

STD-P-02-039

10-142A Cask Maintenance

Scientific Ecology Group, Inc.
 1560 Bear Creek Road
 P.O. Box 2530
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 Title Change
 Minor Revision
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 Rewrite

This procedure supersedes LN Technologies Corp. procedure WM-022.

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1. PURPOSE AND SCOPE

This procedure establishes preventive maintenance requirements and describes the correct methods for gasket, secondary lid stud and ratchet binder replacement on the Scientific Ecology Group, Inc. (SEG) 10-142A shipping cask.

2. APPLICABILITY

This procedure shall be followed when performing maintenance on a 10-142A shipping cask. This procedure may be used in its entirety as is or incorporated into the policies and procedures of a registered user.

3. REFERENCES

- 3.1 U.S. Nuclear Regulatory Commission (NRC) Certificate of Compliance No. 9073
- 3.2 U.S. NRC Safety Evaluation Report on Model No. NUS-OH-142 Shipping Cask Docket No. 71-9073
- 3.3 SEG/QA-4.1, Quality Assurance Procedure Procurement Control
- 3.4 SEG/QA-7, Material Control Procedure
- 3.5 SEG/QA-5.1, Procedures, Instructions, Drawings
- 3.6 SEG Procedure No. STD-P-02-038, Soap Bubble Leak Test for SEG Type A Shipping Casks
- 3.7 SEG Procedure No. STD-P-02-040, Operating Instructions for Loading and Unloading the 10-142A Shipping Cask
- 3.8 SEG Drawing No. E-9414-M-3204

4. RESPONSIBILITIES

- 4.1 The Cask Operation Manager has overall responsibility for cask maintenance operations.
- 4.2 The Cask Operation Manager is responsible for the performance of all required cask maintenance. Procurement of gasket and other replacement parts are procured and controlled in accordance with Reference 3.3.
- 4.3 The Cask Operation Manager is responsible for procurement, storage, and issue of quality control materials.

- 4.4 The Quality Assurance (QA) representative of the registered users organization shall ensure that cask maintenance performed at the registered user's site (by other than SEG personnel) is accomplished in accordance with that registered user's NRC-approved 10 CFR 71, Subpart H, Quality Assurance Program. Enclosure 10.4 shall be completed by the registered user's QA representative when such maintenance is performed.

5. DEFINITIONS

- 5.1 Primary Lid Gasket - .75 in. thick by 3.00 in. wide: Silicon
- 5.2 Secondary Lid Outer Gasket - .25 in. thick by 1.00 in. wide: Neoprene
- 5.3 Secondary Inner Gasket - .25 in. thick by 1.00 in. wide: Silicon
- 5.4 Ratchet Binder - 1-3/4 in. x 10 Type J: 160,000 lbs, minimum break strength
- 5.5 Secondary Lid Stud - Driver Type Stud 1 in. - 8UNC-2A: ASTM A320 GR.L7
- 5.6 Secondary Lid Retaining Nut - Hex nut 1 in. - 8UNC-2B: Commercial grade
- 5.7 Secondary Lid Alignment Guide Pin - .75 in. Dia.: ASTM A-516, GR 70
- 5.8 Primary Lid Alignment Guide Plate - On cask body .50 in. thick: ASTM A-516, GR 70

6. TOOLS AND MATERIALS

- 6.1 Gaskets
 - 6.1.1 Primary lid
 - 6.1.2 Secondary lid (outer/inner)
- 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 hand held
- 6.7 Acetone

- 6.8 Gasket Adhesive: Silicon Lube (RTV) GE 10-8101 or other brand adhesives which are recommended by the manufacturer for bonding silicon or neoprene to metal.

7. PERIODIC MAINTENANCE REQUIREMENTS

7.1 Primary Lid Gasket

- 7.1.1 Inspect primary lid gasket prior to placement of the primary lid on the cask. Gasket must be free of defects such as nicks, frays, and cuts (Reference 3.7) which would affect proper sealing.
- 7.1.2 Replace gasket every 12 months as per C of C.
- 7.1.3 Replace gasket to correct any defects noted in step 7.1.1 or to comply with 7.1.2 above. Refer to step 8.1.

7.2 Secondary Lid Gaskets (Outer/Inner)

- 7.2.1 Inspect secondary lid gaskets. Gaskets must be free of defects such as nicks, frays, and cuts (Reference 3.7) which would affect proper sealing.
- 7.2.2 Replace gaskets every 12 months as per C of C.
- 7.2.3 Replace gaskets to correct any defects noted in step 7.2.1 or to comply with 7.2.2 above. Refer to steps 8.2 or 8.3 as necessary.

7.3 Secondary Lid Holddown Studs and Nuts

- 7.3.1 Inspect studs for excessive wear or cross threading.
- 7.3.2 Inspect nuts for wear caused by cross threading or overtorquing.
- 7.3.3 Repair or replace studs and/or nuts as necessary. Refer to step 8.4.

7.4 Ratchet Binders

- 7.4.1 Inspect binders. Check for freedom of movement and locking action.
- 7.4.2 Check ratchet binder handle storage straps for dry-rot or breaks.
- 7.4.3 Repair or replace as necessary. Refer to step 8.5.

7.5 Secondary Lid Guide Pins and Marks

- 7.5.1 Inspect secondary lid guide marks prior to each shipment for paint flaking or fading.
- 7.5.2 Inspect secondary lid guide pins for excess wear, whenever secondary lid has been removed. Pin should engage secondary lid when lid is installed on primary lid.
- 7.5.3 Repaint secondary lid guide marks as necessary.
- 7.5.4 Repair or replace secondary lid guide pins as necessary. Refer to step 8.4.

7.6 Cask to Transport Trailer Tiedown Cable Assembly

- 7.6.1 Inspect prior to each shipment.
- 7.6.2 Inspect tiedown cables for broken or frayed wire.
- 7.6.3 Inspect tiedown ratchet binders for security and lubricate.
- 7.6.4 Inspect transport trailer cask tiedown lugs for obvious cracks.
- 7.6.5 Repair and/or replace as necessary.

7.7 Leak Test of Cask

- 7.7.1 Leak test to be performed in accordance with Reference 3.6.
- 7.7.2 Required prior to acceptance from fabricator.
- 7.7.3 Required after maintenance has been performed on any gasket.

8. GASKET/SEAL REPLACEMENT

8.1 Primary Lid Gasket Replacement

- 8.1.1 Remove old flat gasket by hand or use metal scraper, using care to prevent damage to sealing surfaces. Discard old gasket material using proper radiological procedures.
- 8.1.2 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.

- 8.1.3 Inspect all seating surfaces for foreign material or nicks which would prevent proper seating and sealing.
- 8.1.4 Inspect new replacement gasket for nicks, frays, and cuts. Discard unusable materials.
- 8.1.5 Fit gasket to cask body surface.
- 8.1.6 Place gasket adhesive on cask body in accordance with adhesive directions.
- 8.1.7 Press gasket into adhesive with hand pressure and allow time recommended on the adhesive directions for the adhesive to set up.
- 8.1.8 Make butt joints using adhesive between the two gasket surfaces. Compress to fit. See Enclosure 10.1 for recommended gasket joint method.
- 8.1.9 Complete Enclosures 10.2 and 10.5 (if applicable) and distribute in accordance with Section 9.

8.2 Secondary Lid Outer Gasket Replacement

- 8.2.1 Remove old flat gasket by hand or use metal scrapper. Use care to prevent damage to seating surfaces.
- 8.2.2 Clean entire gasket seating surfaces (both primary lid and shield plug) by using a steel wire brush along with acetone as a cleaning solvent and lubricant.
- 8.2.3 Inspect all seating surfaces for foreign material or nicks which would prevent proper sealing.
- 8.2.4 Place gasket adhesive on primary cask lid, press gasket in place and allow to set until gasket adhesive is set.
- 8.2.5 Complete Enclosures 10.3 and 10.5 (if applicable) and distribute in accordance with Section 9.

8.3 Secondary Lid Inner Gasket Replacement

- 8.3.1 Remove old flat gasket by hand or use metal scrapper using care to prevent damage to seating surfaces.

- 8.3.2 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.
- 8.3.3 Inspect all seating surfaces for foreign material or nicks which would prevent proper sealing.
- 8.3.4 Place gasket adhesive on primary cask lid inner gasket seating surface.
- 8.3.5 Place gasket on primary cask lid inner gasket seating surface and press in place and allow to set until adhesive is set up.
- 8.3.6 Complete Enclosures 10.4 and 10.5 (if applicable) and distribute in accordance with Section 9.

8.4 Secondary Lid Hold Down Stud and Nut Replacement

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

- 8.4.1 Heli-coil insert, installed in accordance with the heli-coil manufacturer's directions.
- 8.4.2 Increase depth of tap, drill and retap 1/4 in. using 1-in. 8UNC-2A stud of appropriate length. Material as specified in Reference 3.8.
- 8.4.3 Complete Enclosure 10.5 (if applicable) and distribute in accordance with Section 9.

8.5 Ratchet Binder Repair or Replacement

- 8.5.1 If ratchet binder binds before primary lid is tightly secure, then perform the following:
 - a. Extend ratchet binder far enough to remove spring pin and threadless bolt.
 - b. Lean ratchet binder outward away from cask and extend out to full length. Be careful not to spin lug ends totally out of binder.
 - c. Clean old lubricant and contaminants from threads using a steel brush.
 - d. Install new, all-purpose lubricant on threads and rotate binder ends all the way into the binder.

- e. Extend binder ends back to the length necessary to reinstall the threadless bolt and spring pin.
- f. Re-tighten primary lid using ratchet binder.

8.5.2 If the above steps did not repair ratchet binder, then perform the following:

- a. Loosen binder enough to remove the spring pin and threadless bolt.
- b. Remove the cotter pin, nut, and bolt on the lower end of the binder.
- c. Remove the ratchet binder and ship to SEG, Inc., Oak Ridge, Tennessee for additional maintenance.
- d. Install new ratchet binder on cask by installing bolt through lower end of binder.
- e. Reinstall nut on bolt using a new cotter pin.
- f. Reconnect upper end of ratchet and tighten down in accordance with Reference 3.7.
- g. Complete Enclosure 10.5 (if applicable) and distribute in accordance with Section 9.

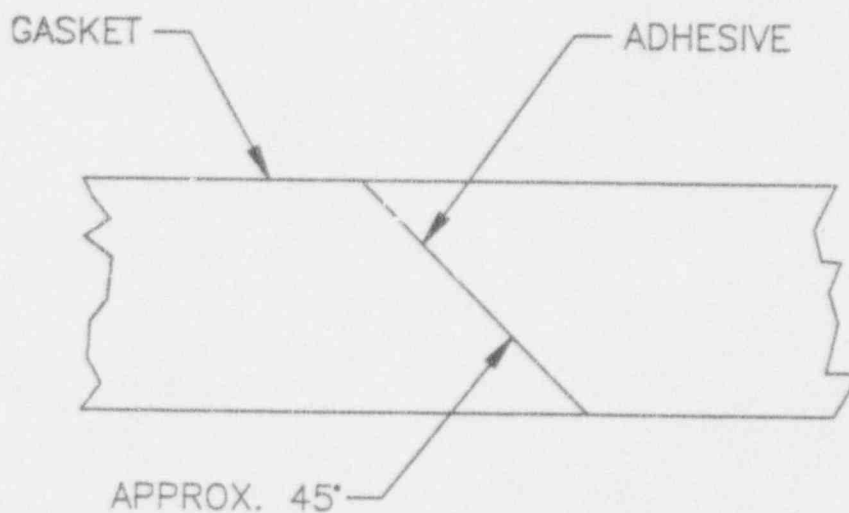
9. DISTRIBUTION OF MAINTENANCE RECORDS

- 9.1 Send original copy of Enclosures 10.2, 10.3, 10.4, and 10.5 to SEG, Inc., Oak Ridge, Tennessee, c/o Transportation Supervisor.
- 9.2 Retain one copy for registered user's Cask Manual.
- 9.3 Additional copies, as may be required, are authorized for registered user's use only.

10. ENCLOSURES

- 10.1 Gasket Joint Detail
- 10.2 10-142A Primary Lid Gasket Replacement Checklist
- 10.3 10-142A Secondary Lid Outer Gasket Replacement Checklist
- 10.4 10-142A Secondary Lid Inner Gasket Replacement Checklist
- 10.5 Registered User's Maintenance Certification

ENCLOSURE 10.1
Gasket Joint Detail





ENCLOSURE 10.5
Registered User's Maintenance Certification

To: Cask Operation Manager
SEG, Inc.
1530 Bear Creek Road
P.O. Box 2530
Oak Ridge, TN 37831

From: _____ (Name)
_____ (Title)
_____ (Organization)

Description of maintenance: _____

CERTIFICATION

_____ (Organization), certifies that:

- (1) It is a registered user of the 10-142A cask, UJSNRC C of C USA/9073/A in accordance with the terms and conditions of 10 CFR 71.12.
- (2) The described maintenance on the 10-142A was accomplished in accordance with SEG Procedure No. STD-P-02-039.
- (3) Maintenance performed on this cask was accomplished in accordance with an NRC-approved 10 CFR 71, Subpart H, Quality Assurance Program, docket # _____.

QA Inspector Signature/Date