



Duratek™

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71-5805

Mr. E. William Brach, Director
Spent Fuel Project Office
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555

October 03, 2002
E&L-049-02

Dear Mr. Brach:

SUBJ: SAFETY ANALYSIS REPORT FOR MODEL NO. 3-55, REV. 3

Duratek Inc. respectfully submits the enclosed application for the subject revision to the Safety Analysis Report (SAR) for the CNS 3-55 Certificate of Compliance No. 5805.

This proposed amendment requests a change to the cask vent plug gasket material; as the material currently specified (Anchor Tauril) is no longer available. The replacement material (Garlock 9850) has comparable characteristics relative to resistance to high temperature and high pressure. References to "Anchor Tauril" have been replaced with "Garlock 9850" within the SAR text (Pages 3-23, 3-26, and 4-3) and drawings (Drawing Nos. MOD-100 and 0999-C-08).

In addition to the changes noted above, the following changes are also requested to Drawing No. 0999-C-08:

- Revise callout for the 1/16" o-ring for the optional plug in the cask vent to include "or equal".
- The "threads per inch" callout for the blind tapped hole located in the center of the vent plug was corrected – from 12 to 13.

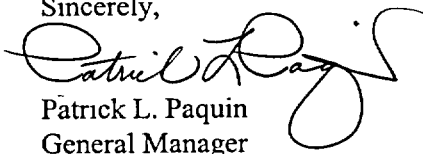
Also, editorial revisions have been made to SAR text (Page 1-9) to reflect and agree with drawing changes approved under a previous submittal.

To facilitate your review of the drawing changes, "marked up" copies of SAR Drawing Nos. 0999-C-08, Rev. 9 and MOD-100, Rev. 14 have been included in attachments 5 and 6. The changes have been circled in red.

No change to packaging contents is being requested, and no changes to the operating and maintenance sections (Chapters 7 and 8 respectively) are required as a result of the proposed changes.

If you or members of your staff have any questions about the application, please feel free to contact Shayne Merritt at (803) 758-1838.

Sincerely,


Patrick L. Paquin
General Manager

NMSSol

Attachments:

- (1) Directory of Changes for Incorporating Revision 4 CNS 8-120B Safety Analysis Report
- (2) Revision 3 Text Change Pages
- (3) Drawing No. MOD-100 Revision 14 (3 copies)
- (4) Drawing No. 0999-C-08 Revision 9 (3 copies)
- (5) "Marked Up" Copy of Drawing No. MOD-100 Revision 13 (1 copy)
- (6) "Marked Up" Copy of Drawing No. 0999-C-08 Revision 8 (1 copy)

Attachment One

Directory of Changes for Incorporating Revision 3 of the CNS 3-55 Safety
Analysis Report

| Remove These Pages From Rev. 2 | Insert These Rev. 3 Pages |
|--|--|
| Cover Sheet | Cover Sheet |
| 1-9 | 1-9 |
| 3-23 | 3-23 |
| 3-26 | 3-26 |
| 4-3 | 4-3 |
| Chapter 9 Cover – “List of Drawings for CNS 3-55 Shipping Cask” | Chapter 9 Cover – “List of Drawings for CNS 3-55 Shipping Cask” |
| Drawing No. MOD-100 Revision 13 | Drawing No. MOD-100 Revision 14 |
| Drawing No. 0999-C-08 Revision 8 | Drawing No. 0999-C-08 Revision 9 |

Attachment Two

SAFETY ANALYSIS REPORT

For

MODEL CNS 3-55 TYPE B SHIPPING PACKAGING

REVISION 3

OCTOBER 2002

Submitted by:

Duratek, Inc
140 Stoneridge Dr.
Columbia, S.C. 29210

The vent hole in the closed end of the cask is plugged by a 6.00 inch long, lead filled 1.00 inch schedule 40 stainless steel pipe, welded to a circular cover cap plate, 1.5 inch thick by 7.375 inches O.D., sealed with a 1/8 inch thick gasket of sheet packing and a 3/8" silicone o-ring. The assembly is fastened with four 0.50 inch by 2.00 inch bolts.

This vent plug assembly may also contain the following optional configuration: A recessed plug valve stem sealed with a 1/16 inch by 3/16 inch silicone o-ring. The stem is threaded 7/16-14 NC and can be opened to a diagonal 1/4-18 NPT threaded sampling port for test pressure gauge or vent sampling. The sample port is plugged with a 1/4 inch NPT male pipe plug when not in use. The valve stem is closed by turning in to full stop. The radial o-ring on the end of the stem in conjunction with the other o-rings shown on Drawing No. 0999-C-08 seal the containment. A 1-1/2 inch by 3 inch by 1/8 inch stainless cover plate with a 1/16 inch neoprene gasket retained by (6) 8-32 by 1/4 inch stainless steel bolts covers the recessed valve stem hole and the test port hole when not in use or in transport.

Total material shield thickness of closed end of the cask is 3.125 inches of steel and 5.25 inches of lead.

The cylindrical cavity liner and the cylindrical outer shell, at the open end of the cask, are welded to a 1.25 inch ring plate, 50.50 inches O.D. by 36.625 inches I.D., T-304 stainless steel.

3.5.6.2 Performance Evaluation of Cask Drain and Vent

The thermal performance of the drain vent valve and vent plug (in center of cask top) will be adequate when subjected to fire test conditions. The drain line will be sealed with a vent valve designed to relieve at a pressure of 25 psig. (Reference Appendix 3.6.3.)

The vent assembly in the center of the cask top consists of a lead filled steel plug insert in the vent opening and a 1 ½ inch thick plate bolted to the top to secure the plug insert. A Garlock 9850 flat gasket (or equivalent) will be used to seal the vent plate to the cask body. This gasket is rated at a temperature and pressure of 900°F and 2000 psig, respectively. This material will provide a satisfactory seal under the fire test conditions. (Reference Appendix 3.6.2).

High Temp Compressed Graphite or Carbon Fiber Gasketing

Typical Physical Properties*

| | | G-9900 | 9800 | 9850 |
|--|---|-----------------------|-----------------|---------------------|
| Color | | Mahogany | Black | Black |
| Composition | | Graphite with nitrile | Carbon with SBR | Carbon with nitrile |
| Temperature ¹ | Maximum | +1000°F (+540°C) | +900°F (+480°C) | +900°F (+480°C) |
| | Minimum | -40°F (-40°C) | -40°F (-40°C) | -40°F (-40°C) |
| | Continuous max. | +650°F (+340°C) | +650°F (+340°C) | +650°F (+340°C) |
| Pressure ¹ | psig | 2000 | 2000 | 2000 |
| | (bar) | (138) | (138) | (138) |
| P x T, max. ¹ (psig x °F) (bar x °C) | 1/32", 1/16" | 700,000 | 700,000 | 700,000 |
| | (0.8 mm, 1.6 mm) | (25,000) | (25,000) | (25,000) |
| | 1/8" | 350,000 | 350,000 | 350,000 |
| | (3.2 mm) | (12,000) | (12,000) | (12,000) |
| Sealability (ASTM F37B) ² | | | | |
| ASTM Fuel A | ml/hr | 0.1 | 0.1 | 0.1 |
| Nitrogen | ml/hr | 0.1 | 0.1 | 0.1 |
| Creep Relaxation (ASTM F38) | % | 9 | 15 | 15 |
| Compressibility Range (ASTM F36) | % | 7-17 | 7-17 | 7-17 |
| Recovery (ASTM F36) | min. % | 65 | 55 | 56 |
| Fluid Resistance (ASTM F146) | | | | |
| ASTM #1 Oil at +300°F (+150°C) | | | | |
| Thickness increase | range % | 0-5 | 0-10 | 0-5 |
| Weight increase | max. % | 10 | 20 | 10 |
| ASTM IRM #903 Oil at +300°F (+150°C) | | | | |
| Thickness increase | range % | 0-10 | 15-40 | 0-10 |
| Tensile loss | max. % | 35 | 65 | 35 |
| ASTM Fuel A at +70-85°F (+20-30°C) | | | | |
| Thickness increase | range % | 0-5 | 0-10 | 0-5 |
| Weight increase | max. % | 7 | 20 | 7 |
| ASTM Fuel B +70-85°F (+20-30°C) | | | | |
| Thickness increase | range % | 0-10 | 5-20 | 0-10 |
| Weight increase | max. % | 15 | 20 | 15 |
| Tensile Strength across grain (ASTM F152) | psi (N/mm ²) | 1800 (12) | 1500 (10) | 1800 (12) |
| Density | lbs/ft ³ (g/cm ³) | 110 (1.76) | 105 (1.68) | 105 (1.68) |
| Gas Permeability (DIN 3535 Part 4) ³ | cc/min | 0.015 | 0.015 | 0.015 |

Notes:

¹ When approaching maximum pressure or continuous operating temperature, or 50% of maximum P x T, consult Garlock Engineering

² ASTM F37B Sealability
ASTM Fuel A (isooctane)
Gasket load = 500 psi (3.5 N/mm²), Int. pressure = 9.8 psig (0.7 bar)
Nitrogen
Gasket load = 3000 psi (20.7 N/mm²), Int. pressure = 30 psig (2 bar)

This is a general guide and should not be the sole means of selecting or rejecting this material. ASTM test results in accordance with ASTM F-104, properties based on 1/32" (0.8mm) sheet thickness

³ DIN 3535 Part 4 Gas Permeability, cc/min (1/16" thick)
Nitrogen
Gasket load = 4640 psi (32 N/mm²), Int. pressure = 580 psig (40 bar)

All styles are furnished with an anti-stick parting agent as standard

* Values do not constitute specification limits

4.1.3 (continued)

The closed end of the cask vent plug assembly contains a 1/8-inch thick Garlock 9850 (or equivalent) gasket to provide the seal for the vent plug assembly.

4.1.4 Closure

The cask closure assembly has a tapered sidewall penetrating into the inside diameter of the cask cavity which centers the closure with a close fit with less clearance than the closure bolts-to-bolt hole clearances.

The closure assembly is secured to the cask body assembly by (12) 1.50-inch diameter bolts, equally spaced, around the assembly flange and the cask retaining flange. These bolts are fabricated of AISI-4140 chrome-moly steel, 160,000 pounds U.T.S. These bolts are torqued to 75 ft.-lbs.(lubricated). Eight bolts are threaded 1-1/2- 8 UNC and four bolts, 1-1/2- 6 UN.

4.2 Requirements for Normal Conditions of Transport

4.2.1 Release of Radioactive Material

The CNS 3-55 cask is designed to assure no release of radioactive material in excess of limits prescribed in the NRC Regulatory Guide 7.4, "Leakage Tests on Packages for the Shipment of Radioactive Materials."

Table 4.2.1 shows the radiological limitations on a releasable medium that could transport radioactivity through leaks, if any exist, in the containment system. Appendix 4.4 summarizes the derivation of the limits given in the table. Provided these limits are not exceeded, compliance of the CNS 3-55 package with the requirements of the NRC Regulatory Guide 7.4 is assured. In accordance with Regulatory Position, Paragraph C of this

9.0 DRAWINGS

LIST OF DRAWINGS FOR CNS 3-55 SHIPPING CASK

| <u>Drawing Number</u> | | <u>Drawing Name</u> | |
|-----------------------|---------|---|--|
| MOD-100 | Rev. 14 | Modification of VNDB Cask (LS-6000-1) | |
| C-111-D-0001 | Rev. – | 3-55 Cask Shield Ring | |
| C-111-E-0002 | Rev. 2 | CNS 3-55 Lid Detail | |
| MOD-139-1 | Rev. K | VNDB Shipping and Storage Cask Engineering Reference Drawing | |
| MOD-140 | Rev. C | VNDB Shipping and Storage Cask Closure Detail | |
| MOD-124 | Rev. 5 | VNDB Skid Assembly | |
| 0999-D-07 | Rev. 8 | Cask, Shock Absorber Detail for Top Cover, Bottom, & Trunnions | |
| 0999-C-08 | Rev. 9 | Vent | |
| C-110-D-5001 | Rev. 1 | Sunshade for 3-55 Transport Cask | |

Attachment Three

**THIS PAGE IS AN
OVERSIZED DRAWING
OR FIGURE,**

**THAT CAN BE VIEWED AT
THE RECORD TITLED:
DWG. NO. MOD-100, REV. 14
MODIFICATION F VNDB CASK
(LS-6000-1)**

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BY SEARCHING USING THE
DOCUMENT/REPORT NUMBER
MOD-100, REV. 14**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-1

MODIFICATION INSTRUCTIONS:

1. DWG. NO. LS-6000-1 SHEET 1:

REMOVE ITEM NO. 11. THIS ITEM TO BE FLUSH WITH ITEM NO. 1.

DWG. NO. LS-6000-1 SHEET 2:

REMOVE ITEM NOS. 12, 14, 15, 16, 18, 19, 22, AND 23.

THESE ITEMS TO BE FLUSH WITH ITEM NO. 1.

2. DWG. NO. LS-6000-1 SHEET 2:

ITEM NO. 13 TO BE CUT TO 4.50 DIM. REMOVE BURRS. (SEE

DWG. NO. MOD-100 SHEET 1 VIEW "A" AND SECTION H-H.)

3. DWG. NO. LS-6000-1 SHEET 2:

ITEM NO. 12 TO BE PLUG WELDED SEALED BOTH ENDS (TO BE FLUSH WITH

ITEM NO. 1). (SEE DWG. NO. MOD-100 SHEET 1 SECTION F-F.)

4. DWG. NO. LS-6000-1 SHEET 2:

(a) ADD ITEM NO. 104 LOCATE AND WELD PER DWG. NO. MOD-100 SHEET 1 SECTIONS D-D AND H-H. HOLES TO BE IN ALIGNMENT AFTER WELDING (TYPICAL 4 PLACES).

(b) ADD ITEM NO. 106 LOCATE AND WELD PER DWG. NO. MOD-100 SHEET 1 SECTIONS D-D AND H-H. HOLES TO BE IN ALIGNMENT AFTER WELDING (TYPICAL 4 PLACES).

(c) ADD ITEM NOS. 119 AND 104 LOCATE AND WELD PER DWG. NO. MOD-100 SHEET 1 SECTIONS C-C AND H-H. HOLES TO BE IN ALIGNMENT AFTER WELDING (TYPICAL 8 PLACES). ADD ITEM NO. 105 LOCATE AND WELD



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| MAT'L (COMMERCIAL TOLERANCES APPLY) | | | | | | BATTELLE MEMORIAL INSTITUTE 505 KING AVE. COLUMBUS 1, OHIO | | | | | |
| TOLERANCE UNLESS OTHERWISE NOTED | | | | NEXT ASSY. | NO REQ'D | TITLE | | | | | |
| FRAC | ANG | DEC | | | | MODIFICATION INSTRUCTIONS | | | | | |
| ± | ± | | | | | VNDB (ASK (LS-6000-1)) | | | | | |
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| BY: <i>Leibert</i> | | | | | | — | | | — | N 9954 | MOD-100 |
| DATE | 5-11-68 | | | | | | | | | | 14 |
| DIV. | 748 | | | | | | | | | | |

5. DWG. NO. MOD-100 SHEET 1:

- (a) ADD ITEM NO. 125. LOCATE AND WELD PER DWG. NO. MOD-100 SHEET 1.
- (b) ADD ITEM NO. 128 TO ITEM 125 USING FOUR 1-8 UNC x 1.88 LONG BOLTS.

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| | | | | | | | <i>14</i> |

PER DWG. NO. MOD-100 SHEET 1 SECTIONS C-C AND H-H. HOLES TO BE IN ALIGNMENT AFTER WELDING (TYPICAL 8 PLACES).

6. DWG. NO. LS-6000-1 SHEET 2:

DRILL SIX 0.75-DIA. HOLES ON AN 8.00-DIA. ON THE CENTER LINE OF ITEM NO. 13. DRILL THROUGH ITEM NO. 1 ONLY! PLUG WELD ITEM NO. 17 TO ITEM NO. 1 (TYPICAL 6 HOLES). TYPICAL 2 PLACES. (SEE DWG. NO. MOD-100 SHEET 1 VIEW "A" AND SECTION H-H .)

7. DWG. NO. LS-6000-1 SHEET 2:

ADD ITEM NOS. 101 AND 102 TO ITEM NO. 13 (2 PLACES). LOCATE AND WELD PER DWG. NO. MOD-100 SHEET 1 VIEW "A" AND SECTION H-H.

8. DWG. NO. LS-6000-1 SHEET 2:

ADD ITEM NOS. 107 AND 108, 2 REQUIRED EACH. LOCATE AND TACK WELD THESE ITEMS INTO POSITION PER DWG. NO. MOD-100 SHEET 1 VIEW "E" AND SECTIONS G-G AND H-H. MAKE ALL 0.50 FILLET WELDS FIRST. THEN MAKE THE 0.50 BEVEL "V" WELDS. FINISH WELDS AND MATCH FINISH DIRECTION (TYPICAL 4 PLACES).

9. DWG. NO. LS-6000-1 SHEET 1:

ADD ITEM NO. 116 TO ITEM NO. 3 (BASE PLATE) AND WELD PER DWG. NO. MOD-100 SHEET 1 SECTION H-H.

10. DWG. NO. LS-6000-1 SHEET 2:

(a) ADD ITEM NOS. 109 AND 114 TO ITEM NO. 3. POSITION THESE ITEMS AND WELD PER DWG. NO. MOD-100 SHEET 1 SECTION H-H.

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| BY | Robert | | | | | N 9954 | | | | MOD-100 | 14 |
| DATE | 5-17-68 | | | SCALE | K-G | | | | | | |
| DIV. | 748 | | | | | | | | | | |

(b) ADD ITEM NO. 110. LOCATE AND WELD PER DWG. NO. MOD-100 SHEET 1 SECTION H-H. NOTE: CAUTION MUST BE APPLIED AS TO INSURE PROPER ALIGNMENT BETWEEN ITEM NOS. 115, 111, 110, AND 114 (SECTION H-H).

(c) ADD ITEM NO. 115 TO ITEM NO. 111. POSITION ITEM NO. 115 WITH CAUTION TO INSURE PROPER ALIGNMENT WITH ITEM NOS. 110 AND 114. WELD PER DWG. NO. MOD-100 SHEET 1 SECTION H-H.

11. DWG. NO. LS-6000-1 SHEET 1:

ITEM NO. 120 REPLACES ITEM NO. 5 FOUR PLACES. SEE DWG. NO. MOD-100 SHEET 1 SECTIONS D-D AND H-H.

12. DWG. NO. LS-6000-1 SHEET 1:

ITEM NO. 121 REPLACES ITEM NO. 6 EIGHT PLACES. SEE DWG. NO. MOD-100 SHEET 1 SECTIONS C-C AND H-H.

13. DWG. NO. LS-6000-1 SHEET 1:

ITEM NO. 118 REPLACES ITEM NO. 15. SEE DWG. NO. MOD-100 SHEET 1 SECTION H-H.

14. DWG. NO. LS-6000-1 SHEET 1:

ITEM NO. 118 REPLACES ITEM NO. 13 (BOLTS). SEE DWG. NO. MOD-100 SHEET 1 SECTION H-H.

15. DWG. NO. LS-6000-1 SHEET 1:

ITEM NOS. 30, 17, 2, AND 14 NOT USED. (SEE DWG. NO. MOD-100 SHEET 1 SECTION H-H FOR REPLACEMENT ITEMS.)

16. DWG. NO. MOD-100 SHEET 1:

ADD ITEM NO. 127. LOCATE AND WELD PER SECTIONS H-H AND G-G.

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| MAT'L (COMMERCIAL TOLERANCES APPLY) | | | | | | | BATTELLE MEMORIAL INSTITUTE 505 KING AVE. COLUMBUS 1, OHIO | | | | |
| TOLERANCE UNLESS OTHERWISE NOTED | | | | NEXT ASSY. | | NO RECD | TITLE | | | | |
| FRAC | ANG | DEC | | | | | MODIFICATION INSTRUCTIONS VNDB CASK (LS-6000-1) | | | | |
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| DATE | <i>5-17-68</i> | | | | | | | | | | <i>14</i> |
| DIV. | <i>748</i> | | | | | | | | | | |

Attachment Four

**THIS PAGE IS AN
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**THAT CAN BE VIEWED AT
THE RECORD TITLED:
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DOCUMENT/REPORT NUMBER
0999-C-08**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-2

Attachment Five

**THIS PAGE IS AN
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**THAT CAN BE VIEWED AT
THE RECORD TITLED:
DWG. NO. MOD-100, REV. 13
MODIFICATION F VNDB CASK
(LS-6000-1)**

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BY SEARCHING USING THE
DOCUMENT/REPORT NUMBER
MOD-100, REV. 13**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-3

MODIFICATION INSTRUCTIONS:

1. DWG. NO. LS-6000-1 SHEET 1:

REMOVE ITEM NO. 11. THIS ITEM TO BE FLUSH WITH ITEM NO. 1.

DWG. NO. LS-6000-1 SHEET 2:

REMOVE ITEM NOS. 12, 14, 15, 16, 18, 19, 22, AND 23.

THESE ITEMS TO BE FLUSH WITH ITEM NO. 1.

2. DWG. NO. LS-6000-1 SHEET 2:

ITEM NO. 13 TO BE CUT TO 4.50 DIM. REMOVE BURRS. (SEE

DWG. NO. MOD-100 SHEET 1 VIEW "A" AND SECTION H-H.)

3. DWG. NO. LS-6000-1 SHEET 2:

ITEM NO. 12 TO BE PLUG WELDED SEALED BOTH ENDS (TO BE FLUSH WITH

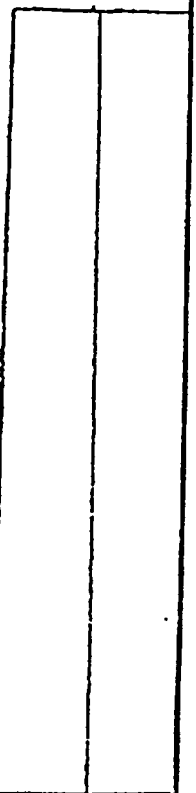
ITEM NO. 1). (SEE DWG. NO. MOD-100 SHEET 1 SECTION F-F.)

4. DWG. NO. LS-6000-1 SHEET 2:

(a) ADD ITEM NO. 104 LOCATE AND WELD PER DWG. NO. MOD-100 SHEET 1 SECTIONS D-D AND H-H. HOLES TO BE IN ALIGNMENT AFTER WELDING (TYPICAL 4 PLACES).

(b) ADD ITEM NO. 106 LOCATE AND WELD PER DWG. NO. MOD-100 SHEET 1 SECTIONS D-D AND H-H. HOLES TO BE IN ALIGNMENT AFTER WELDING (TYPICAL 4 PLACES).

(c) ADD ITEM NOS. 119 AND 104 LOCATE AND WELD PER DWG. NO. MOD-100 SHEET 1 SECTIONS C-C AND H-H. HOLES TO BE IN ALIGNMENT AFTER WELDING (TYPICAL 8 PLACES). ADD ITEM NO. 105 LOCATE AND WELD



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| MAT'L (COMMERCIAL TOLERANCES APPLY) | | | | | | BATTELLE MEMORIAL INSTITUTE 505 KING AVE. COLUMBUS 1, OHIO | | | | | | |
| TOLERANCE UNLESS OTHERWISE NOTED | | | | NEXT ASSY. | NO REQ'D | TITLE | | | | | | |
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| DATE | 5-11-68 | | | | | | | | | | | 13 |
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5. DWG. NO. MOD-100 SHEET 1:

- (a) ADD ITEM NO. 125. LOCATE AND WELD PER DWG. NO. MOD-100 SHEET 1.
- (b) ADD ITEM NO. 128 TO ITEM 125 USING FOUR 1-8 UNC x 1.88 LONG BOLTS.

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| MAT'L (COMMERCIAL TOLERANCES APPLY) | | | | BATTELLE MEMORIAL INSTITUTE 505 KING AVE. COLUMBUS 1, OHIO | | | |
| TOLERANCE UNLESS OTHERWISE NOTED | | | NEXT ASSY. | NO REQ'D | TITLE | | |
| FRAC | ANG | DEC' | | | MODIFICATION INSTRUCTIONS VNDB CASK (LS-6000-1) | | |
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| BY | <i>delat</i> | | | | | | |
| DATE | <i>6-4-68</i> | | | SCALE | K-G | ACCT. NO. | DWG. NO. |
| DIV. | <i>748</i> | | | <i>—</i> | <i>—</i> | <i>N 9954</i> | <i>MOD-100</i> |
| | | | | | | | 13 |

PER DWG. NO. MOD-100 SHEET 1 SECTIONS C-C AND H-H. HOLES TO BE IN ALIGNMENT AFTER WELDING (TYPICAL 8 PLACES).

6. DWG. NO. LS-6000-1 SHEET 2:

DRILL SIX 0.75-DIA. HOLES ON AN 8.00-DIA. ON THE CENTER LINE OF ITEM NO. 13. DRILL THROUGH ITEM NO. 1 ONLY! PLUG WELD ITEM NO. 17 TO ITEM NO. 1 (TYPICAL 6 HOLES). TYPICAL 2 PLACES. (SEE DWG. NO. MOD-100 SHEET 1 VIEW "A" AND SECTION H-H .)

7. DWG. NO. LS-6000-1 SHEET 2:

ADD ITEM NOS. 101 AND 102 TO ITEM NO. 13 (2 PLACES). LOCATE AND WELD PER DWG. NO. MOD-100 SHEET 1 VIEW "A" AND SECTION H-H.

8. DWG. NO. LS-6000-1 SHEET 2:

ADD ITEM NOS. 107 AND 108, 2 REQUIRED EACH. LOCATE AND TACK WELD THESE ITEMS INTO POSITION PER DWG. NO. MOD-100 SHEET 1 VIEW "E" AND SECTIONS G-G AND H-H. MAKE ALL 0.50 FILLET WELDS FIRST. THEN MAKE THE 0.50 BEVEL "V" WELDS. FINISH WELDS AND MATCH FINISH DIRECTION (TYPICAL 4 PLACES).

9. DWG. NO. LS-6000-1 SHEET 1:

ADD ITEM NO. 116 TO ITEM NO. 3 (BASE PLATE) AND WELD PER DWG. NO. MOD-100 SHEET 1 SECTION H-H.

10. DWG. NO. LS-6000-1 SHEET 2:

(a) ADD ITEM NOS. 109 AND 114 TO ITEM NO. 3. POSITION THESE ITEMS AND WELD PER DWG. NO. MOD-100 SHEET 1 SECTION H-H.

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| <i>A WAS SUP FOR 4 SHTS.</i> | | | | | | | | | | |
| REV. LET. | REVISIONS | | | BY | DATE | REV. LET. | REVISIONS | | BY | DATE |
| MAT'L (COMMERCIAL TOLERANCES APPLY) | | | | | | BATTELLE MEMORIAL INSTITUTE 505 KING AVE. COLUMBUS 1, OHIO | | | | |
| TOLERANCE UNLESS OTHERWISE NOTED | | | | NEXT ASSY | NO REQ'D | TITLE | | | | |
| FRAC | ANG | DEC | | | | MODIFICATION INSTRUCTIONS VNDB CASK (LS-6000-1) | | | | |
| ± | ± | | | | | | | | | |
| BY | DRAWN | CHECKED | PROJ. APP | | | | | | | |
| | <i>Latent</i> | | | | | | | | | |
| DATE | 5-17-68 | | | SCALE | K-G | ACCT. NO. | DWG. NO. | | | |
| DIV. | 748 | | | — | — | N 9954 | MOD-100 | 13 | | |

(b) ADD ITEM NO. 110. LOCATE AND WELD PER DWG. NO. MOD-100 SHEET 1 SECTION H-H. NOTE: CAUTION MUST BE APPLIED AS TO INSURE PROPER ALIGNMENT BETWEEN ITEM NOS. 115, 111, 110, AND 114 (SECTION H-H).

(c) ADD ITEM NO. 115 TO ITEM NO. 111. POSITION ITEM NO. 115 WITH CAUTION TO INSURE PROPER ALIGNMENT WITH ITEM NOS. 110 AND 114. WELD PER DWG. NO. MOD-100 SHEET 1 SECTION H-H.

11. DWG. NO. LS-6000-1 SHEET 1:

ITEM NO. 120 REPLACES ITEM NO. 5 FOUR PLACES. SEE DWG. NO. MOD-100 SHEET 1 SECTIONS D-D AND H-H.

12. DWG. NO. LS-6000-1 SHEET 1:

ITEM NO. 121 REPLACES ITEM NO. 6 EIGHT PLACES. SEE DWG. NO. MOD-100 SHEET 1 SECTIONS C-C AND H-H.

13. DWG. NO. LS-6000-1 SHEET 1:

ITEM NO. 118 REPLACES ITEM NO. 15. SEE DWG. NO. MOD-100 SHEET 1 SECTION H-H.

14. DWG. NO. LS-6000-1 SHEET 1:

ITEM NO. 118 REPLACES ITEM NO. 13 (BOLTS). SEE DWG. NO. MOD-100 SHEET 1 SECTION H-H.

15. DWG. NO. LS-6000-1 SHEET 1:

ITEM NOS. 30, 17, 2, AND 14 NOT USED. (SEE DWG. NO. MOD-100 SHEET 1 SECTION H-H FOR REPLACEMENT ITEMS.)

16. DWG. NO. MOD-100 SHEET 1:

ADD ITEM NO. 127. LOCATE AND WELD PER SECTIONS H-H AND G-G.

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| A | | WAS SHIT 4 OF 4 SHITS | | | | | | | | | |
| REV. LET. | REVISIONS | | | BY | DATE | REV. LET. | REVISIONS | | | BY | DATE |
| MAT'L (COMMERCIAL TOLERANCES APPLY) | | | | | | BATTELLE MEMORIAL INSTITUTE 505 KING AVE. COLUMBUS 1, OHIO | | | | | |
| TOLERANCE UNLESS OTHERWISE NOTED | | | | NEXT ASSY. | | NO REQ D | | TITLE | | | |
| FRAC | ANG | DEC | | | | | | MODIFICATION INSTRUCTIONS VYDB CASK (LS-6000-1) | | | |
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| DIV. | 748 | | | | - | N 9954 | MOD-100 | 13 | | | |

Attachment Six

**THIS PAGE IS AN
OVERSIZED DRAWING
OR FIGURE,**

**THAT CAN BE VIEWED AT
THE RECORD TITLED:
DWG. NO. 0999-C-08, REV. 8**

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BY SEARCHING USING THE
DOCUMENT/REPORT NUMBER
0999-C-08**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

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