | Jeff Jensen | [signature] | 7/19/12 | | X |
| ~~Cert~~ SSWC | DAVID CAPELL | David Capell | 07/19/12 | | X |
| PAIT | Jared Hawley | See email | 7/19/12 | | X |
| TRU | Eric Schweinsberg | [signature] | 7/19/12 | | X |
| UE/NAD | DAVID SANDERLIN | [signature] | 7/19/12 | | X |

**10a Validation:** Is this an instructional procedure (INST)? ☒ Yes ☐ No ☐ N/A (for Minor Change, FC, and FC Gap Reviews)

Is this a Form/Checklist used in conjunction with a revised INST? ☐ Yes ☒ No ☐ N/A (for Minor Changes)

Is this a Form/Checklist that independently directs work? ☐ Yes ☒ No ☐ N/A (for Minor Changes)

If any of the above are Yes, indicate procedure validation method and attach Form-1002, Procedure Validation Request:

☐ Limited Field Use ☒ Mockup ☐ Tabletop

Was the validation listed above a ☒ Complete validation or a ☐ Partial validation?

**10b Hazard Assessment:** ☐ **N/A (for Minor Change, FC, FC Gap Reviews, and administrative procedure changes)**

Does this change **Introduce Any Safety Hazards** that have not previously been identified? ☐ Yes ☒ No

**If Yes**, a Hazard Assessment must be either completed or revised in accordance with INST-COPS-9.18.4, Hazard Assessment, and attach a copy of the completed Form-1444, Hazard Assessment Record Sheet attached.

Provide new or revised Hazard Assessment number: N/A

SSWC Reviewer Name: DAVID CAPELL Signature: David Capell Date: 07/19/12

Retained for Signatures
RD 8/6/12

| AMWTP Advanced Mixed Waste Treatment Project | DOCUMENT CHANGE REQUEST (DCR) | Form-100 Rev.3 Effective: 9/14/1 Page 1 |
|---|---|---|

Implementing Document: MP-DOCS-18.4

| Document ID: | INST-OI-81 | Current Revision ID: | 9 | DCR No: | 11431 |
|---|---|---|---|---|---|

**11a WIPP-Related Documents:**

a. If this document is **NEW**, should it be added to LST-Q&SI-01 per the Quality Assurance and SPM review? ☐ Yes ☒ No / N/A

b. If this document is **NOT NEW**, is it **listed in LST-Q&SI-01**? ☒ Yes ☐ No / N/A

c. Do these changes require CBFO review? ☐ Yes ☒ No

**Site Project Manager (SPM):** Printed Name: Eric Schoeinsberg

Signature (indicating review and approval): [signature] Date: 7/19/12

**11b NNSS Related Documents:** ☐ N/A for Minor Change

a. If this document is **NEW**, should it be added to LST-LLW-03? ☐ Yes ☒ No/N/A

b. If this document is **NOT NEW**, is it currently listed in LST-LLW-03? ☒ Yes ☐ No/N/A

**NNSS Waste Certification Official (WCO) Approval:** Printed Name: Jared Dominick

Signature (indicating review and approval): see email Date: 7/16/12

**12.** **RCRA**: Are there any regulatory/permit impacts? ☐ Yes ☒ No ☐ N/A for Minor Change or FC

Evaluator Printed Name: Greg Henrie Signature: [signature] Date: 7/19/12

**13. Training Requirements Determination:** ☐ N/A for Field Change

Document owner initials are required, indicating approval of the option selected below.

1. ☐ This is a minor change or strictly incorporation of approved FCs. Training Department review not required. _____

2. ☐ This change affects informational and non-implementing documents (i.e., RPT, PLN, etc.). The document owner will ensure that any operating and training requirements will be flowed down to implementing procedures. Training Department review not required. _____

3. ☐ This change to an implementing document <u>does not</u> introduce or change technical content that will require personnel to acquire new knowledge or to develop new skills to implement the change. Qualification packages, training objectives, or examination questions do not need to be changed. _____

4. ☒ This change to an implementing document <u>does</u> introduce or change technical content that will require personnel to acquire new knowledge, complete new training requirements, or develop new skills to implement the change. Qualification packages, training objectives, or examination questions will need to be changed. _____
Enter TrackWise AI number (from Form-1010) - 71778.

5. ☐ The formal training described in the TrackWise AI above MUST BE COMPLETED PRIOR TO procedure issuance. _____

***Required only for Numbers 3 – 5:***

Training Specialist Printed Name: Ted Simmons

Signature: See attached email Date: 7/23/12

Retained for Signatures
RO 8/6/12

| AMWTP INSTRUCTION | | |
|---|---|---|
| INST-OI-81, Rev. 9 | Issued: 07/03/12 | Effective: 07/03/12 @ 1500 Hrs |
| **Real-Time Radiography Operations (for WIPP Certification of Boxes)** | | |

## 1.0 PURPOSE/SCOPE

The Advanced Mixed Waste Treatment Project (AMWTP) Real-Time Radiography (RTR) system is a nondestructive examination technique used to verify the physical form of the waste and the absence of liquids and containerized gases within the contents of radioactive and mixed waste containers. In addition to identifying the contents of containers, the RTR system also provides digital data-recording capabilities. Examination of containers verifies the specific waste matrix code (WMC) and *waste stream* (see def.) description, identifies prohibited items, and estimates each waste material parameter weight as required for disposal at the Waste Isolation Pilot Plant (WIPP). In the case of unlabeled containers, RTR is used to correlate the contents of the container with known waste types and, if possible, assign an item description code (IDC).

This document applies to the operation of the RTR and operating software.

**(HWMA/RCRA Permit; MP-TRUW-8.1; MP TRUW-8.2; CCP-PO-003)**

## 2.0 ROLES AND RESPONSIBILITIES

| Performer | Responsibilities |
|---|---|
| Operations Technician (OT) | • Unless otherwise specified, performs the steps in this instruction. |
| Shift Supervisor (SS) | • Logs ~~mode~~ **status** changes<br>• Updates the applicable status boards<br>• Performs post-job reviews<br>• Makes necessary notifications. |
| System Engineer (SE) | • Evaluates conditions and advises SS. |

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# 3.0 PRECAUTIONS AND LIMITATIONS/PREREQUISITES

## 3.1 Precautions and Limitations

3.1.1 The RTR ~~safety significant~~ door interlock systems, audible and visual warning signals, minimum 20-second delay function, emergency shutdown switches, and shielding shall be *OPERABLE* (see def.) when the associated RTR x-ray unit is capable of generating x-rays.

**(~~RPT-TSR-03, GEO 3.1~~ANSI-N43.3)**

3.1.2 To avoid personnel exposure, personnel must ensure that the shielded enclosure is clear of personnel before initiating x-rays.

3.1.2.1 When personnel are using the mirror mounted inside the shielded enclosure, they must ensure the hidden area located underneath the camera is unoccupied.

3.1.3 To avoid personnel exposure to x-rays and personnel injury, emergency stops to shut off x-ray generation and equipment movement are located on the operator control console (red mushroom pushbutton), and within the RTR enclosure (pull cords).

3.1.4 The personnel access door can be opened from inside the RTR enclosure to allow personnel egress during an emergency. If x-rays are being generated, opening the personnel door will stop generation of x-rays.

3.1.5 The cart enable/disable key must be switched to DISABLE, the key removed, and maintained under operator control when loading, unloading, and rotating the cart or installing/removing the drum manipulator and when entered the enclosure.

3.1.6 The maximum capacity for the x-ray cart is 10,000 lb.

3.1.7 Before leaving the RTR control console unattended, the x-ray controller must be placed in STAND BY mode and the key must be removed and maintained under operator control or stored in the master key locker.

3.1.8 The x-ray controller may be turned off at any time; however, if time permits, maintaining the key switch in STANDBY after periods of continuous operation will help ensure adequate cool down before switching off.

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## 3.2 Prerequisites

3.2.1 Personnel operating the RTR are properly qualified in accordance with MP-RTQP-14.4, Personnel Qualification and Certification, by completing the qualification checklist for an RTR operator (QPOT03A).

**(HWMA/RCRA Permit; MP-TRUW-8.1)**

3.2.2 The following forms are available:

- Applicable operator log
- Form-1578, Imaging Quality Indicator Verification Form for RTR
- Form-1218, Daily RTR ~~Technical Safety Requirements Surveillance~~ Checks.

3.2.3 Operations Technician has obtained the following items (keys are in the master key locker):

- Operator control console power key
- E-Stop reset key
- X-ray control console key
- Cart enable/disable key
- Recording media (DVD if needed)
- Image Quality Indicator (IQI) test pattern.

**(HWMA/RCRA Permit; MP-TRUW-8.1)**

3.2.4 Waste Tracking System (WTS) is available.

3.2.5 A pre-job brief has been performed per MP-COPS-9.17, Performing Pre-Job Briefings and Post-Job Reviews, as directed by the SS prior to performing work in this procedure.

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3.2.6 The following ~~technical~~ **required** safety ~~requirement (TSR)~~ surveillance checks have been verified (and logged on the applicable operator log) to be within periodicity
**OR** the system is being operated to perform **the** surveillance **checks** ~~requirements~~ or other activities to restore the system to operability

| **Surveillance** ~~**Requirement**~~ | **Performed Per** | **Periodicity** |
|---|---|---|
| RTR door interlocks, warning signals, delay function, and emergency switches ~~(SR 4.1.2)~~ | INST-MI-1002, RTR 6-Month Surveillance for RTR System Z-21[illegible]101 and Z-21[illegible]106 ~~in Accordance With LCO 3.1 SR 4.[illegible]~~ | Semiannually or following configuration changes or modifications |
| RTR shielding survey ~~(SR 4.1.3)~~ | Form 1177, WMF-634 RTR Shielding Radiation Survey | Semiannually or following configuration changes or modifications |

## 4.0 INSTRUCTIONS

### 4.1 General Instructions

**NOTE:** *Entering the shielded enclosure may be performed at any time throughout this procedure as necessary to perform routine inspections and escort personnel for inspections or training.*

4.1.1 **IF** entry into the shielded enclosure is necessary at any point during the performance of this procedure,
**THEN GO TO** Section 4.3
**AND RETURN TO** the point of departure in the previous section when complete.

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**NOTE:** *It is management's expectation that Form-1218 is not completed until the SS has reviewed it and signed on the appropriate line.*

4.3.3.11 Ensure that Form-1218 has been completed for the applicable RTR unit for the current day.

**(~~RPT-TSR-03, SR 3.1.1~~ANSI-N43.3)**

4.3.3.11.1 **IF** any item in Section I or II is unsatisfactory, **THEN** immediately take the following steps:

4.3.3.11.1.1 Place the RTR system ~~in *SUSPENSION MODE* (see def.)~~**Out of Service**.

4.3.3.11.1.2 Notify the SS.

4.3.3.11.1.3 **GO TO** Section 4.13.14.

**(~~RPT-TSR-03, LCO 3.1~~ANSI-N43.3)**

4.3.3.12 Enter the shielded enclosure to perform inspection/training as necessary.

## 4.4 Beginning of Shift Activities

4.4.1 **IF** Form-1218 has **NOT** been completed for the current day, **THEN GO TO** Section 4.3 to complete Form-1218 **AND RETURN TO** Step 4.4.2 when complete.

**(~~RPT-TSR-03, SR 4.1.1; LCO 3.1~~ANSI-N43.3)**

**NOTE:** *The WTS will not permit logon if the Form-1268 is not current.*

4.4.2 Log in to the WTS, RTR operation navigation screen, as necessary.

4.4.3 Double click the barcode reader icon, if necessary.

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**NOTE:** *An IQI is required at system startup prior to examining waste and at least once every 24 hours during continuous operations.*

4.4.4 **IF** IQI has been completed for the current day, as evidenced on Form-1578,
**THEN** verify it is complete and compliant by viewing the recording and listening to the audio.

4.4.4.1 **IF** IQI is found to **NOT** be complete and compliant,
**THEN** notify SS.

**NOTE:** *The cart will have to be out in order to mount the IQI test pattern.*

4.4.5 **IF** the IQI image verification is required,
**THEN** mount the IQI test pattern on the cart.

## 4.5 Warm-up

4.5.1 Ensure Sections 4.2 through 4.4 are completed prior to RTR system operations.

4.5.2 Ensure that the system is in one of the following:

- ~~*OPERATION MODE* (see def.)~~***In Service***
- Being operated to perform ~~SR 4.1.3~~**RTR Shielding Surveillance**
- Other activities to demonstrate system operability.

~~**(RPT-TSR-03, LCO 1.4 and LCO 3.0.5)**~~

**NOTE:** *In the event that an extended manual warm-up is necessary, personnel should consult with the SS and RTR SE for guidance. The GE Inspection Technologies Isovolt operating instructions are available for a more detailed description of operation.*

4.5.3 Ensure the x-ray shutters are closed.

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**WARNING**

**When the x-ray generator is on, personnel in the enclosure could suffer fatal injuries.**

**NOTE 1:** *The DOOR CLOSE button light on the operator control panel will be illuminated when the bi-parting door is closed.*

**NOTE 2:** *The hidden area located underneath the camera can be checked using the mirror mounted inside the shielded enclosure.*

4.5.3.1 Ensure that the enclosure is unoccupied **AND** both the personnel access door and the bi-parting doors are closed.

4.5.4 **GO TO** the appropriate procedure section from the following table based on the desired warm-up activities to be performed, **THEN RETURN TO** this step, if further warm-up activities will be performed:

| Task | Section |
|---|---|
| Start of shift OR after ~~LCO~~ **Daily Safety Checks** completion | 4.5.5 |
| RTR has been in continuous operation for less than 2 hours and prompts for warm-up when entering a high kV value, **OR** has been idle for 2-3 hours | 4.5.6 |
| RTR System has been idle for 3–4 hours | 4.5.7 |
| RTR System has been idle for >4 hours | 4.5.8 |
| Warm-up is complete | 4.5.9 |

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**NOTE:** *The controller will display "Tube To Be Warmed-Up" and display options for: NO (F1), 1..2 Days (F4), 2..14 Days (F5), >14 Days (F6), and RTC auto (F7).*

4.5.5 **IF** at the start of shift
**OR AFTER** ~~Limiting Condition for Operations (LCO)~~**Daily Safety Checks** completion,
**THEN** cycle the key position from the ON/STANDBY position to OFF and back to ON.

**NOTE:** *After performing the following step, a screen prompting to "Enter Test Voltage" will appear.*

4.5.5.1 Press F6 to select >14 Days.

4.5.5.2 Type 420 kV
**AND** press ENTER.

4.5.5.3 Press the X-RAY ON button to begin the warm-up.

**NOTE:** *The controller will display "Tube To Be Warmed-Up" and display options for: NO (F1), 1..2 Days (F4), 2..14 Days (F5), >14 Days (F6), and RTC auto (F7).*

4.5.6 **IF** the RTR system has been in continuous operations for less than 2 hours and prompts for warm-up when entering a high kV value
**OR** the RTR system has had continuous idle time for 2-3 hours,
**THEN** cycle the key position from the ON/STANDBY position to OFF and back to ON.

**NOTE:** *After performing the following step, a screen prompting to "Enter Test Voltage" will appear.*

4.5.6.1 Press F4 to select 1..2 Days.

4.5.6.2 Type 420 kV
**AND** press ENTER.

4.5.6.3 Press the X-RAY ON button to begin the warm-up.

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**NOTE 1:** *There are a number of controls that will affect the quality of the recorded image (including IQI placement, zoom functions, Automatic Defect Enhancement (ADE) filter, window leveling, x-ray focal spot), all of which can be adjusted by the OT. The intent of the IQI evaluation is to demonstrate the imaging system capability to achieve a specified resolution. During RTR imaging of waste containers, the OT has the latitude to adjust these same parameters, as needed, to obtain the best image possible.*

**NOTE 2:** *It is management's expectation that Form-1218 is not completed until the SS has reviewed it and signed on the appropriate line.*

4.6.4 Ensure that Form-1218 has been completed for the current day for the applicable RTR unit.

**(~~RPT-TSR-03, SR 4.1.1~~ANSI-N43.3)**

4.6.4.1 **IF** any item in Section I or II is unsatisfactory,
**THEN** take the following steps:

4.6.4.1.1 Place the RTR system ~~in SUSPENSION MODE~~**Out of Service.**

**(~~RPT-TSR-03, LCO 3.1~~ANSI-N43.3)**

4.6.4.1.2 Notify the SS.

4.6.4.1.3 **GO TO** Section 4.13.14.

4.6.5 Place the cursor in the first edit box located on the screen of the barcode reader window.

4.6.6 **IF** an IQI is required,
**THEN** enter the IQI number using the following format: mmddyyXXXWWWQ; where mm is the month, dd is the day, yy is the year, XXX stands for IQI, WWW for the RTR System 101 (Z-213-101) or 106 (Z-213-106), and Q stands for the shift (D for day shift or N for night shift).

4.6.6.1 Set or advance to the next entry location by manually performing the following:

4.6.6.1.1 Press the "Shift" and ":" keys simultaneously to set the entry.

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4.6.6.1.2 Press the "Shift" and ">" keys simultaneously to advance to the next entry location.

4.6.7 Select the CONFIRM button to finalize the entry.

4.6.8 Ensure that the x-ray system has been warmed up and the x-ray controller is ready for operation.

**NOTE:** *The IQI will be recorded on the same recording media as for the current RTR batch.*

4.6.9 Select "Start New Cycle" to retrieve barcode data from the barcode window, if necessary.

4.6.10 Select the IQI number to be recorded.

4.6.11 **IF** recording confirmation prompt displays correct ID for recording, **THEN** click OK.

4.6.11.1 **IF** recording confirmation prompt displays incorrect ID, **THEN RETURN TO** Step **4.6.9**~~4.6.8~~.

4.6.12 Adjust the voltage to approximately 100 kV and the current to approximately 2.0 mA, if necessary.

4.6.13 Ensure that the x-ray control console is in the ON position.

4.6.14 Press the green X-RAY ON button.

4.6.14.1 **IF** an x-ray system error message occurs during two consecutive starts/restarts,
**THEN** immediately notify SS/SE for instruction prior to any additional attempts to generate x-rays.

4.6.15 Open the x-ray shutters, as required.

4.6.16 Position the cart, x-ray tube-head, and FP to center the IQI test pattern.

4.6.17 Adjust the zoom functions, ADE filter, window leveling, kV, and mA, as needed, for image resolution and clarity to obtain a good image of the IQI.

4.6.18 Select red RECORD button on Debut Professional program.

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## 4.7 Operation of RTR System

4.7.1 Ensure that the system is in ~~OPERATION MODE~~**Service**.

~~(RPT-TSR-03-1.4)~~

4.7.2 Check initial conditions as follows:

4.7.2.1 Ensure Sections 4.2 through 4.6 are completed prior to RTR system operations.

**NOTE 1:** *The RTR system cannot detect frozen liquids, and therefore, frozen waste boxes cannot be examined. To ensure that a waste box is not frozen, the waste is preheated for a minimum of 72 hours at 18°C or higher during cold weather. Preheating is required from October through April. The SS will determine if preheating is required outside the October through April window.*

**(HWMA/RCRA Permit)**

**NOTE 2:** *After the box has met the 72-hour preheat requirement and if the box has not been moved out of WMF-634, the temperature may fall below 18°C (inside WMF-634) for any period of time, as long as it does not fall below 1°C.*

4.7.2.2 **IF** preheating is required,
**THEN** ensure the waste package has been preheated for a minimum of 72 hours at 18°C or higher, per WTS.

## 4.8 Moving Boxes into and out of the Enclosure

**NOTE 1:** *Steps in this section may be completed out of sequence, concurrently, or as needed.*

**NOTE 2:** *Handrails may be removed as necessary to facilitate removal of the drum manipulators and loading a box.*

4.8.1 Home the RTR system by pressing the AUTO OUT pushbutton, if needed.

4.8.2 Set the enable/disable key to DISABLE, to disable cart movement if needed.

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4.8.15 **IF** the barcode data has already been retrieved for the cycle of the box being examined,
**THEN** select "Select Next Drum/Box," if necessary.

4.8.16 Select the barcode number of the box to be examined and confirm that Recording Confirmation prompt displays correct information,
**AND** click OK.

4.8.16.1 **IF** Recording Confirmation prompt displays incorrect information,
**THEN RETURN TO** Step 4.8.14.

4.8.17 Ensure a disk ID file has been created in RITA for the current RTR batch, by double clicking RITA icon.

4.8.17.1 **IF** a disk has **NOT** been created,
**THEN** follow Appendix B
**AND THEN RETURN TO** Step 4.8.18.

**NOTE:** *It is management's expectation that Form-1218 is not completed until the SS has reviewed it and signed on the appropriate line.*

4.8.18 Ensure that Form-1218 has been completed for the current day for the applicable RTR unit.

**(~~RPT-TSR-03, SR 4.1.1~~ANSI-N43.3)**

**WARNING**

**When the x-ray generator is on, personnel in the enclosure could suffer fatal injuries.**

**NOTE:** *The hidden area located underneath the camera can be checked using the mirror mounted inside the shielded enclosure.*

4.8.19 Ensure that the enclosure is unoccupied
**AND** both the personnel access door and the bi-parting doors are closed.

4.8.20 Insert x-ray control console key into x-ray control console
**AND** turn it to the ON position.

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### 4.13 Abnormal and Infrequent Operations

**WARNING**

**Abnormalities with the x-ray equipment could cause radiological exposure and injury/death.**

**CAUTION**

**Abnormalities with the x-ray equipment could cause damage to equipment.**

**NOTE:** *Applicable steps may be performed when needed.*

4.13.1 **IF** any abnormalities that could cause damage to equipment, personnel, or the environment are encountered with the x-ray equipment, **THEN** perform the following:

4.13.1.1 Push the red EMERGENCY STOP button.

4.13.1.2 Ensure that no personnel are in the area.

4.13.1.3 Inform the SS or designated alternate.

4.13.1.3.1 **IF** abnormality is related to a safety ~~significant~~ component, **THEN** immediately place system ~~in SUSPENSION MODE.~~**Out of Service.**

**(~~RPT-TSR-03, LCO 3.1~~ANSI-N43.3)**

4.13.1.3.1.1 **IF** the system is placed ~~in SUSPENSION MODE~~**Out of Service**, **THEN** perform the following:

4.13.1.3.1.1.1 Notify the SS.

4.13.1.3.1.1.2 **GO TO** Step 4.13.14.

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4.13.1.3.2 **IF** operation has been terminated due to activation of the EMERGENCY STOP button, **THEN** obtain both Radiological Controls manager and plant shift manager (PSM) approval prior to resuming operation.

4.13.1.4 Log all abnormal conditions and malfunctions on the applicable operator log, ensuring that the log entries include the operational conditions prior to the abnormality.

4.13.2 **IF** other abnormal or infrequent operations need to be performed, **THEN GO TO** the applicable section from the following table **AND RETURN TO** this step if further activities will be performed:

| Task | Section to be Performed |
|---|---|
| X-rays Fail to De-Energize | 4.13.3 |
| Constant Air Monitor Alarm in Affected Area | 4.13.4 |
| X-ray Head Fails to Energize | 4.13.5 |
| Equipment or Computer Malfunction | 4.13.6 |
| Unplanned Shutdown | 4.13.7 |
| Loss of Commercial Power | 4.13.8 |
| Breached Waste Container | 4.13.9 |
| Fire Involving the Characterization Facility | 4.13.10 |
| Motion Fault | 4.13.11 |
| Manual Extended Warm-Up | 4.13.12 |
| Entering Barcodes Manually | 4.13.13 |
| Follow-Up Steps When RTR System is Placed ~~in SUSPENSION MODE~~**Out of Service** | 4.13.14 |
| Performing Functional Verification/Post-Maintenance Testing for Mechanical Motion Only | 4.13.15 |

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4.13.12 **Manual Extended Warm-up**

4.13.12.1 Observe, during the warm-up time, the actual value of the current (mA) on the liquid crystal display (LCD) of the control module,
~~THEN place the system into SUSPENSION MODE~~

**NOTE:** *Considerable fluctuations of this value of the current on the LCD of the control mean that the tube is not running smoothly.*

4.13.12.2 **IF** the tube is **NOT** running smoothly,
**THEN** lower the tube voltage to the point where the actual value display no longer shows fluctuation beyond the normal operating value.

4.13.12.2.1 **IF** this condition is met,
**THEN GO TO** Step 4.13.12.3.

4.13.12.2.2 **IF** the tube continues to fluctuate beyond the normal operating value,
**THEN** turn off x-ray control console
**AND** contact the SS.

4.13.12.3 **IF** the x-ray tube has been left idle for greater than 8 weeks, or as directed by the SS or designated alternate,
**THEN** notify SS.

4.13.12.4 SS: Notify the RTR SE to evaluate the situation prior to switching to the manual warm-up mode.

4.13.12.4.1 SE: Evaluate the need to implement a semi-automatic extended warm-up through the setup menu OR to switch to the manual warm-up mode
**AND** advise SS.

4.13.12.5 **IF** directed by the SS,
**THEN** perform the following:

4.13.12.5.1 Start warm-up at up to 210 kV.

4.13.12.5.2 Increase the voltage up to 315 kV in 10 kV increments every 15 minutes.

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4.13.12.5.3 Increase the voltage above 315 kV in 10 kV increments every 20 minutes, up to 420 kV.

4.13.13 **Entering Barcodes Manually**

**WARNING**

**Eye injury may occur if personnel look directly into the barcode scanner beam.**

4.13.13.1 Avoid looking directly into the barcode scanner beam.

4.13.13.2 Click on "Clear All" to clear all entries displayed for the four barcodes.
**OR** press the "Shift" and "<" keys simultaneously to clear the displayed entry.

4.13.13.3 Enter the barcode using the keyboard.

4.13.13.4 Press the "Shift" and ":" keys simultaneously to set the entry.

4.13.13.5 Press the "Shift" and ">" keys simultaneously to advance to the next entry location.

4.13.13.6 **REPEAT** Steps 4.13.13.3 through 4.13.13.5 until all barcodes have been entered.

4.13.13.7 **WHEN** all the barcodes have been entered,
**THEN** click on CONFIRM to set the entries.

4.13.14 **Follow-Up Steps When RTR System is Placed ~~in SUSPENSION MODE~~Out of Service**

4.13.14.1 Turn the x-ray controller key to STAND BY
**AND** remove the key.

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4.13.14.2 OT and SS: Log the change to ~~SUSPENSION MODE~~**Out of Service** in the applicable operator log and the SS log.

4.13.14.2.1 Ensure documentation is accurate and sufficient to ensure compliance with the requirements of operational limits.

4.13.14.2.1.1 Include, as a minimum, entry conditions and actions that are taken in response to operational limits requirements.

4.13.14.3 OT and SS: Update the applicable status boards.

**(MP-COPS-9.7)**

4.13.14.4 **GO TO** INST-COPS-911.2, Resuming Operations After Suspension **or Out of Service**, to bring the system back into ~~OPERATION MODE~~**Service**.

4.13.15 **Performing Functional Verification/Post-Maintenance Testing for Mechanical Motion Only**

4.13.15.1 Ensure that x-rays are **NOT** generated at any time during the performance of this section.

4.13.15.2 Ensure Section 4.2 has been completed.

4.13.15.3 **IF** entry into shielded enclosure is necessary for inspection, **THEN** perform necessary steps in Section 4.2 **AND RETURN TO** Step 4.13.15.4, when complete.

4.13.15.4 Insert the cart enable/disable key **AND** turn it to the ENABLE position.

4.13.15.5 Perform manipulations of equipment as necessary to satisfy functional verification/post-maintenance testing.

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## 5.0 DEFINITIONS

*Home position.* When the cart is completely outside of the enclosure and the x-ray manipulator and II manipulator are fully lowered.

*Inoperable.* A system, subsystem, train, component, or device is inoperable when it is NOT capable of performing its specified safety basis function(s).

*Liquids, observable (or liquid).* Liquid that can be seen by a trained radiography operator or by a trained individual performing visual examination or the waste. This term can be implemented consistently during characterization regardless of waste type.

*OPERABLE.* A system, subsystem, train, component, or device shall be OPERABLE when it is capable of performing its specified safety function(s) and all the required instrumentation, controls, normal or alternate electrical power, cooling and seal water, lubrication, and other auxiliary equipment for the system, subsystem, train, component, or device to perform its specified safety function are capable of performing their related support function(s).

~~*OPERATION MODE.* An AMWTP facility/process operational condition in which the facility, process, or equipment is capable of being operated and maintained as designed, and is capable of meeting applicable TSRs.~~

*Radiography.* A nondestructive testing method that uses x-rays to inspect and determine the physical form of waste.

*Summary Category S3000—Homogeneous Solids.* Homogeneous solids, or solid process residues, are defined as solid materials, excluding soil, that do not meet the NMED criteria for classification as debris (20.4.1.800 NMAC, Adoption of 40 CFR 268, (incorporating 40 CFR §268.2[g] and [h]). Included in the series of solid process residues are inorganic process residues, inorganic sludges, salt waste, and pyrochemical salt waste. Other waste streams are included in this summary category group based on the specific waste stream types and final waste form. This summary category group is expected to contain toxic metals and spent solvents. This category includes wastes that are at least 50 percent by volume solid process residues.

*Summary Category S4000—Soils/Gravel.* This summary category group includes S4000 waste streams that are at least 50% by volume soil/gravel. This summary category group is expected to contain toxic metals. Soils/gravel are further categorized by the amount of debris included in the matrix.

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*Summary Category S5000—Debris Wastes.* This summary category group includes heterogeneous waste that is at least 50% by volume materials that meet the criteria specified in 20.4.1.800 NMAC (incorporating 40 CFR §268.2 [g]). Debris means solid material exceeding a 2.36 inch (60 millimeter) particle size that is intended for disposal (particles smaller than 2.36 inches in size may be considered debris if the debris is a manufactured object and if it is not a particle of S3000 or S4000 material) and is:

- A manufactured object
- Plant or animal matter
- Natural geologic material.

~~*SUSPENSION MODE.* An AMWTP facility/process operational condition in which the facility, process, or equipment is not capable of being operated and maintained as designed and/or not able to meet applicable TSRs. If an activity is in SUSPENSION MODE, other activities can be in OPERATION MODE. Production operations for a system are not allowed, except for maintenance or testing when that system is in SUSPENSION.~~

*Waste stream.* Waste materials that have common physical form that contain similar hazardous constituents and that are generated from a single process or activity.

## 6.0 REFERENCES

(1) 20.4.1.800 NMAC, Adoption of 40 CFR Part 268

(2) 40 CFR 268.2, Land Disposal Restrictions, Definitions Applicable in this Part

(3) 40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Subpart D Storage and Disposal

(4) AMWTP HWMA/RCRA Permit

(5) CCP-PO-003, CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)

(6) Form-1268, Production Systems Access Request

(7) GE Inspection Technologies Isovolt operating instructions

(8) INST-COPS-9.11.2, Resuming Operations After Suspension **or Out of Service**

(9) INST-MI-1002, RTR 6-Month Surveillance for RTR System Z-213-101 and Z-213-106 ~~in Accordance with LCO 3.1 SR 4.1.2~~

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(10) INST-OI-11, Waste Container Handling

(11) INST-OI-24, Packaging Radioactive Waste

(12) MP-COPS-9.7, Control of Equipment and Systems Status

(13) MP-COPS-9.17, Performing Pre-Job Briefings and Post-Job Reviews

(14) MP-COPS-9.20, Hazardous Energy Control Processes

(15) MP-DOCS-18.2, Records Management

(16) MP-Q&SI-5.4, Identification of Nonconforming Conditions

(17) MP-RS&C-6.22, Radiological Survey Program

(18) MP-RTQP-14.4, Personnel Qualification and Certification

(19) MP-TRUW-8.1, Certification Plan for INL Transuranic Waste

(20) MP-TRUW-8.2, Quality Assurance Project Plan

**(21) ANSI N43.3, General Radiation Safety Standard for Installations Using Non-Medical X-ray and Sealed Gamma Ray Sources, Energies up to 10 MeV**

~~(21)~~**(22)** ~~RPT-TSR-03, Technical Safety Requirements~~

~~(22)~~**(23)** RPT-TRUW-05, Waste Matrix Code Reference Manual

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## 7.0 RECORDS

Records generated by this procedure are classified in accordance with the table below and dispositioned in accordance with MP-DOCS-18.2, Records Management.

| Record Description | Classification |
|---|---|
| INST-OI-81, Case File | Non-permanent WIPP/ENV1-J-1/Destroy 75 years after submittal |
| Form-1218, Daily RTR ~~Technical~~ Safety ~~Requirements Surveillance~~ Checks | Facility Operating Record/ENV2-a-1-a/ Destroy 5 years after Life of Facility |
| Form-1374, RTR Log (or eSOMS equivalent) (Applicable Operator Log) | Facility Operating Record/ENV2-a-1-a/ Destroy 5 years after Life of Facility |
| Form-1377, WMF-634 RTR Shielding Radiation Survey | Facility Operating Record/ENV2-a-1-a / Destroy 5 years after Life of Facility |
| Form-1578, Imaging Quality Indicator Verification Form for RTR | Facility Operating Record/ENV2-a-1-a/ Destroy 5 years after Life of Facility |
| Recording Media Log | Nonpermanent WIPP/ENV1-J-1/Destroy 75 years after submittal |
| Recording media | Non-permanent WIPP/ENV1-J-1/Destroy75 years after submittal |

## 8.0 EXHIBITS

Exhibit 1 – RTR Image Test Quality Grid

Exhibit 2 – Waste Material Parameter Descriptions

Exhibit 3 – Parameters and Weights of Commonly Identified Items

Exhibit 4 – List of Prohibited Items

Exhibit 5 – Volumes of Cylinders

Exhibit 6 – Common Liquid Measurements and Conversions

Exhibit 7 – $V^2$ Nominal Density Guidance Table

Exhibit 8 – Volume Conversion Table, Cubic Inches to Pints

Exhibit 9 – Categorizing Box Contents During RTR Examination

DCR-11431, Block 4 Redline

## DeWall, Robyn I.

| | |
|---|---|
| **From:** | DeWall, Robyn I. on behalf of Document Services |
| **Sent:** | Monday, July 16, 2012 9:53 AM |
| **To:** | Hooper, Vicki L.; Stamos, Cameron; Sharp, Michelle; Cook, Terry; Griffith, Ted P.; Sisson, Clint E.; Warner, Brian; Criticality Safety Review; Nuclear Safety Review; Jensen, Jeff; Capell, David; Hawley, Jared; Peterman, Susan M.; Schweinsberg, Eric; LLW MLLW. Doc Reviews; Dominick, Jared L. |
| **Cc:** | Document Services; Hilzman, Misty; Morse, Angie ; Butler, Dave; Sanderlin, David T.; Powell, Wendy |
| **Subject:** | FYI for: DSA Implementation Review of INST-OI-81 Rev. 10A, Real-time Radiography Operations (for WIPP Certification of Boxes) (Due at Roundtable Review) |

## FYI—

If you have already sent your response, you do not need to send another one. This information is only for your reference. If you have not yet sent your response, you may either forward your concurrence to Document Services or sign the DCR at the roundtable later this week.

The following changes were made to INST-OI-81, Rev. 10 A, after the original review transmittal was sent out. These changes are now present in the draft copies in the review folder (see link below):

1. Step 4.3.3.11.1.1; Step 4.6.4.1.1; and Step 4.13.1.3.1: Changed from "Place the RTR system out of service." to "Stop production operations with the RTR system **AND** generate an NCR on the system"

2. First bullet, Step 4.5.2 and Step 4.7.1: Changed from "In service" to "No NCRs exist against the system"

3. Deleted Step 4.13.1.3.1.1 and move 4.13.1.3.1.1.1 and 4.13.1.3.1.1.2 up a level.

4. Step 4.13.14 (and in routing table): Changed to read, "Follow-Up Steps When Stopping Production Operations with the RTR System."

5. Step 4.13.14.2: Changed to read, "Log the status change and NCR number in the applicable operator log and the SS log."

6. Step 4.13.14.4: Changed to read, "**WHEN** the condition for stopping production operations has been corrected, **AND** the associated NCRs have been closed, **THEN** return the RTR system to production operations."

7. References to INST-COPS-9.11.2, Resuming Operations After Suspension, has been removed from the document.

These changes were inadvertently left out of the original review draft. Please, let me know if you have any questions or concerns.

Thanks,

*Robyn*

| AMWTP Advanced Mixed Waste Treatment Project | Attendance Roster | Form-1985<br>Rev. 0<br>Effective: 05/21/10<br><br>Page 1 of 1 |
|---|---|---|

Implementing Document: INST-COPS-9.6.1

Title: Roundtable for DSA Implementation (See Attached)

Date: 7/19/12

| | Print Name (Last, First, MI) | Department/Job Title | Signature |
|---|---|---|---|
| 1 | Bingham, Tom | Rad Con | |
| 2 | LABRUYERE, GARY A.S. | QA | |
| 3 | GRIFFITH THEODORE P | OPS | |
| 4 | ~~Warner, Brian D~~ | ~~BWarner~~ | W 07/19/12 |
| 5 | Warner, Brian D. | OPS / CHAR Esturlead | BWarner |
| 6 | YOUNG, DAVID K. | FIRE MARSHAL | |
| 7 | SANDERLIN, DAVID | NAO | |
| 8 | Henrie, Greg | Waste Services, Env., RCRA | |
| 9 | CAPELL, DAVID | SSWC | |
| 10 | Bolander, Thane | CRIT/Nuc Safety | Thane Bolander |
| 11 | Jensen, Jeff L. | Engineering | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
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| 25 | | | |

## DeWall, Robyn I.

**From:** Powell, Wendy on behalf of Document Services
**Sent:** Thursday, July 19, 2012 9:06 AM
**To:** Hooper, Vicki L.; Hawley, Jared; LLW MLLW. Doc Reviews; Criticality Safety Review; Nuclear Safety Review; Schweinsberg, Eric; Byram, George; Butler, Dave; Simmons, Ted; Golberg, Todd; Sisson, Clint E.; Griffith, Ted P.; Capell, David; Henderson, Mark; Stacey, Brett; Szabo, Jeremy; Roth, Fred; Carlson, Clydene; DeWall, Robyn I.; Thompson, Rick A.; Swanson, Brent R.; Jackson, Susan K.; LLW MLLW. Doc Reviews; Dominick, Jared L.; Johnson, Calvin K.; Stepzinski, Charles A.; Golberg, Todd; Stamos, Cameron; Greenwell, Doug; Hamilton, Rob; Raymond, Roger; Hansen, Roy K.; Biorn, Scott; Flores, Shannon; Wescoat, Mark J.; Wirkus, David L.; Jones, LeeRoy C.; Killian, Robin D.; Warner, Brian; Anderson, Carol R.; Henderson, Mark; Butler, Dave; Simmons, Ted; Hinsley, Gene E.; Sanderlin, David T.; Young, Ben L.; Hilzman, Misty; Doolittle, Robert E.; LaBruyere, Gary A.; Sharp, Michelle; Jensen, Jeff; Todd, Ron
**Cc:** DeWall, Robyn I.; McKean, Marti; Carlson, Clydene; Roth, Fred; Jackson, Jim M.; Thompson, Rick A.
**Subject:** Agenda for Roundtable for Thursday, July 19

**Importance:** High

The following documents will be on the Agenda for July 19 signoff meeting at 1:00. ATTENDANCE from EACH Discipline is MANDATORY or have someone there to represent your discipline with Delegation Authority provided to Document Services. Comments MUST be submitted prior to roundtable as the roundtables are intended to be a DCR sign-off meeting. If you know there are issues/comments with the document, please notify document services ASAP to try to schedule accordingly. The comments should be resolved PRIOR to the roundtable, as much as possible. Thank you.

| | |
|---|---|
| INST-OI-93<br>(if time permits) | Inverting Boxes |
| INST-OI-68<br>(if time permits) | Drum Treatment Facility Operations |
| **INST-OI-11**** | Waste Container Handling |
| INST-OI-41 | RTR Operations (Box) |
| **INST-OI-12****<br>**Form-1218** | RTR Operations (Drum) |
| INST-OI-60<br><br>OI-81 | RTR Quick Scan |
| Form-1218,<br>Form-1374,<br>Form-1989,<br>Form-1990 | |

*Thank you!*

*Wendy Powell*
*Document Services Supervisor*
*557-6614; CELL: 569-3292*

## Powell, Wendy

**From:** Wescoat, Mark J.
**Sent:** Thursday, July 19, 2012 9:44 AM
**To:** Powell, Wendy
**Cc:** Raymond, Roger; Hooper, Vicki L.
**Subject:** FW: Corrected_RE: Agenda for Roundtable for Thursday, July 19

Shawn Goodspeed has ES&H and ISIH and 851 signature authority for tomorrow and Dave Young for today.

**From:** Goodspeed, William S.
**Sent:** Thursday, July 19, 2012 9:37 AM
**To:** Raymond, Roger; Wescoat, Mark J.
**Subject:** RE: Corrected_RE: Agenda for Roundtable for Thursday, July 19

Yes, I can cover it. Sounds like it will be tomorrow at 07:00 at EDF.

W. Shawn Goodspeed, CSP
ISIH Field Support Manager
AMWTP
Phone: (208) 557-6789
Cell: (208) 390-2987
Fax: (208) 557-7225

**From:** Raymond, Roger
**Sent:** Thursday, July 19, 2012 9:31 AM
**To:** Wescoat, Mark J.; Goodspeed, William S.
**Subject:** Re: Corrected_RE: Agenda for Roundtable for Thursday, July 19

Yes. Shawn are you able to cover tomorrow?

---

**From**: Wescoat, Mark J.
**To**: Raymond, Roger
**Sent**: Thu Jul 19 09:27:33 2012
**Subject**: RE: Corrected_RE: Agenda for Roundtable for Thursday, July 19

YES, He has to have all disciplines covered; isih, 851, es&h.
Will that work?

**From:** Raymond, Roger
**Sent:** Thursday, July 19, 2012 9:25 AM
**To:** Wescoat, Mark J.
**Subject:** Re: Corrected_RE: Agenda for Roundtable for Thursday, July 19

We also need someone for tomorrow morning at EDF. I think Shawn will be here and could cover. What do you think?

---

**From**: Wescoat, Mark J.
**To**: Young, David K.
**Cc**: Raymond, Roger; Goodspeed, William S.
**Sent**: Thu Jul 19 09:19:23 2012
**Subject**: FW: Corrected_RE: Agenda for Roundtable for Thursday, July 19

# Real-Time Radiography Operations (for WIPP Certification of Boxes)

**(Controlled Activity)**

Advanced Mixed Waste Treatment Project

Roundtable Review Redline

Approved:

| | |
|---|---|
| (*Signature on file. See DCR-1143~~111~~44.*) | TBD~~07/03/12~~ |
| ~~Charles Stepzinski~~Brian Warner<br>Characterization Lead~~& Storage Manager~~ | Date |

## 1.0 PURPOSE/SCOPE

The Advanced Mixed Waste Treatment Project (AMWTP) Real-Time Radiography (RTR) system is a nondestructive examination technique used to verify the physical form of the waste and the absence of liquids and containerized gases within the contents of radioactive and mixed waste containers. In addition to identifying the contents of containers, the RTR system also provides digital data-recording capabilities. Examination of containers verifies the specific waste matrix code (WMC) and *waste stream* (see def.) description, identifies prohibited items, and estimates each waste material parameter weight as required for disposal at the Waste Isolation Pilot Plant (WIPP). In the case of unlabeled containers, RTR is used to correlate the contents of the container with known waste types and, if possible, assign an item description code (IDC).

This document applies to the operation of the RTR and operating software.

**(HWMA/RCRA Permit; MP-TRUW-8.1; MP TRUW-8.2; CCP-PO-003)**

## 2.0 ROLES AND RESPONSIBILITIES

| Performer | Responsibilities |
|---|---|
| Operations Technician (OT) | • Unless otherwise specified, performs the steps in this instruction. |
| Shift Supervisor (SS) | • Logs modestatus changes<br>• Updates the applicable status boards<br>• Performs post-job reviews<br>• Makes necessary notifications. |
| System Engineer (SE) | • Evaluates conditions and advises SS. |

Roundtable Review Redline

# 3.0 PRECAUTIONS AND LIMITATIONS/PREREQUISITES

## 3.1 Precautions and Limitations

3.1.1 The RTR ~~safety significant~~ door interlock systems, audible and visual warning signals, minimum 20-second delay function, emergency shutdown switches, and shielding shall be *operable* (see def.) when the associated RTR x-ray unit is capable of generating x-rays.

**(~~RPT-TSR-03, LCO 3.1~~ANSI-N43.3)**

3.1.2 To avoid personnel exposure, personnel must ensure that the shielded enclosure is clear of personnel before initiating x-rays.

3.1.2.1 When personnel are using the mirror mounted inside the shielded enclosure, they must ensure the hidden area located underneath the camera is unoccupied.

3.1.3 To avoid personnel exposure to x-rays and personnel injury, emergency stops to shut off x-ray generation and equipment movement are located on the operator control console (red mushroom pushbutton), and within the RTR enclosure (pull cords).

3.1.4 The personnel access door can be opened from inside the RTR enclosure to allow personnel egress during an emergency. If x-rays are being generated, opening the personnel door will stop generation of x-rays.

3.1.5 The cart enable/disable key must be switched to DISABLE, the key removed, and maintained under operator control when loading, unloading, and rotating the cart or installing/removing the drum manipulator and when entered the enclosure.

3.1.6 The maximum capacity for the x-ray cart is 10,000 lb.

3.1.7 Before leaving the RTR control console unattended, the x-ray controller must be placed in STAND BY mode and the key must be removed and maintained under operator control or stored in the master key locker.

3.1.8 The x-ray controller may be turned off at any time; however, if time permits, maintaining the key switch in STANDBY after periods of continuous operation will help ensure adequate cool down before switching off.

Roundtable Review Redline

## 3.2 Prerequisites

3.2.1 Personnel operating the RTR are properly qualified in accordance with MP-RTQP-14.4, Personnel Qualification and Certification, by completing the qualification checklist for an RTR operator (QPOF03A).

**(HWMA/RCRA Permit; MP-TRUW-8.1)**

3.2.2 The following forms are available:

- Applicable operator log
- Form-1578, Imaging Quality Indicator Verification Form for RTR
- Form-1218, Daily RTR ~~Technical Safety Requirements Surveillance~~ Checks.

3.2.3 Operations Technician has obtained the following items (keys are in the master key locker):

- Operator control console power key
- E-Stop reset key
- X-ray control console key
- Cart enable/disable key
- Recording media (DVD if needed)
- Image Quality Indicator (IQI) test pattern.

**(HWMA/RCRA Permit; MP-TRUW-8.1)**

3.2.4 Waste Tracking System (WTS) is available.

3.2.5 A pre-job brief has been performed per MP-COPS-9.17, Performing Pre-Job Briefings and Post-Job Reviews, as directed by the SS prior to performing work in this procedure.

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3.2.6 The following ~~technical~~ required safety ~~requirement (TSR) surveillance~~ checks have been verified (and logged on the applicable operator log) to be within periodicity
**OR** the system is being operated to perform the ~~surveillance~~ safety checks ~~requirements~~ or other activities to restore the system to operability.

| **Safety Check~~Surveillance Requirement~~** | **Performed Per** | **Periodicity** |
|---|---|---|
| RTR door interlocks, warning signals, delay function, and emergency switches ~~(SR 4.1.2)~~ | INST-MI-1002, RTR 6-Month ~~Surveillance~~ Safety Check for RTR System, Z-213-101 and Z-213-106 ~~in Accordance With LCO 3.1 SR 4.1.2~~ | Semiannually or following configuration changes or modifications |
| RTR shielding survey ~~(SR 4.1.3)~~ | Form-1377, WMF-634 RTR Shielding Radiation Survey | Semiannually or following configuration changes or modifications |

**(ANSI-N43.3)**

# 4.0 INSTRUCTIONS

## 4.1 General Instructions

**NOTE:** *Entering the shielded enclosure may be performed at any time throughout this procedure as necessary to perform routine inspections and escort personnel for inspections or training.*

4.1.1 **IF** entry into the shielded enclosure is necessary at any point during the performance of this procedure,
**THEN GO TO** Section 4.3
**AND RETURN TO** the point of departure in the previous section when complete.

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**NOTE:** *It is management's expectation that Form-1218 is not completed until the SS has reviewed it and signed on the appropriate line.*

4.3.3.11 Ensure that Form-1218 has been completed for the applicable RTR unit for the current day.

**(~~RPT-TSR-03, SR 4.1.1~~ANSI-N43.3)**

4.3.3.11.1 **IF** any item in Section I or II is unsatisfactory, **THEN** immediately take the following steps:

4.3.3.11.1.1 Stop production operations with the RTR system **AND** generate an NCR on the system.~~Place the RTR system in *SUSPENSION MODE* (see def.).~~

4.3.3.11.1.2 Notify the SS.

4.3.3.11.1.3 **GO TO** Section 4.13.14.

**(~~RPT-TSR-03, LCO 3.1~~ANSI-N43.3)**

4.3.3.12 Enter the shielded enclosure to perform inspection/training as necessary.

## 4.4 Beginning of Shift Activities

4.4.1 **IF** Form-1218 has **NOT** been completed for the current day, **THEN GO TO** Section 4.3 to complete Form-1218 **AND RETURN TO** Step 4.4.2 when complete.

**(~~RPT-TSR-03, SR 4.1.1; LCO 3.1~~ANSI-N43.3)**

**NOTE:** *The WTS will not permit logon if the Form-1268 is not current.*

4.4.2 Log in to the WTS, RTR operation navigation screen, as necessary.

4.4.3 Double click the barcode reader icon, if necessary.

Roundtable Review Redline

**NOTE:** *An IQI is required at system startup prior to examining waste and at least once every 24 hours during continuous operations.*

4.4.4 **IF** IQI has been completed for the current day, as evidenced on Form-1578,
**THEN** verify it is complete and compliant by viewing the recording and listening to the audio.

4.4.4.1 **IF** IQI is found to **NOT** be complete and compliant,
**THEN** notify SS.

**NOTE:** *The cart will have to be out in order to mount the IQI test pattern.*

4.4.5 **IF** the IQI image verification is required,
**THEN** mount the IQI test pattern on the cart.

## 4.5 Warm-up

4.5.1 Ensure Sections 4.2 through 4.4 are completed prior to RTR system operations.

~~4.5.2 Ensure that the system is in one of the following:~~

- ~~*OPERATION MODE* (see def.)No NCRs exist against the system~~
- ~~Being operated to perform SR 4.1.3RTR shielding surveillance~~
- ~~Other activities to demonstrate system operability.~~

**~~(RPT-TSR-03, LCO 1.4 and LCO 3.0.5)~~**

**NOTE:** *In the event that an extended manual warm-up is necessary, personnel should consult with the SS and RTR SE for guidance. The GE Inspection Technologies Isovolt operating instructions are available for a more detailed description of operation.*

~~4.5.3~~4.5.2 Ensure the x-ray shutters are closed.

Roundtable Review Redline

**WARNING**

**When the x-ray generator is on, personnel in the enclosure could suffer fatal injuries.**

**NOTE 1:** *The DOOR CLOSE button light on the operator control panel will be illuminated when the bi-parting door is closed.*

**NOTE 2:** *The hidden area located underneath the camera can be checked using the mirror mounted inside the shielded enclosure.*

~~4.5.3.1~~4.5.2.1 Ensure that the enclosure is unoccupied **AND** both the personnel access door and the bi-parting doors are closed.

~~4.5.4~~4.5.3 **GO TO** the appropriate procedure section from the following table based on the desired warm-up activities to be performed, **THEN RETURN TO** this step, if further warm-up activities will be performed:

| Task | Section |
|---|---|
| Start of shift OR after ~~LCO~~ daily safety checks completion | 4.5.4~~4.5.5~~ |
| RTR has been in continuous operation for less than 2 hours and prompts for warm-up when entering a high kV value, **OR** has been idle for 2-3 hours | 4.5.5~~4.5.6~~ |
| RTR System has been idle for 3–4 hours | 4.5.6~~4.5.7~~ |
| RTR System has been idle for >4 hours | 4.5.7~~4.5.8~~ |
| Warm-up is complete | 4.5.8~~4.5.9~~ |

Roundtable Review Redline

**NOTE:** *The controller will display "Tube To Be Warmed-Up" and display options for: NO (F1), 1..2 Days (F4), 2..14 Days (F5), >14 Days (F6), and RTC auto (F7).*

~~4.5.5~~4.5.4 **IF** at the start of shift
**OR AFTER** ~~Limiting Condition for Operations (LCO)~~ daily safety checks completion,
**THEN** cycle the key position from the ON/STANDBY position to OFF and back to ON.

**NOTE:** *After performing the following step, a screen prompting to "Enter Test Voltage" will appear.*

~~4.5.5.1~~4.5.4.1 Press F6 to select >14 Days.

~~4.5.5.2~~4.5.4.2 Type 420 kV
**AND** press ENTER.

~~4.5.5.3~~4.5.4.3 Press the X-RAY ON button to begin the warm-up.

**NOTE:** *The controller will display "Tube To Be Warmed-Up" and display options for: NO (F1), 1..2 Days (F4), 2..14 Days (F5), >14 Days (F6), and RTC auto (F7).*

~~4.5.6~~4.5.5 **IF** the RTR system has been in continuous operations for less than 2 hours and prompts for warm-up when entering a high kV value
**OR** the RTR system has had continuous idle time for 2-3 hours,
**THEN** cycle the key position from the ON/STANDBY position to OFF and back to ON.

**NOTE:** *After performing the following step, a screen prompting to "Enter Test Voltage" will appear.*

~~4.5.6.1~~4.5.5.1 Press F4 to select 1..2 Days.

~~4.5.6.2~~4.5.5.2 Type 420 kV
**AND** press ENTER.

~~4.5.6.3~~4.5.5.3 Press the X-RAY ON button to begin the warm-up.

Roundtable Review Redline

**NOTE:** *The controller will display "Tube To Be Warmed-Up" and display options for: NO (F1), 1..2 Days (F4), 2..14 Days (F5), >14 Days (F6), and RTC auto (F7).*

~~4.5.7~~4.5.6 **IF** the RTR system has been idle for 3–4 hours,
**THEN** cycle the key position from the ON/STANDBY position to OFF and back to ON.

**NOTE:** *After performing the following step, a screen prompting to "Enter Test Voltage" will appear.*

~~4.5.7.1~~4.5.6.1 Press F5 to select 2..14 Days.

~~4.5.7.2~~4.5.6.2 Type 420 kV
**AND** press ENTER.

~~4.5.7.3~~4.5.6.3 Press the X-RAY ON button to begin the warm-up.

**NOTE:** *The controller will prompt for a warm up and give options for: NO (F1), 1..2 Days (F4), 2..14 Days (F5), >14 Days (F6), and RTC auto (F7).*

~~4.5.8~~4.5.7 **IF** the RTR system has had continuous idle time for more than 4 hours,
**THEN** cycle the key position from the ON/STANDBY position to OFF and back to ON.

**NOTE:** *After performing the following step, a screen prompting to "Enter Test Voltage" will appear.*

~~4.5.8.1~~4.5.7.1 Press F6 to select >14 Days.

~~4.5.8.2~~4.5.7.2 Type 420 kV
**AND** press ENTER.

~~4.5.8.3~~4.5.7.3 Press the X-RAY ON button to begin the warm-up.

~~4.5.9~~4.5.8 **WHEN** the appropriate warm-up is complete,
**THEN** perform the following:

~~4.5.9.1~~4.5.8.1 Follow prompts on the x-ray controller
**AND** turn the x-ray control console key to the STAND BY position.

Roundtable Review Redline

~~4.5.9.2~~4.5.8.2 **IF** leaving the RTR control room,
**THEN** perform the following:

~~4.5.9.2.1~~4.5.8.2.1 Remove the x-ray control console key.

~~4.5.9.2.2~~4.5.8.2.2 Maintain the x-ray control console key either under the operator control or store it in the master key locker.

~~4.5.9.3~~4.5.8.3 **IF** warm-up was performed,
**THEN** record the following in the applicable operator log:

- Elapsed warm-up time
- Warm-up completion time
- Any pertinent comments.

## 4.6 Imaging System Check

4.6.1 Ensure a disk ID file has been created in the RTR Imaging Transfer Application (RITA) for the current RTR batch, by double clicking RITA icon.

4.6.1.1 **IF** a disk has **NOT** been created,
**THEN** follow Appendix B, Creating or Transferring Data to the RITA Archival System
**AND THEN RETURN TO** Step 4.6.2.

4.6.2 Verify the precision of *radiography* (see def.) prior to use by adjusting the image enough to demonstrate compliance with the quality assurance objectives (QAOs) through viewing an image test pattern.

**(MP-TRUW-8.1; MP-TRUW-8.2)**

4.6.3 Perform an imaging system check daily, prior to use
**AND** record on applicable operator log, and Form-1578.

**(HWMA/RCRA Permit; MP-TRUW-8.2)**

Roundtable Review Redline

**NOTE 1:** *There are a number of controls that will affect the quality of the recorded image (including IQI placement, zoom functions, Automatic Defect Enhancement (ADE) filter, window leveling, x-ray focal spot), all of which can be adjusted by the OT. The intent of the IQI evaluation is to demonstrate the imaging system capability to achieve a specified resolution. During RTR imaging of waste containers, the OT has the latitude to adjust these same parameters, as needed, to obtain the best image possible.*

**NOTE 2**: *It is management's expectation that Form-1218 is not completed until the SS has reviewed it and signed on the appropriate line.*

4.6.4 Ensure that Form-1218 has been completed for the current day for the applicable RTR unit.

**(~~RPT-TSR-03, SR 4.1.1~~ANSI-43.3)**

4.6.4.1 **IF** any item in Section I or II is unsatisfactory, **THEN** take the following steps:

4.6.4.1.1 Stop production operations with the RTR system
**AND** generate an NCR on the system.~~Place the RTR system in SUSPENSION MODE.~~

**(~~RPT-TSR-03, LCO 3.1~~ANSI-N43.3)**

4.6.4.1.2 Notify the SS.

4.6.4.1.3 **GO TO** Section 4.13.14.

4.6.5 Place the cursor in the first edit box located on the screen of the barcode reader window.

Roundtable Review Redline

**NOTE:** *Verification of the resolution is with visual confirmation by the OT. The recorded image may not represent the actual image due to degradation from the recording.*

4.6.23 **IF** the resolution is less than 16 lines/inch,
**THEN** contact the SS
**AND** troubleshoot.

4.6.24 Press the red X-RAY OFF button on the x-ray controller unit panel, if applicable,
**AND** turn the x-ray control console key to the STAND BY position.

4.6.25 **IF** leaving the RTR control room,
**THEN** perform the following steps:

4.6.25.1 Remove the X-ray control console key.

4.6.25.2 Maintain the x-ray control console key either under the operator control or store it in the master key locker.

## 4.7 Operation of RTR System

4.7.1 Ensure that no NCRs exist against the RTR system.~~the system is in OPERATION MODE.~~

~~**(RPT-TSR-03, 1.4)**~~

4.7.2 Check initial conditions as follows:

4.7.2.1 Ensure Sections 4.2 through 4.6 are completed prior to RTR system operations.

**NOTE 1:** *The RTR system cannot detect frozen liquids, and therefore, frozen waste boxes cannot be examined. To ensure that a waste box is not frozen, the waste is preheated for a minimum of 72 hours at 18°C or higher during cold weather. Preheating is required from October through April. The SS will determine if preheating is required outside the October through April window.*

**(HWMA/RCRA Permit)**

Roundtable Review Redline

4.8.15 **IF** the barcode data has already been retrieved for the cycle of the box being examined,
**THEN** select "Select Next Drum/Box," if necessary.

4.8.16 Select the barcode number of the box to be examined and confirm that Recording Confirmation prompt displays correct information
**AND** click OK.

4.8.16.1 **IF** Recording Confirmation prompt displays incorrect information,
**THEN RETURN TO** Step 4.8.14.

4.8.17 Ensure a disk ID file has been created in RITA for the current RTR batch, by double clicking RITA icon.

4.8.17.1 **IF** a disk has **NOT** been created,
**THEN** follow Appendix B
**AND THEN RETURN TO** Step 4.8.18.

**NOTE:** *It is management's expectation that Form-1218 is not completed until the SS has reviewed it and signed on the appropriate line.*

4.8.18 Ensure that Form-1218 has been completed for the current day for the applicable RTR unit.

**(~~RPT-TSR-03, SR 4.1.1~~ANSI-N43.3)**

**WARNING**

**When the x-ray generator is on, personnel in the enclosure could suffer fatal injuries.**

**NOTE:** *The hidden area located underneath the camera can be checked using the mirror mounted inside the shielded enclosure.*

4.8.19 Ensure that the enclosure is unoccupied
**AND** both the personnel access door and the bi-parting doors are closed.

4.8.20 Insert x-ray control console key into x-ray control console
**AND** turn it to the ON position.

Roundtable Review Redline

## 4.13 Abnormal and Infrequent Operations

**WARNING**

**Abnormalities with the x-ray equipment could cause radiological exposure and injury/death.**

**CAUTION**

**Abnormalities with the x-ray equipment could cause damage to equipment.**

**NOTE:** *Applicable steps may be performed when needed.*

4.13.1 **IF** any abnormalities that could cause damage to equipment, personnel, or the environment are encountered with the x-ray equipment,
**THEN** perform the following:

4.13.1.1 Push the red EMERGENCY STOP button.

4.13.1.2 Ensure that no personnel are in the area.

4.13.1.3 Inform the SS or designated alternate.

4.13.1.3.1 **IF** abnormality is related to a safety ~~significant~~ component,
**THEN** immediately stop production operation with the RTR system
**AND** generate an NCR against the system.~~place system in SUSPENSION MODE.~~

**(~~RPT-TSR-03, LCO 3.1~~ANSI-N43.3)**

~~4.13.1.3.1.1 **IF** the system is placed in SUSPENSION MODE,~~
~~**THEN** perform the following:~~

~~4.13.1.3.1.2~~4.13.1.3.1.1 Notify the SS.

Roundtable Review Redline

~~4.13.1.3.1.3~~4.13.1.3.1.2 **GO TO** Step 4.13.14.

4.13.1.3.2 **IF** operation has been terminated due to activation of the EMERGENCY STOP button, **THEN** obtain both Radiological Controls manager and plant shift manager (PSM) approval prior to resuming operation.

4.13.1.4 Log all abnormal conditions and malfunctions on the applicable operator log, ensuring that the log entries include the operational conditions prior to the abnormality.

4.13.2 **IF** other abnormal or infrequent operations need to be performed, **THEN GO TO** the applicable section from the following table **AND RETURN TO** this step if further activities will be performed:

| Task | Section to be Performed |
|---|---|
| X-rays Fail to De-Energize | 4.13.3 |
| Constant Air Monitor Alarm in Affected Area | 4.13.4 |
| X-ray Head Fails to Energize | 4.13.5 |
| Equipment or Computer Malfunction | 4.13.6 |
| Unplanned Shutdown | 4.13.7 |
| Loss of Commercial Power | 4.13.8 |
| Breached Waste Container | 4.13.9 |
| Fire Involving the Characterization Facility | 4.13.10 |
| Motion Fault | 4.13.11 |
| Manual Extended Warm-Up | 4.13.12 |
| Entering Barcodes Manually | 4.13.13 |
| Follow-Up Steps When Stopping Production Operations with the RTR System~~RTR System is Placed in SUSPENSION MODE~~ | 4.13.14 |
| Performing Functional Verification/Post-Maintenance Testing for Mechanical Motion Only | 4.13.15 |

Roundtable Review Redline

4.13.11.3 Place the operator control console key in the OFF position.

4.13.11.4 After 60 seconds, activate reset keys located on the operator control console.

4.13.11.5 Press the AUTO HOME button.

4.13.12 **Manual Extended Warm-up**

4.13.12.1 Observe, during the warm-up time, the actual value of the current (mA) on the liquid crystal display (LCD) of the control module.~~,~~
~~**THEN** place the system into SUSPENSION MODE.~~

**NOTE:** *Considerable fluctuations of this value of the current on the LCD of the control mean that the tube is not running smoothly.*

4.13.12.2 **IF** the tube is **NOT** running smoothly,
**THEN** lower the tube voltage to the point where the actual value display no longer shows fluctuation beyond the normal operating value.

4.13.12.2.1 **IF** this condition is met,
**THEN GO TO** Step 4.13.12.3.

4.13.12.2.2 **IF** the tube continues to fluctuate beyond the normal operating value,
**THEN** turn off x-ray control console
**AND** contact the SS.

4.13.12.3 **IF** the x-ray tube has been left idle for greater than 8 weeks, or as directed by the SS or designated alternate,
**THEN** notify SS.

Roundtable Review Redline

4.13.13.5 Press the "Shift" and ">" keys simultaneously to advance to the next entry location.

4.13.13.6 **REPEAT** Steps 4.13.13.3 through 4.13.13.5 until all barcodes have been entered.

4.13.13.7 **WHEN** all the barcodes have been entered,
**THEN** click on CONFIRM to set the entries.

4.13.14 **Follow-Up Steps When Stopping Production Operations with the RTR System~~RTR System is Placed in SUSPENSION MODE~~**

4.13.14.1 Turn the x-ray controller key to STAND BY
**AND** remove the key.

4.13.14.2 OT and SS: Log the status change and NCR number ~~change to SUSPENSION MODE~~ in the applicable operator log and the SS log.

4.13.14.2.1 Ensure documentation is accurate and sufficient to ensure compliance with the requirements of operational limits.

4.13.14.2.1.1 Include, as a minimum, entry conditions and actions that are taken in response to operational limits requirements.

4.13.14.3 OT and SS: Update the applicable status boards.

**(MP-COPS-9.7)**

4.13.14.4 **WHEN** the condition for stopping production operations has been corrected,
**AND** the associated NCRs have been closed,
**THEN** return the RTR system to production operations.~~**GO TO** INST-COPS-9.11.2, Resuming Operations After Suspension, to bring the system back into OPERATION MODE.~~

Roundtable Review Redline

4.13.15 **Performing Functional Verification/Post-Maintenance Testing for Mechanical Motion Only**

4.13.15.1 Ensure that x-rays are **NOT** generated at any time during the performance of this section.

4.13.15.2 Ensure Section 4.2 has been completed.

4.13.15.3 **IF** entry into shielded enclosure is necessary for inspection, **THEN** perform necessary steps in Section 4.2 **AND RETURN TO** Step 4.13.15.4, when complete.

4.13.15.4 Insert the cart enable/disable key **AND** turn it to the ENABLE position.

4.13.15.5 Perform manipulations of equipment as necessary to satisfy functional verification/post-maintenance testing.

## 5.0 DEFINITIONS

*Home position.* When the cart is completely outside of the enclosure and the x-ray manipulator and II manipulator are fully lowered.

~~*Inoperable.* A system, subsystem, train, component, or device is inoperable when it is NOT capable of performing its specified safety basis function(s).~~

*Liquids, observable (or liquid).* Liquid that can be seen by a trained radiography operator or by a trained individual performing visual examination or the waste. This term can be implemented consistently during characterization regardless of waste type.

*Operable.* A system, subsystem, train, component, or device shall be operable when it is capable of performing its specified safety function(s) and all the required instrumentation, controls, normal or alternate electrical power, cooling and seal water, lubrication, and other auxiliary equipment for the system, subsystem, train, component, or device to perform its specified safety function are capable of performing their related support function(s).

~~*OPERATION MODE.* An AMWTP facility/process operational condition in which the facility, process, or equipment is capable of being operated and maintained as designed, and is capable of meeting applicable TSRs.~~

*Radiography.* A nondestructive testing method that uses x-rays to inspect and determine the physical form of waste.

Roundtable Review Redline

*Summary Category S3000—Homogeneous Solids.* Homogeneous solids, or solid process residues, are defined as solid materials, excluding soil, that do not meet the NMED criteria for classification as debris (20.4.1.800 NMAC, Adoption of 40 CFR 268, (incorporating 40 CFR §268.2[g] and [h]). Included in the series of solid process residues are inorganic process residues, inorganic sludges, salt waste, and pyrochemical salt waste. Other waste streams are included in this summary category group based on the specific waste stream types and final waste form. This summary category group is expected to contain toxic metals and spent solvents. This category includes wastes that are at least 50 percent by volume solid process residues.

*Summary Category S4000—Soils/Gravel.* This summary category group includes S4000 waste streams that are at least 50% by volume soil/gravel. This summary category group is expected to contain toxic metals. Soils/gravel are further categorized by the amount of debris included in the matrix.

*Summary Category S5000—Debris Wastes.* This summary category group includes heterogeneous waste that is at least 50% by volume materials that meet the criteria specified in 20.4.1.800 NMAC (incorporating 40 CFR §268.2 [g]). Debris means solid material exceeding a 2.36 inch (60 millimeter) particle size that is intended for disposal (particles smaller than 2.36 inches in size may be considered debris if the debris is a manufactured object and if it is not a particle of S3000 or S4000 material) and is:

- A manufactured object
- Plant or animal matter
- Natural geologic material.

~~*SUSPENSION MODE.* An AMWTP facility/process operational condition in which the facility, process, or equipment is not capable of being operated and maintained as designed and/or not able to meet applicable TSRs. If an activity is in SUSPENSION MODE, other activities can be in OPERATION MODE. Production operations for a system are not allowed, except for maintenance or testing when that system is in SUSPENSION.~~

*Waste stream.* Waste materials that have common physical form that contain similar hazardous constituents and that are generated from a single process or activity.

Roundtable Review Redline

## 6.0 REFERENCES

(1) 20.4.1.800 NMAC, Adoption of 40 CFR Part 268

(2) 40 CFR 268.2, Land Disposal Restrictions, Definitions Applicable in this Part

(3) 40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Subpart D Storage and Disposal

(4) ANSI-N43.3, General Radiation Safety Standard for Installations Using Non-Medical X-ray and Sealed Gamma Ray Sources, Energies up to 10 MeV

~~(4)~~(5) AMWTP HWMA/RCRA Permit

~~(5)~~(6) CCP-PO-003, CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)

~~(6)~~(7) Form-1268, Production Systems Access Request

~~(7)~~(8) GE Inspection Technologies Isovolt operating instructions

~~(8) INST-COPS-9.11.2, Resuming Operations After Suspension~~

(9) INST-MI-1002, RTR 6-Month ~~Surveillance~~ Safety Checks for RTR System Z-213-101 and Z-213-106 ~~in Accordance with LCO 3.1 SR 4.1.2~~

(10) INST-OI-11, Waste Container Handling

(11) INST-OI-24, Packaging Radioactive Waste

(12) MP-COPS-9.7, Control of Equipment and Systems Status

(13) MP-COPS-9.17, Performing Pre-Job Briefings and Post-Job Reviews

(14) MP-COPS-9.20, Hazardous Energy Control Processes

(15) MP-DOCS-18.2, Records Management

(16) MP-Q&SI-5.4, Identification of Nonconforming Conditions

(17) MP-RS&C-6.22, Radiological Survey Program

(18) MP-RTQP-14.4, Personnel Qualification and Certification

Roundtable Review Redline

(19) MP-TRUW-8.1, Certification Plan for INL Transuranic Waste

(20) MP-TRUW-8.2, Quality Assurance Project Plan

~~(21) RPT-TSR-03, Technical Safety Requirements~~

~~(22)~~(21) RPT-TRUW-05, Waste Matrix Code Reference Manual

## 7.0 RECORDS

Records generated by this procedure are classified in accordance with the table below and dispositioned in accordance with MP-DOCS-18.2, Records Management.

| Record Description | Classification |
|---|---|
| INST-OI-81, Case File | Non-permanent WIPP/ENV1-J-1/Destroy 75 years after submittal |
| Form-1218, Daily RTR ~~Technical~~ Safety ~~Requirements Surveillance~~ Checks | Facility Operating Record/ENV2-a-1-a/ Destroy 5 years after Life of Facility |
| Form-1374, RTR Log (or eSOMS equivalent) (Applicable Operator Log) | Facility Operating Record/ENV2-a-1-a/ Destroy 5 years after Life of Facility |
| Form-1377, WMF-634 RTR Shielding Radiation Survey | Facility Operating Record/ENV2-a-1-a / Destroy 5 years after Life of Facility |
| Form-1578, Imaging Quality Indicator Verification Form for RTR | Facility Operating Record/ENV2-a-1-a/ Destroy 5 years after Life of Facility |
| Recording Media Log | Nonpermanent WIPP/ENV1-J-1/Destroy 75 years after submittal |
| Recording media | Non-permanent WIPP/ENV1-J-1/Destroy75 years after submittal |

Roundtable Review Redline

| Revision Number | Date Approved | Pages Affected | Description of Revision |
|---|---|---|---|
| 5 | 02/22/10 | Various | DCR-9007. Changes to clarify IQI requirements. |
| 5 FC-1 | 04/28/10 | B1 | DCR-9208. Changed RTR ratings for RTRs 101 and 106. |
| 5 FC-2 | 05/10/10 | Pg 5 | DCR-9249. Change made to resolve CAR 49662, incorporating alternative isolation device information. |
| 5 FC-3 | 06/19/10 | Pgs 12, 13, and 14 B1 | DCR-9376. Change made to warm-up steps and RTR 106 kV settings. |
| 6 | 06/24/10 | Various | DCR-9198. Incorporated DCRs-9208 -9249, and -9376 (EXCEPT for the RTR kV changes), and WIPP Permit modifications. |
| 6 FC-1 | 08/02/10 | Various | DCR-9454. Allow de-rate of maximum power by System Engineer and Document owner. |
| 6 FC-2 | 09/30/10 | Various | DCR-9568. Provides formal direction to operators. |
| 7 | 12/15/10 | Various | DCR-9497. Incorporated FC-1 (DCR-9454) and FC-2 (DCR-9568). Incorporate the new WIPP Hazardous Waste Permit language changes. Also corrected inconsistencies in FCs compared to OI-12 FCs. |
| 8 | 06/21/11 | Various | DCR-10139. Changed to Controlled Activity. Updated steps and notes to match operational changes. Added clarification to reduce NCRs and to minimize rework. Resolves CAR 54805. |
| 9 | 07/03/12 | Various | DCR-11144. Revised to incorporate ITG-Bluesheet-021, update document owner and equipment upgrades, including changing the II to FP. |
| 10 | TBD | Various | DCR-11431. Incorporated DSA changes. |

Roundtable Review Redline

| AMWTP Advanced Mixed Waste Treatment Project | REVIEW COMMENT AND RESOLUTIONS FORM | Form-1003<br>Rev. 5<br>Effective: 07/25/12<br>Page 1 of 1 |
|---|---|---|

Implementing Document: MP-DOCS-18.4

| | | | | | |
|---|---|---|---|---|---|
| Technical Point of Contact: | Brian Warner | | Phone No.: | 6318 | Comments Due By: Roundtable |
| Reviewer's Name | Discipline: | Phone No.: | Signature of reviewer accepting resolution of significant comments: | | Date: |
| G. LaBruyere | / QA | 6788 | | | 07/19/12 |
| Comments resolved by: | | Date: | | | |
| B. Warner | | 07/19/12 | | | |

* Comments so marked are considered to be significant. *Significant comment.* A reviewer's written response that is derived from the reviewer's area of expertise or discipline or that addresses material assigning tasks to the reviewer's organization. Significant comments address issues of: (A) Noncompliance with laws, regulations, permits, standards; (B) Proper conduct of mission-critical operations; (C) Creating unsafe conditions that could result in personal injury, death, damage to the environment; (D) Creating conditions that could result in a contract change or deviation from a contractual obligation.

| Reviewer: G. LaBruyere | | | | | |
|---|---|---|---|---|---|
| Document No.: INST-OI-81 | | Document Title: Real-Time Radiography Operations (for WIPP Certification of Boxes) | | Revision: 10A | DCR No.: 11431 |
| Item No. | Section/Steps | * | Revision Comment | Comment Resolution | |
| 1 | 3.1.1 | ☐ | Global to all RTR Procedures Change "OPERABLE" to "operable" | Agree | |
| 2 | 3.2.6 Table | ☐ | Global to all RTR procedures Change Colum 1 heading to Safety Check<br>Global to all RTR procedures Change row one Colum two the word Surveillance to "Safety Check"<br>add ANSI 43.3 roll down to table | Agree | |
| 3 | 3.2.6 | ☐ | delet word "surveillance" and after the OR delete "surveillance" and replace with "safety" | Agree | |
| 4 | Daily Safety Checks | ☐ | General/Global - Ben Young Radiation Safety and draft EDF expects that the daily safety checks will check all safety equipment - i.e. same as 6 month. | Disagree. When this was a TSR, the daily checks were inspections. What is the issue now that it is not a TSR? We will have to discuss. | |
| 5 | 5.0 | ☐ | Editorial - Uncap the definition OPERABLE | Agree | |
| 6 | Form 1218 | ☐ | Editorial - page 1 row 11 change OPERABLE to operable<br>page 2 row 9 change OPERABLE to operable | Agree | |
| 7 | Form 1218 | ☐ | Global and General to all RTR forms and instructions - see 4 above. | Disagree. When this was a TSR, the daily checks were inspections. What is the issue now that it is not a TSR? We will have to discuss. | |

## DeWall, Robyn I.

**From:** Hamilton, Rob
**Sent:** Thursday, August 02, 2012 12:01 PM
**To:** Document Services
**Subject:** RE: DSA Implementation Review of INST-OI-12 Rev. 49B, INST-OI-41 Rev. 17B, INST-OI-60 Rev. 14B, INST-OI-81 Rev. 10B, INST-OI-88 Rev. 4B, INST-OI-45 Rev. 17

I have no comments on the following procedures with exception of INST-OI-45, which is not in the attached file folder and available for review.

---

**From:** DeWall, Robyn I. **On Behalf Of** Document Services
**Sent:** Wednesday, August 01, 2012 6:11 PM
**To:** Dominick, Jared L.; Sailer Siemer, Shelly J.; Hamilton, Rob
**Cc:** Document Services
**Subject:** DSA Implementation Review of INST-OI-12 Rev. 49B, INST-OI-41 Rev. 17B, INST-OI-60 Rev. 14B, INST-OI-81 Rev. 10B, INST-OI-88 Rev. 4B, INST-OI-45 Rev. 17
**Importance:** High

Hello All,

Can you please send your concurrence/comments for the DSA-implementation revisions for the following documents. Because a new revision to MP-DOCS-18.4 (the document that directs required reviewers for OIs) became effective following the roundtable review for these documents, I am missing a review from your group (**Maintenance**, **LLW/MLLW** [not NNSS – I have that already], and **ACL**):

INST-OI-12 Rev. 49B,
INST-OI-41 Rev. 17B,
INST-OI-60 Rev. 14B,
INST-OI-81 Rev. 10B,
INST-OI-88 Rev. 4B, [

INST-OI-45 Rev. 17B, [I only need maintenance concurrence for this one]

Please indicate if your concurrence if for **ALL** the documents (or use the voting button above) **OR** please specify which ones you are concurring for (if not all of them).

To see the original DCR and the redline of the changes, please use the link attached to the document list above or the one in the review transmittal below.

I have been told that all of the DSA-related documents need to be completed by Monday, so I would be really appreciative if you could send your concurrence as soon as you possibly can.

I apologize for the inconvenience.

Thanks,

*Robyn*

---

Robyn DeWall
Technical Writing/Editing

## DeWall, Robyn I.

**From:** Zovi, James B.
**Sent:** Friday, August 03, 2012 11:40 AM
**To:** Document Services
**Subject:** Re: DSA Implementation Review of INST-OI-12 Rev. 49B, INST-OI-41 Rev. 17B, INST-OI-60 Rev. 14B, INST-OI-81 Rev. 10B, INST-OI-88 Rev. 4B

I concur for LLW, as my WCOs have reviewed and concured as well.

---

**From**: DeWall, Robyn I.
**To**: Zovi, James B.
**Sent**: Fri Aug 03 08:22:32 2012
**Subject**: DSA Implementation Review of INST-OI-12 Rev. 49B, INST-OI-41 Rev. 17B, INST-OI-60 Rev. 14B, INST-OI-81 Rev. 10B, INST-OI-88 Rev. 4B

Hello Bruno,

Can you please send a concurrence/comments for the DSA-implementation revisions for the following documents. Because a new revision to MP-DOCS-18.4 (the document that directs required reviewers for OIs) became effective following the roundtable review for these documents, I am missing a review from your group (**LLW/MLLW** [not NNSS – I have that already]):

INST-OI-12 Rev. 49B,
INST-OI-41 Rev. 17B,
INST-OI-60 Rev. 14B,
INST-OI-81 Rev. 10B,
INST-OI-88 Rev. 4B,

Please indicate if your concurrence if for **ALL** the documents (or use the voting button above) **OR** please specify which ones you are concurring for (if not all of them).

To see the original DCR and the redline of the changes, please use the link attached to the document list above or the one in the review transmittal below.

I have been told that all of the DSA-related documents need to be completed by Monday, so I would be really appreciative if you could send your concurrence as soon as you possibly can.

I sent this request to Jared Dominick on Wednesday, but Wendy asked me to send it to you as well. Thanks for your help.

I apologize for the inconvenience.

Thanks,

*Robyn*

---

Robyn DeWall
Technical Writing/Editing
Document & Record Services

## DeWall, Robyn I.

**From:** Sailer Siemer, Shelly J.
**Sent:** Wednesday, August 01, 2012 9:08 PM
**To:** Document Services
**Subject:** Re: DSA Implementation Review of INST-OI-12 Rev. 49B, INST-OI-41 Rev. 17B, INST-OI-60 Rev. 14B, INST-OI-81 Rev. 10B, INST-OI-88 Rev. 4B, INST-OI-45 Rev. 17

No comments

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**From**: DeWall, Robyn I.
**To**: Dominick, Jared L.; Sailer Siemer, Shelly J.; Hamilton, Rob
**Cc**: Document Services
**Sent**: Wed Aug 01 18:11:21 2012
**Subject**: DSA Implementation Review of INST-OI-12 Rev. 49B, INST-OI-41 Rev. 17B, INST-OI-60 Rev. 14B, INST-OI-81 Rev. 10B, INST-OI-88 Rev. 4B, INST-OI-45 Rev. 17

Hello All,

Can you please send your concurrence/comments for the DSA-implementation revisions for the following documents. Because a new revision to MP-DOCS-18.4 (the document that directs required reviewers for OIs) became effective following the roundtable review for these documents, I am missing a review from your group (**Maintenance**, **LLW/MLLW** [not NNSS – I have that already], and **ACL**):

INST-OI-12 Rev. 49B,
INST-OI-41 Rev. 17B,
INST-OI-60 Rev. 14B,
INST-OI-81 Rev. 10B,
INST-OI-88 Rev. 4B, [

INST-OI-45 Rev. 17B, [I only need maintenance concurrence for this one]

Please indicate if your concurrence if for **ALL** the documents (or use the voting button above) **OR** please specify which ones you are concurring for (if not all of them).

To see the original DCR and the redline of the changes, please use the link attached to the document list above or the one in the review transmittal below.

I have been told that all of the DSA-related documents need to be completed by Monday, so I would be really appreciative if you could send your concurrence as soon as you possibly can.

I apologize for the inconvenience.

Thanks,

*Robyn*

---

Robyn DeWall
Technical Writing/Editing
Document & Record Services

| AMWTP Advanced Mixed Waste Treatment Project | **Procedure Validation Request** | Form-1002<br>Rev. 10<br>Effective Date: 07/25/12<br><br>Page 1 of 4 |
|---|---|---|

**Implementing Document: MP-DOCS-18.4**

| | |
|---|---|
| 1. | **Procedure/Form Number:** INST-OI-81 **Draft Revision:** 10 **DCR Number:** 11431<br>**Procedure/Form Title:** Real-Time Radiography Operations (for WIPP Certification of Boxes) |
| 2. | **Validation Method:** ☐ Limited Field Use **(All blocks on this form are required)**<br>W 07/31/12 ☒ Mockup ☐ Walkdown (ACL Only) ☒ Tabletop **(Blocks 7 through 8 on this form are required)**<br>**Validation Extent:** ☒ Complete validation ☐ Partial validation |
| **Complete Blocks 3 through 6 for Limited Field Use Validation Only**<br>☒ **N/A (Blocks 3-6), if NOT Limited Field Use Validation** | |
| 3a. | **NOTE:** *Only one section (3a OR 3b) needs to be completed and signed.*<br>**USQ Process Applicability Review:** To be completed by the document owner.<br><br>☐ The change applies to a document or document type listed in LST-NSPC-02 **(considering noted exceptions).**<br>*(If checked, the change does not require a USQ evaluation. If not checked, signature is not required)*<br><br>Document Owner ____ Signature ____ Date ____ |
| 3b | **USQ Evaluation:** To be completed by a USQ Evaluator in accordance with MP-NSPC-3.2 (*Check only one check box that applies*).<br>• A list of qualified USQ personnel can be found on the AMWTP Homepage.<br>• The listed Categorical Exclusion Review or USQ Determination must be approved prior to obtaining the signature on this form.<br>☐ A USQ **DOES NOT EXIST** based upon the results of a Categorical Exclusion Review<br>☐ A USQ **DOES NOT EXIST** based upon the results of an approved USQ Determination.<br><br>☐ A USQ **EXISTS** based upon the results of an approved USQ Determination.<br>**NOTE:** *A limited field use validation cannot be performed and a change to this document cannot be issued as long as a USQ exists.*<br>**NOTE:** *If a USQ exists, forward the DCR and case file with supporting documentation to Document Control.*<br><br>Categorical Exclusion Review Number: ____<br>USQ Determination Number: ____<br>Approved by: ____ Print ____ Signature ____ Date:<br>☐ Signature via TrackWise Notification |
| 4. | **RCRA:** Are there any regulatory/permit impacts? ☐ Yes ☐ No ☐ N/A (N/A for minor changes)<br>If yes, attach completed AMWTP Form-1006, RCRA Permit Proposed Modification/Classification Request Form (if applicable).<br>Evaluator Printed Name: ____ Signature: ____ Date: ____ |
| 5. | **Training Requirements:**<br>Personnel involved in the use of this Limited Field Use Validation must be briefed on the document changes and the use of a Limited Field Use Validation.<br><br>Training Tracking No. ____ |

**6.** **Approval to begin Limited Field Use Validation of the Draft Revision:** (Document Owner):

Extent of Validation: ☐ Complete Validation ☐ Partial Validation

Validation Timeframe: Start Date _____ End Date _____

***Signature indicates correct reviewers have been involved, no pending USQ or RCRA actions for this draft revision, and approval is granted to use the referenced draft revision to perform operations using actual waste containers. Any actual waste containers used are to be non-reported and must be reprocessed using approved non-draft procedures prior to certification and shipment. Number of actual waste containers used during validation of this procedure shall be minimized.***

Printed Name: _____ Signature: _____ Date: _____

**7.** **Validation Personnel**: Complete a validation in accordance with MP-DOCS-18.4 and the guidelines on the following page.

☐ Validation completed and no additional changes are needed. Return draft procedure and this form to the the Document Owner or designee.

☑ Validation completed and additional changes are needed. Document needed changes on Form-1003, Review Comment and Resolution Form, or red-line the draft working copy, and return red-lined draft procedure, Form-1003 and this form to the the Document Owner or designee.

| Printed Name | Discipline | Signature |
|---|---|---|
| Cindy Tiegs | Ops Tech | Cindy Tiegs |
| | | |
| | | |
| | | |
| | | |
| | | |

**Lead Validator Signature:** Derek Cox (Printed Name) [signature] (Signature) 08/01/12 (Date)

**8.** **Validation Review: (Document Owner):**

☐ Issues have been identified resulting in changes that will require further review by the required reviewers listed in Block 9 of the DCR for this change).

☐ Further validation is required, due to changes found during this validation. Indicate ***BOTH*** the method ***AND*** the extent of validation and attach new Form-1002, as applicable:

- (Pick one method) ☐ Limited Field Use ☐ Mockup ☐ Walk Down (ACL Only) ☐ Tabletop
- (Pick one extent) ☐ Complete ☐ Partial

☒ Minor changes were recommended based on the validation, and no further review is required. Return this form to Document Services.

☐ No changes were recommended. Return this form to Document Services.

Document Owner: C.A. Sterzinski Signature: [signature] Date: 08/02/12

| AMWTP Advanced Mixed Waste Treatment Project | REVIEW COMMENT AND RESOLUTIONS FORM | Form-1003<br>Rev. 5<br>Effective: 07/25/12<br><br>Page 1 of 2 |
|---|---|---|

Implementing Document: MP-DOCS-18.4

| | | | | |
|---|---|---|---|---|
| Technical Point of Contact: Brian Warner | | Phone No.: 7318 | Comments Due By: | |
| Reviewer's Name | Discipline: | Phone No.: | Signature of reviewer accepting resolution of significant comments: | Date: |
| Cindy Tiegs | / Operations Tech. | N/A | [illegible] for Cindy Tiegs | 08/02/12 |
| Comments resolved by: | | Date: | | |

* Comments so marked are considered to be significant. *Significant comment.* A reviewer's written response that is derived from the reviewer's area of expertise or discipline or that addresses material assigning tasks to the reviewer's organization. Significant comments address issues of: (A) Noncompliance with laws, regulations, permits, standards; (B) Proper conduct of mission-critical operations; (C) Creating unsafe conditions that could result in personal injury, death, damage to the environment; (D) Creating conditions that could result in a contract change or deviation from a contractual obligation.

| Reviewer: Cindy Tiegs<br>Document No.: INST-OI-81 | | Document Title: Real-Time Radiography Operations (for WIPP Certification of Boxes) | | Revision: 10 | DCR No.: 11431 |
|---|---|---|---|---|---|
| Item No. | Section/Steps | * | Revision Comment | Comment Resolution | |
| 1 | 3.2.6 | ☐ | Change the phrase "surviellance checks" in the last half of step to "safety checks" | Change as requested | |
| | | ☐ | | | |
| | | ☐ | | | |
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| | | ☐ | | | |
| | | ☐ | | | |

## DeWall, Robyn I.

**From:** Dominick, Jared L. on behalf of LLW MLLW. Doc Reviews
**Sent:** Monday, July 16, 2012 10:49 AM
**To:** Document Services
**Subject:** RE: DSA Implementation Review of INST-OI-81 Rev. 10A, Real-time Radiography Operations (for WIPP Certification of Boxes) (Due at Roundtable Review)

HI Robyn,
I have no comments on the changes.
Please mark DCR boxes:
11b – a – "N/A"
11b – b – "Yes"
Thanks,
*Jared L. Dominick*
*Idaho Treatment Group, LLC (ITG)*
*Advanced Mixed Waste Treatment Project (AMWTP)*

*Office - 208-557-6458*
*Cell - 208-360-8839*
*jared.dominick@amwtp.inl.gov*

---

**From:** DeWall, Robyn I. **On Behalf Of** Document Services
**Sent:** Thursday, July 12, 2012 4:51 PM
**To:** Hooper, Vicki L.; Stamos, Cameron; Sharp, Michelle; Cook, Terry; Griffith, Ted P.; Sisson, Clint E.; Warner, Brian; Criticality Safety Review; Nuclear Safety Review; Jensen, Jeff; Capell, David; Hawley, Jared; Peterman, Susan M.; Schweinsberg, Eric; LLW MLLW. Doc Reviews; Dominick, Jared L.
**Cc:** Document Services; Hilzman, Misty; Morse, Angie ; Butler, Dave; Sanderlin, David T.; Powell, Wendy
**Subject:** DSA Implementation Review of INST-OI-81 Rev. 10A, Real-time Radiography Operations (for WIPP Certification of Boxes) (Due at Roundtable Review)

**This review is part of the DSA implementation. Only comments related to DSA changes will be accepted. A roundtable review for this document will be scheduled.**

You have been identified as either a required reviewer (per DOCS-18.4) or as a requested reviewer by the document owner. Within the following link is:

DCR-11431 – INST-OI-81, Rev. 10A – Real-time Radiography Operations (for WIPP Certification of Boxes)

**ES&H Required:** Full ES&H review required to include RCRA Determination (RCRA reply to be independent to ES&H reviewers)

**Waste Programs Required:**

- TRU Program Review (separate from SPM review)
- SPM for Block 11
- NNSS WCO for Block 11

**If you have NO COMMENTS, click the info bar/button above and then delete this email.**

## DeWall, Robyn I.

**From:** Hawley, Jared
**Sent:** Thursday, July 12, 2012 5:17 PM
**To:** Document Services
**Subject:** RE: DSA Implementation Review of INST-OI-81 Rev. 10A, Real-time Radiography Operations (for WIPP Certification of Boxes) (Due at Roundtable Review)

PAIT concurs.

---

**From:** DeWall, Robyn I. **On Behalf Of** Document Services
**Sent:** Thursday, July 12, 2012 4:51 PM
**To:** Hooper, Vicki L.; Stamos, Cameron; Sharp, Michelle; Cook, Terry; Griffith, Ted P.; Sisson, Clint E.; Warner, Brian; Criticality Safety Review; Nuclear Safety Review; Jensen, Jeff; Capell, David; Hawley, Jared; Peterman, Susan M.; Schweinsberg, Eric; LLW MLLW. Doc Reviews; Dominick, Jared L.
**Cc:** Document Services; Hilzman, Misty; Morse, Angie ; Butler, Dave; Sanderlin, David T.; Powell, Wendy
**Subject:** DSA Implementation Review of INST-OI-81 Rev. 10A, Real-time Radiography Operations (for WIPP Certification of Boxes) (Due at Roundtable Review)

**This review is part of the DSA implementation. Only comments related to DSA changes will be accepted. A roundtable review for this document will be scheduled.**

You have been identified as either a required reviewer (per DOCS-18.4) or as a requested reviewer by the document owner. Within the following link is:

DCR-11431 – INST-OI-81, Rev. 10A – Real-time Radiography Operations (for WIPP Certification of Boxes)

**ES&H Required:** Full ES&H review required to include RCRA Determination (RCRA reply to be independent to ES&H reviewers)

**Waste Programs Required:**

- TRU Program Review (separate from SPM review)
- SPM for Block 11
- NNSS WCO for Block 11

**If you have NO COMMENTS, click the info bar/button above and then delete this email.**

**If you DO HAVE COMMENTS, send them to Document Services before the roundtable review (time and date TBD). Use of Form-1003 (also within the link above) is recommended.**

**Point of Contact (POC) for questions: Brian Warner, ext. 6318**

Any questions can be directed to the POC person listed above. Thank you.

---

*Document Services*
*DOCServ@amwtp.inl.gov*

---

*Robyn*

**From:** Simmons, Ted
**Sent:** Monday, July 23, 2012 4:23 PM
**To:** Document Services
**Cc:** Stamos, Cameron; Butler, Dave; Hinsley, Gene E.
**Subject:** RE: Need ACL and Training Determinations--DSA Implementation Review of Miscellaneous Forms

Attached is a document containing a table showing the training determinations that have been done for the DSA Implementation Review.

Please call if you have questions.

Ted Simmons
AMWTP Training Specialist
(desk) 557-6436
(cell) 360-6774

## 2012 DSA Implemenation Training Determinations

| Procedure | DCR # | Box in Section 13 | Action Item | Affected Qual/Group |
|---|---|---|---|---|
| COPS-9.11 | 11421 | 3 | N/A | |
| COPS-9.11.2 | 11439 | 3 | N/A | |
| FOI-01 | 11457 | 4 | 71771 | FQPOT9B Facility Assay operations |
| FOI-14 | 11375 | 4 | 71774 | FQPOT9C Facility Material Transfer |
| FOI-16 | 11380 | 4 | 71704 | FQPOT10B Remote Equipment Operations |
| FOI-20 | 11377 | 4 | 71629 | FQPOT12A Supercompactor |
| FOI-23 | 11379 | 4 | 71687 | FQPOT13B Special Case Waste |
| FOI-25 | 11388 | 4 | 71777 | FQPOT13C Packet Assay |
| FOI-27 | 11465 | 4 | 71629 | FQPOT12A Supercompactor |
| FOI-32 | 11381 | 4 | 71628 | QCSZRDLI Size Reduction (Plasma) |
| FOI-40 | 11382 | 4 | 71685 | QPOI11A Shredder Operations |
| Form-1218 | 11424 | 3 | N/A | |
| Form-1274 | 11452 | 3 | N/A | |
| Form-1374 | 11385 | 3 | N/A | |
| Form-1454 | 11423 | 3 | N/A | |
| Form-1545 | 11385 | 3 | N/A | |
| Form-1546 | 11384 | 3 | N/A | |
| Form-1561 | 11417 | 3 | N/A | |
| Form-1562 | 11418 | 3 | N/A | |
| Form-1563 | 11419 | 3 | N/A | |
| Form-1564 | 11420 | 3 | N/A | |
| Form-1565 | 11387 | 3 | N/A | |
| Form-1579 | 11389 | 4 | 71687 | FQPOT13B Special Case Waste |
| Form-1618 | 10234 | 3 | N/A | |
| Form-1619 | 11447 | 3 | N/A | |
| Form-1684 | 11449 | 3 | N/A | Facility |
| Form-1684 | 11449 | 3 | N/A | |
| Form-1989 | 11425 | 3 | N/A | |
| Form-1990 | 11427 | 3 | N/A | |
| Form-2065 | 11459 | 4 | 71693 and 71694 | Retrieval |
| Form-2093 | 11451 | 3 | N/A | Retrieval |
| ISIH-2.18 | 11456 | 3 | N/A | |
| ISIH-2.41 | 11454 | 3 | N/A | |
| OI-101 | 11397 | 4 | 71693 and 71694 | Retrieval |
| OI-107 | 11422 | 4 | 71693 and 71694 | Retrieval |
| OI-108 | 11458 | 4 | 71693 and 71694 | Retrieval |
| OI-11 | 11433 | 4 | 71705 | QPOT7D Waste movement |
| OI-112 | 11463 | 3 | N/A | |
| OI-12 | 11428 | 4 | 71778 | QPOT3A RTR |
| OI-15 | 11438 | 4 | 71779 | QPOT3D Box Assay |
| OI-41 | 11429 | 4 | 71778 | QPOT3A RTR |
| OI-45 | 11215 | 4 | 71678 | QPOT2D Drum Vent 634 |
| OI-50 | 11434 & 11435 | 4 | 71679 | QPFTINOP 615 Filter insertion |
| OI-60 | 11430 | 4 | 71778 | QPOT3A RTR |
| OI-68 | 11363 | 4 | 71772 | QPOT4F |
| OI-81 | 11431 | 4 | 71778 | QPOT3A RTR |
| OI-92 | 11436 | 3 | N/A | |
| OI-93 | 11437 | 3 | N/A | |
| OI-99 | 11432 | 4 | 71778 | QPOT3A RTR |
| RS&C-6.10 | 11373 | 3 | N/A | |
| RS&C-6.22.4 | 11077 | 4 | 71690 | QPRT1A Rad Monitoring |
| RS&C-6.27 | 11469 | 4 | 71690 | QPRT1A Rad Monitoring |
| SRM-ISIH-2.21 | 11470 | 3 | N/A | |
| SRM-ISIH-2.41 | 11454 | 3 | N/A | |

## DeWall, Robyn I.

**From:** Simmons, Ted
**Sent:** Thursday, August 02, 2012 6:40 AM
**To:** Document Services
**Cc:** Powell, Wendy
**Subject:** RE: Clarification request: DSA Training Determinations as of 7/17

None of the training determinations that we have made so far needs to be completed before the document is issued.

Thanks for accepting one answer for all,

Ted Simmons
AMWTP Training Specialist
(desk) 557-6436
(cell) 360-6774

---

**From:** DeWall, Robyn I. **On Behalf Of** Document Services
**Sent:** Wednesday, August 01, 2012 5:11 PM
**To:** Simmons, Ted
**Cc:** Powell, Wendy; Document Services
**Subject:** Clarification request: DSA Training Determinations as of 7/17

Hello Ted,

Can you please clarify, for all the training determinations marked 4 for Box 13 in the table below, does the training need to be completed before or after the document is issued (new question on the revised DCR form)?

Thanks for your help,

*Robyn*

---

Robyn DeWall
Technical Writing/Editing
Document & Record Services
208-557-6620 office
208-360-3107 cell
dewari@amwtp.inl.gov

<< OLE Object: Picture (Device Independent Bitmap) >>

<< OLE Object: Picture (Device Independent Bitmap) >>

## DeWall, Robyn I.

**From:** Kurt Zorn [ZORNDK@amwtp.inl.gov]
**Sent:** Saturday, August 04, 2012 10:27 AM
**To:** Thompson, Rick A.; Roth, Fred; Stoneberg, Ken; Zorn, Kurt; DeWall, Robyn I.; Morse, Angie ; Griffith, Ted P.; carlcm@amwtp.inl.gov; Jackson, Susan K.; Swanson, Brent R.; Cook, Janet M.; McKean, Marti; Walker, Sherrie; Jensen, Jeff; Powell, Wendy
**Subject:** TrackWise: :AMWTP USQ Categorical Exclusion Doc # 71907: INST-OI-81 Rev 10B, has been closed

The following AMWTP USQ Categorical Exclusion -# 71907 has been closed on 08/04/2012 10:26 AM (GMT-6:00).

USQ Categorical Exclusion Change Type: DCR
Change Number: 11431

USQ Categorical Exclusions Summary:

USQ-CX-001: Is this a minor document change that does not affect technical content? NO

USQ-CX-002: Is this change a common commercial practice that is rountinely accepted by industry using standard practices AND is the change being performed in a non-nuclear/non-radiological environment? NO

USQ-CX-003: Is this an implementation into procedures exclusively involving DOE approved changes made to the AMWTP Safety Basis? YES

USQ-CX-004: Is this a proposed change that would require DOE Nuclear Safety approval? NO

USQ-CX-005: Is this a minor change to nuclear related software? NO

USQ Categorical Exclusion Results:
Is there a categorical exclusion as described in MP-NSPC-3.2, Appendix A that can be applied to the proposed change? YES

USQ Categorical Exclusion Approval:

USQ Evaluator: Kurt Zorn
USQ Evaluation Date: 08/04/2012 10:26 AM (GMT-6:00)

| AMWTP Advanced Mixed Waste Treatment Project | Document and Case File QC Checklist | Form-1728<br>Rev. 7<br>Effective: 07/25/12<br>Page 1 of 1 |
|---|---|---|

Implementing Document: MP-DOCS-18.4

Document: INST-OI-81 Rev.: 10 DCR #: 11431

| ✓ | NA | |
|---|---|---|
| All Docs - ☐ N/A for Canceled, Superseded, or Suspended Documents | | |
| ☐ | ☒ | **Blue Sheets** – incorporated **AND** cited on DCR. |
| ☐ | ☒ | **Records** – All records generated are listed, classification is correct. |
| ☒ | ☐ | **Page Breaks** are in right places and **Page numbering** is correct including Appendices. |
| ☒ | ☐ | **Clutter redlines** – removed. |
| ☒ | ☐ | **Forms generated** by this document – reviewed for consistency to the revised procedure. |
| ☒ | ☐ | **Cross References/TOC** – updated/regenerated, contain no errors. |
| ☐ | ☒ | **Title changes** – Verified the change was made on all pages. |
| INSTs - ☐ Does Not Apply | | |
| ☐ | ☒ | **Field Changes** – incorporated **AND** cited on DCR. |
| ☒ | ☐ | **Use-Type** – Verified against EDMS. |
| ☐ | ☒ | **P&Ls** – LCOs 3.0.1 - 3.0.6 deleted, and others are converted to steps, notes, etc., relevant to THIS procedure activity |
| Forms - ☒ Does Not Apply | | |
| ☐ | ☐ | **Re-created Form** – thoroughly compared to effective revision, even if minor change. |
| ☐ | ☐ | **Fields** requiring data input – form fields incorporated appropriately. |
| ☐ | ☐ | **Implementing Doc(s)** – verified against supplemental documents cited in EDMS |
| DCR | | |
| ☒ | ☐ | **DCR #** – verified against EDMS record and in the document. |
| ☒ | ☐ | **ALL blocks** through 13 –filled in, N/A'd, or have line drawn through. (Double check **Periodic Review Block 8.**) |
| ☐ | ☒ | **Title Change** – annotated on DCR in Block 4 or Block 17 (depending on when the title changed). |
| ☒ | ☐ | **Block 11 a/b/c** – verified correct against applicable list and signed appropriately if required. |
| ☒ | ☐ | **Case File** - All electronic signatures and comments/resolutions are included in the order of the DCR. |
| ☒ | ☐ | **Comment Forms** – procedure and DCR #, reviewer discipline are cited appropriately |
| ☒ | ☐ | **Document owner is correct on the cover page (verify against EDMS, or if doc owner change is identified on DCR.)** |
| ☒ | -- | **OKAY TO SEND to USQ , OBTAIN Final Approval, and then submittal to DOE/CBFO or ISSUE** |

Tech Writer/ Processor: Robyn DeWall Date: 8/3/12 Tech Writer/ Processor: [signature] Date: 8/3/12

| FINALIZING DOCUMENT TO ISSUE (includes FORMS) ☐ N/A for Canceled, Superseded, or Suspended Documents | | |
|---|---|---|
| ✓ | N/A | |
| ☒ | ☐ | **TBD/PENDING** – replaced with dates. **Draft Letter Designators** have been removed from all applicable pages. |
| ☒ | ☐ | **Table of Contents** updated before creating PDF. |
| ☒ | ☐ | **Track Change** options changed before creating PDF. |
| ☒ | ☐ | **Page Numbers** have been re-checked. |
| ☐ | ☒ | **Forms Only:**<br>• Track changes accepted<br>• Track change feature turned OFF<br>• Form is **protected**, and **then saved** as Form-#####.dot or dotx or excel equiv. |
| ☒ | ☐ | • PDF hardcopy (camera-ready) document is printed and added to case file.<br>• Native hardcopy of each revised form is created and added to case file. |

Tech Writer/ Processor: Robyn DeWall Date: 8/20/12 Tech Writer/ Processor: [signature] Date: 8/16/12

| SUBMITTAL TO CHECK-IN | | |
|---|---|---|
| ✓ | N/A | |
| ☒ | -- | Final **DCR Blocks** are complete and ~~**Case file pages are numbered**~~ doc control 10/8/12 |
| ☒ | ☐ | **PDF electronic file** (rev bars only) (file name: xx-xxx-##.#.pdf) (N/A for Forms) |
| ☒ | ☐ | **Word native/changes tracked** (file name: xx-xxx-##.#-tracked.doc or dotx). N/A for total rewrite. |
| ☒ | ☐ | **Word native/tracked changes accepted and saved** (file name: xx-xxx-##.#.doc or docx) |
| ☐ | ☒ | Form-#####.dot or dotx, or excel equiv. |

Tech Writer/Processor: Robyn DeWall Date: 8/20/12

**Remember to move Tech Writer folder AND Doc Services e-mail folder to "COMPLETED"**

# Real-Time Radiography Operations (for WIPP Certification of Boxes)

**(Controlled Activity)**

Advanced Mixed Waste Treatment Project

Approved:

| | |
|---|---|
| *(Signature on file. See DCR-11431.)* | 08/06/12 |
| Brian Warner<br>Characterization Lead | Date |

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# 1.0 PURPOSE/SCOPE

The Advanced Mixed Waste Treatment Project (AMWTP) Real-Time Radiography (RTR) system is a nondestructive examination technique used to verify the physical form of the waste and the absence of liquids and containerized gases within the contents of radioactive and mixed waste containers. In addition to identifying the contents of containers, the RTR system also provides digital data-recording capabilities. Examination of containers verifies the specific waste matrix code (WMC) and *waste stream* (see def.) description, identifies prohibited items, and estimates each waste material parameter weight as required for disposal at the Waste Isolation Pilot Plant (WIPP). In the case of unlabeled containers, RTR is used to correlate the contents of the container with known waste types and, if possible, assign an item description code (IDC).

This document applies to the operation of the RTR and operating software.

**(HWMA/RCRA Permit; MP-TRUW-8.1; MP TRUW-8.2; CCP-PO-003)**

# 2.0 ROLES AND RESPONSIBILITIES

| Performer | Responsibilities |
|---|---|
| Operations Technician (OT) | • Unless otherwise specified, performs the steps in this instruction. |
| Shift Supervisor (SS) | • Logs status changes<br>• Updates the applicable status boards<br>• Performs post-job reviews<br>• Makes necessary notifications. |
| System Engineer (SE) | • Evaluates conditions and advises SS. |

# 3.0 PRECAUTIONS AND LIMITATIONS/PREREQUISITES

## 3.1 Precautions and Limitations

3.1.1 The RTR door interlock systems, audible and visual warning signals, minimum 20-second delay function, emergency shutdown switches, and shielding shall be *operable* (see def.) when the associated RTR x-ray unit is capable of generating x-rays.

**(ANSI-N43.3)**

3.1.2 To avoid personnel exposure, personnel must ensure that the shielded enclosure is clear of personnel before initiating x-rays.

3.1.2.1 When personnel are using the mirror mounted inside the shielded enclosure, they must ensure the hidden area located underneath the camera is unoccupied.

3.1.3 To avoid personnel exposure to x-rays and personnel injury, emergency stops to shut off x-ray generation and equipment movement are located on the operator control console (red mushroom pushbutton), and within the RTR enclosure (pull cords).

3.1.4 The personnel access door can be opened from inside the RTR enclosure to allow personnel egress during an emergency. If x-rays are being generated, opening the personnel door will stop generation of x-rays.

3.1.5 The cart enable/disable key must be switched to DISABLE, the key removed, and maintained under operator control when loading, unloading, and rotating the cart or installing/removing the drum manipulator and when entered the enclosure.

3.1.6 The maximum capacity for the x-ray cart is 10,000 lb.

3.1.7 Before leaving the RTR control console unattended, the x-ray controller must be placed in STAND BY mode and the key must be removed and maintained under operator control or stored in the master key locker.

3.1.8 The x-ray controller may be turned off at any time; however, if time permits, maintaining the key switch in STANDBY after periods of continuous operation will help ensure adequate cool down before switching off.

3.1.9 To ensure waste boxes are not frozen, waste boxes must be preheated for a minimum of 72 hours at 18°C or higher during cold weather. Preheating is required October through April. The SS will determine if preheating is required outside the October through April window. After 72-hour initial preheat and if the box has not been removed from WMF-634, the temperature may fall below 18°C (in WMF-634) as long as it does not fall below 1°C for any period of time.

**(HWMA/RCRA Permit)**

3.1.10 For safety, personnel must stay clear of the moving cart and moving doors.

3.1.11 When entering the shielded enclosure following the conclusion of x-ray generation, a qualified radiological controls technician (RCT) shall use a suitable, operable, calibrated survey instrument to verify that the source is in its fully shielded condition or that the x-ray tube has been de-energized. The qualified RCT shall document this survey in accordance with MP-RS&C-6.22, Radiological Survey Program.

3.1.12 The x-ray enclosure interior is a very high radiation area when the x-ray generator is on. Personnel are not allowed inside the enclosure while x-rays are being produced.

3.1.13 The RTR is an x-ray-generating device. Direct exposure to the x-ray beam may result in serious injury or death. Personnel must avoid exposure by observing all warning devices and personnel barriers.

3.1.14 Alternative methods for hazardous energy control are used in this procedure for servicing tasks that are routine, repetitive, and integral to the use of the equipment for production in accordance with MP-COPS-9.20, Hazardous Energy Control Processes.

3.1.15 Waste containers containing explosives must have a nonconformance report (NCR) generated in accordance with MP-QS&I-5.4, Identification of Nonconforming Conditions, and will be identified for return shipment to the waste-generating Department of Energy (DOE) contractor following appropriate shipping procedures and regulations.

**(HWMA/RCRA Permit)**

### 3.2 Prerequisites

3.2.1 Personnel operating the RTR are properly qualified in accordance with MP-RTQP-14.4, Personnel Qualification and Certification, by completing the qualification checklist for an RTR operator (QPOT03A).

**(HWMA/RCRA Permit; MP-TRUW-8.1)**

3.2.2 The following forms are available:

- Applicable operator log
- Form-1578, Imaging Quality Indicator Verification Form for RTR
- Form-1218, Daily RTR Safety Checks.

3.2.3 Operations Technician has obtained the following items (keys are in the master key locker):

- Operator control console power key
- E-Stop reset key
- X-ray control console key
- Cart enable/disable key
- Recording media (DVD if needed)
- Image Quality Indicator (IQI) test pattern.

**(HWMA/RCRA Permit; MP-TRUW-8.1)**

3.2.4 Waste Tracking System (WTS) is available.

3.2.5 A pre-job brief has been performed per MP-COPS-9.17, Performing Pre-Job Briefings and Post-Job Reviews, as directed by the SS prior to performing work in this procedure.

3.2.6 The following required safety checks have been verified (and logged on the applicable operator log) to be within periodicity
**OR** the system is being operated to perform the safety checks or other activities to restore the system to operability.

| Safety Check | Performed Per | Periodicity |
|---|---|---|
| RTR door interlocks, warning signals, delay function, and emergency switches | INST-MI-1002, RTR 6-Month Safety Check for RTR System Z-213-101 and Z-213-106 | Semiannually or following configuration changes or modifications |
| RTR shielding survey | Form-1377, WMF-634 RTR Shielding Radiation Survey | Semiannually or following configuration changes or modifications |

**(ANSI-N43.3)**

# 4.0 INSTRUCTIONS

## 4.1 General Instructions

**NOTE**: *Entering the shielded enclosure may be performed at any time throughout this procedure as necessary to perform routine inspections and escort personnel for inspections or training.*

4.1.1 **IF** entry into the shielded enclosure is necessary at any point during the performance of this procedure,
**THEN GO TO** Section 4.3
**AND RETURN TO** the point of departure in the previous section when complete.

4.1.2 **IF** an abnormal or infrequent event is encountered at any point while working this procedure,
**THEN GO TO** Section 4.13
**AND RETURN TO** the point of departure in the previous section when complete.

4.1.3 **GO TO** the appropriate procedure section from the following table based on the desired task to be performed,
**THEN RETURN TO** this step if further activities will be performed:

| Task | Section |
|---|---|
| System Startup | 4.2 |
| Entry into Shielded Enclosure | 4.3 |
| Beginning of Shift Activities | 4.4 |
| Warm up | 4.5 |
| Imaging System Check | 4.6 |
| Operation of RTR System | 4.7 |
| Moving Boxes into and out of the Enclosure | 4.8 |
| Real-Time Radiography Examination Guidelines | 4.9 |
| RTR Examination and WTS Data Entry | 4.10 |
| Total System Shutdown | 4.11 |
| Post-Job Review | 4.12 |
| Abnormal and Infrequent Operations | 4.13 |

## 4.2 System Startup

4.2.1 Ensure x-ray cooler is ON.

4.2.2 Insert the cart enable/disable key and turn to ENABLE.

**NOTE:** *Applicable steps may be performed to shutdown and restart computers because of minor computer malfunctions on the barcode scanner, RTR, and WTS systems.*

4.2.3 Ensure the electrical power strip is turned on.

4.2.4 Ensure the RTR computer systems are on.

4.2.5 Ensure all RTR system monitors are on.

4.2.6 Perform Windows login, as necessary.

4.2.7 Ensure the closed-circuit television (CCTV) monitor is turned on.

**NOTE:** *The power-on lamp will be illuminated after an approximate 15-second delay.*

4.2.8 Ensure the operator control console power key is inserted into the POWER key switch.

4.2.8.1 Turn the key to the RESET position **AND** release.

4.2.9 Ensure the E-Stop reset key is inserted into the "E-Stop Reset" switch.

4.2.10 Double click on barcode icon, if necessary.

4.2.11 Double click Vi3 icon, if necessary.

**NOTE:** *Before the control system can be operated, the system is in the* HOME position *(see def.). The HOME position is selected by pressing the AUTO OUT pushbutton. The AUTO OUT lamp will flash while the x-ray tube head and Flat Panel Digital Radiography Imaging System (FP) manipulator are returning to the HOME positions.*

4.2.12 Press the AUTO OUT button to home the system, as applicable.

4.2.13 Insert x-ray controller key into key switch on x-ray control console and turn key to STAND BY position.

4.2.14 Ensure the x-ray shutters are closed.

4.2.15 **IF** this is a full system startup,
**THEN** enter the time of the system power up in the applicable operator log.

**NOTE:** *The WTS will not permit logon if Form-1268, Production Systems Access Request, is not current.*

4.2.16 Log in to the WTS RTR operation navigation screen, if necessary.

### 4.3 Entry into Shielded Enclosure

**NOTE:** *The only activities authorized to be performed using this section are entry into the shielded enclosure to perform routine inspections or escorting personnel into the shielded enclosure for inspections and/or training.*

4.3.1 Ensure radiation survey of enclosure has been completed by a qualified RCT prior to entry into shielded enclosure.

4.3.2 **IF** system startup is required,
**THEN GO TO** Section 4.2.

4.3.3 Ensure cart movement has been disabled prior to enclosure entry.

4.3.3.1 Insert the cart enable/disable key
**AND** turn it to the ENABLE position, if necessary.

**NOTE:** *The following step is performed to verify the cart and other equipment are capable of moving as a pre-check to satisfy using an alternate method to hazardous energy control.*

4.3.3.2 Press the AUTO IN button and allow the cart to enter the enclosure and the bi-parting door to close, if necessary.

4.3.3.3 Home the RTR system by pressing the AUTO OUT pushbutton.

4.3.3.4 Set cart enable/disable key to DISABLE to disable cart movement.

4.3.3.5 Remove the cart enable/disable key
**AND** maintain under operator control.

4.3.3.6 Verify that the RTR cart is nonoperational after key removal by attempting to move cart from RTR Control Room with key removed.

4.3.3.7 Ensure that the drum manipulator is removed, if necessary.

**NOTE:** *The only personnel authorized to enter the shielded enclosure under this alternate method to hazardous energy control are the OT in control of cart enable/disable and x-ray keys and any personnel being escorted by OT in control of cart enable/disable and x-ray keys.*

4.3.3.8 **IF** performing shielded enclosure inspection for any reason other than the daily inspection and completion of Form-1218,
**THEN GO TO** Step 4.3.3.12.

4.3.3.9 **IF** performing shielded enclosure inspection for daily inspection and completion of Form-1218.
**THEN** perform the following:

**NOTE:** *Remaining steps in this section may be performed concurrently.*

4.3.3.9.1 Inspect the shielded enclosure vault as follows:

- General cleanliness
- Foreign objects or signs of tampering with equipment
- Oil on the floor
- Drive screws on both the x-ray tube head and (FP) manipulators free of obstructions.

**NOTE:** *An IQI is required at system startup prior to examining boxes and at least once every 24 hours during continuous operations.*

4.3.3.10 **IF** an IQI image verification is required,
**THEN** mount the IQI test pattern on the cart, if necessary.

**NOTE:** *It is management's expectation that Form-1218 is not completed until the SS has reviewed it and signed on the appropriate line.*

4.3.3.11 Ensure that Form-1218 has been completed for the applicable RTR unit for the current day.

**(ANSI-N43.3)**

4.3.3.11.1 **IF** any item in Section I or II is unsatisfactory, **THEN** immediately take the following steps:

4.3.3.11.1.1 Stop production operations with the RTR system **AND** generate an NCR on the system.

4.3.3.11.1.2 Notify the SS.

4.3.3.11.1.3 **GO TO** Section 4.13.14.

**(ANSI-N43.3)**

4.3.3.12 Enter the shielded enclosure to perform inspection/training as necessary.

## 4.4 Beginning of Shift Activities

4.4.1 **IF** Form-1218 has **NOT** been completed for the current day, **THEN GO TO** Section 4.3 to complete Form-1218 **AND RETURN TO** Step 4.4.2 when complete.

**(ANSI-N43.3)**

**NOTE:** *The WTS will not permit logon if the Form-1268 is not current.*

4.4.2 Log in to the WTS, RTR operation navigation screen, as necessary.

4.4.3 Double click the barcode reader icon, if necessary.

**NOTE:** *An IQI is required at system startup prior to examining waste and at least once every 24 hours during continuous operations.*

4.4.4 **IF** IQI has been completed for the current day, as evidenced on Form-1578,
**THEN** verify it is complete and compliant by viewing the recording and listening to the audio.

4.4.4.1 **IF** IQI is found to **NOT** be complete and compliant,
**THEN** notify SS.

**NOTE:** *The cart will have to be out in order to mount the IQI test pattern.*

4.4.5 **IF** the IQI image verification is required,
**THEN** mount the IQI test pattern on the cart.

## 4.5 Warm-up

4.5.1 Ensure Sections 4.2 through 4.4 are completed prior to RTR system operations.

**NOTE:** *In the event that an extended manual warm-up is necessary, personnel should consult with the SS and RTR SE for guidance. The GE Inspection Technologies Isovolt operating instructions are available for a more detailed description of operation.*

4.5.2 Ensure the x-ray shutters are closed.

**WARNING**

**When the x-ray generator is on, personnel in the enclosure could suffer fatal injuries.**

**NOTE 1:** *The DOOR CLOSE button light on the operator control panel will be illuminated when the bi-parting door is closed.*

**NOTE 2:** *The hidden area located underneath the camera can be checked using the mirror mounted inside the shielded enclosure.*

4.5.2.1 Ensure that the enclosure is unoccupied **AND** both the personnel access door and the bi-parting doors are closed.

4.5.3 **GO TO** the appropriate procedure section from the following table based on the desired warm-up activities to be performed, **THEN RETURN TO** this step, if further warm-up activities will be performed:

| Task | Section |
|---|---|
| Start of shift OR after daily safety checks completion | 4.5.4 |
| RTR has been in continuous operation for less than 2 hours and prompts for warm-up when entering a high kV value, **OR** has been idle for 2-3 hours | 4.5.5 |
| RTR System has been idle for 3–4 hours | 4.5.6 |
| RTR System has been idle for >4 hours | 4.5.7 |
| Warm-up is complete | 4.5.8 |

**NOTE:** *The controller will display "Tube To Be Warmed-Up" and display options for: NO (F1), 1..2 Days (F4), 2..14 Days (F5), >14 Days (F6), and RTC auto (F7).*

4.5.4 **IF** at the start of shift
**OR AFTER** daily safety checks completion,
**THEN** cycle the key position from the ON/STANDBY position to OFF and back to ON.

**NOTE:** *After performing the following step, a screen prompting to "Enter Test Voltage" will appear.*

4.5.4.1 Press F6 to select >14 Days.

4.5.4.2 Type 420 kV
**AND** press ENTER.

4.5.4.3 Press the X-RAY ON button to begin the warm-up.

**NOTE:** *The controller will display "Tube To Be Warmed-Up" and display options for: NO (F1), 1..2 Days (F4), 2..14 Days (F5), >14 Days (F6), and RTC auto (F7).*

4.5.5 **IF** the RTR system has been in continuous operations for less than 2 hours and prompts for warm-up when entering a high kV value
**OR** the RTR system has had continuous idle time for 2-3 hours,
**THEN** cycle the key position from the ON/STANDBY position to OFF and back to ON.

**NOTE:** *After performing the following step, a screen prompting to "Enter Test Voltage" will appear.*

4.5.5.1 Press F4 to select 1..2 Days.

4.5.5.2 Type 420 kV
**AND** press ENTER.

4.5.5.3 Press the X-RAY ON button to begin the warm-up.

**NOTE:** *The controller will display "Tube To Be Warmed-Up" and display options for: NO (F1), 1..2 Days (F4), 2..14 Days (F5), >14 Days (F6), and RTC auto (F7).*

4.5.6 **IF** the RTR system has been idle for 3–4 hours,
**THEN** cycle the key position from the ON/STANDBY position to OFF and back to ON.

**NOTE:** *After performing the following step, a screen prompting to "Enter Test Voltage" will appear.*

4.5.6.1 Press F5 to select 2..14 Days.

4.5.6.2 Type 420 kV
**AND** press ENTER.

4.5.6.3 Press the X-RAY ON button to begin the warm-up.

**NOTE:** *The controller will prompt for a warm up and give options for: NO (F1), 1..2 Days (F4), 2..14 Days (F5), >14 Days (F6), and RTC auto (F7).*

4.5.7 **IF** the RTR system has had continuous idle time for more than 4 hours,
**THEN** cycle the key position from the ON/STANDBY position to OFF and back to ON.

**NOTE:** *After performing the following step, a screen prompting to "Enter Test Voltage" will appear.*

4.5.7.1 Press F6 to select >14 Days.

4.5.7.2 Type 420 kV
**AND** press ENTER.

4.5.7.3 Press the X-RAY ON button to begin the warm-up.

4.5.8 **WHEN** the appropriate warm-up is complete,
**THEN** perform the following:

4.5.8.1 Follow prompts on the x-ray controller
**AND** turn the x-ray control console key to the STAND BY position.

4.5.8.2 **IF** leaving the RTR control room,
**THEN** perform the following:

4.5.8.2.1 Remove the x-ray control console key.

4.5.8.2.2 Maintain the x-ray control console key either under the operator control or store it in the master key locker.

4.5.8.3 **IF** warm-up was performed,
**THEN** record the following in the applicable operator log:

- Elapsed warm-up time
- Warm-up completion time
- Any pertinent comments.

## 4.6 Imaging System Check

4.6.1 Ensure a disk ID file has been created in the RTR Imaging Transfer Application (RITA) for the current RTR batch, by double clicking RITA icon.

4.6.1.1 **IF** a disk has **NOT** been created,
**THEN** follow Appendix B, Creating or Transferring Data to the RITA Archival System
**AND THEN RETURN TO** Step 4.6.2.

4.6.2 Verify the precision of *radiography* (see def.) prior to use by adjusting the image enough to demonstrate compliance with the quality assurance objectives (QAOs) through viewing an image test pattern.

**(MP-TRUW-8.1; MP-TRUW-8.2)**

4.6.3 Perform an imaging system check daily, prior to use
**AND** record on applicable operator log, and Form-1578.

**(HWMA/RCRA Permit; MP-TRUW-8.2)**

**NOTE 1:** *There are a number of controls that will affect the quality of the recorded image (including IQI placement, zoom functions, Automatic Defect Enhancement (ADE) filter, window leveling, x-ray focal spot), all of which can be adjusted by the OT. The intent of the IQI evaluation is to demonstrate the imaging system capability to achieve a specified resolution. During RTR imaging of waste containers, the OT has the latitude to adjust these same parameters, as needed, to obtain the best image possible.*

**NOTE 2:** *It is management's expectation that Form-1218 is not completed until the SS has reviewed it and signed on the appropriate line.*

4.6.4 Ensure that Form-1218 has been completed for the current day for the applicable RTR unit.

**(ANSI-43.3)**

4.6.4.1 **IF** any item in Section I or II is unsatisfactory,
**THEN** take the following steps:

4.6.4.1.1 Stop production operations with the RTR system
**AND** generate an NCR on the system.

**(ANSI-N43.3)**

4.6.4.1.2 Notify the SS.

4.6.4.1.3 **GO TO** Section 4.13.14.

4.6.5 Place the cursor in the first edit box located on the screen of the barcode reader window.

4.6.6 **IF** an IQI is required,
**THEN** enter the IQI number using the following format: mmddyyXXXWWWQ; where mm is the month, dd is the day, yy is the year, XXX stands for IQI, WWW for the RTR System 101 (Z-213-101) or 106 (Z-213-106), and Q stands for the shift (D for day shift or N for night shift).

4.6.6.1 Set or advance to the next entry location by manually performing the following:

4.6.6.1.1 Press the "Shift" and ":" keys simultaneously to set the entry.

4.6.6.1.2 Press the "Shift" and ">" keys simultaneously to advance to the next entry location.

4.6.7 Select the CONFIRM button to finalize the entry.

4.6.8 Ensure that the x-ray system has been warmed up and the x-ray controller is ready for operation.

**NOTE:** *The IQI will be recorded on the same recording media as for the current RTR batch.*

4.6.9 Select "Start New Cycle" to retrieve barcode data from the barcode window, if necessary.

4.6.10 Select the IQI number to be recorded.

4.6.11 **IF** recording confirmation prompt displays correct ID for recording, **THEN** click OK.

4.6.11.1 **IF** recording confirmation prompt displays incorrect ID, **THEN RETURN TO** Step 4.6.9.

4.6.12 Adjust the voltage to approximately 100 kV and the current to approximately 2.0 mA, if necessary.

4.6.13 Ensure that the x-ray control console is in the ON position.

4.6.14 Press the green X-RAY ON button.

4.6.14.1 **IF** an x-ray system error message occurs during two consecutive starts/restarts,
**THEN** immediately notify SS/SE for instruction prior to any additional attempts to generate x-rays.

4.6.15 Open the x-ray shutters, as required.

4.6.16 Position the cart, x-ray tube-head, and FP to center the IQI test pattern.

4.6.17 Adjust the zoom functions, ADE filter, window leveling, kV, and mA, as needed, for image resolution and clarity to obtain a good image of the IQI.

4.6.18 Select red RECORD button on Debut Professional program.

4.6.19 Record verbal comments by speaking into the microphone.

4.6.20 Start IQI recording by stating the operator identification (ID), IQI number, and lines of resolution obtained.

4.6.20.1 To ensure that an acceptable recording has been done, stop x-ray generation prior to viewing the recording.

4.6.20.2 Verify the acceptable recording of the IQI and the audio/video recording.

4.6.20.2.1 **IF** the audio/video recording was **NOT** acceptable,
**THEN** contact the SS.

4.6.21 Record IQI results and the number corresponding to the crosshatched pattern visible in both the horizontal and vertical directions on the applicable operator log (see Exhibit 1, RTR Image Test Quality Grid, for RTR image test grid figure) and Form-1578.

4.6.22 Record RTR settings (voltage, current) on Form-1578.

**NOTE:** *Verification of the resolution is with visual confirmation by the OT. The recorded image may not represent the actual image due to degradation from the recording.*

4.6.23 **IF** the resolution is less than 16 lines/inch,
**THEN** contact the SS
**AND** troubleshoot.

4.6.24 Press the red X-RAY OFF button on the x-ray controller unit panel, if applicable,
**AND** turn the x-ray control console key to the STAND BY position.

4.6.25 **IF** leaving the RTR control room,
**THEN** perform the following steps:

4.6.25.1 Remove the X-ray control console key.

4.6.25.2 Maintain the x-ray control console key either under the operator control or store it in the master key locker.

## 4.7 Operation of RTR System

4.7.1 Ensure that no NCRs exist against the RTR system.

4.7.2 Check initial conditions as follows:

4.7.2.1 Ensure Sections 4.2 through 4.6 are completed prior to RTR system operations.

**NOTE 1:** *The RTR system cannot detect frozen liquids, and therefore, frozen waste boxes cannot be examined. To ensure that a waste box is not frozen, the waste is preheated for a minimum of 72 hours at 18°C or higher during cold weather. Preheating is required from October through April. The SS will determine if preheating is required outside the October through April window.*

**(HWMA/RCRA Permit)**

**NOTE 2:** *After the box has met the 72-hour preheat requirement and if the box has not been moved out of WMF-634, the temperature may fall below 18°C (inside WMF-634) for any period of time, as long as it does not fall below 1°C.*

4.7.2.2 **IF** preheating is required,
**THEN** ensure the waste package has been preheated for a minimum of 72 hours at 18°C or higher, per WTS.

## 4.8 Moving Boxes into and out of the Enclosure

**NOTE 1:** *Steps in this section may be completed out of sequence, concurrently, or as needed.*

**NOTE 2:** *Handrails may be removed as necessary to facilitate removal of the drum manipulators and loading a box.*

4.8.1 Home the RTR system by pressing the AUTO OUT pushbutton, if needed.

4.8.2 Set the enable/disable key to DISABLE, to disable cart movement if needed.

4.8.3 Remove the enable/disable key, if needed,
**AND** maintain under operator control.

4.8.4 Verify, by visual inspection, that a candidate box is linked to the correct historical data by comparing the following:

- Historical ID
- Tamper-indicating device
- Generator
- Other historical data, as available, between the box and the historical data displayed in WTS.

4.8.5 **IF** the correct link is confirmed,
**THEN** load the box on the RTR.

4.8.6 **IF** the correct link is **NOT** confirmed,
**THEN** notify the SS or acceptable knowledge expert (AKE).

4.8.6.1 **IF** SS or AKE were unable to correct the link,
**THEN** record all historical information from the container in the WTS container marking screen, which is accessible from the RTR screen or the AMWTP container screen.

**WARNING**

**Failure to ensure that no portion of the box extends past the cart could result in a container breach causing possible inhalation hazard to personnel.**

**CAUTION 1**

**Failure to ensure that no portion of the box extends past the cart could result in the container being breached or equipment damage.**

**CAUTION 2**

**Failure to disconnect the electrical cable at the rear of the cart will result in damage to the connector and cable.**

**NOTE:** *Handrails may be removed as necessary to facilitate removal of the drum manipulators and loading a box.*

4.8.7 Load a box onto the cart, as applicable, ensuring no portion of the box extends past the cart.

4.8.8 Ensure the box on the RTR cart has been received to the equipment using WTS.

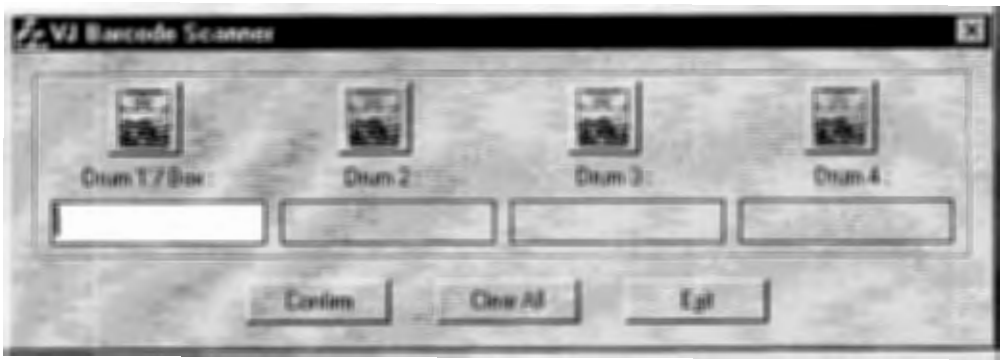
4.8.9 Perform a barcode cycle, as necessary, by performing the following:

4.8.9.1 Ensure the Windows login is complete.

4.8.9.2 Double click the barcode reader icon, if necessary.

4.8.9.3 **IF** previous barcodes are present,
**THEN** select CLEAR ALL button.

4.8.9.4 Place the cursor in the first edit box located on the screen of the barcode reader window, if necessary.




**WARNING**

**Eye injury may occur if personnel look directly into the barcode scanner beam.**

4.8.9.5 Scan the barcode of the box into drum No. 1/box
**AND** visually confirm the correct barcode has populated, taking care to **NOT** look directly into the barcode reader.

4.8.9.6 **IF** the barcode does **NOT** scan,
**THEN** perform Section 4.13.13
**AND RETURN TO** Step 4.8.9.7.

**NOTE 1:** *If the system finds unused barcodes from previous scans either in a previous session or the CONFIRM button was selected prior to the CLEAR ALL button, the software will display a warning message stating that it found unused bar codes.*

**NOTE 2:** *The unused barcodes will be displayed in sequence. However the cursor will move to the first edit box so that the operator can overwrite the older text. The CLEAR ALL button is used to clear the text in the edit boxes. The cursor is displayed in the first edit box.*

**NOTE 3:** *Selecting the CONFIRM button will communicate the scanned barcodes to the RTR (imaging) computer.*

4.8.9.7 Select the CONFIRM button.

4.8.10 Insert the cart enable/disable key **AND** turn it to the ENABLE position.

4.8.11 Home the RTR cart system by pressing the AUTO OUT pushbutton, if necessary.

4.8.12 Press the AUTO IN button and allow the cart to enter the enclosure and the bi-parting door to close.

4.8.13 Ensure that x-ray system has been warmed up **AND** the x-ray controller is ready for operation.

4.8.14 In the Vi3 program, Select "Start New Cycle" to retrieve barcode data from the barcode window, if necessary.

4.8.15 **IF** the barcode data has already been retrieved for the cycle of the box being examined,
**THEN** select "Select Next Drum/Box," if necessary.

4.8.16 Select the barcode number of the box to be examined and confirm that Recording Confirmation prompt displays correct information
**AND** click OK.

4.8.16.1 **IF** Recording Confirmation prompt displays incorrect information,
**THEN RETURN TO** Step 4.8.14.

4.8.17 Ensure a disk ID file has been created in RITA for the current RTR batch, by double clicking RITA icon.

4.8.17.1 **IF** a disk has **NOT** been created,
**THEN** follow Appendix B
**AND THEN RETURN TO** Step 4.8.18.

**NOTE:** *It is management's expectation that Form-1218 is not completed until the SS has reviewed it and signed on the appropriate line.*

4.8.18 Ensure that Form-1218 has been completed for the current day for the applicable RTR unit.

**(ANSI-N43.3)**

**WARNING**

**When the x-ray generator is on, personnel in the enclosure could suffer fatal injuries.**

**NOTE:** *The hidden area located underneath the camera can be checked using the mirror mounted inside the shielded enclosure.*

4.8.19 Ensure that the enclosure is unoccupied
**AND** both the personnel access door and the bi-parting doors are closed.

4.8.20 Insert x-ray control console key into x-ray control console
**AND** turn it to the ON position.

4.8.21 Set the x-ray controller to 100 kV and 2 mA.

4.8.21.1 Open X-ray shutters, as necessary.

4.8.22 Press the green X-RAY ON button.

4.8.23 Adjust kV and mA as appropriate.

**NOTE:** *At any time, the control room operator can select "Single" mode to enable the x-ray head and FP to be raised or lowered independent of each other, up to a maximum of 5 inches. This will produce an oblique image.*

4.8.24 Ensure that the DUAL position is selected to provide synchronized movement of the x-ray head and FP.

4.8.25 Select red RECORD button on Debut Professional program.

## 4.9 Real-Time Radiography Examination

**NOTE 1:** *A complete scan of the waste box is required. A complete box scan is defined as across the entire top, through the center of the waste from top to the bottom, going from side to side in overlapping layers, across the entire bottom, and up the side of the container. 100% of each container must be scanned to meet the radiography quality assurance objective for completeness. All the data must be collected and evaluated to complete the WTS and have a complete scan.*

**(MP-TRUW-8.1; MP-TRUW-8.2)**

**NOTE 2:** *The replicate scan will be conducted by an RTR qualified operator who was not involved in the original scan of the waste container and documented in WTS.*

**NOTE 3:** *Sections 4.9 and 4.10, and steps within these sections, may be performed concurrently, out of sequence, or repeated during the examination of the waste container, as applicable. All the required data will be captured in WTS and on the audio/visual record. WTS will not save the record if any of the required data is not populated in WTS.*

4.9.1 Perform replicate scan on one waste box per day or once per testing batch, whichever is less frequent under uniform conditions and procedures.

**(MP-TRUW-8.1; MP-TRUW-8.2)**

**NOTE:** *The independent observation is conducted by a qualified RTR OT who was not involved in the original scan of the waste container and documented in WTS.*

4.9.2 Perform an independent observation on one waste box (which must **NOT** be the same box that was used for the replicate scan) once per day or once per testing batch, whichever is less frequent under uniform conditions and procedures.

**(MP-TRUW-8.1; MP-TRUW-8.2)**

4.9.3 **Adjust Image Enhancement System**

4.9.3.1 Ensure that the X-RAY/FP MANIPULATOR VERTICAL SPEED CONTROL is adjusted for speeds that are appropriate for the waste container to be examined.

4.9.3.2 Increase or decrease the x-ray kV and/or mA as needed.

4.9.3.3 Adjust the zoom functions, as required, to characterize small objects.

**NOTE:** *The RTR examination is recorded in both the WTS and in the audio/video record. All characterization activities are required to be announced in the audio/video record.*

**(HWMA/RCRA Permit)**

4.9.3.4 Shake boxes along the horizontal axis to detect the presence of liquids.

**NOTE:** *X-ray generation is stopped prior to switching the focus (filament) between broad and fine.*

4.9.3.5 Use the Broad or Fine focus (filament), as appropriate, for boxes containing high density material.

**NOTE:** *Two measuring annotations are available, the linear measurement and the protractor tool to help assist the operator with waste characterization.*

4.9.3.6 **IF** the image is difficult to see,
**THEN** perform the following:

4.9.3.6.1 Switch the x-ray filters to 0, 1, 2, or 3, as necessary.

4.9.3.6.2 Mask exposed portions of the image with the x-ray shutters.

4.9.3.6.3 Adjust window leveling as needed to achieve desired penetration and image quality.

**NOTE:** *The ADE filter is meant to be a tool to help the operator discern details in objects, and guide the operator to areas for further examination under the primary window leveling tool. While the filter is active the operator will notice a delay and choppiness for objects in motion.*

4.9.3.6.4 Apply ADE filter as needed.

### 4.10 RTR Examination and WTS Data Entry

**NOTE 1:** *Nonconformance reports are not required to be generated as part of a replicate or operator independent observation examination.*

**NOTE 2:** *An audio/video recording of the radiography examination and a validated radiography data form in the WTS will be obtained for each container. The contents of the waste container are described in sufficient detail on the audio/video record to provide an adequate inventory of the waste container contents in the audio/video record narrative.*

**(MP-TRUW-8.1; MP-TRUW-8.2)**

**NOTE 3:** *The RTR examination is recorded in both the WTS and in the audio/video record.*

**(HWMA/RCRA Permit)**

4.10.1 Enter as an introduction for the examination of the waste container the following:

- Operator ID
- Container ID
- IDC
- WMC
- Waste stream description as defined in RPT-TRUW-05, Waste Matrix Code Reference Manual, in the audio/video record
- Waste **NOT** covered in RPT-TRUW-05 or other approved applicable acceptable knowledge (AK) documents and report.

**(HWMA/RCRA Permit)**

4.10.2 Verify the correct container number.

**NOTE:** *Step 4.10.3 may be performed by either typing in the box number and using F8 to query the information or selecting the appropriate box number from the list of values and clicking the mouse in the "Recording ID" field.*

4.10.3 Enter the container ID number in WTS **AND** query the container information.

4.10.4 Verify the container data and analysis information have auto-populated in the container information section of the WTS RTR record (i.e., batch number, container type, RTR date).

4.10.5 **IF** any of the required fields are **NOT** populated,
**THEN** contact the SS for guidance.

4.10.6 Verify the "Equipment" field for the processing area for WTS has auto-populated.

4.10.7 Verify the current procedure and revision number.

4.10.8 **IF** the revision number of the procedure is incorrect in WTS,
**THEN** enter the procedure number and current revision used to conduct the examination in the "Result Comment" field in WTS.

4.10.9 Ensure the Recording ID is correct.

4.10.10 Enter the identification in the format: WXXXyy-nnnnn; where W stands for RTR system one (Z-213-101) or two (Z-213-106), XXX stands for RTR, yy is the year, and nnnnn is the disk number,
**AND** enter the side as A or B.

**NOTE:** *The QAO for precision at RTR is verified upon satisfactory completion of an IQI test at least once every 24 hours or upon system start-up as specified in Section 4.6, by verifying that the audio/video record of the IQI has been recorded, and by answering "Yes" to the question: "Is the Imaging Quality Indicator Satisfactory? "*

4.10.11 Enter Y/N in WTS to the question "Is the Imaging Quality Indicator Satisfactory?"

**(MP-TRUW-8.1; MP-TRUW-8.2)**

4.10.12 Ensure the replicate is completed on one box per day or once per testing batch, whichever is least frequent, as documented on applicable operator log, and in WTS.

**(MP-TRUW-8.1; MP-TRUW-8.2)**

4.10.12.1 **IF** Debut Professional program "File Already Exists Replace Existing File?" pops up,
**THEN** answer NO.

4.10.13 Ensure a qualified RTR OT that was **NOT** involved in the original scan of the waste container performs the replicate scan.

**(MP-TRUW-8.1; MP-TRUW-8.2)**

**NOTE:** *The independent observation is performed by viewing the recording from a waste container (not the replicate), and documenting the results on a radiography analysis sheet in WTS. The independent observation is performed without reference to the original radiography analysis sheet in WTS.*

4.10.14 Ensure the independent observation analysis is completed on one box per day (not the replicate) or once per testing batch, whichever is least frequent, as documented on applicable operator log and in WTS.

**(MP-TRUW-8.1; MP-TRUW-8.2)**

4.10.15 Ensure a qualified RTR OT that was **NOT** involved in the original scan of the waste container performs the independent observation analysis.

**(MP-TRUW-8.1; MP-TRUW-8.2)**

**NOTE:** *The purpose of checking the visual class inspection form is to assist the RTR OT in looking for pinhole(s) and/or weakness in the container wall.*

4.10.16 **IF** the "Visual Classification" inspection form is available in WTS, **THEN** review the form to see the container classification **AND** look for pinhole(s) and/or weakness in the container wall.

4.10.16.1 **IF** pinholes and/or weaknesses are found, **THEN** perform the following:

4.10.16.1.1 Notify the SS.

4.10.16.1.2 Document the finding in WTS.

4.10.16.1.3 Handle the container as directed by the SS.

4.10.17 Estimate and enter the fill factor for the waste container (in percent) in WTS.

**NOTE:** *The "twisted and tied" or "zipped and tied" closure methods are entered as "twisted and taped."*

4.10.18 Enter the closure method(s) for the waste container and inner packages in WTS.

**NOTE:** *Sealed containers >4 liters are considered a layer of confinement.*

4.10.19 Determine the layers of confinement for the waste container **AND** enter in WTS.

4.10.20 Enter the presence of liquids by selecting YES in WTS.

**(HWMA/RCRA Permit)**

4.10.21 Enter the volume and location of liquids in WTS.

**(HWMA/RCRA Permit)**

**NOTE 1:** Observable liquids *(see def.) in association with an identified polychlorinated biphenyl (PCB) item or PCB waste are considered PCB-contaminated liquids and will have a disposition of treatment or special-case waste.*

**(HWMA/RCRA Permit)**

**NOTE 2:** *"Internal container" means container inside the outermost container examined during radiography or visual examination. Drum liners, liner bags, plastic bags used for contamination control, capillary-type lab ware, and debris not designed to hold liquid at the time of original waste packaging are not internal containers.*

4.10.22 **IF** observable liquid is prohibited as defined in Exhibit 4, List of Prohibited Items
**OR** is equal to or greater that 4.4 pints,
**THEN** record the presence of prohibited liquids in WTS by selecting YES.

**(HWMA/RCRA Permit; MP-TRUW-8.1; MP-TRUW-8.2) (CCP-PO-003)**

4.10.23 **IF** observable liquid is noted
**AND** the total liquid is **NOT** prohibited,
**THEN** enter NO for prohibited liquids.

**NOTE:** *Item 10 of Exhibit 6, Common Liquid Measurements and Conversions, provides a conversion for milliliters (ml) to pints.*

4.10.24 **WHEN** internal containers with observable liquid, are present, **THEN** enter YES for internal containers with liquid.

4.10.25 **IF** prohibited liquids are identified, **THEN** initiate an NCR in accordance with MP-Q&SI-5.4.

**(HWMA/RCRA Permit)**

4.10.25.1 Select the NCR RTR Characterization for Liquids and the applicable "Liquids Identified" category as observed in the RTR examination.

4.10.26 Document the absence or presence of sharp or non-braced objects that could be a puncture hazard to the waste container in WTS.

**NOTE 1:** *Sharp or non-braced objects that are not protected will be NCR'd appropriately to ensure remediation.*

**NOTE 2:** *Although cardboard liners do offer protection for sharp objects, as determined by the RTR operator, they are not considered as "liners" for headspace gas drum age criteria and are considered as cellulosic waste.*

4.10.27 Document in WTS if sharp or non-braced objects are protected.

4.10.28 Document the absence or presence of PCBs in WTS by performing the following:

**(HWMA/RCRA Permit)**

4.10.28.1 **IF** PCBs are **NOT** present, **THEN** document NO for PCBs present in WTS.

**(40 CFR 761)**

**NOTE:** *"Yes Acceptable" PCBs are given a process code of Direct Ship as PCBs are not approved for super compaction.*

4.10.28.2 **IF** PCBs present are "Yes - Acceptable" to document non-prohibited PCBs,
**THEN** perform the following:

4.10.28.2.1 Document a description of non-prohibited PCBs in the "PCB Comment" field.

4.10.28.2.2 Document the weight of non-prohibited PCBs in the "PCB Weight" field.

4.10.28.2.3 Ensure the non-prohibited PCBs are included in the waste container inventory with a description, item weight, and assignment to the applicable waste parameters field.

4.10.28.3 **IF** prohibited PCBs present are "Yes - Prohibited,"
**THEN** perform the following:

4.10.28.3.1 Document a description of prohibited PCBs in the PCB comment field.

4.10.28.3.2 Document the net weight of the box in the PCB weight field.

4.10.28.3.3 Ensure the prohibited PCBs are included in the waste container inventory with a description, item weight, and assignment to the applicable waste parameters.

4.10.28.3.4 Initiate an NCR in accordance with MP-Q&SI-5.4.

**(MP-TRUW-8.1)**

4.10.28.4 Answer the following container questions on the WTS CONTENTS BOX tab in WTS, as applicable.

- HEPA Filters?
- Graphite?
- Metal Debris?
- Paper/Rags?
- Plastics/PVC/Rubber?
- Electrical Conduits or Wiring?
- Scaffolding Poles or Planks?
- Heavy, Dense Objects?
- Steel/Metal Rods or Bars?
- Bulky, Shreddable Objects?
- Concrete/Bricks/Solids?

4.10.28.5 **IF** Heavy Dense Objects or Concrete/Bricks/Solids are YES,
**THEN** include an approximate dimension in the description.

**NOTE:** *Mercury is not prohibited unless the criteria for prohibited observable liquid are exceeded.*

4.10.29 Document in WTS the absence or presence of the following:

A. Mercury

B. Lead, and in what physical form

C. Wet cell batteries.

**(HWMA/RCRA Permit)**

**NOTE 1:** *Lead content needs to be identified and listed as a hazardous material in the data package prepared for each WIPP-certifiable container (i.e., leaded rubber gloves, lead aprons, and lead bricks).*

**NOTE 2:** *When examining containers whose contents prevent full examination of a waste item (e.g., check weights or calorimeter cans) or of the remaining contents (e.g., an aggregate of bulk-loaded dense sludge), AK information that may have determined a visual examination would not provide additional relevant information for the referred to container.*

**(MP-TRUW-8.1; MP-TRUW-8.2)**

**NOTE 3:** *Lead shielding cannot be used to shield an item or waste container to meet external surface dose rates.*

**NOTE 4:** *When examining containers whose contents prevent full examination, such as multiple dense sludge containers or over-packed into a box, an NCR will be written that box contents could not be confirmed.*

4.10.29.1 **IF** container is lead-lined
**OR IF** lead tape, impenetrable objects, and/or shielded objects are present that prevent full examination,
**THEN** initiate RTR NCR in accordance with MP-Q&SI-5.4.

4.10.29.2 **IF** any of the items listed in Step 4.10.29 are detected,
**THEN** enter a comment in the appropriate comment field in WTS.

**(MP-TRUW-8.1; MP-TRUW-8.2)**

4.10.30 Document in WTS the presence of prohibited items in the waste, if any, using Exhibit 4.

**(MP-TRUW-8.1; MP-TRUW-8.2)**

4.10.31 **IF** any prohibited items are present, in accordance with Exhibit 4, **THEN** perform the following:

4.10.31.1 Initiate an NCR in accordance with MP-Q&SI-5.4.

4.10.32 Examine the waste and enter data into WTS with the description, weight and the assignment to the appropriate waste parameters by performing the following:

4.10.32.1 Select item(s) from look-up table, where appropriate, and enter quantity.

4.10.32.2 **IF** item is **NOT** shown on look-up table, **THEN** perform **ONE** of the following to add the waste item(s) to the container inventory:

4.10.32.2.1 **IF** entering item(s) by weight, **THEN** perform the following:

4.10.32.2.1.1 Enter a description.

4.10.32.2.1.2 Enter item type as weight.

4.10.32.2.1.3 Enter weight.

4.10.32.2.1.4 Enter quantity.

4.10.32.2.1.5 Assign the appropriate waste parameter(s) by percentage weight.

4.10.32.2.2 **IF** entering item(s) by volume, **THEN** obtain reference data **AND** perform the following:

4.10.32.2.2.1 Enter description.

4.10.32.2.2.2 Enter item type as volume.

4.10.32.2.2.3 Enter weight per unit volume from reference data.

4.10.32.2.2.4 Enter quantity.

4.10.32.2.2.5 Assign the appropriate waste parameter(s) by percentage weight.

4.10.32.2.3 **IF** entering item(s) as packaging materials, **THEN** perform the following:

4.10.32.2.3.1 Enter description.

4.10.32.2.3.2 Enter item type as packaging.

4.10.32.2.3.3 Enter weight.

4.10.32.2.3.4 Enter quantity.

4.10.32.2.3.5 Assign the appropriate waste parameter(s) by percentage weight.

4.10.32.3 After completing the RTR examination of the first side of the box, pause the audio/video recording.

4.10.32.3.1 Press the red X-RAY OFF button on the x-ray controller unit panel
**AND** turn the x-ray controller key to the STAND BY position.

4.10.32.3.1.1 **IF** leaving the RTR control room,
**THEN** remove the x-ray key
**AND** maintain it under operator control
**OR** store it in the master key locker.

4.10.32.3.2 Press the AUTO OUT button to home the system.

**NOTE:** *If cart is disabled with x-ray head in low position, not homed, system will not home when turned back on without manually manipulating up on joystick.*

4.10.32.3.3 Ensure cart is in the HOME position before disabling it.

4.10.32.3.4 Set the enable/disable key to DISABLE to disable cart movement
**AND** remove the key.

4.10.32.3.5 Rotate the box 180 degrees
**AND** place the box back on the cart.

4.10.32.3.6 Insert the cart enable/disable key
**AND** turn it to the ENABLE position.

4.10.32.3.6.1 **IF** the system is **NOT** in the HOME position (indicated by the AUTO OUT button illuminated), **THEN** push the AUTO OUT button.

4.10.32.3.6.2 Press the AUTO IN button and allow the cart to enter the enclosure and the bi-parting doors to close.

4.10.32.3.7 Insert x-ray controller key into key switch on x-ray control console
**AND** turn it to the ON position.

4.10.32.3.8 Set the kV to 100 and the mA to 2.

4.10.32.3.9 Press the green X-RAY ON button.

**NOTE:** *Steps in Section 4.9 and 4.10 may be repeated or performed out of sequence during the examination of the waste container.*

4.10.32.3.10 Continue examination of container per Sections 4.9 and 4.10.

**NOTE:** *The weight assigned to the remaining waste is assigned by subtracting the packaging, and item(s) entered by weight/volume, from the gross weight and then distributing this remaining unassigned weight to the appropriate waste parameters by the designated percentage weight assigned for the remaining waste. Remaining waste = Gross – (Packaging + Items by Weight + Items converted from volume to weight).*

4.10.32.4 Assign the remaining waste to the appropriate waste parameter by weight percent on the remaining contents of container table.

4.10.32.4.1 In the "Result Comment" field, enter a description of the waste that was entered under the "Remaining Contents of Container Table."

**NOTE:** *Following RTR, boxes with the 000 IDC are typically assigned the code UN-00A for* undefined homogenous solids (S3000; see def.), *UN-00B for* undefined debris (S5000; see def.), *or UN-00C for* undefined soil/gravel (S4000; see def.).

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4.10.33 Verify that the physical form of the waste is consistent with the IDC, WMC, summary category and waste stream description (as defined in RPT-TRUW-05, or for waste **NOT** covered in RPT TRUW-05, other approved applicable AK documents and reports) for the waste container and recorded correctly in WTS.

**(HWMA/RCRA Permit)**

4.10.33.1 **IF** the IDC is verified **AND** the historical ID found in WTS does **NOT** match the information on the container, as found in Step 4.8.4,
**THEN** initiate a Type 3 NCR in accordance with MP-Q&SI-5.4.

**NOTE:** *Answering the question "Is IDC Correct?" allows information required by Steps 4.10.35 and 4.10.36 to be entered.*

4.10.34 **IF** the IDC, WMC, summary category or waste stream description can **NOT** be verified,
**THEN** perform the following:

4.10.34.1 Place a UN-000 code for undetermined waste, UN-00A for undefined homogenous solids (S3000), UN-00B for undefined debris (S5000), or UN-00C for undefined soil/gravel (S4000), in the "Recommended Gen-IDC" field.

**(HWMA/RCRA Permit)**

4.10.34.2 Enter the change reason comment of undefined IDC.

**(HWMA/RCRA Permit)**

4.10.34.2.1 Describe the waste in sufficient detail to allow the AKE to evaluate a recommended IDC determination in the "Result Comment" field or using the "Container Markings" screen button at the bottom of the RTR screen.

4.10.34.3 Record any historical information from the container on the "Container" screen in the "Add New Container Comment" field or in the "Container Markings" button at the bottom of the general section of the RTR screen.

4.10.35 **IF** the IDC is **NOT** correct,
**THEN** perform the following:

**(HWMA/RCRA Permit)**

4.10.35.1 Enter recommended IDC,
**AND** assign the containers to AK review.

4.10.35.2 Enter change reason (example: % volume of contents).

4.10.35.3 Enter any applicable comments.

4.10.35.3.1 Describe the waste in sufficient detail to allow the AKE to evaluate a recommended IDC determination in the "Add New Container Comment" field or using the "Container Markings" screen button at the bottom of the general section of the RTR screen.

4.10.35.4 Record any historical information from the container on the "Container" screen in the "Add new Container Comment" field or using the Container Markings screen button at the bottom of the general section of the RTR screen.

4.10.36 At the completion of the scan, summarize the examination by stating the operator ID, container ID, whether the IDC, WMC, and waste stream description are consistent with the AK.

**(HWMA/RCRA Permit)**

4.10.37 **STOP** or pause the recording as necessary.

4.10.38 **WHEN** the container on the cart has been examined,
**THEN** turn off x-rays by depressing the red X-RAY OFF pushbutton located on the x-ray control unit.

4.10.39 Perform an audio/visual check of the recorded image to verify that the recording device is working properly.

**(HWMA/RCRA Permit)**

4.10.39.1 Enter Y/N in WTS to the question "Is the Audio/Visual Check Satisfactory?"

**NOTE:** *The RTR recording will be reviewed against the data reported on the RTR container data in the WTS.*

4.10.40 Perform the following to sign the RTR record:

**(HWMA/RCRA Permit)**

4.10.40.1 Verify that the data in WTS is correct
**AND** that the audio/visual recording, match and are correct.

4.10.40.2 E-sign and save RTR record.

**NOTE 1:** *After the burning DVD from hard drive process has started, WINDOWS may be minimized and operations continued.*

**NOTE 2:** *Typical burning of files associated with current batch is done one file at a time; multiple files can be burned at the same time.*

**NOTE 3:** *All containers burned to DVD have an audio/video check performed.*

4.10.41 Transfer recording files to RITA Archival System using the guidance provided in Appendix B.

4.10.42 Burn file of box to DVD using the guidance provided in Appendix A, Burning DVD from Hard Drive, or at the SS discretion.

4.10.42.1 **AFTER** "Burning DVD from Hard Drive" has started,
**THEN** minimize the "Nero Essentials" window
**AND** continue operations.

4.10.42.2 Upon completion of the burning process, check the audio and visual recording on the DVD, prior to burning the next container.

4.10.43 Turn the x-ray control console key to the STAND BY position.

4.10.43.1 **IF** leaving the RTR control room,
**THEN** remove the key
**AND** maintain it under operator control,
**OR** store it in the master key locker.

4.10.44 Press the AUTO OUT button and allow the system to home.

4.10.45 Set the enable/disable key to DISABLE to disable cart movement **AND** remove the key.

4.10.46 Unload the box from the cart.

**NOTE:** *For WTS batch, an automatic closure will occur after 20 boxes (22 examinations including the replicate and independent observation) are processed. WTS batch data reports contain the required contents identified by Table C3-11 of MP-TRUW-8.2, Quality Assurance Project Plan).*

4.10.47 Label the container for PCBs, as applicable, in accordance with INST-OI-24, Packaging Radioactive Waste.

**(40 CFR 761)**

4.10.48 **RETURN TO** Section 4.7 to examine additional waste containers.

## 4.11 Total System Shutdown

4.11.1 Close the x-ray shutters by pressing the X-RAY SHUTTERS switches.

**NOTE 1:** *The x-ray shutter indicator lights may be used to verify shutters are closed.*

**NOTE 2:** *The remaining activities may be performed during x-ray tube cool down.*

4.11.2 Ensure the x-ray control console key is in the STAND BY position.

4.11.3 Log off of WTS.

4.11.4 Press the AUTO OUT button to home the system.

**NOTE:** *To remove residual heat from the x-ray tube, the x-ray system oil cooler is to remain ON for a minimum of 5 minutes prior to performing Step 4.11.5.*

4.11.5 Turn x-ray oil cooler to OFF.

4.11.6 Exit the applicable programs.

4.11.7 Acknowledge any pop-ups, as applicable.

4.11.8 Turn the enable/disable key to DISABLE to disable cart movement **AND** remove the key, if necessary.

4.11.9 Log out of Windows
**AND** turn OFF the RTR computers as follows:

4.11.9.1 Select "Turn off Computer" from the START button menu on the computer.

4.11.9.2 Click on the TURN OFF button on the SHUTDOWN COMPUTER window.

4.11.10 Turn OFF the x-ray image monitor by depressing the POWER button.

4.11.11 Switch the x-ray control console key to the OFF position
**AND** remove the key.

4.11.12 Switch the operator control console key to the OFF position
**AND** remove the key.

4.11.13 Switch the E-Stop key to the OFF position
**AND** remove the key.

4.11.13.1 Turn OFF the RTR CCTV monitor

4.11.14 Ensure that all shutdown information has been recorded on the applicable operator log.

4.11.15 Return the operator control console power, E-stop reset, x-ray control console, and cart enable/disable keys to the master key locker.

## 4.12 Post-Job Review

4.12.1 SS or designee: Perform a post-job review in accordance with MP-COPS-9.17.

### 4.13 Abnormal and Infrequent Operations

**WARNING**

**Abnormalities with the x-ray equipment could cause radiological exposure and injury/death.**

**CAUTION**

**Abnormalities with the x-ray equipment could cause damage to equipment.**

**NOTE:** *Applicable steps may be performed when needed.*

4.13.1 **IF** any abnormalities that could cause damage to equipment, personnel, or the environment are encountered with the x-ray equipment, **THEN** perform the following:

4.13.1.1 Push the red EMERGENCY STOP button.

4.13.1.2 Ensure that no personnel are in the area.

4.13.1.3 Inform the SS or designated alternate.

4.13.1.3.1 **IF** abnormality is related to a safety component,
**THEN** immediately stop production operation with the RTR system
**AND** generate an NCR against the system.

**(ANSI-N43.3)**

4.13.1.3.1.1 Notify the SS.

4.13.1.3.1.2 **GO TO** Step 4.13.14.

4.13.1.3.2 **IF** operation has been terminated due to activation of the EMERGENCY STOP button, **THEN** obtain both Radiological Controls manager and plant shift manager (PSM) approval prior to resuming operation.

4.13.1.4 Log all abnormal conditions and malfunctions on the applicable operator log, ensuring that the log entries include the operational conditions prior to the abnormality.

4.13.2 **IF** other abnormal or infrequent operations need to be performed, **THEN GO TO** the applicable section from the following table **AND RETURN TO** this step if further activities will be performed:

| Task | Section to be Performed |
|---|---|
| X-rays Fail to De-Energize | 4.13.3 |
| Constant Air Monitor Alarm in Affected Area | 4.13.4 |
| X-ray Head Fails to Energize | 4.13.5 |
| Equipment or Computer Malfunction | 4.13.6 |
| Unplanned Shutdown | 4.13.7 |
| Loss of Commercial Power | 4.13.8 |
| Breached Waste Container | 4.13.9 |
| Fire Involving the Characterization Facility | 4.13.10 |
| Motion Fault | 4.13.11 |
| Manual Extended Warm-Up | 4.13.12 |
| Entering Barcodes Manually | 4.13.13 |
| Follow-Up Steps When Stopping Production Operations with the RTR System | 4.13.14 |
| Performing Functional Verification/Post-Maintenance Testing for Mechanical Motion Only | 4.13.15 |

4.13.3 **X-rays Fail to De-Energize**

4.13.3.1 **IF** x-rays fail to de-energize when the red OFF button is pushed as indicated by the following indications:

- Voltage and amperage meters do **NOT** drop to zero when x-ray control unit key is removed
- Images still visible when X-RAY OFF button is depressed
- Radiation field (higher than expected from box) at the entry door,

**THEN** complete the following steps:

4.13.3.1.1 Push the red EMERGENCY STOP button.

4.13.3.1.2 Turn the x-ray controller key to the STAND BY position.

4.13.3.1.3 Notify the SS or designated alternate.

4.13.3.1.4 Obtain permission from Radiological Controls manager and PSM before restarting the RTR.

4.13.4 **Constant Air Monitor Alarm**

4.13.4.1 **IF** the x-ray head is operating,
**THEN** perform the following steps:

4.13.4.1.1 De-energize the x-ray head by pushing the red X-RAY OFF button.

4.13.4.1.2 Turn the x-ray controller key to STAND BY **AND** remove the key.

4.13.4.1.3 Notify coworkers
**AND** leave the affected area immediately.

4.13.4.1.4 Inform the RCT, the SS, or the designated alternate.

4.13.5 **X-ray Head Fails to Energize**

4.13.5.1 Turn the x-ray controller key to STAND BY **AND** remove the key.

4.13.5.2 Ensure all interlocks are satisfied.

4.13.5.3 Reinsert the x-ray controller key **AND** turn to ON position.

4.13.5.4 Attempt to generate x-rays.

4.13.5.4.1 **IF** the x-ray unit still fails to energize, **THEN** perform the following steps:

4.13.5.4.1.1 Turn the x-ray controller key to the STAND BY position.

4.13.5.4.1.2 Turn the control console power key to the OFF position.

4.13.5.4.1.3 Notify the SS or the designated alternate.

4.13.6 **Equipment or Computer Malfunction**

4.13.6.1 Push the X-RAY OFF button.

**NOTE:** *Applicable steps may be performed to shutdown and restart computers because of minor computer malfunctions on the VJ barcode program, RTR, and WTS systems.*

4.13.6.2 Shut down the system per Section 4.11, Total System Shutdown.

4.13.6.3 Restart the system per Section 4.2, System Startup.

4.13.6.4 **IF** the malfunction continues,
**THEN** place the system in a safe condition
**AND** inform the SS or designated alternate.

4.13.6.4.1 Log the malfunction in the applicable operator log.

4.13.7 **Unplanned Shutdown**

4.13.7.1 **IF** the x-ray unit shuts down inadvertently
**AND** auto warm-up is **NOT** being performed,
**THEN** perform the following steps:

4.13.7.1.1 Contact the SS.

4.13.7.1.2 Consult with the RTR SE for guidance.

4.13.7.1.3 **IF** the unplanned shutdown **CANNOT** be corrected,
**THEN** perform the following steps:

4.13.7.1.3.1 Turn the x-ray controller key to the STAND BY position.

4.13.7.1.3.2 Notify the SS or designated alternate.

4.13.7.1.4 Record the shutdown ion the applicable operator log.

4.13.7.1.4.1 Include information on RTR operating status prior to the shutdown.

4.13.7.1.4.2 Inform the SS or designated alternate.

4.13.8 **Loss of Power**

4.13.8.1 **IF** commercial power is lost to the RTR x-ray unit, **THEN** perform the following steps:

4.13.8.1.1 Turn the x-ray controller key to the STAND BY position.

4.13.8.1.2 Turn the control console power key to the OFF position.

4.13.8.1.3 Inform the SS or designated alternate.

4.13.8.1.4 Log the conditions on applicable operator log.

4.13.9 **Breached Waste Container**

4.13.9.1 Stop x-rays.

4.13.9.2 Turn x-ray controller key to STAND BY **AND** remove.

4.13.9.3 Respond per INST-OI-11, Waste Container Handling.

4.13.9.4 Notify the SS.

4.13.10 **Fire Involving the Characterization Facility**

4.13.10.1 Stop x-rays.

4.13.10.2 Turn x-ray controller key to STAND BY **AND** remove.

4.13.10.3 Evacuate **AND** inform the SS or designated alternate.

4.13.10.3.1 While exiting, pull the manual fire alarm.

4.13.11 **Motion Fault**

4.13.11.1 Stop x-rays.

4.13.11.2 Turn the x-ray controller key to STAND BY **AND** remove key.

4.13.11.3 Place the operator control console key in the OFF position.

4.13.11.4 After 60 seconds, activate reset keys located on the operator control console.

4.13.11.5 Press the AUTO HOME button.

4.13.12 **Manual Extended Warm-up**

4.13.12.1 Observe, during the warm-up time, the actual value of the current (mA) on the liquid crystal display (LCD) of the control module.

**NOTE:** *Considerable fluctuations of this value of the current on the LCD of the control mean that the tube is not running smoothly.*

4.13.12.2 **IF** the tube is **NOT** running smoothly,
**THEN** lower the tube voltage to the point where the actual value display no longer shows fluctuation beyond the normal operating value.

4.13.12.2.1 **IF** this condition is met,
**THEN GO TO** Step 4.13.12.3.

4.13.12.2.2 **IF** the tube continues to fluctuate beyond the normal operating value,
**THEN** turn off x-ray control console
**AND** contact the SS.

4.13.12.3 **IF** the x-ray tube has been left idle for greater than 8 weeks, or as directed by the SS or designated alternate,
**THEN** notify SS.

4.13.12.4 SS: Notify the RTR SE to evaluate the situation prior to switching to the manual warm-up mode.

4.13.12.4.1 SE: Evaluate the need to implement a semi-automatic extended warm-up through the setup menu OR to switch to the manual warm-up mode
**AND** advise SS.

4.13.12.5 **IF** directed by the SS,
**THEN** perform the following:

4.13.12.5.1 Start warm-up at up to 210 kV.

4.13.12.5.2 Increase the voltage up to 315 kV in 10 kV increments every 15 minutes.

4.13.12.5.3 Increase the voltage above 315 kV in 10 kV increments every 20 minutes, up to 420 kV.

4.13.13 **Entering Barcodes Manually**

**WARNING**

**Eye injury may occur if personnel look directly into the barcode scanner beam.**

4.13.13.1 Avoid looking directly into the barcode scanner beam.

4.13.13.2 Click on "Clear All" to clear all entries displayed for the four barcodes,
**OR** press the "Shift" and "<" keys simultaneously to clear the displayed entry.

4.13.13.3 Enter the barcode using the keyboard.

4.13.13.4 Press the "Shift" and ":" keys simultaneously to set the entry.

4.13.13.5 Press the "Shift" and ">" keys simultaneously to advance to the next entry location.

4.13.13.6 **REPEAT** Steps 4.13.13.3 through 4.13.13.5 until all barcodes have been entered.

4.13.13.7 **WHEN** all the barcodes have been entered,
**THEN** click on CONFIRM to set the entries.

4.13.14 **Follow-Up Steps When Stopping Production Operations with the RTR System**

4.13.14.1 Turn the x-ray controller key to STAND BY
**AND** remove the key.

4.13.14.2 OT and SS: Log the status change and NCR number in the applicable operator log and the SS log.

4.13.14.2.1 Ensure documentation is accurate and sufficient to ensure compliance with the requirements of operational limits.

4.13.14.2.1.1 Include, as a minimum, entry conditions and actions that are taken in response to operational limits requirements.

4.13.14.3 OT and SS: Update the applicable status boards.

**(MP-COPS-9.7)**

4.13.14.4 **WHEN** the condition for stopping production operations has been corrected,
**AND** the associated NCRs have been closed,
**THEN** return the RTR system to production operations.

4.13.15 **Performing Functional Verification/Post-Maintenance Testing for Mechanical Motion Only**

4.13.15.1 Ensure that x-rays are **NOT** generated at any time during the performance of this section.

4.13.15.2 Ensure Section 4.2 has been completed.

4.13.15.3 **IF** entry into shielded enclosure is necessary for inspection, **THEN** perform necessary steps in Section 4.2 **AND RETURN TO** Step 4.13.15.4, when complete.

4.13.15.4 Insert the cart enable/disable key **AND** turn it to the ENABLE position.

4.13.15.5 Perform manipulations of equipment as necessary to satisfy functional verification/post-maintenance testing.

## 5.0 DEFINITIONS

*Home position.* When the cart is completely outside of the enclosure and the x-ray manipulator and II manipulator are fully lowered.

*Liquids, observable (or liquid).* Liquid that can be seen by a trained radiography operator or by a trained individual performing visual examination or the waste. This term can be implemented consistently during characterization regardless of waste type.

*Operable.* A system, subsystem, train, component, or device shall be operable when it is capable of performing its specified safety function(s) and all the required instrumentation, controls, normal or alternate electrical power, cooling and seal water, lubrication, and other auxiliary equipment for the system, subsystem, train, component, or device to perform its specified safety function are capable of performing their related support function(s).

*Radiography.* A nondestructive testing method that uses x-rays to inspect and determine the physical form of waste.

*Summary Category S3000—Homogeneous Solids.* Homogeneous solids, or solid process residues, are defined as solid materials, excluding soil, that do not meet the NMED criteria for classification as debris (20.4.1.800 NMAC, Adoption of 40 CFR 268, (incorporating 40 CFR §268.2[g] and [h]). Included in the series of solid process residues are inorganic process residues, inorganic sludges, salt waste, and pyrochemical salt waste. Other waste streams are included in this summary category group based on the specific waste stream types and final waste form. This summary category group is expected to contain toxic metals and spent solvents. This category includes wastes that are at least 50 percent by volume solid process residues.

*Summary Category S4000—Soils/Gravel.* This summary category group includes S4000 waste streams that are at least 50% by volume soil/gravel. This summary category group is expected to contain toxic metals. Soils/gravel are further categorized by the amount of debris included in the matrix.

*Summary Category S5000—Debris Wastes.* This summary category group includes heterogeneous waste that is at least 50% by volume materials that meet the criteria specified in 20.4.1.800 NMAC (incorporating 40 CFR §268.2 [g]). Debris means solid material exceeding a 2.36 inch (60 millimeter) particle size that is intended for disposal (particles smaller than 2.36 inches in size may be considered debris if the debris is a manufactured object and if it is not a particle of S3000 or S4000 material) and is:

- A manufactured object
- Plant or animal matter
- Natural geologic material.

*Waste stream.* Waste materials that have common physical form that contain similar hazardous constituents and that are generated from a single process or activity.

## 6.0 REFERENCES


(1) 20.4.1.800 NMAC, Adoption of 40 CFR Part 268

(2) 40 CFR 268.2, Land Disposal Restrictions, Definitions Applicable in this Part

(3) 40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Subpart D Storage and Disposal

(4) ANSI-N43.3, General Radiation Safety Standard for Installations Using Non-Medical X-ray and Sealed Gamma Ray Sources, Energies up to 10 MeV

(5) AMWTP HWMA/RCRA Permit

(6) CCP-PO-003, CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)

(7) Form-1268, Production Systems Access Request

(8) GE Inspection Technologies Isovolt operating instructions

(9) INST-MI-1002, RTR 6-Month Safety Checks for RTR System Z-213-101 and Z-213-106

(10) INST-OI-11, Waste Container Handling

(11) INST-OI-24, Packaging Radioactive Waste

(12) MP-COPS-9.7, Control of Equipment and Systems Status

(13) MP-COPS-9.17, Performing Pre-Job Briefings and Post-Job Reviews

(14) MP-COPS-9.20, Hazardous Energy Control Processes

(15) MP-DOCS-18.2, Records Management

(16) MP-Q&SI-5.4, Identification of Nonconforming Conditions

(17) MP-RS&C-6.22, Radiological Survey Program

(18) MP-RTQP-14.4, Personnel Qualification and Certification

(19) MP-TRUW-8.1, Certification Plan for INL Transuranic Waste

(20) MP-TRUW-8.2, Quality Assurance Project Plan

(21) RPT-TRUW-05, Waste Matrix Code Reference Manual

## 7.0 RECORDS

Records generated by this procedure are classified in accordance with the table below and dispositioned in accordance with MP-DOCS-18.2, Records Management.

| Record Description | Classification |
|---|---|
| INST-OI-81, Case File | Non-permanent WIPP/ENV1-J-1/Destroy 75 years after submittal |
| Form-1218, Daily RTR Safety Checks | Facility Operating Record/ENV2-a-1-a/ Destroy 5 years after Life of Facility |
| Form-1374, RTR Log (or eSOMS equivalent) (Applicable Operator Log) | Facility Operating Record/ENV2-a-1-a/ Destroy 5 years after Life of Facility |
| Form-1377, WMF-634 RTR Shielding Radiation Survey | Facility Operating Record/ENV2-a-1-a / Destroy 5 years after Life of Facility |
| Form-1578, Imaging Quality Indicator Verification Form for RTR | Facility Operating Record/ENV2-a-1-a/ Destroy 5 years after Life of Facility |
| Recording Media Log | Nonpermanent WIPP/ENV1-J-1/Destroy 75 years after submittal |
| Recording media | Non-permanent WIPP/ENV1-J-1/Destroy75 years after submittal |

## 8.0 EXHIBITS

Exhibit 1 – RTR Image Test Quality Grid

Exhibit 2 – Waste Material Parameter Descriptions

Exhibit 3 – Parameters and Weights of Commonly Identified Items

Exhibit 4 – List of Prohibited Items

Exhibit 5 – Volumes of Cylinders

Exhibit 6 – Common Liquid Measurements and Conversions

Exhibit 7 – $V^2$ Nominal Density Guidance Table

Exhibit 8 – Volume Conversion Table, Cubic Inches to Pints

Exhibit 9 – Categorizing Box Contents During RTR Examination

**Exhibit 1 – RTR Image Test Quality Grid**

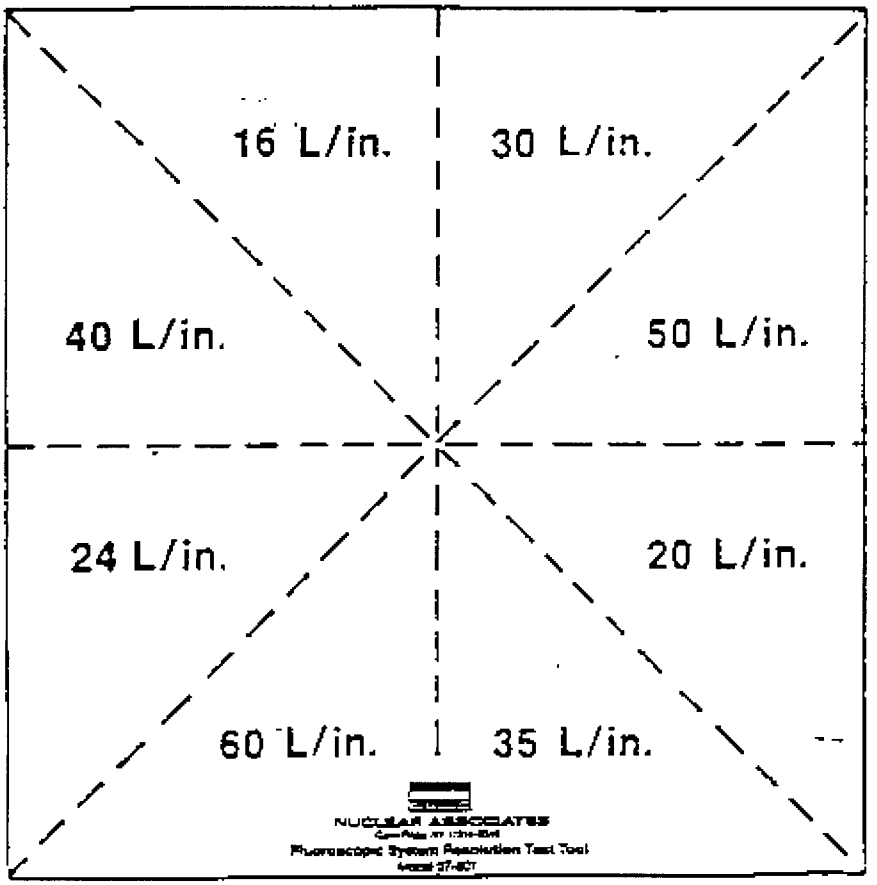

**Exhibit 2 – Waste Material Parameter Descriptions**

| Waste Material Parameter | Help Description |
|---|---|
| Iron-based metals/alloys | Iron and steel alloys in the waste; does not include the waste container materials |
| Aluminum-based metals/alloys | Aluminum or aluminum-based alloys in the waste material |
| Other metals | All other metals found in the waste materials |
| Other inorganic materials | Nonmetallic inorganic waste, including concrete, glass, firebrick, ceramics, sand, and inorganic sorbents |
| Cellulosics | Materials generally derived from high polymer plant carbohydrates. Examples are paper, cardboard, wood, cloth, etc. |
| Rubber | Natural or man-made elastic latex materials. Examples are surgeons' gloves, leaded rubber gloves, etc. |
| Plastics (waste materials) | Generally man-made materials often derived from petroleum feedstock. Examples are polyethylene, polyvinyl chloride, etc. |
| Organic matrix | Cemented organic resins, solidified organic liquids, and sludge |
| Inorganic matrix | Any homogeneous materials consisting of sludge or aqueous-based liquids that are solidified with cement, calcium silicate, or other solidification agents. Examples are wastewater treatment sludge, cemented aqueous liquids, inorganic particulate, etc. |
| Soil/gravel | Generally consists of naturally-occurring soil/gravel contaminated with inorganic waste materials |
| Steel (packaging materials) | 208-L (55-gal.) drums |
| Plastics (packaging materials) | 90-mil polyethylene drum line and plastic bags |

**Exhibit 3 – Parameters and Weights of Commonly Identified Items**

| Item | Weight | Waste Material Parameter |
|---|---|---|
| 55-gal drum (17 C) | See WTS List of Container Weights | Steel (packaging materials) |
| 90 mil liner (Type I, II, III, IV) | See WTS List of Liner Weights | Plastic (packaging materials) |
| O-ring plastic bag found in sludge, organic setups, etc. | 4 lb | Plastic (packaging materials) |
| Drum plastic bag | 1 lb | Plastic (packaging materials) |
| Plastic bag for waste | 1/4 lb | Plastic (waste materials) |
| Cardboard liner (graphite mold waste) | 4 lb | Cellulosics |
| Fiber pack | 6 lb | Cellulosics |
| Box fiberboard liner | 15 lb | Cellulosics |
| Box plastic liner | 5 lb | Plastic (packaging materials) |
| Lead Brick 2 by 4 by 8 in. | 25 lb | Other metals |
| Leaded Rubber Glove | 5.5 lb | Rubber |
| Leaded Rubber Apron | 5.25 lb | Rubber |
| Liquids (Water) | 8 lb/gal + (1 lb/pint)* | |
| Drum Lead-liner: (1/8 in. thick, 28 in. high, by 72 in. long) (0.4 lb/in.$^3$) | 100 lb | Other metals |
| Drum Lead-liner: (1/16 in. thick, 28 in. high by 72 in. long) | 50 lb | Other metals |
| Vermiculite (95 gm/liter) | 0.9 lb/gal (0.125 lb/pint) | Other Inorganics |
| Oil-Dri (404 gm/liter) | 3.36 lb/gal (0.42 lb/pint) | Other Inorganics |
| Poly Bottles (1 gal) | 1 lb | Plastics (waste materials) |
| Metal Can | 1/2 lb | Iron-based metals/alloys |
| Drum Stub bag | 2 lb | Plastic Packaging (materials) |
| Cured Cement | 9 lb/gal (1.125 lb/pint) | Other Inorganic Materials |
| Uncured Cement | 24 lb/gal (3 lb/pint) | Other Inorganic Materials |
| Aquaset | 9.6 lb/gal (1.21 lb/pint) | Other Inorganic Materials |

* Waste Parameter depends on source of liquid organic or inorganic.

## Exhibit 4 – List of Prohibited Items

| Prohibited Item | Comments |
|---|---|
| Liquids | Liquid Waste is not acceptable at WIPP. Observable liquid containing PCBs is prohibited at WIPP. Liquid in the quantities delineated below is acceptable:<br>• Observable liquid shall be less than 1% by volume of the outermost container at the time of radiography or visual examination.<br>• Internal containers with more than 60 milliliters or 3% by volume observable liquid, whichever is greater, are prohibited.<br>• Containers with Hazardous Waste Number U134 assigned shall have no observable liquid.<br>• Overpacking the outermost container that was examined during radiography or visual examination or redistributing untreated liquid within the container shall not be used to meet the liquid volume limits. |
| Compressed gases | Typically, aerosol cans, gas bottles, or cylinders that cannot be verified to be physically vented (e.g., a drilled hole, a removed relief valve). |
| Corrosives/reactives/ ignitables present | Waste exhibiting the characteristic of ignitability, corrosivity, or reactivity. |
| Explosives | Examples include ammunition, dynamite, black powder, detonators, nitroglycerine, urea nitrate, and picric acid. |
| Wastes with PCBs not authorized under an EPA PCB waste disposal authorization | Light ballasts **AND** transformers are potential sources of PCBs in much of the waste. PCB items commingled (in direct contact with or displaying evidence of cross contamination) with residual liquids are prohibited. |
| Non-radionuclide pyrophorics | Examples of pyrophoric radionuclides are: metallic plutonium, americium. Examples of non-radionuclide pyrophorics or materials/waste that may cause a pyrophoric type event are: organic peroxides, sodium metal, and chlorates. |
| Sealed containers greater than 4 liters | Containers >4 liters are considered sealed unless the container cannot be airtight (example: fiber-packs). |
| Non-mixed hazardous waste | Hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes). |
| Waste incompatible with backfill, seal and panel closure material, shipping container materials or other wastes | Excessive rust, brittle materials, excessive corrosion, evidence of reaction in the waste are all potential sources for evidence that the waste is not compatible with backfill, packaging, or shipping container. Compatible waste meets the TRUCON requirement. |
| Sharp or heavy items not blocked or braced | Sharp items that have a reasonable potential to puncture the payload container shall be treated or protected prior to shipment. (The presence of a properly assembled rigid or fiberboard liner is considered as one method of providing protection. Padding, when applicable, is also an acceptable method of providing protection.) Heavy items shall be blocked, braced, or suitably packaged to provide puncture protection for the payload containers packaging these objects. |

**(HWMA/RCRA Permit; MP-TRUW-8.1; MP-TRUW-8.2; CCP-PO-003)**

## Exhibit 5 – Volumes of Cylinders

| Volumes of Cylinders (pints) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Diameter (in.) | | | | | | | | | | | |
| Height (in.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | 0.03 | 0.11 | 0.24 | 0.44 | 0.68 | 0.98 | 1.33 | 1.74 | 2.20 | 2.72 | 3.29 | 3.92 |
| 2 | 0.05 | 0.22 | 0.49 | 0.87 | 1.36 | 1.96 | 2.67 | 3.48 | 4.41 | 5.44 | 6.58 | 7.83 |
| 3 | 0.08 | 0.33 | 0.73 | 1.31 | 2.04 | 2.94 | 4.00 | 5.22 | 6.61 | 8.16 | 9.87 | 11.75 |
| 4 | 0.11 | 0.44 | 0.98 | 1.74 | 2.72 | 3.92 | 5.33 | 6.96 | 8.81 | 10.88 | 13.16 | 15.67 |
| 5 | 0.14 | 0.54 | 1.22 | 2.18 | 3.40 | 4.90 | 6.66 | 8.70 | 11.02 | 13.60 | 16.46 | 19.58 |
| 6 | 0.16 | 0.65 | 1.47 | 2.61 | 4.08 | 5.88 | 8.00 | 10.44 | 13.22 | 16.32 | 19.75 | 23.50 |
| 7 | 0.19 | 0.76 | 1.71 | 3.05 | 4.76 | 6.85 | 9.33 | 12.19 | 15.42 | 19.04 | 23.04 | 27.42 |
| 8 | 0.22 | 0.87 | 1.96 | 3.48 | 5.44 | 7.83 | 10.66 | 13.93 | 17.63 | 21.76 | 26.33 | 31.33 |
| 9 | 0.24 | 0.98 | 2.20 | 3.29 | 6.12 | 8.81 | 12.00 | 15.67 | 19.83 | 24.48 | 29.62 | 35.25 |
| 10 | 0.27 | 1.09 | 2.45 | 4.35 | 6.80 | 9.793 | 13.33 | 17.41 | 22.03 | 27.20 | 32.91 | 39.17 |
| 11 | 0.30 | 1.20 | 2.69 | 4.79 | 7.48 | 10.77 | 14.66 | 19.15 | 24.24 | 29.92 | 36.20 | 43.08 |
| 12 | 0.33 | 1.31 | 2.94 | 5.22 | 8.16 | 11.75 | 15.99 | 20.89 | 26.44 | 32.64 | 39.49 | 47.00 |
| 13 | 0.35 | 1.41 | 3.18 | 5.66 | 8.84 | 12.73 | 17.33 | 22.63 | 28.64 | 35.36 | 42.79 | 50.92 |
| 14 | 0.38 | 1.52 | 3.43 | 6.09 | 9.52 | 13.71 | 18.66 | 24.37 | 30.84 | 38.08 | 46.08 | 54.84 |
| 15 | 0.41 | 1.63 | 3.67 | 6.53 | 10.20 | 14.69 | 19.99 | 26.11 | 33.05 | 40.80 | 49.37 | 58.75 |

**Exhibit 6 – Common Liquid Measurements and Conversions**

| Liquid Measurements | |
|---|---|
| 1. | 3 tsp = 1 tbsp |
| 2. | 4 tbsp = 1/4 cup |
| 3. | 2 cups = 1 pint |
| 4. | 4 cups = 1 qt |
| 5. | 2 pints = 1 qt |
| 6. | 8 pints = 1 gal |
| 7. | 4 quarts = 1 gal |
| 8. | Pints × 0.473 = liters |
| 9. | Millilitres × 1000 = liters |
| 10. | 60 ml = .127 pints |
| 11. | 1 pint = 1 lb |

| Conversions | | |
|---|---|---|
| Unit | Conversions to Pints | Weight (lb) |
| 1 teaspoon | 0.01 | 0.01 |
| 1 tablespoon | 0.03 | 0.03 |
| 1/4 cup | 0.13 | 0.13 |
| 1/3 cup | 0.17 | 0.17 |
| 1 cup | 0.5 | 0.5 |
| 1 pint | 1 | 1 |
| 1 quart | 2 | 2 |
| 1 gal | 8 | 8 |

## Exhibit 7 – $V^2$ Nominal Density Guidance Table

| Material | Density (kg/L) | References |
|---|---|---|
| Aluminum | 3.0 | 1, 2 |
| Cement | 2.0 | 1 |
| Cardboard (fiber board) | 0.8 | 5 |
| Copper | 9.0 | 1, 2 |
| Fiber board (insulating) | 0.8 | 4 |
| Fire Brick (90% aluminum oxide) | 3.0 | 4 |
| Glass | 2.0 | 3 |
| Glass, Bulk Density | 2.0 | 3 |
| Glass, Raschig Rings (0.06 kg/ring) | 0.6 | 4 |
| Graphite, Bulk Density | 0.5 | 3 |
| Gravel | 2.0 | 3 |
| Iron | 7.5 | 2 |
| Lead | 11.0 | 1, 2 |
| Plastic (e.g., 10 ml liner material) | 0.9–1.0 | Calculated |
| Plastic (e.g., 90 ml heavy rigid liner material) | 0.9–1.0 | Calculated |
| Rubber | 0.9–2.0 | 2 |
| Sand | 2.0 | 3 |
| Sludge | 1.0–1.5 | Common Knowledge |
| Soil | 1.0–1.8 | 2 |
| Stainless Steel | 8.0 | 1 |
| Steel | 8.0 | 1, 2 |
| Tantalum | 17.0 | 2 |
| Wood (fir, oak, pine, avg.) | 1.0 | 3 |
| Water | 1.0 | 1.3 |

The actual density of specific metals or wood types may vary due to the type of wood or the composition of the metal alloy.
Water has a nominal density of 1 kg/L
1 kilogram = 2.2 pounds

References
1. Shigley, J. E., Mechanical Engineering Design, 3rd ed. 636
2. Marks Standard Handbook for Mechanical Engineers, 8th ed. 6-60/61
3. Perry, John H., Chemical Engineers Handbook, 3rd ed. 1549-52
4. Harbison-Walker Refractories Co., Technical Bulletin 12, HU
5. Rocky Flats procedure, 4-119-NDT-00569

## Exhibit 8 – Volume Conversion Table, Cubic Inches to Pints

| $in^3$ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | .04 | .07 | .10 | .14 | .17 | .21 | .24 | .28 | .31 | .35 | .38 | .42 | .45 | .49 | .52 | .55 | .59 | .62 | .66 | .69 | .73 | .76 |
| 2 | .07 | .14 | .21 | .28 | .35 | .42 | .49 | .55 | .62 | .69 | .76 | .83 | .9 | .97 | 1.04 | 1.12 | 1.18 | 1.25 | 1.32 | 1.41.395 | 1.45 | 1.52 |
| 3 | .1 | .17 | .31 | .42 | .52 | .62 | 73 | .83 | .94 | 1.04 | 1.14 | 1.25 | 1.35 | 1.45 | 1.56 | 1.66 | 1.77 | 1.87 | 1.97 | 2.08 | 2.18 | 2.29 |
| 4 | .14 | .28 | .42 | .55 | .69 | .83 | .97 | 1.12 | 1.25 | 1.39 | 1.52 | 1.66 | 1.8 | 1.94 | 2.08 | 2.22 | 2.36 | 2.49 | 2.63 | 2.77 | 2.91 | 3.05 |
| 5 | .17 | .35 | .52 | .69 | .87 | 1.04 | 1.21 | 1.39 | 1.56 | 1.73 | 1.9 | 2.08 | 2.25 | 2.42 | 2.6 | 2.77 | 2.94 | 3.12 | 3.29 | 3.46 | 3.64 | 3.81 |
| 6 | .21 | .42 | .62 | .83 | 1.04 | 1.25 | 1.45 | 1.66 | 1.87 | 2.08 | 2.29 | 2.49 | 2.7 | 2.9 | 3.12 | 3.32 | 3.53 | 3.74 | 3.95 | 4.16 | 4.36 | 4.57 |
| 7 | .24 | .49 | .73 | .97 | 1.21 | 1.45 | 1.7 | 1.94 | 2.19 | 2.42 | 2.67 | 2.91 | 3.15 | 3.39 | 3.64 | 3.88 | 4.12 | 4.36 | 4.61 | 4.85 | 5.09 | 5.33 |
| 8 | .28 | .55 | .83 | 1.11 | 1.39 | 1.66 | 1.94 | 2.22 | 2.49 | 2.77 | 3.05 | 3.32 | 3.61 | 3.88 | 4.16 | 4.43 | 4.71 | 4.99 | 5.26 | 5.54 | 5.82 | 6.1 |
| 9 | .31 | .62 | .94 | 1.25 | 1.56 | 1.87 | 2.18 | 2.49 | 2.81 | 3.12 | 3.43 | 3.74 | 4.05 | 4.36 | 4.68 | 4.99 | 5.3 | 5.61 | 5.92 | 6.23 | 6.66 | 6.86 |
| 10 | .35 | .69 | 1.04 | 1.39 | 1.73 | 2.08 | 2.42 | 2.77 | 3.12 | 3.46 | 3.81 | 4.16 | 4.5 | 4.85 | 5.19 | 5.54 | 5.89 | 6.23 | 6.58 | 6.92 | 7.27 | 7.62 |
| 11 | .38 | .76 | 1.14 | 1.52 | 1.9 | 2.29 | 2.67 | 3.05 | 3.43 | 3.81 | 4.19 | 4.57 | 4.95 | 5.33 | 5.71 | 6.1 | 6.48 | 6.86 | 7.24 | 7.62 | 8 | 8.38 |
| 12 | .42 | .83 | 1.25 | 1.66 | 2.08 | 2.49 | 2.91 | 3.32 | 3.74 | 4.16 | 4.57 | 4.99 | 5.4 | 5.82 | 6.23 | 6.65 | 7.06 | 7.48 | 7.98 | 8.31 | 8.73 | 9.14 |
| 13 | .45 | .9 | 1.35 | 1.8 | 2.25 | 2.7 | 3.15 | 3.61 | 4.05 | 4.5 | 4.95 | 5.4 | 5.85 | 6.3 | 6.75 | 7.2 | 7.65 | 8.1 | 8.55 | 9 | 9.45 | 9.9 |
| 14 | .49 | .97 | 1.45 | 1.94 | 2.42 | 2.9 | 3.39 | 3.88 | 4.36 | 4.85 | 5.33 | 5.82 | 6.3 | 6.79 | 7.27 | 7.76 | 8.24 | 8.72 | 9.21 | 9.7 | 10.18 | 10.67 |
| 15 | .52 | 1.04 | 1.56 | 2.08 | 2.6 | 3.12 | 3.64 | 4.16 | 4.68 | 5.19 | 5.71 | 6.23 | 6.75 | 7.27 | 7.79 | 8.31 | 8.83 | 9.35 | 9.87 | 10.39 | 10.91 | 11.43 |
| 16 | .55 | 1.12 | 1.66 | 2.22 | 2.77 | 3.32 | 3.88 | 4.43 | 4.99 | 5.54 | 6.1 | 6.65 | 7.2 | 7.76 | 8.31 | 8.87 | 9.42 | 9.97 | 10.53 | 11.08 | 11.64 | 12.19 |
| 17 | .59 | 1.18 | 1.77 | 2.36 | 2.94 | 3.53 | 4.12 | 4.71 | 5.3 | 5.89 | 6.48 | 7.06 | 7.65 | 8.24 | 8.83 | 9.42 | 10 | 10.6 | 11.18 | 11.77 | 12.36 | 12.95 |
| 18 | .62 | 1.25 | 1.87 | 2.49 | 3.12 | 3.74 | 4.36 | 4.99 | 5.61 | 6.23 | 6.86 | 7.48 | 8.1 | 8.72 | 9.35 | 9.97 | 10.6 | 11.22 | 11.84 | 12.47 | 13.09 | 13.71 |
| 19 | .66 | 1.32 | 1.97 | 2.63 | 3.29 | 3.95 | 4.61 | 5.26 | 5.92 | 6.58 | 7.24 | 7.9 | 8.55 | 9.21 | 9.87 | 10.53 | 11.18 | 11.84 | 12.5 | 13.16 | 13.82 | 14.48 |
| 20 | .69 | 1.39 | 2.08 | 2.77 | 3.46 | 4.16 | 4.85 | 5.54 | 6.23 | 6.92 | 7.62 | 8.31 | 9 | 9.7 | 10.39 | 11.08 | 11.77 | 12.47 | 13.16 | 13.85 | 14.55 | 15.24 |
| 21 | .73 | 1.45 | 2.18 | 2.91 | 3.64 | 4.36 | 5.09 | 5.82 | 6.55 | 7.27 | 8 | 8.73 | 9.45 | 10.18 | 10.91 | 11.64 | 12.36 | 13.09 | 13.82 | 14.55 | 15.27 | 16 |
| 22 | .76 | 1.52 | 2.29 | 3.05 | 3.81 | 4.57 | 5.33 | 6.1 | 6.86 | 7.62 | 8.38 | 9.14 | 9.9 | 10.67 | 11.43 | 12.19 | 12.95 | 13.71 | 14.48 | 15.24 | 16 | 16.76 |

A. Multiply the cross-section volume in the table by the height of the object to get the volume of the object in pints. The cross-section volume is based on a height of 1 inch.

**Exhibit 9 – Categorizing Box Contents During RTR Examination**

| CATEGORY<br>ITEM | Packaging Material | Layer of Confinement | Waste Material |
|---|---|---|---|
| **Plastic Drum Bag** | * | X | |
| **90-mil Liner** | X | | |
| **Small Plastic Bag Containing Waste** | * | X | |
| **Poly Bottle <4 liters** | | | X |
| **Fiber Pack** | | | X |
| **Volrath Can <4 liters** | | | X |
| **Metal Can <4 liters** | | | X |
| **Empty Plastic Bag** | | | X |
| **Ice Cream Carton** | | | X |
| **Sealed containers >4 liters** | | X | |

* Only plastic bags (PVC or poly) in the outer two layers are considered plastic packaging materials, the others are considered plastic waste.

## 9.0 APPENDICES

Appendix A – Burning DVD from Hard Drive

Appendix B – Creating or Transferring Data to the RITA Archival System

Appendix C - Revision Log

## Appendix A – Burning DVD from Hard Drive

**NOTE:** *This appendix is used to provide information for burning data from the hard drive onto a DVD.*

1. Start by clicking the "Nero Essentials" icon on the desktop.

2. Highlight the data DVD button by double clicking it. (This program will burn the DVD from the hard drive.)

**NOTE:** *The Nero essentials will open and have a button on the right hand side of the window titled ADD.*

3. After selecting the ADD button, a folder window will open with the recorded data.

4. File the applicable file or folder.

5. Highlight the box(es) and IQI, if needed, to be burned to the DVD **AND** click the ADD button.

6. Ensure there is enough memory on the DVD for selected file. If not, insert a new DVD.

7. After all items to be burned to DVD have been added, close the folder containing all the data.

8. Hit the NEXT button.

9. Name the disc with the batch number being burned to the DVD, if necessary.

10. Ensure that "Verify data on disc after burning" and "Multi-session" boxes are checked.

11. Select the burn button. If DVD does not have enough space for selected file, then insert new DVD and continue.

12. After the burn is complete, select "OK" to "Data Verification Completed Successfully."

13. Select NEXT.

14. Exit "Nero Essentials."

15. Re-insert disc and wait for "My Disc" window to open.
16. Select previously burned file and check the audio/video record for completeness.
17. Exit "My Disc" folder.
18. Create a folder with the batch number as the folder name, if necessary.
19. Move previously burned file(s) to batch folder.

## Appendix B – Creating or Transferring Data to the RITA Archival System

1. Double click RITA icon, if necessary.

2. If needing to create a disk, click CREATE.

   2.1 Select the type of disk to be created and select CREATE.

   **NOTE 1:** *After confirming, a window will pop up informing if you are successful or if there is a problem with the creation of the disc.*

   **NOTE 2:** *After clicking CANCEL, the program will return you to the first screen of RITA.*

   2.2 If information is correct, click CONFIRM.

   2.3 If information is incorrect, click CANCEL.

   2.4 Click OK to acknowledge creation of the disk ID.

3. If needing to transfer data, click TRANSFER

   **NOTE:** *While data is transferring, the RITA window can be minimized.*

   3.1 Select disk ID to be transferred and select TRANSFER

   3.2 Input batch ID if disk is associated with a batch, and N/A if it is not.

   3.3 Click TRANSFER.

   3.4 If transfer is unsatisfactory, contact SS/subject matter expert/SE.

   3.5 If transfer is complete and satisfactory, click OK.

## Appendix C – Revision Log

| Revision Number | Date Approved | Pages Affected | Description of Revision |
|---|---|---|---|
| 0 | 04/08/08 | All | DCR-6867. Initial issue. |
| 1 | 08/11/08 | All | DCR-7359. Incorporated DOCS-BLUESHEET-01 changes, revised Section 2.0 to be specific to procedure, revised Sections 4.2, 4.4, 4.6, 4.7, 4.8 per upgrades to procedure, deleted Section 4.13, revised Section 7.0, updated roll-downs, replaced the magneto optical disc with recording media, added updates for the IQI, added Appendix A, made editorial changes per MP-DOCS-18.1. |
| 2 | 01/29/09 | Various | DCR-7644. Incorporated DSA changes and edited per MP-DOCS-18.1 and reformatted per MP-DOCS-18.4. |
| 2 FC-1 | 03/19/09 | 7 and 41 | DCR-8178. Clarification and match software terminology. |
| 3 | 04/27/09 | Various | DCR-8267. Incorporated changes for consistency with INST-OI-12 and to improve flow. Incorporate FC-1 (DCR-8178) to make FC permanent. Made editorial changes for consistency within document and per MP-DOCS-18.1. Incorporated DOCS-Bluesheet-02 changes (eSOMS equivalent). (Revision considered a rewrite due to number of rev bars.) |
| 4 | 11/18/09 | Various | DCR-8729. Incorporated 2009 DSA/TSR update. |

| Revision Number | Date Approved | Pages Affected | Description of Revision |
|---|---|---|---|
| 5 | 02/22/10 | Various | DCR-9007. Changes to clarify IQI requirements. |
| 5 FC-1 | 04/28/10 | B1 | DCR-9208. Changed RTR ratings for RTRs 101 and 106. |
| 5 FC-2 | 05/10/10 | Pg 5 | DCR-9249. Change made to resolve CAR 49662, incorporating alternative isolation device information. |
| 5 FC-3 | 06/19/10 | Pgs 12, 13, and 14 B1 | DCR-9376. Change made to warm-up steps and RTR 106 kV settings. |
| 6 | 06/24/10 | Various | DCR-9138. Incorporated DCRs-9208 -9249, and -9376 (EXCEPT for the RTR kV changes), and WIPP Permit modifications. |
| 6 FC-1 | 08/02/10 | Various | DCR-9454. Allow de-rate of maximum power by System Engineer and Document owner. |
| 6 FC-2 | 09/30/10 | Various | DCR-9568. Provides formal direction to operators. |
| 7 | 12/15/10 | Various | DCR-9497. Incorporated FC-1 (DCR-9454) and FC-2 (DCR-9568). Incorporate the new WIPP Hazardous Waste Permit language changes. Also corrected inconsistencies in FCs compared to OI-12 FCs. |
| 8 | 06/21/11 | Various | DCR-10139. Changed to Controlled Activity. Updated steps and notes to match operational changes. Added clarification to reduce NCRs and to minimize rework. Resolves CAR 54805. |
| 9 | 07/03/12 | Various | DCR-11144. Revised to incorporate ITG-Bluesheet-021, update document owner and equipment upgrades, including changing the II to FP. |
| 10 | 08/06/12 | Various | DCR-11431. Incorporated DSA changes. |