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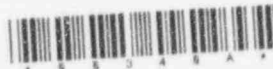
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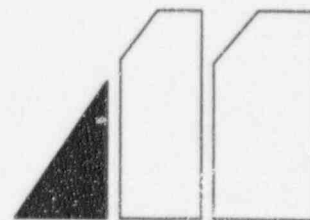


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MILLSTONE NUCLEAR POWER STATION  
MAINTENANCE PROCEDURE



**Target Rock Safety Relief Valve — Topworks  
Changeout**

MP 717.7

Rev. 6

STOP

THINK

ACT

REVIEW

Approval:

PORC Mtg. No: 1-97-090

Date: 6-4-97

Effective Date: 6-11-97

Level of Use  
**General**

SME: J. Pernal

Millstone Unit 1  
Maintenance Procedure

Target Rock Safety Relief Valve — Topworks Changeout

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## 1. PURPOSE

### 1.1 Objective

The objective of this procedure is to provide instructions for removal and installation of the topworks for the main steam safety relief valve.

### 1.2 Discussion

The main steam safety relief valves are Target Rock Model 7567F pilot-operated valves and consist of two principle assemblies: a pilot stage assembly and a main stage assembly. These two assembly stages are directly coupled to provide a unitized, dual-function, safety and relief valve.

The pilot stage assembly is the pressure-sensing and control element and the main stage assembly is a system fluid-actuated follower valve which provides the pressure relief function. Self-actuation of the pilot assembly at set pressure vents the main piston chamber, permitting the system pressure to fully open the main assembly, which results in system depressurization at full rated flow. The topworks assembly discussed and described in this procedure consists of an air operator and the pilot stage subassembly. This procedure provides instructions to remove and install the topworks.

Before performing maintenance on the topworks, any valve insulation and the solenoid and manifold assembly must be removed. Removal and installation of the solenoid is covered by MP 717.8, "Main Steam Safety Relief Valve — Solenoid Changeout (EQ)."

### 1.3 Applicability

This procedure applies to the following local IDs:

- 1-MS-3A, "Main Steam Safety/Relief A Valve"
- 1-MS-3B, "Main Steam Safety/Relief B Valve"
- 1-MS-3C, "Main Steam Safety/Relief C Valve"
- 1-MS-3D, "Main Steam Safety/Relief D Valve"
- 1-MS-3E, "Main Steam Safety/Relief E Valve"
- 1-MS-3F, "Main Steam Safety/Relief F Valve"

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## 2. PREREQUISITES

### 2.1 General

- 2.1.1 Planned valve repairs have been evaluated in accordance with WC 3, "ASME Section XI Repair and Replacement Program." If necessary, an ASME Section XI Repair and Replacement Plan has been prepared and approved and included in the AWO.

### 2.2 Documents

- 2.2.1 C MP 715C, "Installation of Lockwire and Lockplates"
- 2.2.2 MP 717.8, "Main Steam Safety Relief Valve — Solenoid Changeout (EQ)"

### 2.3 Measuring and Test Equipment (M&TE)

- 2.3.1 All M&TE has been calibrated in accordance with WC 8, "Control and Calibration of Measuring and Test Equipment" and the calibration is current.
- 2.3.2 QA torque wrenches (click or dial type) with a minimum accuracy and maximum torque wrench full scale value listed in the table below for the specified torque application range:

Specified Torque Application Range	Maximum Torque Wrench Full Scale Value	Minimum Accuracy
95 to 105 ft•lbs	200 to 350 ft•lb	5%

### 2.4 Tools and Consumables

#### 2.4.1 Tools

- Standard mechanic's tool kit
- Wire cutters

#### 2.4.2 Equipment

- Hoisting slings
- Hoist, minimum 1-ton capacity

#### 2.4.3 Consumables

- Approved cleaning solvent such as Polywater HydraFoam 2020
- Approved O-ring lubricant such as Versilube
- Low-lint rags
- Never-Seez (Nickel Special) anti-seize thread lubricant
- Temporary protective covers for 3-inch diameter of pilot body and exposed portion of safety relief valve

#### 2.4.4 Spare Parts

- Gasket ( $4\frac{1}{8}$ -inch OD x  $3\frac{3}{8}$ -inch ID x 0.125 inch )
- Gasket ( $6\frac{3}{16}$ -inch OD x  $5\frac{11}{16}$ -inch ID x 0.125 inch)
- Lockwire (annealed 0.032 inch diameter)

### 3. PRECAUTIONS

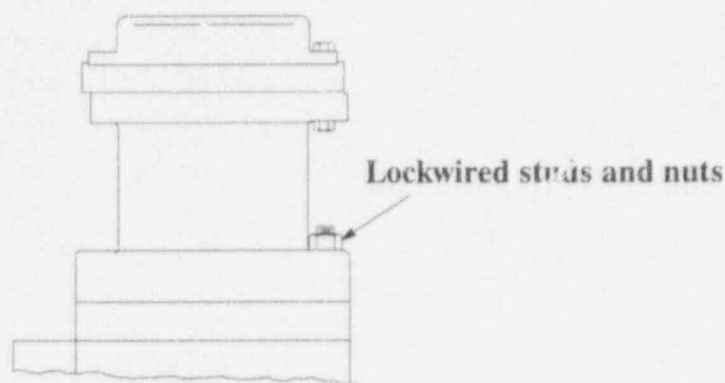
- 3.1 All consumables used in or on power plant components must be controlled in accordance with CC 1, "Control of Chemical Consumable Products."
- 3.2 Components being disassembled must be match marked to aid in reassembly. Delicate parts or critical mating surfaces must *not* be match marked.
- 3.3 All O-rings and gaskets that are exposed during maintenance must be replaced.
- 3.4 Approved thread lubricant and anti-seize compound must be applied to all threads prior to installation.
- 3.5 These valves fall within the ASME Section XI boundary. Repair or replacement of pressure-retaining components must be evaluated in accordance with WC 3, "ASME Section XI Repair and Replacement Program."

#### 4. INSTRUCTIONS

##### 4.1 Topworks Assembly Removal

- 4.1.1 Refer To Attachment 1, and, IF necessary, REMOVE valve insulation.
- 4.1.2 Refer To MP 717.8, "Main Steam Safety Relief Valve — Solenoid Changeout (EQ)," and REMOVE solenoid and manifold assembly.
- 4.1.3 RECORD serial number and setpoint of topworks assembly being removed onto AWO and Attachment 3.
- 4.1.4 Refer To Figure 1, and REMOVE lockwire from studs and nuts.

**Figure – 1. Topworks Removal**



- 4.1.5 REMOVE nuts.
- 4.1.6 TAG and STORE nuts.

#### CAUTION

1. Sling must be rigged to exert lifting force on axial centerline of pilot assembly for a vertical lift to prevent damage to the portion of pilot body which extends into base.
2. Removing the topworks when the base is hot may cause galling.

- 4.1.7 IF necessary, ALLOW base to cool.

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- 4.1.8 Refer To Attachment 2, and RIG hoist and sling to topworks assembly for vertical lift.

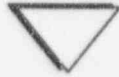


### CAUTION



Topworks assembly must be lifted gently to avoid any impact to 3-inch diameter end.

- 4.1.9 *Gently* LIFT topworks assembly free of base and studs.
- 4.1.10 REMOVE and DISCARD gaskets.
- 4.1.11 INSTALL temporary protective cover on 3-inch diameter of pilot body.



### CAUTION



To maintain the valve setpoint accuracy, the topworks assembly must be maintained in an upright position during transport.

- 4.1.12 *Gently* PLACE topworks assembly on firm base or cribbing in an upright position.
- 4.1.13 TAG and PREPARE topworks assembly for shipping as necessary.
- 4.1.14 INSTALL temporary cover or protective wrap on exposed part of safety relief valve, and PREVENT entry of foreign materials and damage to gasket sealing surfaces.



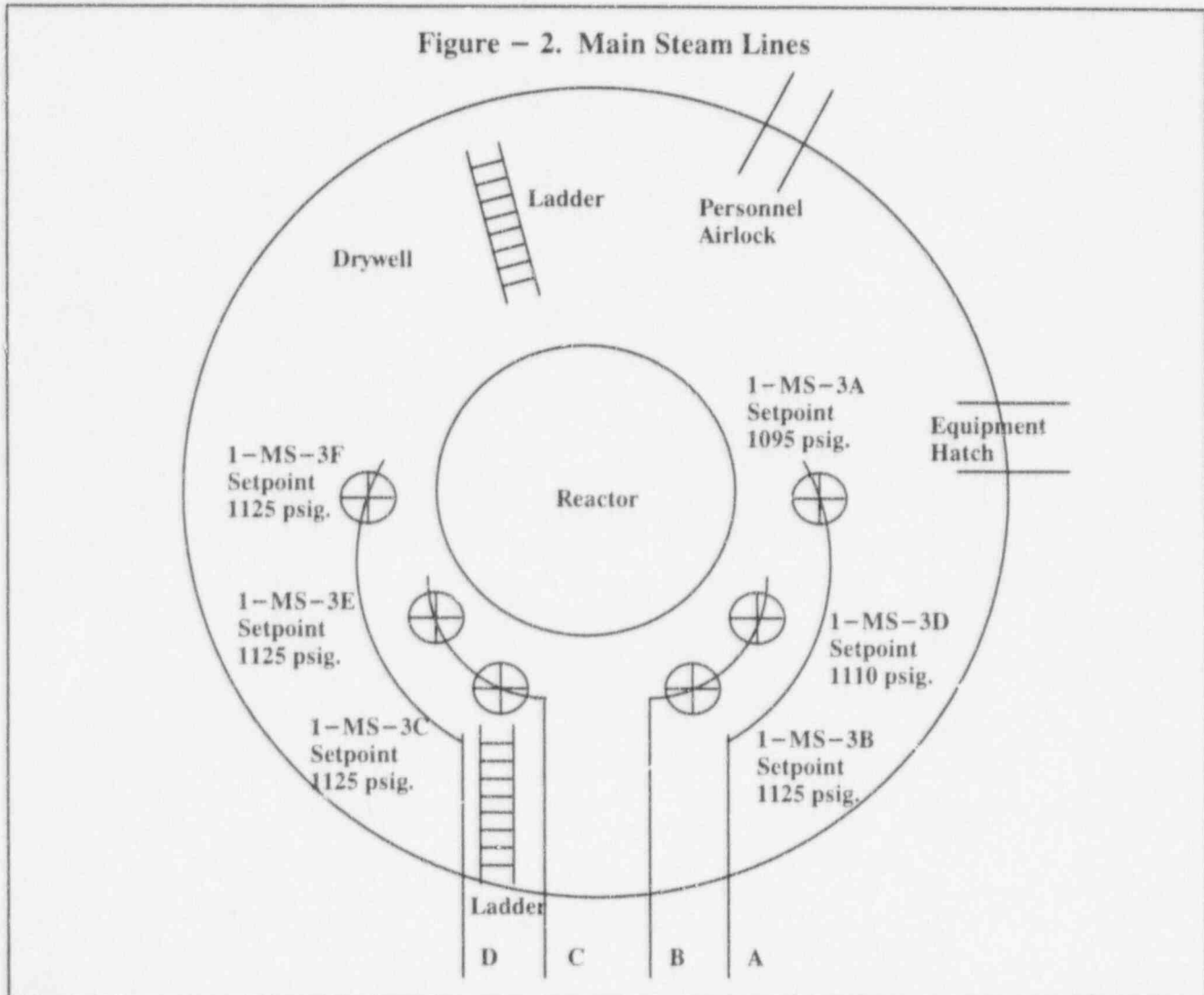
## 4.2 Topworks Assembly Installation

### NOTE

Figure 2 shows main steam lines and valve setpoints.

- 4.2.1 RECORD serial number and setpoint of topworks assembly being installed onto AWO and Attachment 3.

Figure - 2. Main Steam Lines



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## CAUTION



To maintain the valve setpoint accuracy, the topworks assembly must be transported in an upright position.

- 4.2.2 Refer To Attachment 2, and RIG hoist and sling to topworks assembly for vertical lift.

## NOTE

Vent ports must be free of any foreign material such as tape or protective wrap before installation.

- 4.2.3 REMOVE protective wrap or temporary covers from safety relief valve.
- 4.2.4 Gently LIFT topworks assembly and PERFORM the following:
- Refer To Attachment 2 and INSTALL new gaskets.
  - REMOVE protective wrap or temporary covers from topworks assembly, and ENSURE tape has been removed from vent ports.



## CAUTION

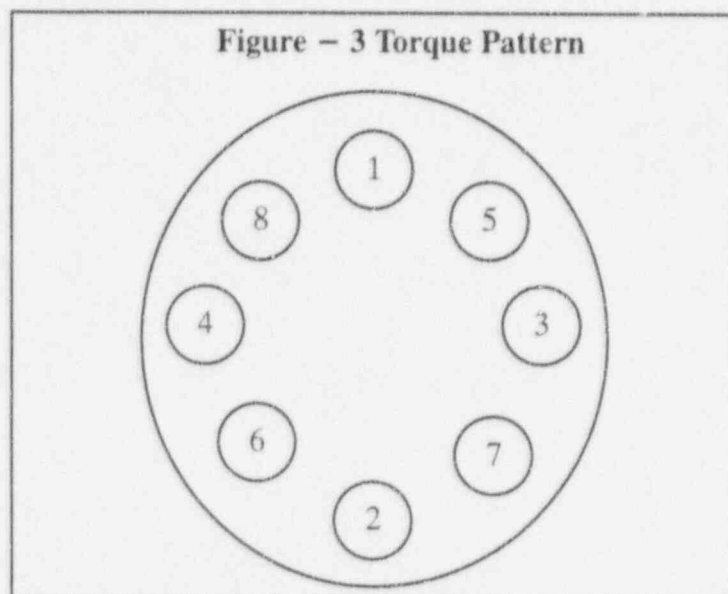


Topworks assembly must be gently lowered to avoid *any* impact to 3 inch diameter end or damage to new gaskets.

- 4.2.5 POSITION topworks assembly and gently LOWER assembly into valve base.
- 4.2.6 Refer To Attachment 2, and, using approved lubricant, LUBRICATE stud threads.

4.2.7 INSTALL nuts onto studs and TORQUE nuts as follows:

- a. Refer To Figure 3, and, using criss-cross pattern, dual VERIFY and TORQUE bolts in the following increments:



- 1) 30 ft•lbs (25 to 35 ft•lbs)
- 2) 60 ft•lbs (55 to 65 ft•lbs)
- 3) 100 ft•lbs (95 to 105 ft•lbs)

- b. RECORD the following onto Attachment 3:

- Measured torque value
- Torque wrench serial number
- Calibration due date

4.2.8 Refer To C MP 715C, "Installation of Lockwire and Lockplates," and INSTALL lockwire to studs and nuts.

4.2.9 Independently VERIFY lockwire installation, and RECORD verification onto Attachment 3.

4.2.10 Refer To MP 717.8, "Main Steam Safety Relief Valve — Solenoid Changeout (EQ)" and INSTALL solenoid and manifold assembly.

4.2.11 IF necessary, Refer To Attachment 1, INSTALL insulation onto valve body, and ENSURE the following:

- No insulation gaps exist between valve body and main steam piping.
- No insulation is installed above bonnet lower flange level.

## 5. REVIEW AND SIGN-OFF

- 5.1 Review and sign-off for this procedure is satisfied by review and sign-off of the AWO and Attachment 3.

## 6. REFERENCES

- 6.1 NNECo Accident Prevention Manual
- 6.2 Memo MP1-DE-94-2080, "MP1 SRV Insulation Gaps and Damaged Buckles
- 6.3 GE SIL 196 Supplement 16, "Target Rock SRV Insulation Maintenance"
- 6.4 Administrative Procedures
  - 6.4.1 CC 1, "Control of Chemical Consumable Products"
  - 6.4.2 WC 3, "ASME Section XI Repair and Replacement Program"
  - 6.4.3 WC 8, "Control and Calibration of Measuring and Test Equipment"
- 6.5 Maintenance Procedures
  - 6.5.1 C MP 715C, "Installation of Lockwire and Lockplates"
  - 6.5.2 MP 717.8, "Target Rock Safety Relief Valve—Solenoid Changeout (EQ)"
- 6.6 Vendor Manual
  - 6.6.1 25202-726-001A, Target Rock Corp, "Safety and Relief Valve Model 7567F Technical Manual"
- 6.7 Other Documents
  - 6.7.1 GE SIL No. 196, Rev. 1, "Target Rock SRV Insulation Maintenance"

## 7. SUMMARY OF CHANGES

- 7.1 Made various editorial and reference changes as a result of the Biennial Review.

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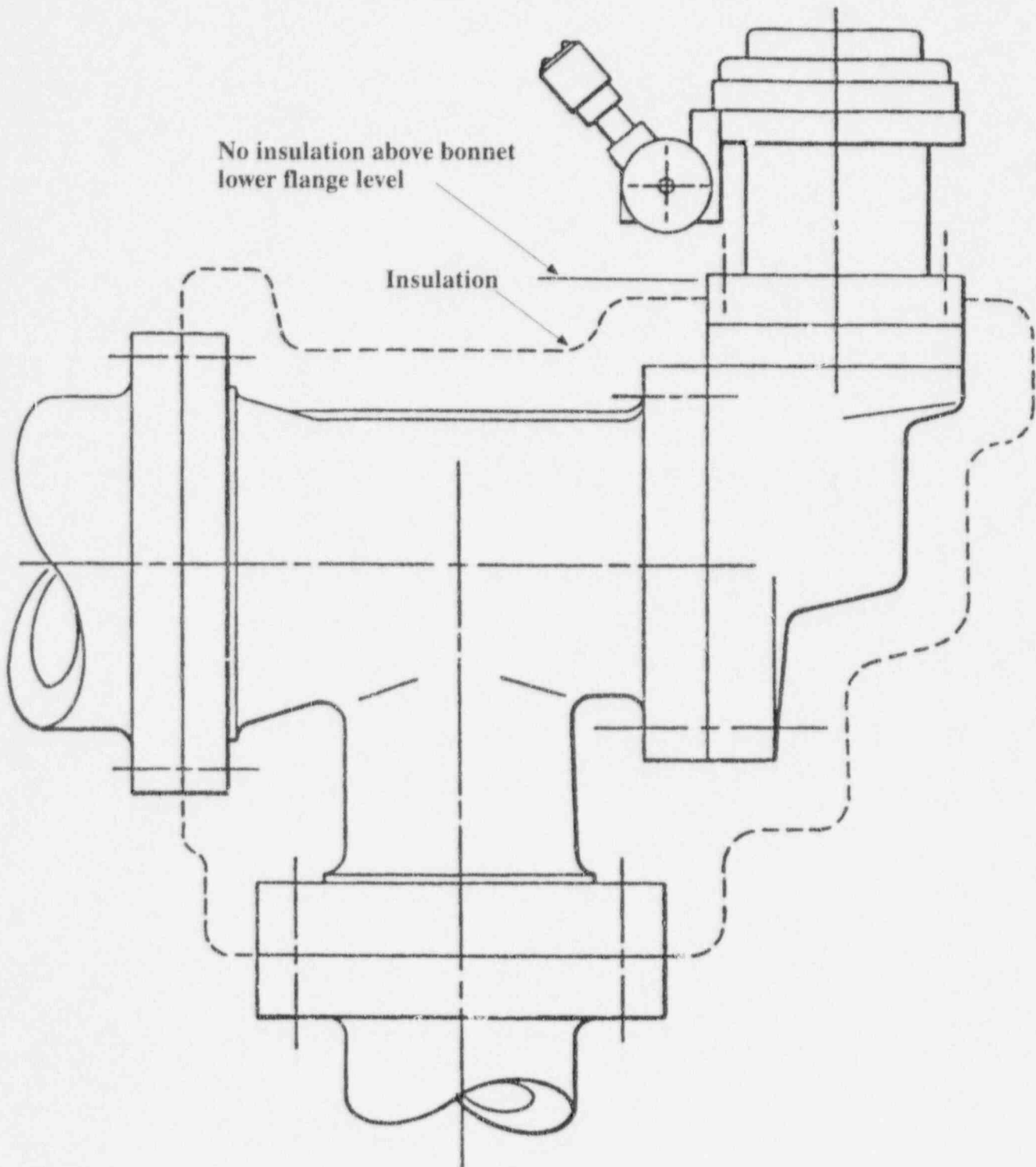
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- 7.2 Incorporated System Manager review comments regarding removing the topworks when the base is hot, maintaining the topworks in a vertical position during transport, and using the necessary torque increments and torque pattern to eliminate leakage.
- 7.3 Incorporated GE SIL No. 196, Rev. 1, "Target Rock SRV Insulation Maintenance," regarding valve body insulation integrity.

**Attachment 1**  
**Valve Body Insulation**  
(Sheet 1 of 1)



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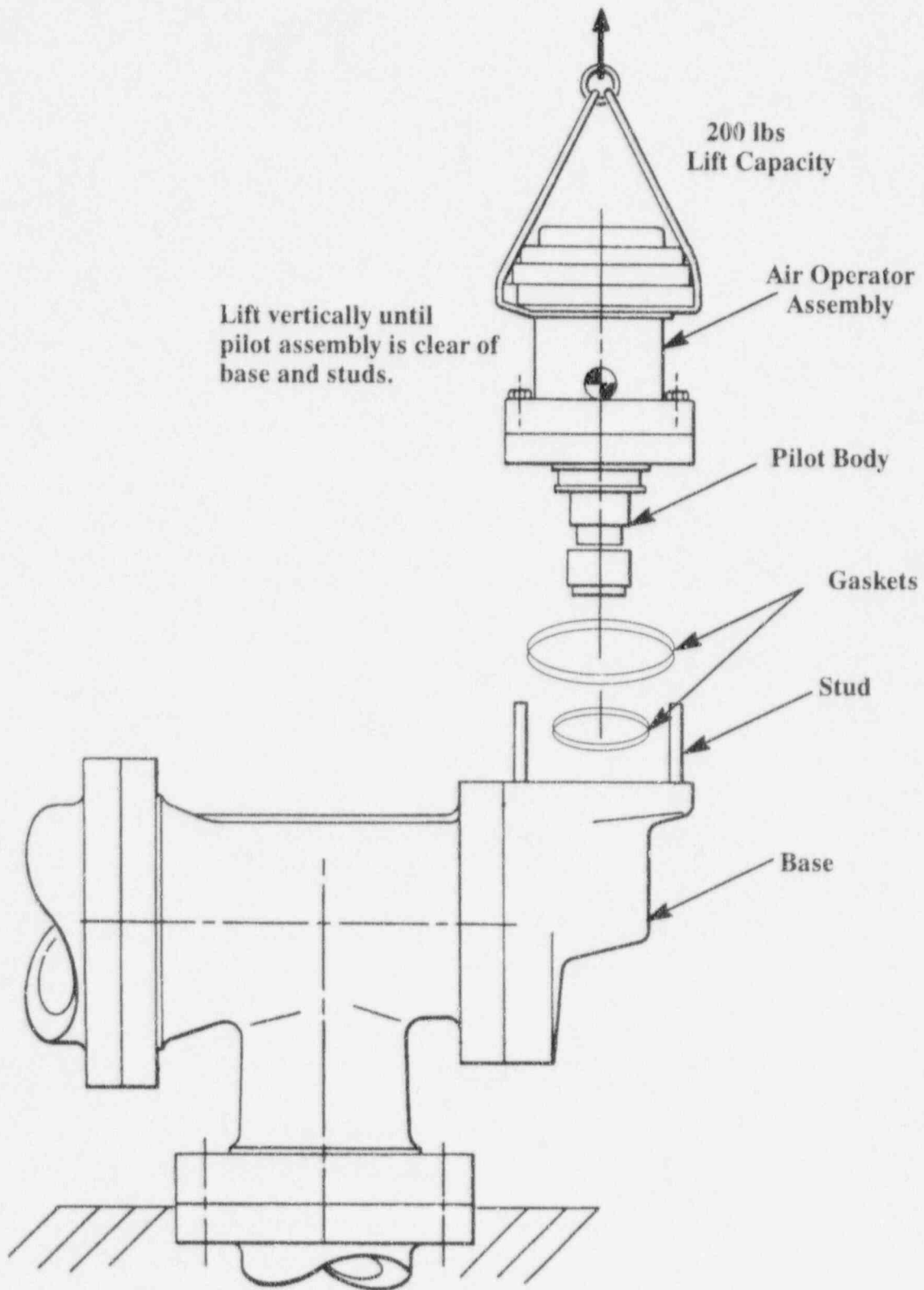
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**Attachment 2**  
**Topworks Lift**  
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**Attachment 3**  
**Inspection Data Record**

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AWO \_\_\_\_\_

Local ID \_\_\_\_\_

Serial Number and Setpoint of Topworks Removed \_\_\_\_\_

Serial Number and Setpoint of Topworks Installed \_\_\_\_\_

Step	Inspection	Measurement	Acceptance Criteria	Performed By	Verifier
4.2.7	Topworks torque	_____ ft•lbs	95 to 105 ft•lbs	_____	_____
	Torque wrench serial No. _____ Calibration due date _____				
4.2.9	Lockwire mounting bolts	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	Lockwire installed	_____	_____

Comments \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Worked Performed By \_\_\_\_\_ Date \_\_\_\_\_

Data Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

Maintenance Supervisor

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**General**

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