WP 05-WH1715

Revision 6

Preparation of an Empty CNS 10-160B Cask for Shipment

Technical Procedure

EFFECTIVE DATE: 03/27/09

Randy Britain
APPROVED FOR USE

CONTINUOUS USE PROCEDURE

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INTRODUCTION[1,2,3,4,5]

This procedure provides instructions for performing an inspection of the CNS 10-160B Cask and instructions for assembling an empty CNS 10-160B Cask for shipment.

This procedure will begin with the CNS 10-160B Cask positioned at the Prep Station. Performance of this procedure will begin after the completion of WP 05-WH1718, CNS 10-160B Trailer Unloading and/or the applicable sections of WP 05-WH1722, 10-160B RH Processing, and WP 05-WH1716, CNS 10-160B Cask Operation.

The following quality record is generated as a result of performing this procedure:

- Attachment 1, Empty Shipment CNS 10-160B Cask Data Sheet

REFERENCES

BASELINE DOCUMENTS

- 10 CFR Part 7, "Advisory Committees"
- 10 CFR Part 20, "Standards for Protection Against Radiation"
- 49 CFR Part 172, "Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, Training Requirements, and Security Plans"
- 49 CFR Part 173, "Shippers--General Requirements for Shipments and Packagings"
- DOE Standard 1090-2007, *Hoisting and Rigging*
- *Safety Analysis Report for the RH CNS 10-160B RAD Waste Shipping Cask*, Chapter 7
- *Certificate of Compliance for the RH CNS 10-160B Type B RAD Waste Shipping Cask* , NCR Docket Number 71-9204
- WP 08-PT.03, WIPP Quality Assurance Program Plan for Type "B" Packaging
- WP 13-1, Washington TRU Solutions LLC Quality Assurance Program Description

REFERENCED DOCUMENTS

- WP 05-WH1701, Road Cask Transfer Car Operation
- WP 05-WH1714, RH Cask Preparation Station 41-Z-076

- WP 05-WH1716, CNS 10-160B Cask Operation
- WP 05-WH1718, CNS 10-160B Trailer Unloading
- WP 05-WH1722, 10-160B RH Processing
- 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

EQUIPMENT

- Acceptable bolt lubricant (Moly-Z, Neolube, or Anti-Seize)
- Calibrated torque wrench capable of torqueing to 0-50 lb-ft
- Calibrated torque wrench capable of torqueing to 330 lb-ft
- Socket for the lift lug bolts (1-7/8-in.)
- Socket for the lid bolts (2-5/8-in.)
- Appropriate rigging for cask operation
- Clean rags

PRECAUTIONS AND LIMITATIONS

- Hearing and eye protection must be used when using impact wrenches.
- Only personnel qualified on the 10-160B Cask as a Waste Handling Technician/Engineer (WHT/WHE), or trainees operating under the direct supervision of a 10-160B Cask qualified WHT/WHE, are authorized to perform the waste handling activities specified in this procedure.
- If this procedure cannot be performed as written, WHE shall be contacted.
- Radiological Control must verify that items to be inspected are below contamination limits as required per WP 12-HP1100, Attachment 1, before the inspection can be performed.
- WHE and Quality Assurance are to be notified of any abnormal conditions found during inspections.

- Maximum empty cask weight (including lids without impact limiters) is 47,000 lb.
- Top impact limiter weight is approximately 5,300 lb.
- Bottom impact limiter weight is approximately 5,200 lb.
- The rigging used for lifting the cask lid must have a true angle with respect to the horizontal of not less than 45 degrees.
- Torque values are as follows:

Primary lid bolts (lubricated)	300 lb-ft ± 30 lb-ft
Secondary bolts (lubricated)	300 lb-ft ± 30 lb-ft
Leak test port plugs	12 lb-ft ± 1 lb-ft
Vent port plug (if equipped)	20 lb-ft ± 2 lb-ft
Drain port plug (if equipped)	20 lb-ft ± 2 lb-ft
Lifting lug bolts (lubricated)	200 lb-ft ± 20 lb-ft

PREREQUISITE ACTIONS

1.0 WHE, verify the following:

- WP 05-WH1701 preoperational checks are complete.
- WP 05-WH1714 preoperational checks are complete.
- WP 05-WH1741 preoperational checks are complete.
- WP 05-WH1746 preoperational checks are complete.
- Wave preoperational checks are complete, if necessary.
- Genie preoperational checks are complete, if necessary.
- WP 05-WH1716 complete, as appropriate.
- WP 05-WH1718 complete.
- WP 05-WH1722 applicable sections complete.

SIGN-OFF WHE

2.0 Ensure the cask transfer car and cask are positioned in the Cask Prep Stand (CPS).

2.1 Ensure 10-160B lift lug cover plates are installed.

3.0 Record torque wrench ID numbers and calibration dates on Attachment 1.

SIGN-OFF WH

PERFORMANCE

1.0 CNS 10-160B CASK CONTAMINATION SURVEY

1.1 Waste Handler (WH), record CNS 10-160B Cask serial number on Attachment 1.

SIGN-OFF WH

1.2 WH, verify packaging maintenance is current by checking maintenance labels on the CNS 10-160B Cask lid.

SIGN-OFF WH

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

SIGN-OFF RCT

2.0 INSPECTIONS AND ASSEMBLY

NOTE

Any discrepancies found during the performance of this procedure shall be reported to WHE or Waste Handling manager (WHM). WHE/WHM will be responsible for resolving discrepancies with Packaging Maintenance Engineer.

2.1 Primary Lid, Impact Limiter, and Newly Exposed Surfaces Inspection

2.1.1 Inspect the impact limiters for the following:

- Punctures
- Abnormal flat spots or dents > ½ in. long
- Abnormal gouges or scratches
- Distortion on or around lifting attachments
- Plastic burnout plugs in place
- Ratchet binder tie-downs for cleanliness and condition

NOTE

Disposal of absorbent material and water will be at the direction of RCT.

NOTE

Entering lower impact limiter will be done following site requirements.

2.1.2 Inspect lower impact limiter interior cavity for water.

- If water is found in cavity, remove water using wet/dry vacuum or absorbent material attached to rod.
- Ensure lower impact limiter is free of standing water.

2.1.3 **IF** the impact limiters are found to be damaged, contact WHE **AND** record findings in the "Remarks" section on Attachment 1,
THEN contact Remote Handled (RH) Packaging Maintenance Engineer.

2.1.4 Initial Attachment 1 to document that impact limiters and hardware are satisfactory.

SIGN-OFF WH

2.1.5 WH, remove the lid lift fixture from the lid.

2.1.6 Remove vent port plug and cap.

2.1.7 Connect the 140/25-ton crane and rigging to the three lifting lugs on the secondary lid.

NOTE

The rigging used for lifting the lid must have a true angle, with respect to the horizontal, of not less than 45 degrees. A minimum sling length of 2 ft is required to maintain the angle.

2.1.8 Remove the primary lid.

2.1.9 RCT, perform survey on the interior of the primary and secondary lid **AND** record applicable information on Attachment 1.

SIGN-OFF RCT

2.1.10 Place primary lid on lid stand.

2.1.11 Remove both empty drum carriages using appropriate rigging and crane, if required.

NOTE

Steps 2.1.12 through 2.1.21 may be performed concurrently with Steps 2.1.10 and 2.1.11, including RCT sign-off.

2.1.12 RCT, survey newly exposed areas of drum carriages and cask interior, as applicable.

SIGN-OFF RCT

2.1.13 Stage each carriage in designated storage location, if required.

2.1.14 Inspect primary lid for the following:

- Visible deformation
- Abnormal flat spots or dents > ½ in. long
- Abnormal scratches or gouges
- No damage to port threads

2.1.15 **IF** damage is found, contact WHE **AND** record finding in "Remarks" section of Attachment 1,
THEN contact M&O Contractor RH Packaging Maintenance Engineer.

2.1.16 Clean and inspect the surface of the primary lid O-rings for the following:

- Cleanliness (no visible dirt or debris)

- Damage (voids, cracks, flat sports, and gouges)

2.1.17 **IF** O-rings are damaged, contact WHE, **AND** record findings in "Remarks" section of Attachment 1,
THEN contact M&O Contractor RH Packaging Maintenance Engineer.

2.1.18 WH, lubricate accessible areas of primary lid O-rings.

2.1.19 Clean and inspect the following components for deformation, scratches, and/or burrs:

- Lid bolts and threads in cask

- Port bolts

2.1.20 **IF** lid bolts, bolt threads in cask, or port bolts are damaged, contact WHE, **AND** record findings in "Remarks" section of Attachment 1,
THEN contact M&O Contractor RH Packaging Maintenance Engineer.

2.1.21 Initial Attachment 1 to document primary lid components and hardware are satisfactory.

SIGN-OFF WH

2.2 Body Inspection

2.2.1 WH, inspect the outer body for the following:

- Punctures
- Abnormal flat spots or dents > ½ in. long
- Abnormal gouges or scratches
- Distortion on or around lifting attachments

2.2.2 **IF** the body components are found to be damaged, contact WHE **AND** record findings in the "Remarks" section on Attachment 1,
THEN contact RH Packaging Maintenance Engineer.

2.2.3 Clean O-ring seating surface on cask body.

2.2.4 Initial Attachment 1 to document that outer body components and hardware are satisfactory.

SIGN-OFF WH

2.3 Cask Cavity Inspection

2.3.1 Inspect cask cavity for water.

NOTE

Disposal of absorbent material and water will be at the direction of RCT.

NOTE

Entering cask body will be done following site requirements.

A. If water is found in cask body, remove water using wet/dry vacuum or absorbent material attached to rod.

B. Remove equipment and exit cask cavity using precautions not to damage cask body sealing area.

2.3.2 Ensure cask is free of standing water.

2.3.3 Initial Attachment 1 to document inner cavity inspection is complete.

SIGN-OFF WH

2.4 Lid Installation

2.4.1 Load both empty drum carriages using appropriate rigging and crane, if required.

NOTE

The rigging used for lifting the cask lid must have a true angle, with respect to the horizontal, of not less than 45 degrees. A minimum sling length of 2 ft is required to maintain the angle 45 degrees.

2.4.2 Ensure rigging is attached to the three lifting lugs on the secondary lid.

2.4.3 If not previously performed, install the primary lid alignment pins into the cask.

NOTE

Care should be taken during handling operations to prevent damage to cask and lid seal surfaces.

2.4.4 Lift the primary lid above the cask and lower into position using alignment marks and alignment pins.

2.4.5 Detach rigging from the secondary lid lifting lugs.

2.4.6 Remove the primary lid alignment pins from the cask.

2.4.7 Install alignment pin plugs, if available.

2.4.8 Lubricate primary lid bolts, if needed.

2.4.9 Replace the twenty-four 1¾-in. primary lid bolts and hand tighten.

2.4.10 Start with bolt location number one.

2.4.11 Torque primary lid bolts to 150 ± 15 lb-ft, in a star pattern.

2.4.12 Start torque at bolt number one.

2.4.13 Torque primary lid bolts to 300 ± 30 lb-ft, in a star pattern.

2.4.14 Recheck torque on primary lid bolts using a circular pattern to 300 ± 30 lb-ft, and initial on Attachment 1.

SIGN-OFF WH

2.4.15 Install the vent port plug.

2.4.16 Torque the vent port plug to 20 ± 2 lb-ft and initial on Attachment 1.

SIGN-OFF WH

2.4.17 Install the vent port cap, torque to 20 ± 2 lb-ft.

2.4.18 **IF** bolts/plugs were removed,
THEN torque bolts/plugs to:

- Cask drain plug: 20 ± 2 lb-ft
- Leak test port on primary/secondary lid: 12 ± 1.0 lb-ft

SIGN-OFF WH OR N/A

2.5 Record on Attachment 1 that empty shipment is complete and unit is ready for loading onto trailer.

SIGN-OFF WH

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

SIGN-OFF WH

2.7 Remove CNS 10-160 Cask lift lug cover plates.

2.8 Raise CPS to PASSTHRU.

2.9 Position cask and cask transfer car at end of rails for cask removal.

3.0 REVIEW

3.1 WHE, perform the following:

3.1.1 Review Attachment 1 for completeness and sign "Review/Validation" block.

3.1.2 Report noted discrepancies to Packaging Maintenance Engineer.

3.1.3 Hand carry or fax a copy of Attachment 1 to Transportation Engineer for traveler folder.

3.1.4 Forward Attachment 1 to Records Coordinator.

Attachment 1 - Empty Shipment CNS 10-160B Cask Data Sheet

STEP	DESCRIPTION	INITIAL
	PREREQUISITE ACTIONS	
1.0	Prerequisite actions complete.	WHE _____
3.0	Record torque wrench serial number and calibration dates. S/N: _____ Cal Date: _____ S/N: _____ Cal Date: _____	WH _____
	PERFORMANCE	
1.1	CNS 10-160B Cask Serial No._____	WH _____
1.2	Packaging maintenance is current.	WH _____
1.3	Survey Number: _____	RCT _____
2.1.4	Impact limiters and hardware satisfactory.	WH _____
2.1.9	Activity on smears is below acceptable limits.	RCT _____
2.1.12	Activity on smears is below acceptable limits.	RCT _____
2.1.21	Primary lid components and hardware satisfactory.	WH _____
2.2.4	Outer body components and hardware satisfactory.	WH _____
2.3.3	Cask cavity inspection complete.	WH _____
2.4.14	Torque on primary lid bolts 300 ± 30 lb-ft.	WH _____
2.4.16	Torque the vent port plug to 20 ± 2 lb-ft.	WH _____
2.4.18	Torque vent port cap and cask drain plug 20 ± 2 lb-ft. Leak test port primary/secondary lid 12 ± 1.0 lb-ft.	WH or N/A _____
2.5	Unit is ready for loading onto trailer.	WH _____

Print Name	Signature	Date	Initials
Print Name	Signature	Date	Initials
Print Name	Signature	Date	Initials

Remarks:_____

_____

_____

_____

Review/Validation:_____

WHE (Print Name) Signature Date