

WP 05-WH1706

Revision 11

Preparation of an Empty RH-TRU 72-B Cask for Shipment

Technical Procedure

EFFECTIVE DATE: 01/28/11

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APPROVED FOR USE

CONTINUOUS USE PROCEDURE

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CHANGE HISTORY SUMMARY

REVISION NUMBER	DATE ISSUED	DESCRIPTION OF CHANGES
11	01/28/11	<p>Added bullet in Precautions and Limitations for the AJHA PROD for this procedure.</p> <p>Added bullet in Precautions and Limitations for the installation of new shipping labels.</p> <p>Added Note in Prerequisite Actions above Step 1.0 that actions may be performed in any order as long as radiological control sign-offs are not bypassed.</p> <p>Added Note above Step 2.7 that Steps 2.7, impact limiter inspection, and 2.8, preshipment inspections, may be performed at anytime during performance of this procedure.</p> <p>Deleted Step 3.1.8 and 3.1.10 for torquing of IV seal test port bolts and backfill port closure bolts and sign-offs for Att. 1.</p> <p>Deleted Step 3.2.8 torque OC seal test port closure bolts and sign-off for Att. 1.</p> <p>Deleted Step 4.3, install trunnion bushings on RH-TRU 72-B lifting trunnions, if needed and sign-off for Att. 1.</p>

INTRODUCTION^{1, 2}

This procedure provides instructions for performing an inspection of the remote-handled transuranic (RH-TRU) 72-B, and instructions for assembling an empty RH-TRU 72-B for shipment.

Performance of this procedure generates the following record(s), as applicable. Any records generated are handled in accordance with departmental Records Inventory and Disposition Schedules.

- Attachment 1 - Empty RH-TRU 72-B Data Sheet

REFERENCES

BASELINE DOCUMENTS

- 10 Code of Federal Regulations (CFR) Part 71, "Packaging and Transportation of Radioactive Material"
- 10 CFR Part 835, "Occupational Radiation Protection"
- DOE Standard 1090-2007, Hoisting and Rigging
- DOE Order 5400.5, Radiation Protection of the Public and the Environment
- NRC-Docket-71-9212, RH-TRU 72-B Certificate of Compliance
- NRC-Docket-71-9212, Safety Analysis Report for the RH-TRU 72-B Waste Shipping Package
- DOE/WIPP-02-3283, RH Packaging Program Guidance
- WP 08-PT.03, WIPP Quality Assurance Plan for Type "B" Packaging
- WP 13-1, Washington TRU Solutions LLC Quality Assurance Program Description

REFERENCED DOCUMENTS

- DOE/WIPP 02-3284, RH Packaging Operations
- WP 05-WH1701, Road Cask Transfer Car Operation
- WP 05-WH1710, 72-B RH Processing
- WP 05-WH1714, RH Cask Preparation Station, 41-Z076

- WP 05-WH1741, 140/25-Ton Remote Handling Crane 41-T-001
- WP 05-WH1746, 2.5-Ton Jib Crane 41-T-201
- WP 12-HP1100, Radiological Surveys
- WP 12-HP4000, Emergency Radiological Control Responses

EQUIPMENT

- Calibrated torque wrenches
- Calibrated Load Cell
- Lint-free rags
- Denatured alcohol
- Appropriate rigging for lid operation
- Dow Corning™ high-vacuum grease or equivalent
- Outer containment vessel (OC) lid lift fixture
- Nut runner (if applicable)
- Wet/Dry Vacuum

PRECAUTIONS AND LIMITATIONS

- Personnel performing this procedure must be familiar with AJHA PROD-301.
- Only personnel qualified on the RH-TRU 72-B as a Waste Handling Technician/Engineer (WHT/WHE), or trainees operating under the direct supervision of a RH-TRU 72-B qualified WHT/WHE, are authorized to perform the waste handling (WH) activities specified in this procedure.
- Components of one RH-TRU 72-B may not be interchanged with components of another RH-TRU 72-B.
- WHE and Quality Assurance (QA) are to be notified of any abnormal conditions found during inspections.
- RH packaging identified as "out of service" must be tagged as such, with an equipment inactivation tag, QA hold tag, or Transportation Operations, out of service tag.

- Transportation Operations Engineer must be notified of any packages identified as "out of service."
- If procedure cannot be performed as written, WHE shall be contacted.
- Any step that results in N/A on Attachment 1 must be initialed by person performing step.
- The removal of old shipping labels and installation of appropriate new labels may be done at any time during the performance of this procedure.
- Performers of procedure may print, sign, initial, and place date on Attachment 1 at any time during the performance of this procedure.
- Hearing and eye protection must be worn when using impact wrench.
- Performance of this procedure will begin at the cask prep-stand with the RH-TRU 72-B OC Lid removed, per applicable processing procedure.
- Radiological surveys must be performed in accordance with WP 12-HP1100.

PREREQUISITE ACTIONS

NOTE

Prerequisite actions must be performed, but may be performed in any order and in parallel as long as radiological control sign-offs are not bypassed.

1.0 WHE, ensure the following:

- Road Cask Transfer Car preoperational checks are completed.
- 2.5-Ton Jib Crane, 41-T-201, preoperational checks are completed.
- RH Cask Preparation Station, 41-Z076, preoperational checks are completed.
- 140/25-Ton Remote Handling Crane, 41-T-001, preoperational checks are completed, if applicable.

2.0 Record the following on Attachment 1:

- Inner containment vessel (IV) lid closure bolt torque wrench identification (ID) number and calibration due date
- OC lid closure bolt torque wrench ID No. and calibration due date

- Port Closure bolt torque wrench ID No. and calibration due date
- Load Cell ID No. and calibration due date

SIGN-OFF WH**PERFORMANCE**

1.0 RH-TRU 72-B CONTAMINATION SURVEY

- 1.1 WH, record RH-TRU 72-B serial number (S/N) on Attachment 1.

SIGN-OFF WH

- 1.2 WH, verify packaging maintenance is current by checking maintenance labels adjacent to name plate, if date is past due or within 2 weeks of shipment date contact WHE for resolution.

SIGN-OFF WH

- 1.3 Radiological Control Technician (RCT), record survey number/date on Attachment 1.

SIGN-OFF RCT

NOTE

Section 2.0 must be completed, but steps may be performed in any order as long as radiological control steps are not bypassed.

2.0 RH-TRU 72-B PRESHIPMENT INSPECTIONS

- 2.1 RCT, **IF** any of the contamination surveys required by Steps 2.2.1, 2.2.7, 2.4.1, or 2.7.1 have been previously completed, AND results are below contamination limits, **THEN** complete Steps 2.2.1[C], 2.2.7[C], 2.4.1[C], or 2.7.1[C] as applicable.

2.2 IV Lid Removal

- 2.2.1 RCT, if contamination swipes have not been previously completed on exterior of the IV lid, perform the following per WP 12-HP1100:

- [A] Complete contamination swipes on exterior of the IV lid.
- [B] Monitor swipes for gross levels of activity.

[C] Verify activity on swipes is below the acceptable limits.

SIGN-OFF RCT

- 2.2.2 Remove IV lid alignment tool, if attached.
- 2.2.3 Remove IV lid lift fixture, if attached.
- 2.2.4 Connect OC lid lift fixture or Ultra Light lid lift fixture, and load cell to the IV lid.

CAUTION

Exceeding a load cell indication of 2,390 lb may damage the IV lid lift socket. The average weight of IV lid is 1,330 lb.

- 2.2.5 Remove the IV lid.
IF the lid does not release,
THEN contact WHE.
- 2.2.6 WH, place the IV lid on the storage stand.
- 2.2.7 RCT, if contamination swipes have not been completed on IV body interior, perform the following per WP 12-HP1100:
 - [A] Complete contamination swipes on IV body interior.
 - [B] Monitor swipes for gross levels of activity.
 - [C] Verify activity on swipes is below the acceptable limits.

SIGN-OFF RCT

NOTE

Steps 2.3 through 2.6.5 must be completed. They may be performed in any order, as applicable.

2.3 IV Lid Inspection

- 2.3.1 WH, inspect IV lid for the following:
 - Visible deformation
 - Abnormal flat spots or dents > ½ in.
 - Abnormal scratches or gouges
 - Distortion on or around lifting attachments

- 2.3.2 Remove, clean, and inspect the following for deformation, scratches, and/or burrs:
- IV seal test port closure bolt
 - IV backfill port closure bolt
 - IV gas sampling port closure bolt
 - IV lid closure bolt springs
 - IV lid closure bolts
 - IV seal test port closure bolt O-ring
 - IV backfill port closure bolt O-ring
 - IV gas sampling port closure bolt O-rings
- 2.3.3 Clean and inspect the following components for deformation, scratches, and/or burrs:
- Closure bolt threads on lid
 - Seal test port insert threads and seal surfaces
 - Gas sampling port insert threads and seal surfaces
 - Backfill port insert threads and seal surfaces
 - IV lid end forging
- 2.3.4 **IF** port closure bolts are damaged, **THEN** contact the WHE **AND** record findings in the "Remarks" section on Attachment 1.
- 2.3.5 **IF** port closure bolt O-rings are damaged, **THEN** contact the WHE **AND** record findings in the "Remarks" section on Attachment 1.
- 2.3.6 Apply high-vacuum grease sparingly, to all O-rings that were inspected.
- 2.3.7 Apply nickel bearing lubricant sparingly to IV lid closure bolts and reinstall the IV lid closure bolts and the IV lid closure bolt springs into the IV lid.
- 2.3.8 Remove, clean, and inspect all IV lid main O-rings for the following:
- Cleanliness (no visible dirt or debris)
 - Damage (voids, cracks, flat spots, and gouges)
- 2.3.9 Clean and inspect all IV lid O-ring groove sealing surfaces.
- 2.3.10 Clean IV lid with lint-free rags and alcohol.

- 2.3.11 **IF** O-ring groove sealing surfaces are damaged, **THEN** contact the WHE **AND** record findings in the "Remarks" section on Attachment 1.
- 2.3.12 Exchange IV lid middle O-ring with corresponding IV lid middle O-ring from the storage cabinet, as applicable.
- If there is no IV lid middle O-ring in the drawer, then establish new O-ring following applicable work instruction.
 - If needed, clean IV lid middle O-rings removed from storage cabinet with lint-free rags and alcohol and inspect for damage or defects.
- 2.3.13 **IF** O-rings are damaged, **THEN** contact the WHE **AND** record findings in the "Remarks" section on Attachment 1.
- 2.3.14 **IF** lid O-rings are acceptable after cleaning, **THEN** apply high-vacuum grease sparingly, **AND** install O-rings.
- 2.3.15 Initial Attachment 1 to document IV lid components and hardware are satisfactory.

SIGN-OFF WH

2.4 OC Lid Inspection

- 2.4.1 RCT, if contamination swipes have not been previously completed on interior and exterior of the OC lid, perform the following per WP 12-HP1100:
- [A] Complete contamination swipes on interior and exterior of the OC lid.
 - [B] Monitor swipes for gross levels of activity.
 - [C] Verify activity on swipes is below the acceptable limits.

SIGN-OFF RCT

- 2.4.2 WH, inspect OC lid for the following:
- Visible deformation
 - Abnormal flat spots or dents > ½ in.
 - Abnormal scratches or gouges
 - Distortions on or around lifting tabs

- 2.4.3 Remove, clean and inspect the following components for deformation, scratches, and/or burrs:
- OC seal test port closure bolt
 - OC gas sampling port closure bolt
 - OC lid closure bolts
 - OC seal test port closure bolt O-ring
 - OC gas sampling port closure bolt O-ring
- 2.4.4 Clean and inspect the following for deformation, scratches, and burrs:
- OC seal test port insert threads and seal surfaces
 - OC gas sampling port insert threads and seal surfaces
- 2.4.5 **IF** port closure bolts are damaged,
THEN contact the WHE **AND** record findings in the "Remarks" section on Attachment 1.
- 2.4.6 **IF** port closure bolt O-rings are damaged,
THEN contact the WHE **AND** record findings in the "Remarks" section on Attachment 1.
- 2.4.7 **IF** port closure bolt O-rings are acceptable after cleaning,
THEN apply high-vacuum grease sparingly and re-install onto bolts.
- 2.4.8 Remove, clean, and inspect all OC lid main O-rings for the following:
- Cleanliness (no visible dirt or debris)
 - Damage (void, cracks, flat spots, and gouges)
- 2.4.9 Clean and inspect all OC lid O-ring groove sealing surfaces.
- 2.4.10 Clean OC lid with lint-free rages and alcohol.
- 2.4.11 **IF** O-ring groove sealing surfaces are damaged,
THEN contact the WHE **AND** record findings in the "Remarks" section on Attachment 1.
- 2.4.12 Exchange OC lid inner (lower) O-ring with corresponding OC lid inner O-ring from the storage cabinet, as applicable.
- If there is no OC lid inner (lower) O-ring in drawer, then establish new O-ring following work instruction.

- Clean O-rings with lint-free rags and alcohol and inspect for damage or defects.
- 2.4.13 **IF** O-rings are damaged,
THEN contact the WHE, AND record findings in the "Remarks" section on Attachment 1.
- 2.4.14 **IF** O-rings are acceptable after cleaning,
THEN apply high-vacuum grease sparingly, AND install O-rings.
- 2.4.15 Apply nickel bearing lubricant sparingly to OC lid closure bolts.
- 2.4.16 Initial Attachment 1 to document OC lid components and hardware are satisfactory.

SIGN-OFF WH

2.5 OC and IV Body Inspection

- 2.5.1 Inspect the OC body exterior for the following:
- Punctures
 - Abnormal flat spots or dents > ½ in.
 - Abnormal scratches or gouges
 - Distortion on or around lifting attachments
- 2.5.2 Clean and inspect the following for deformation, scratches, and/or burrs on the IV and OC body:
- Alignment pins
 - Closure bolt thread inserts
 - O-ring sealing surfaces on body
- 2.5.3 Initial Attachment 1 to document OC and IV body components and hardware are satisfactory.

SIGN-OFF WH

2.6 IV Cavity Inspection

- 2.6.1 Inspect IV cavity for debris and obvious damage and clean as required.
- 2.6.2 Inspect IV cavity for water.
- 2.6.3 **IF** water or debris is **NOT** in IV,
THEN GO TO Step 2.6.5.

2.6.4 **IF** water or debris IS in IV,
THEN GO TO DOE/WIPP-02-3284, perform Subsection 4.1
AND RETURN TO Step 2.6.5.

2.6.5 Initial Attachment 1 to document IV cavity is satisfactory.

SIGN-OFF WH

NOTE

Substeps of Step 2.7 may be performed at anytime during the performance of this procedure.

2.7 Impact Limiter Inspection

2.7.1 RCT, if contamination swipes have not been previously completed on the impact limiter, perform the following per WP 12-HP1100:

- [A] Complete contamination swipes on the impact limiter.
- [B] Monitor swipes for gross levels of activity.
- [C] Verify activity on swipes is below the acceptable limits.

SIGN-OFF RCT

2.7.2 WH, remove any foreign material from attachment bolts and inspect for thread damage.

2.7.3 Apply nickel bearing lubricant to threads and underside of head on impact limiter attachment bolts.

2.7.4 Inspect the impact limiters for:

- Punctures
- Abnormal flat spots or dents > ½ in.
- Abnormal gouges or scratches
- Distortion on or around lifting attachments
- Plastic burnout plugs (3) in place
- No foreign material in attachment bolt access holes

2.7.5 Clean and inspect lifting attachments.

2.7.6 **IF** impact limiters are damaged,
THEN contact the WHE, **AND** record findings in the "Remarks" section on Attachment 1.

- 2.7.7 Initial Attachment 1 to document impact limiters and hardware are satisfactory.

SIGN-OFF WH

- 2.8 Verify all preshipment inspections are complete.

SIGN-OFF WH

3.0 CLOSING A RH-TRU 72-B

3.1 IV Lid Installation.

- 3.1.1 Match IV lid and OC body S/Ns and record on Attachment 1.

SIGN-OFF WH

- 3.1.2 Connect OC lid lift fixture, or Ultra Light lid lift fixture, and load cell to IV lid.

CAUTION

Exceeding a load cell indication of 2,390 lb may damage the IV lid lift socket. The average weight of IV lid is 1,330 lb.

- 3.1.3 Install IV lid.

- 3.1.4 Disconnect lift fixture from IV lid.

NOTE

Port closure bolts may be installed in any order and in parallel with lid closure bolts.

- 3.1.5 Install eight IV lid closure bolts on the IV lid until bolts are tight.

- 3.1.6 Torque eight IV lid closure bolts in a star pattern, following the numbering system on the lid, to 100 to 200 ft-lb.

SIGN-OFF WH

- 3.1.7 Install the following:
- IV seal test port closure bolt(s)
 - IV backfill port closure bolt(s)
 - IV gas sampling port closure bolt(s)

- 3.1.8 Torque all IV port closure bolt(s) to 15 to 20 ft-lb.

SIGN-OFF WH

- 3.2 OC Lid Installation

- 3.2.1 Match OC lid and OC body S/Ns and record on Attachment 1.

SIGN-OFF WH

- 3.2.2 Connect OC lift fixture, or Ultra Light lift fixture, and load cell to OC lid.

CAUTION

Exceeding a load cell indication of 3,670 lb may damage the OC lid lift socket. The average weight of OC lid is 1,670 lb.

- 3.2.3 Install OC lid.

- 3.2.4 Remove lift fixture from OC lid.

CAUTION

To ensure proper sealing, OC lid closure bolt torque shall be applied in three steps of approximately 220 ft-lb per load step. If a nut runner is being used, each of the three torque settings should be obtained by setting the regulator to the corresponding air pressure, using the scroll arrows to scroll to the targeted torque, and pressing the ENTER key to confirm.

NOTE

Port closure bolts may be installed in any order and in parallel with lid closure bolts.

- 3.2.5 Install 18 OC lid closure bolts on the OC lid until bolts are tight against lid.

- 3.2.6 Torque 18 OC lid closure bolts, following the numbering system on the lid, to 600 to 700 ft-lb.

SIGN-OFF WH

3.2.7 Install the following:

- OC seal test port closure bolt(s)
- OC gas sampling port closure bolt(s)

3.2.8 Torque all OC port closure bolt(s) to 15 to 20 ft-lb.

SIGN-OFF WH

3.3 Record on Attachment 1 that RH-TRU 72-B empty shipment closure is complete.

SIGN-OFF WH

3.4 Enter printed name, signature, date, and initials on Attachment 1.

4.0 REMOVAL OF RH-TRU 72-B FROM CASK PREP STATION

4.1 Raise the cask prep stand to PASS THRU.

4.2 Position Cask Transfer Car with the RH-TRU 72-B at the end of the tracks.

4.3 Remove radiological/haz waste stickers and place applicable "Empty" and "UN2908" stickers on RH-TRU 72-B.

5.0 REVIEW

5.1 WHE, perform the following:

5.1.1 Review Attachment 1 for completeness and sign Review/Validation block.

5.1.2 Forward a copy (fax or hand carry) of Attachment 1 to Transportation Engineer.

5.1.3 Forward Attachment 1 to Records Coordinator

