

NUS-14-170 SERIES I MAINTENANCE

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PDR ADOCK 07109151
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D	WMBH/ster	5-6-85	Shirley P. Mott	5-6-85	<i>[Signature]</i>	5/6/85	<i>[Signature]</i>	5-6-85
	ORIGINATOR	DATE	CHECKED	DATE	QA	DATE	MANAGER	DATE
NUS PROCESS SERVICES								

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1.0 PURPOSE

This procedure describes the correct methods of gasket and ratchet binder replacement on the NUS 14-170 Series 1 shipping cask. The NUS 14-170 Series 1 shipping casks include units with 29 inch or 16 inch secondary lids. This procedure is performed to ensure that all parts and materials used are in compliance with the applicable Nuclear Regulatory Commission issued Certificate of Compliance and that proper records are maintained when gasket or binder replacement is required.

2.0 APPLICABILITY

This procedure is applicable to all gasket and ratchet binder replacement operations performed on the NUS 14-170 Series 1 shipping cask.

2.1 Primary Lid Gasket

2.1.1 Replace gasket every twelve (12) months.

2.1.2 Inspect primary lid gasket primary lid painted alignment markers prior to placement of the primary lid on the cask. Gasket must be free of defects such as nicks, frays, and cuts and the painted alignment markers must be clear and not severely chipped or faded. Replace the gasket or repaint the alignment markers to correct the defects.

2.2 Secondary Lid Gasket

2.2.1 Replace gasket every twelve (12) months.

2.2.2 Inspect secondary lid gasket and secondary lid painted alignment markers to

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placement of the secondary lid on the primary lid. Gasket must be free of defects and the painted alignment markers must be clear and not severely chipped or faded. Replace the gasket or repaint the alignment markers to correct the defects.

2.3 Ratchet Binder

2.3.1 Replace ratchet binders as necessary to ensure positive closure of the primary lid to cask body.

2.3.2 Ratchet binders must be inspected prior to securing primary lid to cask body. Ratchets must operate freely through the complete designed travel distance. All working parts must be free of defects such as cracks.
If inspection reveals defects, replace ratchet binders.

2.4 Secondary Lid Studs/Nuts

2.4.1 Replace secondary lid studs and/or nuts as necessary to ensure positive closure of the shield plug to the primary lid.

2.4.2 Secondary lid studs and nuts must be inspected prior to securing shielded plug to the primary lid. Studs and nuts must be free of defects such as thread nicks and cracks.
If inspection reveals defects, replace.

3.0 DEFINITIONS

3.1 Primary lid gasket - 76.2" I.D. X 79.2" O.D. X 0.38"
Thick Solid Neoprene Durometer 40

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3.2 Secondary Lid gasket

3.2.1 15 inch Secondary Lid - 18.5" I.D. X 22.5" O.D.
X 0.38" thick Neoprene Durometer 50

3.2.2 29 inch Secondary Lid - 31.5" I.D. X 35.5" O.D.
X 0.38" thick solid Neoprene Durometer 50

3.3 Ratchet Binder - 1 3/4" X 8" Galvanized Type J

3.4 Secondary Lid Stud - Driver Type Stud 3/4" - 10UNC-2A
ASTM A-193 Gr B-7

3.5 Secondary Lid Nut - Hex head 3/4" - 10UNC-2B ASTM A-194
Gr B-7

3.6 Shield plug and Secondary lid are synonymous and may be
used in documents and references interchangeably.

4.0 REFERENCES

4.1 NUSPSC Procedure Preparation and Control Procedure No.
QA-001.

4.2 NUSPSC Operating Instructions for Loading and Unloading
the NUS-14-170 Series 1 Shipping Cask Procedure No.
WM-014.

4.3 U.S. Nuclear Regulatory Commission Certificate of
Compliance No. 9151.

4.4 U.S.N.R.C. Safety Evaluation Report on Model No.
NUS-14-170 Series 1 shipping cask Docket No. 71-9151.

4.5 NUSPSC Inventory Control Procedure No. AD-002.

4.6 NUSPSC Procurement Procedure No. AD-001

5.0 RESPONSIBILITIES

The Manager, Transportation Services is designated as the project manager for all cask maintenance operations. He is specifically tasked with ensuring that all inspections and maintenance is performed in a timely manner, that all maintenance records are properly maintained and that maintenance information is distributed to registered cask users in a timely manner.

6.0 TOOLS AND MATERIALS

6.1 Gaskets

6.1.1 Primary Lid Gasket

6.1.2 Secondary Lid Gasket

6.2 Ratchet Binders

6.3 Secondary Lid Studs

6.4 Secondary Lid Nuts

6.5 Gasket Scraper or clean metal scraper knife

6.6 Steel wire brush - drill type or handheld

6.7 Acetone

6.8 Gasket adhesive (Permatex® Super Glue adhesive, Master® Super Weatherstrip adhesive, or other brand adhesives which are recommended by the manufacturer for bonding rubber to metal)

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7.0 GASKET/SEAL REPLACEMENT

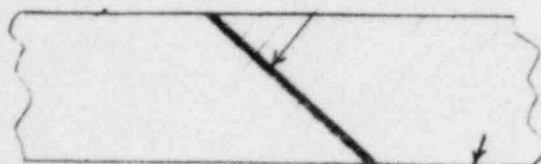
7.1 Primary Lid Gasket Replacement

- 7.1.1 Remove old flat gasket by hand or use metal scraper, using care to prevent damage to seating surfaces. Discard old gasket material using proper radiological procedures.
- 7.1.2 Clean entire gasket seating surfaces (both cask body and lid) by using a steel wire brush along with acetone as a cleaning solvent and lubricant.
- 7.1.3 Inspect all seating surfaces for foreign material or nicks which would prevent proper seating and sealing.
- 7.1.4 Inspect new replacement gasket for nicks, frays and cuts. Discard unusable materials.
- 7.1.5 Fit gasket to cask body surface and cut to fit around guide pin. Maintain 1/2" cross section of gasket material on the inside of the guide pin.
- 7.1.6 Place gasket adhesive on cask body.
- 7.1.7 Hold gasket in place until initial adhesive sets.
- 7.1.8 Make butt joints using adhesive between the two gasket surfaces. Compress to fit. See Figure 1 for an example of how such a butt joint can be made. Other joint angles are acceptable as long as the joint is flush and free of gaps.

Figure 1

Gasket

Adhesive



45° Approximately

Gasket Joint Detail

- 7.1.9 Complete Attachment 1 and retain in cask users book.

7.2 Secondary Lid Gasket Replacement

- 7.2.1 Remove old flat gasket by hand or use metal scrapper, using care to prevent damage to seating surfaces.
- 7.2.2 Clean entire gasket seating surfaces (both primary lid and secondary lid) by using a steel wire brush along with acetone as a cleaning solvent and lubricant.
- 7.2.3 Inspect all seating surfaces for foreign material or nicks which would prevent proper sealing.
- 7.2.4 Place gasket in shield plug and mark bolt holes.
- 7.2.5 Punch 7/8" holes in gasket at marked spots.
- 7.2.6 Place adhesive on primary cask lid and hold gasket in place until adhesive is set.
- 7.2.7 Complete attachment 2 and retain in cask user's book.

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7.3 Secondary Lid Hold Down Stud Replacement

Secondary lid studs may be replaced and/or repaired in the following manner:

- Heli coil insert
- Increase depth of tap, drill and retap 3/4" - 10UNC using 3/4" - 10UNC-2A stud of appropriate length. Material as specified in NUS Drawing No. 8916-M-2003, Item 7.

7.4 Leak Testing

7.4.1 Prior to acceptance of a NUS-14-170 Series 1 shipping cask from the fabricator, a properly witnessed pressure test shall be performed and reviewed in accordance with NUSPSC Procedure WM-011 Leak Test.

7.4.2 After gasket replacement, conduct a leak test in accordance with Procedure WM-011. This test shall be to test gasket and gasket seating surface integrity only.

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Attachment 1

NUS 14-170 Series 1 Primary Lid Gasket Replacement Checklist

Cask Serial Number: _____

- | | Initials | Date |
|---|----------|-------|
| 1. Old gasket removed | _____ | _____ |
| 2. Gasket seating surfaces clean and free of foreign material and nicks. (Step 7.1.3) | _____ | _____ |
| 3. Replacement gasket acceptance (Step 7.1.4) | _____ | _____ |
| 4. Gasket Inventory No: _____ | _____ | _____ |
| 5. Installation completed (Step 7.1.5 thru 7.1.8) | _____ | _____ |
| 6. Gasket replaced and provided in accordance with maintenance Procedure Number WM-012. | | |

Signature _____ Date _____

7. Visual inspection of painted alignment markers satisfactory? Yes/No
- Alignment markers repainted? Yes/No

Signature _____ Date _____

8. Other Maintenance (describe): _____
- _____
- _____

Signature _____ Date _____

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Attachment 2

NUS 14-170 Series 1 Secondary Lid Gasket Replacement Checklist

Cask Serial Number: _____

- | | Initials | Date |
|---|----------|-------|
| 1. Old gasket removed
(Step 7.2.1) | _____ | _____ |
| 2. Gasket seating surfaces clean and
free of foreign material and nicks.
(Step 7.2.3) | _____ | _____ |
| 3. Replacement gasket acceptance | _____ | _____ |
| 4. Gasket Inventory No: _____ | _____ | _____ |
| 5. Installation completed
(Step 7.2.4 thru 7.2.6) | _____ | _____ |
| 6. Gasket replaced and provided in accordance with maintenance
Procedure Number WM-012. | | |

Signature Date

7. Visual inspection of painted alignment
markers satisfactory? Yes/No
- Alignment markers repainted? Yes/No

Signature Date

8. Other Maintenance (describe): _____
- _____
- _____

Signature Date