

**CALVERT CLIFFS NUCLEAR POWER PLANT**

**UNIT ONE**

**1C09-ALM**

**ESFAS 12 ALARM MANUAL**

**REVISION 35**

**Safety Related**

REFERRAL USE

Approval Authority: M. V. Seckens 10/9/01  
signature/date

Effective Date: 12/17/2001

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3501

3502

## **1.0 PURPOSE**

- A. This Alarm Manual provides information to the Operator for diagnosis of alarm conditions and recommended actions to mitigate the consequences of the alarm condition.
- B. This Alarm Manual provides pre-planned compensatory actions that should be considered for implementation when an alarm is not available.

## **2.0 APPLICABILITY/SCOPE**

This Alarm Manual addresses Control Room annunciator panel 1C09.

## **3.0 REFERENCES AND DEFINITIONS**

### **3.1 DEVELOPMENTAL REFERENCES**

- A. Drawings:
  - 1. 1-LD-58 (61-058-E), Logic Diagram Engineered Safety Features Actuation System Unit 1
  - 2. 1E-87 (61-087-E), Engineered Safety Features Control Board 1C08-9
  - 3. OM-74 (60-731-E), Safety Injection and Containment Spray Systems
- B. NO-1-201, Calvert Cliffs Operating Manual
- C. NO-1-206, Alarm Annunciator Control
- D. Additional references are listed in the response for each alarm window.

### **3.2 PERFORMANCE REFERENCES**

- A. Alarm Manuals
  - 1C08
  - 1C10
  - 1C43
  - 1C184
  - 2C43A
- B. AOP-3B, Loss of Shutdown Cooling
- C. AOP-6B, Accidental Release of Radioactive Liquid Waste

- D. OI-3A, Safety Injection And Containment Spray
- E. OI-3B, Shutdown Cooling
- F. OI-16, Component Cooling System
- G. Technical Specifications
- H. Technical Requirements Manual (TRM)

### 3.3 **DEFINITIONS**

None

### 4.0 **PREREQUISITES**

Specific alarm received or not available.

### 5.0 **PRECAUTIONS**

- A. Inappropriate actions may result if operational decisions are based solely on single alarms without consideration of associated alarms and instrumentation.
- B. In no case does the information contained herein supersede an OP, OI, AOP or EOP.

### 6.0 **PERFORMANCE**

- A. Upon receipt of an alarm, **DETERMINE** its validity by comparing appropriate indications to the setpoint, if there is one.
- B. **IF** multiple alarms are received, **THEN EVALUATE** alarms from highest to lowest priority.

#### **NOTE**

The CONDITIONS - RESPONSES are listed in hierarchical order, **NOT** as step by step instructions. Perform the response that applies to the existing condition.

- C. **UTILIZING** the information for each alarm:
  - 1. **DIAGNOSE** the condition.
  - 2. **IMPLEMENT** the appropriate EOP or AOP or **INITIATE** appropriate responses.

### 7.0 **POST PERFORMANCE ACTIVITIES**

None

**8.0** **BASES**

**[B0101]** AOP-6B satisfies INPO SOER 85-05, Recommendation 4 for a leak or rupture of the RWT, which could cause a loss of Safe Shutdown functions due to flooding.

**9.0** **RECORDS**

None

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-01</u>
1-PS-312(Low) 1-PS-313(High)	210 PSIG (208 to 212 PSIG) 235 PSIG (230 to 240 PSIG)		
		<p><b>11A SIT PRESS</b></p>	

**POSSIBLE CAUSES**

- Low Pressure:
  - Draining 11A SIT
  - Vent open or leaking
  - Out surge of water from tank
- High Pressure:
  - Filling 11A SIT with initial pressure greater than 215 PSIG
  - Rising level due to check valve leakage

**AUTOMATIC ACTIONS**

None

**NOTE**

Technical Specifications section 3.5.1 should be consulted for SIT operability determination for either of the following conditions.

CONDITION	RESPONSE
1. 11A SIT low pressure.	1. <b>RAISE</b> 11A SIT pressure by raising N <sub>2</sub> pressure or raising SIT level (whichever is more practical), <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u> .
2. 11A SIT high pressure.	2. <b>LOWER</b> 11A SIT pressure by venting 11A SIT or lowering SIT level (whichever is more practical) <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u> .

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 11A SIT pressure at least hourly.

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(continued)

WINDOW

H-01

**REFERENCES**

61-087-B Sheet 14S; 61-087-E Sheet 7

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-02</u>
1-LS-312(Low) 1-LS-313(High)	187 in. (indicated)(186.5 to 187.5 in.) 199 in. (indicated)(198.5 to 199.5 in.)		<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><b>11A SIT LVL</b></p> </div>

**POSSIBLE CAUSES**

- Low level:
  - Draining 11A SIT
  - Decreasing RCS system pressure below 11A SIT pressure without isolating SIT
- High level:
  - Over-filling 11A SIT
  - Check valve leakage

**AUTOMATIC ACTIONS**

None

**NOTE**

Technical Specifications section 3.5.1 should be consulted for SIT operability determination for either of the following conditions.

CONDITION	RESPONSE
1. 11A SIT low level.  2. 11A SIT high level.	1. <b>IF</b> the alarm is <b>NOT</b> expected due to plant conditions, <b>THEN FILL</b> 11A SIT <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u> .  2. <b>PERFORM</b> the following as necessary: <ul style="list-style-type: none"> <li>• <b>DRAIN</b> 11A SIT <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u></li> <li>• <b>IF</b> check valve leakage is suspected, <b>THEN REFER</b> to OI-3A, <u>Safety Injection And Containment Spray</u>, to determine which check valve is leaking <b>AND</b> the rate of inleakage</li> </ul>

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(continued)

WINDOW

H-02

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 11A SIT level at least hourly.

**REFERENCES**

61-087-E Sheet 14S; 61-087-B Sheet 7

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-03</u>
1-PS-322(Low) 1-PS-323(High)	210 PSIG (208 to 212 PSIG) 235 PSIG (230 to 240 PSIG)		
		<p><b>11B SIT PRESS</b></p>	

**POSSIBLE CAUSES**

- Low Pressure:
  - Draining 11B SIT
  - Vent open or leaking
  - Out surge of water from tank
- High Pressure:
  - Filling 11B SIT with initial pressure greater than 215 PSIG
  - Rising level due to check valve leakage

**AUTOMATIC ACTIONS**

None

**NOTE**

Technical Specifications section 3.5.1 should be consulted for SIT operability determination for either of the following conditions.

CONDITION	RESPONSE
1. 11B SIT low pressure.	1. <b>RAISE</b> 11B SIT pressure by raising N <sub>2</sub> pressure or raising SIT level (whichever is more practical), <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u> .
2. 11B SIT high pressure.	2. <b>LOWER</b> 11B SIT pressure by venting 11B SIT or lowering SIT level (whichever is more practical) <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u> .

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 11B SIT pressure at least hourly.

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WINDOW

H-03

**REFERENCES**

61-087-B Sheet 14S; 61-087-E Sheet 7

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-04</u>
1-LS-322(Low)	187 in. (indicated)(186.5 to 187.5 in.)	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><b>11B SIT LVL</b></p> </div>	
1-LS-323(High)	199 in. (indicated)(198.5 to 199.5 in.)		

**POSSIBLE CAUSES**

- Low level:
  - Draining 11B SIT
  - Decreasing RCS system pressure below 11B SIT pressure without isolating SIT
- High level:
  - Over-filling 11B SIT
  - Check valve leakage

**AUTOMATIC ACTIONS**

None

**NOTE**

Technical Specifications section 3.5.1 should be consulted for SIT operability determination for either of the following conditions.

CONDITION	RESPONSE
1. 11B SIT low level.	1. <b>IF</b> the alarm is <b>NOT</b> expected due to plant conditions, <b>THEN FILL</b> 11B SIT <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u> .
2. 11B SIT high level.	2. <b>PERFORM</b> the following as necessary: <ul style="list-style-type: none"> <li>• <b>DRAIN</b> 11B SIT <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u></li> <li>• <b>IF</b> check valve leakage is suspected, <b>THEN REFER</b> to OI-3A, <u>Safety Injection And Containment Spray</u> to determine which check valve is leaking <b>AND</b> the rate of inleakage</li> </ul>

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WINDOW

H-04

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 11B SIT level at least hourly.

**REFERENCES**

61-087-B Sheet 14S; 61-087-E Sheet 7

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-05</u>
1-PS-332(Low) 1-PS-333(High)	210 PSIG (208 to 212 PSIG) 235 PSIG (230 to 240 PSIG)		
		<p><b>12A SIT PRESS</b></p>	

**POSSIBLE CAUSES**

- Low Pressure:
  - Draining 12A SIT
  - Vent open or leaking
  - Out surge of water from tank
- High Pressure:
  - Filling 12A SIT with initial pressure greater than 215 PSIG
  - Rising level due to check valve leakage

**AUTOMATIC ACTIONS**

None

**NOTE**

Technical Specifications section 3.5.1 should be consulted for SIT operability determination for either of the following conditions.

CONDITION	RESPONSE
1. 12A SIT low pressure.	1. <b>RAISE</b> 12A SIT pressure by raising N <sub>2</sub> pressure or raising SIT level (whichever is more practical), <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u> .
2. 12A SIT high pressure.	2. <b>LOWER</b> 12A SIT pressure by venting 11A SIT or lowering SIT level (whichever is more practical) <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u> .

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 12A SIT pressure at least hourly.

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WINDOW

H-05

**REFERENCES**

61-087-B Sheet 14S; 61-087-E Sheet 7

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-06</u>
1-LS-332(Low)	187 in. (indicated)(186.5 to 187.5 in.)	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><b>12A SIT LVL</b></p> </div>	
1-LS-333(High)	199 in. (indicated)(198.5 to 199.5 in.)		

**POSSIBLE CAUSES**

- Low level:
  - Draining 12A SIT
  - Decreasing RCS system pressure below 12A SIT pressure without isolating SIT
- High level:
  - Over-filling 12A SIT
  - Check valve leakage

**AUTOMATIC ACTIONS**

None

**NOTE**

Technical Specifications section 3.5.1 should be consulted for SIT operability determination for either of the following conditions.

CONDITION	RESPONSE
1. 12A SIT low level.	1. IF the alarm is <b>NOT</b> expected due to plant conditions, <b>THEN FILL</b> 12A SIT <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u> .
2. 12A SIT high level.	2. <b>PERFORM</b> the following as necessary: <ul style="list-style-type: none"> <li>• <b>DRAIN</b> 12A SIT <b>PER</b> of OI-3A, <u>Safety Injection And Containment Spray</u></li> <li>• <b>IF</b> check valve leakage is suspected, <b>THEN REFER</b> to OI-3A, <u>Safety Injection And Containment Spray</u> to determine which check valve is leaking <b>AND</b> the rate of inleakage</li> </ul>

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(continued)

WINDOW

H-06

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 12A SIT level at least hourly.

**REFERENCES**

61-087-B Sheet 14S; 61-087-E Sheet 7

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-07</u>
1-PS-342(Low) 1-PS-343(High)	210 PSIG (208 to 212 PSIG) 235 PSIG (230 to 240 PSIG)		
		<p><b>12B SIT PRESS</b></p>	

**POSSIBLE CAUSES**

- Low Pressure:
  - Draining 12B SIT
  - Vent open or leaking
  - Out surge of water from tank
- High Pressure:
  - Filling 12B SIT with initial pressure greater than 215 PSIG
  - Rising level due to check valve leakage

**AUTOMATIC ACTIONS**

None

**NOTE**

Technical Specifications section 3.5.1 should be consulted for SIT operability determination for either of the following conditions.

CONDITION	RESPONSE
1. 12B SIT low pressure.	1. <b>RAISE</b> 12B SIT pressure by raising N <sub>2</sub> pressure or raising SIT level (whichever is more practical), <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u> .
2. 12B SIT high pressure.	2. <b>LOWER</b> 12B SIT pressure by venting 12B SIT or lowering SIT level (whichever is more practical) <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u> .

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 12B SIT pressure at least hourly.

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WINDOW

H-07

**REFERENCES**

61-087-B Sheet 14S; 61-087-E Sheet 7

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-08</u>
1-LS-342(Low)	187 in. (indicated)(186.5 to 187.5 in.)	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><b>12B SIT LVL</b></p> </div>	
1-LS-343(High)	199 in. (indicated)(198.5 to 199.5 in.)		

**POSSIBLE CAUSES**

- Low level:
  - Draining 12B SIT
  - Decreasing RCS system pressure below 12B SIT pressure without isolating SIT
- High level:
  - Over-filling 12B SIT
  - Check valve leakage

**AUTOMATIC ACTIONS**

None

**NOTE**

Technical Specifications section 3.5.1 should be consulted for SIT operability determination for either of the following conditions.

CONDITION	RESPONSE
1. 12B SIT low level.	1. <b>IF</b> the alarm is <b>NOT</b> expected due to plant conditions, <b>THEN FILL</b> 12B SIT <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u> .
2. 12B SIT high level.	2. <b>PERFORM</b> the following as necessary: <ul style="list-style-type: none"> <li>• <b>DRAIN</b> 12B SIT <b>PER</b> OI-3A, <u>Safety Injection And Containment Spray</u></li> <li>• <b>IF</b> check valve leakage is suspected, <b>THEN REFER</b> to OI-3A, <u>Safety Injection And Containment Spray</u> to determine which check valve is leaking <b>AND</b> the rate of inleakage</li> </ul>

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WINDOW

H-08

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 12B SIT level at least hourly.

**REFERENCES**

61-087-B Sheet 14S; 61-087-E Sheet 7

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-09</u>
1-LIA-4142	High Level: 468 in.(466 to 468 in.) Low Level: 460 in. (459 to 461 in.)	<div style="border: 1px solid black; padding: 10px;"> <p><b>11 RWT</b></p> <ul style="list-style-type: none"> <li>• LVL</li> <li>• TEMP</li> </ul> </div>	
1-TIA-4142	High Temp: 95° F (92 to 98° F) Low Temp: 55° F (52 to 58° F)		

**POSSIBLE CAUSES**

- High Temperature:
  - Excessive hot water flow from Plant Heating System through RWT Heat Exchanger
- Low Temperature:
  - Improper valve lineup
  - RWT Recirculation Pump **NOT** operating
  - Inadequate hot water supply from Plant Heating System to RWT Heat Exchanger
- High or Low level:
  - Malfunction in or improper use of CVCS, Spent Fuel Pool Cooling, Safety Injection or Containment Spray Systems
  - Filling SIT(s), RFP, or SFP

**AUTOMATIC ACTIONS**

None

(continued)

WINDOW

H-09

**NOTE**

- TRM 15.1.2, 15.1.3 and TS 3.5.4 should be consulted for determination of RWT operability, for conditions 1, 2, and 4 below.
- For a high level condition, overflow begins at approximately one inch above the alarm setpoint.

CONDITION	RESPONSE
1. High temperature 11 RWT.	1. <b>ENSURE</b> plant heating is SECURED to RWT HX per Cold Weather Operations section of OI-3A, <u>Safety Injection And Containment Spray</u> .
2. Low temperature 11 RWT.	2. <b>REFER</b> to Cold Weather Operations section of OI-3A, <u>Safety Injection And Containment Spray</u> .
3. High level 11 RWT.	3. <b>PERFORM</b> the following: <ul style="list-style-type: none"> <li>a. <b>STOP</b> the source of water addition to 11 RWT.</li> <li>b. <b>CHECK</b> the valve alignment.</li> </ul>
4. Low level 11 RWT.	4. <b>PERFORM</b> the following: <ul style="list-style-type: none"> <li>a. <b>CHECK</b> the valve alignment.</li> <li>b. <b>IF</b> the low level of 11 RWT is due to a leak or rupture of the RWT, <b>THEN IMPLEMENT</b> AOP-6B, <u>Accidental Release of Radioactive Liquid Waste</u>. <b>[B0101]</b></li> </ul>

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**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 11 RWT level and temperature at least hourly.

**REFERENCES**

61-075-B Sheet 51; 61-087-B Sheet 14S; 61-087-E Sheet 7

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-10</u>
1-LIA-4143	Low Level: 38.5 ft. (38.3 to 38.5 ft.)	<div style="border: 1px solid black; padding: 10px;"> <p><b>11 RWT</b></p> <ul style="list-style-type: none"> <li>• LVL</li> <li>• TEMP</li> </ul> </div>	
1-TIA-4143	High Temp: 95° F (92 to 98° F) Low Temp: 55° F (52 to 58° F)		

**POSSIBLE CAUSES**

- High Temperature:
  - Excessive hot water flow from Plant Heating System through RWT Heat Exchanger
- Low Temperature:
  - Improper valve lineup
  - RWT Recirculation Pump **NOT** operating
  - Inadequate hot water supply from Plant Heating System to RWT Heat Exchanger
- Low level:
  - Malfunction in or improper use of CVCS, Spent Fuel Pool Cooling, Safety Injection or Containment Spray Systems

**AUTOMATIC ACTIONS**

None

(continued)

WINDOW

H-10

**NOTE**

TRM 15.1.2, 15.1.3 and TS 3.5.4 should be consulted for determination of RWT operability, for the following conditions.

CONDITION	RESPONSE
1. High temperature 11 RWT.	1. <b>ENSURE</b> plant heating is SECURED to RWT HX per Cold Weather Operations section of OI-3A, Safety Injection And Containment Spray.
2. Low temperature 11 RWT.	2. <b>REFER</b> to Cold Weather Operations section of OI-3A, <u>Safety Injection And Containment Spray</u> .
3. Low level 11 RWT.	3. <b>PERFORM</b> the following: a. <b>CHECK</b> valve alignment. b. <b>IF</b> the low level of 11 RWT is due to a leak or rupture of the RWT, <b>THEN IMPLEMENT</b> AOP-6B, <u>Accidental Release of Radioactive Liquid Waste</u> . <b>[B0101]</b>

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**ANNUNCIATOR COMPENSATORY ACTIONS**

- **IF** alarm window H-09 is in service and clear, **THEN** no compensatory actions are required.
- **IF** alarm window H-09 is **NOT** in service or is **NOT** clear, **THEN MONITOR** 11 RWT level and temperature at least hourly.

**REFERENCES**

61-075-B Sheet 51; 61-087-B Sheet 14S; 61-087-E Sheet 7

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-11</u>
1-PIA-319 1-PIA-329	1400 PSIG (1375 to 1425 PSIG)	<p><b>•11A •11B SI CKV PRESS HI</b></p>	3502

**POSSIBLE CAUSES**

3502

- Charging Pumps discharging into the Auxiliary HPSI Header
- Check valve 11A LOOP INLET CKV, 1-SI-217 or 11B LOOP INLET CKV, 1-SI-227 leaking from the RCS into the SI System

**AUTOMATIC ACTIONS**

None

**NOTE**

The pressure indication should normally be the same as that in the SIT plus the height of water in the tank, which usually results in a total pressure of approximately 250 PSIG.

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WINDOW

H-11

CONDITION	RESPONSE
<p>1. High pressure 11A or 11B SI check valve.</p>	<p>1. <b>PERFORM</b> the following:</p> <ol style="list-style-type: none"> <li>a. <b>DETERMINE</b> if resultant of an evolution in progress.</li> <li>b. <b>CYCLE</b>, as necessary, the following valves to relieve the pressure to the RCDT: <ul style="list-style-type: none"> <li>• SIT LEAKOFF TO RCDT, 1-SI-661-CV</li> <li>• 11A CKV LKG CV, 1-SI-618-CV (using 1-HIC-3618) or 11B CKV LKG CV, 1-SI-628-CV (using 1-HIC-3628), dependent on loop with high pressure</li> </ul> </li> <li>c. <b>MONITOR</b> RCS leak rate.</li> <li>d. <b>IF</b> leakage from the RCS into the Safety Injection system is suspected, <b>THEN DETERMINE</b> whether SIT levels have risen: <ol style="list-style-type: none"> <li>(1) <b>IF</b> SIT level rises 10 inches, <b>THEN NOTIFY</b> Plant Chemistry to sample boron concentration to ensure between 2450 and 2700 PPM.</li> </ol> </li> <li>e. <b>IF</b> check valve leakage is suspected, <b>THEN INITIATE</b> a CR for the affected check valve(s); 11A LOOP INLET CKV, 1-SI-217 or 11B LOOP INLET CKV, 1-SI-227.</li> </ol>

**ANNUNCIATOR COMPENSATORY ACTIONS****MONITOR** 11A and 11B SI check valves pressure indication at least hourly.**REFERENCES**

61-076-C Sheet 25; 61-087-B Sheet 14S; 61-087-E Sheet 7

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-12</u>
1-PIA-339 1-PIA-349	1400 PSIG (1375 to 1425 PSIG)	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p>•12A •12B SI CKV PRESS HI</p> </div>	3502

**POSSIBLE CAUSES**

3502

- Charging Pumps discharging into the Auxiliary HPSI Header
- Check valve 12A LOOP INLET CKV, 1-SI-237 or 12B LOOP INLET CKV, 1-SI-247 leaking from the RCS into the SI System

**AUTOMATIC ACTIONS**

None

**NOTE**

The pressure indication should normally be the same as that in the SIT plus the height of water in the tank, which usually results in a total pressure of approximately 250 PSIG.

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WINDOW

H-12

CONDITION	RESPONSE
<p>1. High pressure 12A or 12B SI check valve.</p>	<p>1. <b>PERFORM</b> the following:</p> <ul style="list-style-type: none"> <li>a. <b>DETERMINE</b> if resultant of an evolution in progress.</li> <li>b. <b>CYCLE</b>, as necessary, the following valves to relieve the pressure to the RC DT: <ul style="list-style-type: none"> <li>• LEAKOFF TO RC DT, 1-SI-661-CV</li> <li>• 12A SIT CKV LKG CV, 1-SI-638-CV (using 1-HIC-3638) or 12B SIT CKV LKG CV, 1-SI-648-CV (using 1-HIC-3648), dependent on loop with high pressure</li> </ul> </li> <li>c. <b>MONITOR</b> RCS leak rate.</li> <li>d. <b>IF</b> leakage from the RCS into the Safety Injection system is suspected, <b>THEN DETERMINE</b> whether SIT levels have risen: <ul style="list-style-type: none"> <li>(1) <b>IF</b> SIT level rises 10 inches, <b>THEN NOTIFY</b> Plant Chemistry to sample boron concentration to ensure between 2450 and 2700 PPM.</li> </ul> </li> <li>e. <b>IF</b> check valve leakage is suspected, <b>THEN INITIATE</b> an Issue Report for the affected check valve(s); 12A LOOP INLET CKV, 1-SI-237 or 12B LOOP INLET CKV, 1-SI-247.</li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 12A **AND** 12B SI check valves pressure indication at least hourly.

**REFERENCES**

61-076-C Sheet 25; 61-087-B Sheet 14S; 61-087-E Sheet 7

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-13</u>
1-PS-301X	1125 PSIG (1100 to 1150 PSIG)	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><b>11 HPSI PP DISCH PRESS HI</b></p> </div>	3501

**POSSIBLE CAUSES**

- 11 HPSI Pump operating at minimum flow conditions
- 11 HPSI Pump discharge flow path isolated

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
<p>1. 11 HPSI Pump discharge pressure high.</p>	<p>1. <b>PERFORM</b> the following:</p> <ul style="list-style-type: none"> <li>a. <b>IF</b> SIAS has initiated, <b>THEN CHECK</b> ALL HPSI header and loop isolation MOVs have opened.</li> <li>b. <b>ENSURE</b> 11 HPSI Pump valve lineup is correct.</li> <li>c. During normal operation, <b>ENSURE OPEN</b> MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV <b>AND</b> MINI FLOW RETURN TO RWT ISOL MOV 660, 1-SI-660-MOV.</li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 11 HPSI Pump discharge pressure at least hourly while in operation.

**REFERENCES**

61-076-C Sheet 3; 61-087-B Sheet 14S

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-14</u>
1-PS-301Y	1125 PSIG (1100 to 1150 PSIG)	<b>12 HPSI PP DISCH PRESS HI</b>	3501

**POSSIBLE CAUSES**

- 12 HPSI Pump operating at minimum flow conditions
- 12 HPSI Pump discharge flow path isolated

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. 12 HPSI Pump discharge pressure high.	1. <b>PERFORM</b> the following: <ul style="list-style-type: none"> <li>a. <b>IF</b> SIAS has initiated, <b>THEN CHECK</b> ALL HPSI header and loop isolation MOVs have opened.</li> <li>b. <b>ENSURE</b> 12 HPSI Pump valve lineup is correct.</li> <li>c. During normal operation, <b>ENSURE OPEN</b> MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV <b>AND</b> MINI FLOW RETURN TO RWT ISOL MOV 660, 1-SI-660-MOV.</li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 12 HPSI Pump discharge pressure at least hourly while in operation.

**REFERENCES**

61-076-C Sheet 4; 61-087-B Sheet 14S

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-15</u>
1-PS-301Z	1125 PSIG (1100 to 1150 PSIG)	<b>13 HPSI PP DISCH PRESS HI</b>	3501

**POSSIBLE CAUSES**

- 13 HPSI Pump operating at minimum flow conditions
- 13 HPSI Pump discharge flow path isolated

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. 13 HPSI Pump discharge pressure high.	1. <b>PERFORM</b> the following: <ol style="list-style-type: none"> <li>a. <b>IF</b> SIAS has initiated, <b>THEN CHECK</b> ALL HPSI header and loop isolation MOVs have opened.</li> <li>b. <b>ENSURE</b> 13 HPSI Pump valve lineup is correct.</li> <li>c. During normal operation, <b>ENSURE OPEN</b> MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV <b>AND</b> MINI FLOW RETURN TO RWT ISOL MOV 660, 1-SI-660-MOV.</li> </ol>

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 13 HPSI Pump discharge pressure at least hourly while in operation.

**REFERENCES**

61-076-C Sheet 6; 61-087-B Sheet 14S

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-16
1-HS-301Y	N/A		

**12 HPSI PP HS  
NOT IN PTL**

**POSSIBLE CAUSES**

12 HPSI PP handswitch, 1-HS-301Y, **NOT** in PTL.

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. HPSI Pump handswitch <b><u>NOT</u></b> in PTL.	1. Perform the following: <ol style="list-style-type: none"> <li>a. <b>CHECK</b> 12 HPSI PP handswitch, 1-HS-301Y, is in PTL.</li> <li>b. <b>REFER</b> to the following Tech Specs, as applicable:                             <ul style="list-style-type: none"> <li>• 3.4.12</li> <li>• 3.5.2</li> <li>• 3.5.3</li> </ul> </li> </ol>

**ANNUNCIATOR COMPENSATORY ACTIONS**

If alarm is OOS **CHECK** 12 HPSI PP handswitch, 1-HS-301Y, is in PTL as appropriate, at least every 6 hours.

**REFERENCES**

61076SH0004

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-17
1-HS-301X Auto Start Failure Relay Breaker 152-1108: <ul style="list-style-type: none"> <li>• Position Switch</li> <li>• Charging Spring</li> <li>• 186 Lockout device</li> </ul>	N/A	<b>11 HPSI PP</b> <b>•SIAS BLOCKED</b> <b>•AUTO START</b>	

**POSSIBLE CAUSES**

- 11 HPSI PP handswitch, 1-HS-301X, in PULL TO LOCK
- 11 HPSI Pump fails to start within one second after auto start signal is initiated
- 11 HPSI Pump breaker, 152-1108:
  - **NOT** racked in
  - Charging spring **NOT** charged
  - 186 Lockout Device tripped

**AUTOMATIC ACTIONS**

None

(continued)

(continued)

WINDOW

H-17

CONDITION	RESPONSE
<p>1. 11 HPSI Pump did <b>NOT</b> start, or is out of service.</p>	<p>1. Perform the following:</p> <ul style="list-style-type: none"> <li>a. <b>IF</b> SIAS has actuated, <b>THEN ENSURE</b> 13 HPSI Pump is running.</li> <li>b. <b>IF</b> necessary, <b>THEN CONSIDER</b> aligning 12 HPSI Pump for operation.</li> <li>c. <b>PERFORM</b> the following unless 11 HPSI Pump is out of service for maintenance: <ul style="list-style-type: none"> <li>(1) <b>CHECK</b> for 11 HPSI Pump breaker, 152-1108: <ul style="list-style-type: none"> <li>• Breaker is racked in</li> <li>• Charging spring is charged</li> <li>• 186 Lockout Device is reset</li> </ul> </li> <li>(2) <b>CHECK</b> 11 HPSI PP handswitch, 1-HS-301X, is in NORMAL.</li> </ul> </li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **CHECK** 11 HPSI PP handswitch, 1-HS-301X, is in NORMAL at least every 6 hours
- **CHECK** 11 HPSI Pump breaker, 152-1108, racked in, charging spring charged, and 186 Device reset at least every 6 hours

**REFERENCES**

61-076-C Sheet 3; 61-087-B Sheet 14S; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-18
Auto Start Failure Relay Breaker 152-1408: <ul style="list-style-type: none"> <li>• Position Switch</li> <li>• Charging Spring</li> <li>• 186 Lockout device</li> </ul>	N/A		<b>12 HPSI PP</b> <b>•SIAS BLOCKED</b> <b>•AUTO START</b>

**POSSIBLE CAUSES**

- 12 HPSI Pump fails to start within one second after auto start signal is initiated
- 12 HPSI Pump breaker, 152-1408:
  - **NOT** racked in
  - Charging spring **NOT** charged
  - 186 Lockout Device tripped

**AUTOMATIC ACTIONS**

None

**NOTE**

12 HPSI PP handswitch, 1-HS-301Y, is normally in PULL TO LOCK, which will prevent pump auto-start.

CONDITION	RESPONSE
1. It is necessary to operate 12 HPSI Pump.	1. Perform the following: <ol style="list-style-type: none"> <li>a. <b>IF</b> is desired to run 12 HPSI Pump, <b>THEN ENSURE</b> the following for 12 HPSI Pump breaker, 152-1408:                             <ul style="list-style-type: none"> <li>• Breaker is racked in</li> <li>• Charging spring is charged</li> <li>• 186 Lockout Device is reset</li> </ul> </li> <li>b. <b>PLACE</b> 12 HPSI PP handswitch, 1-HS-301Y, in NORMAL, <b>AND DECLARE</b> 13 HPSI Pump inoperable.</li> </ol>

**ANNUNCIATOR COMPENSATORY ACTIONS**

**CHECK** 12 HPSI Pump breaker, 152-1408, racked in, charging spring charged, and 186 Device reset at least every 6 hours

(continued)

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(continued)

WINDOW

H-18

**REFERENCES**

61-076-C Sheet 4; 61-087-B Sheet 14S; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-19</u>
1-HS-301Z Auto Start Failure Relay Breaker 152-1110 or 152-1410: <ul style="list-style-type: none"> <li>• Position Switch</li> <li>• Charging Spring</li> <li>• 186 Lockout Device</li> </ul>	N/A	<b>13 HPSI PP</b> <b>•SIAS BLOCKED</b> <b>•AUTO START</b>	

**POSSIBLE CAUSES**

- 13 HPSI PP handswitch, 1-HS-301Z, in PULL TO LOCK
- 13 HPSI Pump fails to start within one second after auto start signal is initiated
- 13 HPSI Pump breaker, 152-1410 or 152-1110 (depending on the bus to which 13 HPSI Pump is aligned):
  - **NOT** racked in
  - Charging spring **NOT** charged
  - 186 Lockout Device tripped

**AUTOMATIC ACTIONS**

None

(continued)

(continued)

WINDOW

H-19

**NOTE**

13 HPSI Pump is normally aligned to 14 4KV Bus, due to 12 HPSI PP handswitch, 1-HS-301X, in PULL TO **LOCK**.

CONDITION	RESPONSE
<p>1. 13 HPSI Pump did <b>NOT</b> start, or is out of service.</p>	<p>1. <b>PERFORM</b> the following:</p> <ul style="list-style-type: none"> <li>a. <b>IF</b> SIAS has actuated, <b>THEN ENSURE</b> 11 HPSI Pump is running.</li> <li>b. <b>IF</b> necessary, <b>THEN CONSIDER</b> aligning 12 HPSI Pump for operation.</li> <li>c. <b>PERFORM</b> the following unless 13 HPSI Pump is out of service for maintenance:                             <ul style="list-style-type: none"> <li>(1) <b>CHECK</b> 13 HPSI Pump breaker, 152-1410 or 152-1110, depending on the bus to which 13 HPSI Pump is aligned:                                     <ul style="list-style-type: none"> <li>• Breaker is racked in</li> <li>• Charging spring is charged</li> <li>• 186 Lockout Device is reset</li> </ul> </li> <li>(2) <b>CHECK</b> 13 HPSI PP handswitch, 1-HS-301Z, is in <b>NORMAL</b>.</li> </ul> </li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **CHECK** 13 HPSI PP handswitch, 1-HS-301Z, is in **NORMAL** at least every 6 hours
- **CHECK** ALL of the following for 13 HPSI Pump breaker, 152-1410 or 152-1110 (depending on the bus to which 13 HPSI Pump is aligned) at least every 6 hours:
  - Breaker racked in
  - Charging spring charged
  - 186 Lockout Device reset

**REFERENCES**

61-076-C Sheets 6 and 7; 61-087-B Sheet 14S; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-20</u>
152-1410 Position SW 1-HS-301Z-2 (189-1410) 152-1110 Position SW 1-HS-301Z-1 (189-1110)	N/A		
		<b>13 HPSI PP BKR L/U IMPR</b>	

**POSSIBLE CAUSES**

Any combination other than a disconnect closed and its associated breaker racked in.

**AUTOMATIC ACTIONS**

None

**NOTE**

13 HPSI Pump is normally aligned to 14 4KV Bus, due to 12 HPSI PP handswitch, 1-HS-301X, in PULL TO **LOCK**.

CONDITION	RESPONSE
1. Incorrect alignment of 13 HPSI Pump breaker and disconnect switch.	1. <b>ENSURE</b> the desired 13 HPSI Pump disconnect is closed, 1-HS-301Z-2 (189-1410) or 1-HS-301Z-1 (189-1110) <b>AND</b> its associated breaker, 152-1410 or 152-1110, is racked in.

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **CHECK** the positions of 1-HS-301Z-1 (189-1110) and 1-HS-301Z-2 (189-1410) at least every 6 hours
- **CHECK** 13 HPSI Pump breaker, 152-1110 or 152-1410 (depending on the disconnect which is closed) is racked in at least every 6 hours

**REFERENCES**

61-076-C Sheets 6 and 7; 61-087-B Sheet 14S; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-21</u>
1-HS-302X Auto Start Failure Relay 1-HS-302XB Breaker 152-1104: <ul style="list-style-type: none"> <li>• Position Switch</li> <li>• Charging Spring</li> <li>• 186 Lockout Device</li> </ul>	N/A		

**11 LPSI PP**  
**•SIAS BLOCKED**  
**•AUTO START**

**POSSIBLE CAUSES**

- 11 LPSI PP handswitch, 1-HS-302X, in PULL TO LOCK
- 11 LPSI Pump fails to start within one second after an auto start signal is initiated
- 11 LPSI PP LOCAL/REMOTE handswitch, 1-HS-302XB, in LOCAL at BKR 152-1104
- 11 LPSI Pump breaker, 152-1104:
  - **NOT** racked in
  - Charging spring **NOT** charged
  - 186 Lockout Device tripped

**AUTOMATIC ACTIONS**

None

(continued)

(continued)

WINDOW

H-21

**NOTE**

**IF** 11 LPSI PP LOCAL/REMOTE handswitch, 1-HS-302XB, is in LOCAL,  
**THEN** 11 LPSI Pump will **NOT** start on a SIAS and pump status lights will be off.

CONDITION	RESPONSE
1. 11 LPSI Pump did <b>NOT</b> start or is out of service.	1. <b>PERFORM</b> the following: <ul style="list-style-type: none"> <li>a. <b>IF</b> SIAS has actuated, <b>THEN ENSURE</b> 12 LPSI Pump is running.</li> <li>b. <b>PERFORM</b> the following unless 11 LPSI Pump is out of service for maintenance:                             <ul style="list-style-type: none"> <li>(1) <b>CHECK</b> for 11 LPSI Pump breaker, 152-1104:                                     <ul style="list-style-type: none"> <li>• Breaker is racked in</li> <li>• Charging spring is charged</li> <li>• 186 Lockout Device is reset</li> </ul> </li> <li>(2) <b>CHECK</b> 11 LPSI PP LOCAL/REMOTE handswitch, 1-HS-302XB, is in REMOTE.</li> <li>(3) <b>CHECK</b> 11 LPSI PP handswitch, 1-HS-302X, is in NORMAL.</li> </ul> </li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **CHECK** 11 LPSI PP handswitch, 1-HS-302X, is in NORMAL at least every 6 hours
- **CHECK** 11 LPSI PP LOCAL/REMOTE handswitch, 1-HS-302XB, in REMOTE at least every 6 hours
- **CHECK** 11 LPSI Pump breaker, 152-1104, racked in, charging spring charged, and 186 Device reset at least every 6 hours

**REFERENCES**

61-076-C Sheet 1A; 61-087-B Sheet 14S; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-22</u>
1-HS-302Y Auto Start Failure Relay 1-HS-302YB Breaker 152-1404: • Position Switch • Charging Spring • 186 Lockout Device	N/A		
		<b>12 LPSI PP</b> <b>•SIAS BLOCKED</b> <b>•AUTO START</b>	

**POSSIBLE CAUSES**

- 12 LPSI PP handswitch, 1-HS-302Y, in PULL TO LOCK
- 12 LPSI Pump fails to start within one second after an auto start signal is initiated
- 12 LPSI PP LOCAL/REMOTE handswitch, 1-HS-302YB, in LOCAL at BKR 152-1404
- 12 LPSI Pump breaker, 152-1404:
  - **NOT** racked in
  - Charging spring **NOT** charged
  - 186 Lockout Device tripped

**AUTOMATIC ACTIONS**

None

(continued)

(continued)

WINDOW

H-22

**NOTE**

**IF** 12 LPSI PP LOCAL/REMOTE handswitch, 1-HS-302YB, is in LOCAL, **THEN** 12 LPSI Pump will **NOT** start on a SIAS and pump status lights will be off.

CONDITION	RESPONSE
<p>1. 12 LPSI Pump did <b>NOT</b> start or is out of service.</p>	<p>1. <b>PERFORM</b> the following:</p> <p>a. <b>IF</b> SIAS has actuated, <b>THEN ENSURE</b> 11 LPSI Pump is running.</p> <p>b. <b>PERFORM</b> the following unless 12 LPSI Pump is out of service for maintenance:</p> <p>(1) <b>CHECK</b> for 12 LPSI Pump breaker, 152-1404:</p> <ul style="list-style-type: none"> <li>• Breaker is racked in</li> <li>• Charging spring is charged</li> <li>• 186 Lockout Device is reset</li> </ul> <p>(2) <b>CHECK</b> 12 LPSI PP LOCAL/REMOTE handswitch, 1-HS-302YB is in REMOTE.</p> <p>(3) <b>CHECK</b> 12 LPSI PP handswitch, 1-HS-302Y, is in NORMAL</p>

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **CHECK** 12 LPSI PP handswitch, 1-HS-302Y, is in NORMAL at least every 6 hours
- **CHECK** 12 LPSI PP LOCAL/REMOTE handswitch, 1-HS-302YB, in REMOTE at least every 6 hours
- **CHECK** 12 LPSI Pump breaker, 152-1404, racked in, charging spring charged, and 186 Device reset at least every 6 hours

**REFERENCES**

61-076-C Sheet 2A; 61-087-B Sheet 14S; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-23</u>
1-HS-302XA 1-HS-302YA	N/A		
			<p><b>LPSI PP RAS OVERRIDE</b></p>

**POSSIBLE CAUSES**

Either LPSI Pump RAS Override keyswitch in RAS OVERRIDE:

- 11 LPSI PP RAS OVERRIDE, 1-HS-302XA
- 12 LPSI PP RAS OVERRIDE, 1-HS-302YA

**AUTOMATIC ACTIONS**

None

<b><u>NOTE</u></b>
<ul style="list-style-type: none"> <li>• When in RAS OVERRIDE, each keyswitch overrides the RAS signal for its associated LPSI Pump.</li> <li>• The keys are located in the key locker behind the CRS desk.</li> <li>• Both keyswitches are normally in RAS OVERRIDE when on Shutdown Cooling.</li> </ul>

CONDITION	RESPONSE
<p>1. Either LPSI Pump RAS Override keyswitch in RAS OVERRIDE.</p>	<p>1. <b><u>IF</u></b> in normal operation, <b><u>THEN ENSURE</u></b> both LPSI Pump RAS Override keyswitches are in NORMAL:</p> <ul style="list-style-type: none"> <li>• 11 LPSI PP RAS OVERRIDE, 1-HS-302XA</li> <li>• 12 LPSI PP RAS OVERRIDE, 1-HS-302YA</li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **CHECK** both LPSI Pump RAS Override keyswitches in NORMAL at least every 6 hours during normal operations:

**REFERENCES**

61-076-C Sheets 1,1A,2 & 2A; 61-087-B Sheet 14S; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-24</u>
1-PA-304	12.3 PSIG (12.2 to 12.4 PSIG)	<p><b>11 LPSI PP SUCT PRESS LO</b></p>	

**POSSIBLE CAUSES**

- While aligned for Shutdown Cooling, at least one of the following valves is shut:
  - SDC HDR RETURN ISOL, 1-SI-651-MOV
  - SDC HDR RETURN ISOL, 1-SI-652-MOV
- Low RCS level
- Pump suction valve shut
- While aligned to the RWT, 11 RWT OUT, 1-SI-4142-MOV, is shut

**AUTOMATIC ACTIONS**

None

**NOTE**

To prevent a common mode failure, the cause of low suction pressure should be confirmed before starting a standby pump.

CONDITION	RESPONSE
1. 11 LPSI Pump suction pressure low.	1. <b>PERFORM</b> the following: <ul style="list-style-type: none"> <li>a. <b>IF</b> on Shutdown Cooling, <b>THEN IMPLEMENT</b> AOP-3B, <u>Loss of Shutdown Cooling</u>.</li> <li>b. <b>CHECK</b> valve alignment.</li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **MONITOR** 11 LPSI Pump suction pressure at least hourly (at 1C10 or on 1C184, if used) while pump is running
- **MONITOR** 11 LPSI Pump discharge pressure (1-PI-302X, at 1C08) at least hourly while pump is running

(continued)

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(continued)

WINDOW

H-24

**REFERENCES**

60-731-E Sheet 1; 61-076-B Sheet 1A; 61-087-B Sheet 14S; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-25</u>
1-PS-4146	200 PSIG (190 to 210 PSIG)	<p><b>11 CS PP DISCH PRESS HI</b></p>	

**POSSIBLE CAUSES**

- 11 CS Pump operating at minimum flow conditions
- 11 CS Pump discharge flow path isolated

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
<p>1. 11 CS Pump high discharge pressure.</p>	<p>1. <b>PERFORM</b> the following:</p> <p>a. <b>IF</b> the flow of spray into the Containment is required, <b>THEN ENSURE OPEN</b> 11 CS HDR ISOL CV, 1-SI-4150-CV.</p> <p>b. <b>CHECK</b> the valve alignment of the Containment Spray system.</p> <p>c. <b>IF</b> 11 CS Pump is operating at minimum flow conditions, <b>THEN ENSURE OPEN</b> MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV <b>AND</b> MINI FLOW RETURN TO RWT ISOL MOV 660, 1-SI-660-MOV.</p>

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 11 CS Pump discharge pressure at least hourly while in operation.

**REFERENCES**

61-076-C Sheet 9; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-26
1-PS-4147	200 PSIG (190 to 210 PSIG)	<p><b>12 CS PP DISCH PRESS HI</b></p>	

**POSSIBLE CAUSES**

- 12 CS Pump operating at minimum flow conditions
- 12 CS Pump discharge flow path isolated

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. 12 CS Pump high discharge pressure.	<p>1. <b>PERFORM</b> the following:</p> <p>a. <b>IF</b> the flow of spray into the Containment is required, <b>THEN ENSURE OPEN</b> 12 CS HDR ISOL CV, 1-SI-4151-CV.</p> <p>b. <b>CHECK</b> the valve alignment of the Containment Spray system.</p> <p>c. <b>IF</b> 12 CS Pump is operating at minimum flow conditions, <b>THEN ENSURE OPEN</b> MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV <b>AND</b> MINI FLOW RETURN TO RWT ISOL MOV 660, 1-SI-660-MOV.</p>

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** 12 CS Pump discharge pressure at least hourly while in operation.

**REFERENCES**

61-076-C Sheet 10; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-27
None	None	<div style="border: 1px solid black; padding: 20px; width: fit-content; margin: 0 auto;"> <p><b>SPARE</b></p> </div>	

**POSSIBLE CAUSES**

None

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. None.	1. None.

**ANNUNCIATOR COMPENSATORY ACTIONS**

None

**REFERENCES**

None

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-28</u>
1-PA-305	12.3 PSIG (12.2 to 12.4 PSIG)	<p><b>12 LPSI PP SUCT PRESS LO</b></p>	

**POSSIBLE CAUSES**

- While aligned for Shutdown Cooling, at least one of the following valves is shut:
  - SDC HDR RETURN ISOL, 1-SI-651-MOV
  - SDC HDR RETURN ISOL, 1-SI-652-MOV
- Low RCS level
- Pump suction valve shut
- While aligned to the RWT, 11 RWT OUT, 1-SI-4143-MOV, is shut

**AUTOMATIC ACTIONS**

None

**NOTE**

To prevent a common mode failure, the cause of low suction pressure should be confirmed before starting a standby pump.

CONDITION	RESPONSE
1. 12 LPSI Pump suction pressure low.	1. <b>PERFORM</b> the following: <ul style="list-style-type: none"> <li>a. <b>IF</b> on Shutdown Cooling, <b>THEN IMPLEMENT</b> AOP-3B, <u>Loss of Shutdown Cooling</u>.</li> <li>b. <b>CHECK</b> valve alignment.</li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **MONITOR** 12 LPSI Pump suction pressure at least hourly (at 1C10 or on 1C184, if used) while pump is running
- **MONITOR** 12 LPSI Pump discharge pressure (1-PI-302Y, at 1C09) at least hourly while pump is running

(continued)

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(continued)

WINDOW

H-28

**REFERENCES**

60-731-E Sheet 1; 61-076-B Sheet 2A; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-29</u>
1-HS-4146 Auto Start Failure Relay Breaker 152-1107: <ul style="list-style-type: none"> <li>• Position Switch</li> <li>• Charging Spring</li> <li>• 186 Lockout Device</li> </ul>	N/A		

**11 CS PP**  
**•SIAS BLOCKED**  
**•AUTO START**

**POSSIBLE CAUSES**

- 11 CS PP handswitch, 1-HS-4146, in PULL TO LOCK
- 11 CS Pump fails to start within one second after an auto start signal is initiated
- 11 CS Pump breaker, 152-1107:
  - **NOT** racked in
  - Charging spring **NOT** charged
  - 186 Lockout Device tripped

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. 11 CS Pump did <b>NOT</b> start or is out of service.	1. <b>PERFORM</b> the following: <ol style="list-style-type: none"> <li><b>IF</b> SIAS has actuated, <b>THEN ENSURE</b> 12 CS Pump is running.</li> <li><b>PERFORM</b> the following unless 11 CS Pump is out of service for maintenance:                             <ol style="list-style-type: none"> <li><b>CHECK</b> for 11 CS PP breaker, 152-1107:                                     <ul style="list-style-type: none"> <li>• Breaker is racked in</li> <li>• Charging spring is charged</li> <li>• 186 Lockout Device is reset</li> </ul> </li> <li><b>CHECK</b> 11 CS PP handswitch, 1-HS-4146, is in NORMAL.</li> </ol> </li> </ol>

(continued)

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(continued)

WINDOW

H-29

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **CHECK** 11 CS PP handswitch, 1-HS-4146, is in NORMAL at least every 6 hours
- **CHECK** 11 CS Pump breaker, 152-1107, racked in, charging spring charged, **AND** 186 Device reset at least every 6 hours

**REFERENCES**

61-076-C Sheet 9; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-30</u>
1-HS-4147 Auto Start Failure Relay Breaker 152-1407: <ul style="list-style-type: none"> <li>• Position Switch</li> <li>• Charging Spring</li> <li>• 186 Lockout Device</li> </ul>	N/A		<b>12 CS PP</b> <b>•SIAS BLOCKED</b> <b>•AUTO START</b>

**POSSIBLE CAUSES**

- 12 CS PP handswitch, 1-HS-4147, in PULL TO LOCK
- 12 CS Pump fails to start within one second after an auto start signal is initiated
- 12 CS Pump breaker, 152-1407:
  - **NOT** racked in
  - Charging spring **NOT** charged
  - 186 Lockout Device tripped

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. 12 CS Pump did <b>NOT</b> start or is out of service.	1. <b>PERFORM</b> the following: <ol style="list-style-type: none"> <li><b>IF</b> SIAS has actuated, <b>THEN ENSURE</b> 11 CS Pump is running.</li> <li><b>PERFORM</b> the following unless 12 CS Pump is out of service for maintenance:                             <ol style="list-style-type: none"> <li><b>CHECK</b> for 12 CS PP breaker, 152-1407:                                     <ul style="list-style-type: none"> <li>• Breaker is racked in</li> <li>• Charging spring is charged</li> <li>• 186 Lockout Device is reset</li> </ul> </li> <li><b>CHECK</b> 12 CS PP handswitch, 1-HS-4147, is in NORMAL,</li> </ol> </li> </ol>

(continued)

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(continued)

WINDOW

H-30

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **CHECK** 12 CS PP handswitch, 1-HS-4147, is in NORMAL at least every 6 hours
- **CHECK** 12 CS Pump breaker, 152-1407, racked in, charging spring charged, **AND** 186 Device reset at least every 6 hours

**REFERENCES**

61-076-C Sheet 10; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-31
None	None	<div style="border: 1px solid black; padding: 20px; width: fit-content; margin: 0 auto;"> <p><b>SPARE</b></p> </div>	

**POSSIBLE CAUSES**

None

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. None.	1. None.

**ANNUNCIATOR COMPENSATORY ACTIONS**

None

**REFERENCES**

None

**DEVICE**

**SETPOINT**

**WINDOW**

**H-32**

None

None

<p><b>SPARE</b></p>
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**POSSIBLE CAUSES**

None

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. None.	1. None.

**ANNUNCIATOR COMPENSATORY ACTIONS**

None

**REFERENCES**

None

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-33</u>
1-PDIS-5293	2.0 in H <sub>2</sub> O (1.8 to 2.2 in H <sub>2</sub> O)	<b>11 CNTMT FILT DIFF PRESS HI</b>	

**POSSIBLE CAUSES**

HEPA Filter dirty.

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. 11 Containment Filter high differential pressure.	1. <b>PERFORM</b> the following: <ul style="list-style-type: none"> <li>a. <b>OBSERVE</b> local dP indication to verify alarm.</li> <li>b. <b>CONSIDER</b> placing another Containment Filter in service and securing 11 Containment Filter.</li> <li>c. <b>IF</b> necessary, <b>THEN CHANGE</b> filter.</li> <li>d. <b>REFER</b> to TS 3.6.8 for Containment Filter operability requirements.</li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

**IF** Containment is accessible,  
**THEN CHECK** local dP indication at least every 12 hours while 11 Containment Filter is running.

**REFERENCES**

61-076-C Sheet 15; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-34
1-PDIS-5295	2.0 in H <sub>2</sub> O (1.8 to 2.2 in H <sub>2</sub> O)	<p><b>12 CNTMT FILT DIFF PRESS HI</b></p>	

**POSSIBLE CAUSES**

HEPA filter dirty.

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. 12 Containment Filter high differential pressure.	<p>1. <b>PERFORM</b> the following:</p> <ul style="list-style-type: none"> <li>a. <b>OBSERVE</b> local dP indication to verify alarm.</li> <li>b. <b>CONSIDER</b> placing another Containment Filter in service and securing 12 Containment Filter.</li> <li>c. <b>IF</b> necessary, <b>THEN CHANGE</b> filter.</li> <li>d. <b>REFER</b> to TS 3.6.8 for Containment Filter operability requirements.</li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

**IF** Containment is accessible,  
**THEN CHECK** local dP indication at least every 12 hours while 12 Containment Filter is running.

**REFERENCES**

61-076-C Sheet 15; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-35
1-PDIS-5297	2.0 in H <sub>2</sub> O (1.8 to 2.2 in H <sub>2</sub> O)	<p><b>13 CNTMT FILT DIFF PRESS HI</b></p>	

**POSSIBLE CAUSES**

HEPA Filter dirty.

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. 13 Containment Filter high differential pressure.	1. <b>PERFORM</b> the following: <ul style="list-style-type: none"> <li>a. <b>OBSERVE</b> local dP indication to verify alarm.</li> <li>b. <b>CONSIDER</b> placing another Containment Filter in service and securing 13 Containment Filter.</li> <li>c. <b>IF</b> necessary, <b>THEN CHANGE</b> filter.</li> <li>d. <b>REFER</b> to TS 3.6.8 for Containment Filter operability requirements.</li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

**IF** Containment is accessible,  
**THEN CHECK** local dP indication at least every 12 hours while 13 Containment Filter is running.

**REFERENCES**

61-076-C Sheet 15B; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-36
None	None	<div style="border: 1px solid black; width: 100%; height: 100%; display: flex; align-items: center; justify-content: center;"> <p><b>SPARE</b></p> </div>	

**POSSIBLE CAUSES**

None

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. None.	1. None.

**ANNUNCIATOR COMPENSATORY ACTIONS**

None

**REFERENCES**

None

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-37
1-HS-5293 SIAS Relay Breaker 52-1105: • Position Switch	N/A		<b>11 CNTMT FILT</b> <b>•SIAS BLOCKED</b> <b>•AUTO START</b>

**POSSIBLE CAUSES**

- 11 IODINE FILT FAN handswitch, 1-HS-5293, in PULL TO LOCK
- Breaker 52-1105 **NOT** in the operating position
- Breaker 52-1105 did **NOT** close when a SIAS signal was received

**AUTOMATIC ACTIONS**

SIAS actuation automatically starts 11 Iodine Filter Fan.

CONDITION	RESPONSE
1. 11 Iodine Filter Fan failed to start or is out of service.	1. <b>PERFORM</b> the following: <ul style="list-style-type: none"> <li>a. <b>IF</b> SIAS has actuated, <b>THEN:</b> <ul style="list-style-type: none"> <li>(1) <b>ENSURE</b> 12 and 13 Iodine Filter Fans have started.</li> <li>(2) <b>ATTEMPT</b> to start 11 Iodine Filter Fan using 11 IODINE FILT FAN handswitch, 1-HS-5293.</li> </ul> </li> <li>b. <b>CHECK</b> 11 Iodine Filter Fan breaker, 52-1105, is in the operating position.</li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **CHECK** 11 IODINE FILT FAN handswitch, 1-HS-5293, is in NORMAL at least every 6 hours
- **CHECK** breaker 52-1105 in the operating position at least every 6 hours

**REFERENCES**

61-076-C Sheet 15; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-38
1-HS-5295 SIAS Relay Breaker 52-1405: • Position Switch	N/A		<b>12 CNTMT FILT</b> <b>•SIAS BLOCKED</b> <b>•AUTO START</b>

**POSSIBLE CAUSES**

- 12 IODINE FILT FAN handswitch, 1-HS-5295, in PULL TO LOCK
- Breaker 52-1405 **NOT** in the operating position
- Breaker 52-1405 did **NOT** close when a SIAS signal was received

**AUTOMATIC ACTIONS**

SIAS actuation automatically starts 12 Iodine Filter Fan.

CONDITION	RESPONSE
1. 12 Iodine Filter Fan failed to start or is out of service.	1. <b>PERFORM</b> the following: <ul style="list-style-type: none"> <li>a. <b>IF</b> SIAS has actuated, <b>THEN:</b> <ul style="list-style-type: none"> <li>(1) <b>ENSURE</b> 11 and 13 Iodine Filter Fans have started.</li> <li>(2) <b>ATTEMPT</b> to start 12 Iodine Filter Fan using 12 IODINE FILT FAN handswitch, 1-HS-5295.</li> </ul> </li> <li>b. <b>CHECK</b> 12 Iodine Filter Fan breaker, 52-1405, is in the operating position.</li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **CHECK** 12 IODINE FILT FAN handswitch, 1-HS-5295, is in NORMAL at least every 6 hours
- **CHECK** breaker 52-1405 in the operating position at least every 6 hours

**REFERENCES**

61-076-C Sheet 15; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-39
1-HS-5297 SIAS Relay Breaker 52-1121 or 52-1421: • Position Switch	N/A		<b>13 CNTMT FILT</b> <b>•SIAS BLOCKED</b> <b>•AUTO START</b>

**POSSIBLE CAUSES**

- 13 IODINE FILT FAN handswitch, 1-HS-5297, in PULL TO LOCK
- 13 Iodine Filter Fan breaker 52-1121 or 52-1421 **NOT** in the operating position (depending on disconnect switch alignment)
- 13 Iodine Filter Fan breaker 52-1121 or 52-1421 did **NOT** close when a SIAS signal was received (depending on disconnect switch alignment)

**AUTOMATIC ACTIONS**

SIAS actuation automatically starts 13 Iodine Filter Fan.

CONDITION	RESPONSE
1. 11 Iodine Filter Fan failed to start or is out of service.	1. <b>PERFORM</b> the following: a. <b>IF</b> SIAS has actuated, <b>THEN</b> : (1) <b>ENSURE</b> 11 and 12 Iodine Filter Fans have started. (2) <b>ATTEMPT</b> to start 13 Iodine Filter Fan using 13 IODINE FILT FAN handswitch, 1-HS-5297. b. <b>CHECK</b> 13 Iodine Filter Fan breaker 52-1121 or 52-1421 (depending on the disconnect switch alignment) is in the operating position.

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **CHECK** 13 IODINE FILT FAN handswitch, 1-HS-5297, is in NORMAL at least every 6 hours
- **CHECK** breaker 52-1121 or 52-1421 (depending on disconnect switch alignment) is in the operating position at least every 6 hours

(continued)

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(continued)

WINDOW

H-39

**REFERENCES**

61-076-C Sheet 15A,B,C, & D; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-40</u>
1-HS-5297A 1-HS-5297B Breaker 52-1121 or 52-1421: • Position Switch	N/A		<b>13 CNTMT FILT BKR L/U IMPR</b>

**POSSIBLE CAUSES**

13 Iodine Filter Fan disconnect switch, 1-HS-5297A or 1-HS-5297B, closed and its associated breaker, 52-1121 or 52-1421, is **NOT** in the operating position.

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. Incorrect alignment of the 13 Iodine Filter Fan disconnect switches and breakers.	1. <b>ENSURE</b> the desired 13 Iodine Filter Fan disconnect switch, 1-HS-5297A (89-1121) or 1-HS-5297B (89-1421) is closed and its associated breaker, 52-1121 or 52-1421, is in the operating position.

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **CHECK** the positions of 1-HS-5297A (89-1121) and 1-HS-5297B (89-at least every 6 hours
- **CHECK** 13 Iodine Filter Fan breaker, 52-1121 or 52-1421 (depending on the disconnect switch which is closed) is in the operating position at least every 6 hours

**REFERENCES**

61-076-B Sheet 15B,C, & D; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-41</u>
SIAS Relay Breaker 52-1102: • Position Switch 1-HS-5299A1	N/A		<b>11 CAC AUTO START FAILURE</b>

**POSSIBLE CAUSES**

- 11 CNTMT AIR CLR Breaker, 52-1102, is **NOT** racked in
- 11 Containment Air Cooler is **NOT** running in low speed with a SIAS signal present
- 11 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5299A1, in LOCAL

**AUTOMATIC ACTIONS**

SIAS actuation auto-starts or shifts to low speed (if running), 11 CAC.

**NOTE**

11 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5299A1, is located on the 11 Containment Cooler Starter Panel in the 45' East Electrical Penetration Room. If in LOCAL, 11 CAC will **NOT** auto-start on SIAS.

CONDITION	RESPONSE
1. 11 Containment Cooling Fan is <b>NOT</b> running in low speed with a SIAS signal present, or is <b>NOT</b> aligned for auto start.  2.	1. <b>IF</b> a SIAS signal is present, <b>THEN ATTEMPT</b> to shift 11 Containment Cooling Fan to low speed by placing 11 CNTMT AIR CLR handswitch, 1-HS-5299, in PULL TO LOW.  2. <b>IF</b> the alarm was <b>NOT</b> anticipated, <b>THEN:</b> <ol style="list-style-type: none"> <li>a. <b>ENSURE</b> 11 CNTMT AIR CLR breaker, 52-1102, is racked in.</li> <li>b. <b>ENSURE</b> 11 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5299A1 is in REMOTE.</li> </ol>

(continued)

WINDOW

H-41

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **IF** a SIAS occurs **AND** 11 Containment Cooling Fan is **NOT** running in low speed, **THEN PLACE** 11 CNTMT AIR CLR handswitch, 1-HS-5299, in PULL TO LOW
- **CHECK** 11 CNTMT AIR CLR breaker, 52-1102, is racked in at least every 6 hours
- **CHECK** 11 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5299A1, in REMOTE at least every 6 hours

**REFERENCES**

61-076-B Sheet 11,11A, & 11B; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-42</u>
SIAS Relay Breaker 52-1114 • Position Switch 1-HS-5300A1	N/A		<b>12 CAC AUTO START FAILURE</b>

**POSSIBLE CAUSES**

- 12 CNTMT AIR CLR Breaker, 52-1114, is **NOT** racked in
- 12 Containment Air Cooler is **NOT** running in low speed with a SIAS signal present
- 12 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5300A1, in LOCAL

**AUTOMATIC ACTIONS**

SIAS actuation auto-starts or shifts to low speed (if running), 12 CAC.

**NOTE**

12 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5300A1, is located on the 12 Containment Cooler Starter Panel in the 45' West Electrical Penetration Room. If in LOCAL, 12 CAC will **NOT** auto-start on SIAS.

CONDITION	RESPONSE
1. 12 Containment Cooling Fan is <b>NOT</b> running in low speed with a SIAS signal present, or is <b>NOT</b> aligned for auto start.  2.	1. <b>IF</b> a SIAS signal is present, <b>THEN ATTEMPT</b> to shift 12 Containment Cooling Fan to low speed by placing 12 CNTMT AIR CLR handswitch, 1-HS-5300, in PULL TO LOW.  2. <b>IF</b> the alarm was <b>NOT</b> anticipated, <b>THEN:</b> <ol style="list-style-type: none"> <li>a. <b>ENSURE</b> 12 CNTMT AIR CLR breaker, 52-1114, is racked in.</li> <li>b. <b>ENSURE</b> 12 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5300A1 is in REMOTE.</li> </ol>

(continued)

WINDOW

H-42

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **IF** a SIAS occurs **AND** 12 Containment Cooling Fan is **NOT** running in low speed, **THEN PLACE** 12 CNTMT AIR CLR handswitch, 1-HS-5300, in PULL TO LOW
- **CHECK** 12 CNTMT AIR CLR breaker, 52-1114, is racked in at least every 6 hours
- **CHECK** 12 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5300A1, in REMOTE at least every 6 hours

**REFERENCES**

61-076-B Sheet 11,11A, & 11B; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-43
SIAS Relay Breaker 52-1402 • Position Switch 1-HS-5301A1	N/A		
		<p><b>13 CAC AUTO START FAILURE</b></p>	

**POSSIBLE CAUSES**

- 13 CNTMT AIR CLR Breaker, 52-1402, is **NOT** racked in
- 13 Containment Air Cooler is **NOT** running in low speed with a SIAS signal present
- 13 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5301A1, in LOCAL

**AUTOMATIC ACTIONS**

SIAS actuation auto-starts or shifts to low speed (if running), 13 CAC.

**NOTE**

13 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5301A1, is located on the 13 Containment Cooler Starter Panel in the 45' East Electrical Penetration Room. If in LOCAL, 13 CAC will **NOT** auto-start on SIAS.

CONDITION	RESPONSE
<p>1. 13 Containment Cooling Fan is <b>NOT</b> running in low speed with a SIAS signal present, or is <b>NOT</b> aligned for auto start.</p> <p>2.</p>	<p>1. <b>IF</b> a SIAS signal is present, <b>THEN ATTEMPT</b> to shift 13 Containment Cooling Fan to low speed by placing 13 CNTMT AIR CLR handswitch, 1-HS-5301, in PULL TO LOW.</p> <p>2. <b>IF</b> the alarm was <b>NOT</b> anticipated, <b>THEN:</b></p> <p style="margin-left: 40px;">a. <b>ENSURE</b> 13 CNTMT AIR CLR breaker, 52-1402, is racked in.</p> <p style="margin-left: 40px;">b. <b>ENSURE</b> 13 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5301A1 is in REMOTE.</p>

(continued)

WINDOW

H-43

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **IF** a SIAS occurs **AND** 13 Containment Cooling Fan is **NOT** running in slow speed, **THEN PLACE** 13 CNTMT AIR CLR handswitch, 1-HS-5301, in PULL TO LOW
- **CHECK** 13 CNTMT AIR CLR breaker, 52-1402, is racked in at least every 6 hours
- **CHECK** 13 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5301A1, in REMOTE at least every 6 hours

**REFERENCES**

61-076-B Sheet 11,11A, & 11B; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-44</u>
SIAS Relay Breaker 52-1414: • Position Switch 1-HS-5302A1	N/A		
			<b>14 CAC AUTO START FAILURE</b>

**POSSIBLE CAUSES**

- 14 CNTMT AIR CLR Breaker, 52-1414, is **NOT** racked in
- 14 Containment Air Cooler is **NOT** running in low speed with a SIAS signal present
- 14 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5302A1, in LOCAL

**AUTOMATIC ACTIONS**

SIAS actuation auto-starts or shifts to low speed (if running), 14 CAC.

**NOTE**

14 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5302A1, is located on the 14 Containment Cooler Starter Panel in the 45' West Electrical Penetration Room. If in LOCAL, 14 CAC will **NOT** auto-start on SIAS.

CONDITION	RESPONSE
1. 14 Containment Cooling Fan is <b>NOT</b> running in low speed with a SIAS signal present, or is <b>NOT</b> aligned for auto start.  2.	1. <b>IF</b> a SIAS signal is present, <b>THEN ATTEMPT</b> to shift 14 Containment Cooling Fan to low speed by placing 14 CNTMT AIR CLR handswitch, 1-HS-5302, in PULL TO LOW.  2. <b>IF</b> the alarm was <b>NOT</b> anticipated, <b>THEN:</b> <ol style="list-style-type: none"> <li>a. <b>ENSURE</b> 14 CNTMT AIR CLR breaker, 52-1414, is racked in.</li> <li>b. <b>ENSURE</b> 14 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5302A1 is in REMOTE.</li> </ol>

(continued)

WINDOW

H-44

**ANNUNCIATOR COMPENSATORY ACTIONS**

- **IF** a SIAS occurs **AND** 14 Containment Cooling Fan is **NOT** running in low speed, **THEN PLACE** 14 CNTMT AIR CLR handswitch, 1-HS-5302, in PULL TO LOW
- **CHECK** 14 CNTMT AIR CLR breaker, 52-1414, is racked in at least every 6 hours
- **CHECK** 14 CNTMT AIR CLR LOCAL/REMOTE keyswitch, 1-HS-5302A1, in REMOTE at least every 6 hours

**REFERENCES**

61-076-B Sheet 11,11A, & 11B; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-45
None	None	<div style="border: 1px solid black; padding: 20px; width: fit-content; margin: 0 auto;"> <p><b>SPARE</b></p> </div>	

**POSSIBLE CAUSES**

None

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. None.	1. None.

**ANNUNCIATOR COMPENSATORY ACTIONS**

None

**REFERENCES**

None

**DEVICE**

**SETPOINT**

**WINDOW**

H-46

None

None

SPARE
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**POSSIBLE CAUSES**

None

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. None.	1. None.

**ANNUNCIATOR COMPENSATORY ACTIONS**

None

**REFERENCES**

None

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-47
None	None	<div style="border: 1px solid black; padding: 20px; width: fit-content; margin: 0 auto;"> <p><b>SPARE</b></p> </div>	

**POSSIBLE CAUSES**

None

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. None.	1. None.

**ANNUNCIATOR COMPENSATORY ACTIONS**

None

**REFERENCES**

None

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-48
1-HS-5464B	N/A		

**1-PS-5464-CV  
RCS SMPL ISOL  
CLOSED AT 1C43**

**POSSIBLE CAUSES**

RCS SAMPLE ISOL 1-PS-5464-CV handswitch, 1-HS-5464B, in CLOSE at 1C43.

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. RCS SAMPLE ISOL 1-PS-5464-CV handswitch, 1-HS-5464B, in CLOSE at 1C43.	1. <b>RETURN</b> 1-HS-5464B to NORM at 1C43.

**ANNUNCIATOR COMPENSATORY ACTIONS**

**CHECK** 1-HS-5464B in NORM at least every 6 hours at Panel 1C43.

**REFERENCES**

61-076-C Sheet 14B; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	<u>H-49</u>
1-PDIS-3827 1-PDIS-3829	8.0 PSID (7.8 to 8.2 PSID)	<p><b>SDC HX(S) DIFF PRESS HI</b></p>	

**POSSIBLE CAUSES**

Excessive flow of Component Cooling through either 11 or 12 Shutdown Cooling Heat Exchanger.

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. Shutdown Cooling Heat Exchanger(s) high differential pressure.	<p>1. <b>PERFORM</b> the following:</p> <p>a. <b>DETERMINE</b> affected SDC Heat Exchanger(s) by checking dP indication for both.</p> <p>b. <b>ENSURE</b> manual inlet valve(s) position(s) for the affected SDC Heat Exchanger(s) set at the throttle position <b>PER</b> OI-16, Component Cooling System:</p> <ul style="list-style-type: none"> <li>• 11 SDC HX INLET, 1-CC-261</li> <li>• 12 SDC HX INLET, 1-CC-266</li> </ul>

**ANNUNCIATOR COMPENSATORY ACTIONS**

**MONITOR** dP indication of both Shutdown Cooling Heat Exchangers at least every 6 hours while in service.

**REFERENCES**

60-710-E Sheet 2; 61-080-B Sheet 16B; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-50
None	None	<div style="border: 1px solid black; width: 100%; height: 100%; display: flex; align-items: center; justify-content: center;"> <p><b>SPARE</b></p> </div>	

**POSSIBLE CAUSES**

None

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. None.	1. None.

**ANNUNCIATOR COMPENSATORY ACTIONS**

None

**REFERENCES**

None

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-51
None	None	<div style="border: 1px solid black; width: 100%; height: 100%; display: flex; align-items: center; justify-content: center;"> <p><b>SPARE</b></p> </div>	

**POSSIBLE CAUSES**

None

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. None.	1. None.

**ANNUNCIATOR COMPENSATORY ACTIONS**

None

**REFERENCES**

None

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-52
1-HS-2080A	N/A		
		<b>1-HS-2080A CIS OVERRIDE</b>	

**POSSIBLE CAUSES**

1-IA-2080-MOV CIS OVERRIDE keyswitch, 1-HS-2080A, in CIS OVERRIDE

**AUTOMATIC ACTIONS**

None

**NOTE**

Placing 1-IA-2080-MOV CIS OVERRIDE keyswitch, 1-HS-2080A, in CIS OVERRIDE with a CIS signal present blocks the CIS signal to 1-IA-2080-MOV **AND** opens CNTMT ISOL, 1-IA-2080-MOV.

CONDITION	RESPONSE
1. 1-IA-2080-MOV CIS OVERRIDE keyswitch, 1-HS-2080A, in CIS OVERRIDE.	1. <b>IF</b> plant conditions no longer require 1-IA-2080-MOV CIS OVERRIDE keyswitch, 1-HS-2080A, to be in CIS OVERRIDE, <b>THEN PLACE</b> in NORM.

**ANNUNCIATOR COMPENSATORY ACTIONS**

**CHECK** 1-IA-2080-MOV CIS OVERRIDE keyswitch, 1-HS-2080A, in NORM at least hourly.

**REFERENCES**

60-712-E Sheet 3; 61-076-C Sheet 32; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-53
None	None	<div style="border: 1px solid black; width: 100%; height: 100%; display: flex; align-items: center; justify-content: center;"> <p><b>SPARE</b></p> </div>	

**POSSIBLE CAUSES**

None

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. None.	1. None.

**ANNUNCIATOR COMPENSATORY ACTIONS**

None

**REFERENCES**

None

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-54
None	None	<div style="border: 1px solid black; width: 100%; height: 100%; display: flex; align-items: center; justify-content: center;"> <p><b>SPARE</b></p> </div>	

**POSSIBLE CAUSES**

None

**AUTOMATIC ACTIONS**

None

CONDITION	RESPONSE
1. None.	1. None.

**ANNUNCIATOR COMPENSATORY ACTIONS**

None

**REFERENCES**

None

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-55
1-SI-659-MOV 1-HS-3659A RAS relay	N/A		<b>SI PPS RECIRC MOV 659 • CLOSED • RAS BLOCKED</b>

**POSSIBLE CAUSES**

- SI PP RECIRC LOCKOUT handswitch, 1-HS-3659A, in LOCKOUT with a RAS signal present
- MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV, shut without RAS signal present
- MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV, shut **AND** SI PP RECIRC LOCKOUT handswitch, 1-HS-3659A, in LOCKOUT with or without an RAS signal present

**AUTOMATIC ACTIONS**

None

**NOTE**

Technical Specifications require MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV, to be open with SI PP RECIRC LOCKOUT handswitch, 1-HS-3659A, in LOCKOUT during normal operations (Mode 1,2 or 3 with greater than 1750 PSIA).

CONDITION	RESPONSE
<p>1. One of the following conditions has occurred:</p> <ul style="list-style-type: none"> <li>• MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV, is shut during normal operations (no RAS present)</li> <li>• SI PP RECIRC LOCKOUT handswitch, 1-HS-3659A, is in LOCKOUT with RAS signal present</li> <li>• Combination of 1-SI-659-MOV shut and 1-HS-3659A in LOCKOUT</li> </ul>	<p>1. <b>IF</b> the alarm occurs during normal operation, <b>THEN ENSURE</b> MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV, is open and SI PP RECIRC LOCKOUT handswitch, 1-HS-3659A, is in LOCKOUT.</p>

(continued)

(continued)

WINDOW

H-55

**ANNUNCIATOR COMPENSATORY ACTIONS**

- During normal operations, **CHECK** SI PP RECIRC LOCKOUT handswitch, 1-HS-3659A, in LOCKOUT **AND** MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV, open at least every 6 hours
- During RAS, **CHECK** SI PP RECIRC LOCKOUT handswitch, 1-HS-3659A, in ON **AND** MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV, shut at least every 6 hours

**REFERENCES**

61-076-C Sheet 31; 61-087-B Sheet 14T; 61-087-E Sheet 7A

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-56
1-SI-660-MOV 1-HS-3660A RAS relay	N/A		<b>SI PPS RECIRC MOV 660 • CLOSED • RAS BLOCKED</b>

**POSSIBLE CAUSES**

- SI PP RECIRC LOCKOUT handswitch, 1-HS-3660A, in LOCKOUT with a RAS signal present
- MINI FLOW RETURN TO RWT ISOL MOV 660, 1-SI-660-MOV, shut without RAS signal present
- MINI FLOW RETURN TO RWT ISOL MOV 660, 1-SI-660-MOV, shut **AND** SI PP RECIRC LOCKOUT handswitch, 1-HS-3660A, in LOCKOUT with or without an RAS signal present

**AUTOMATIC ACTIONS**

None

**NOTE**

Technical Specifications require MINI FLOW RETURN TO RWT ISOL MOV 660, 1-SI-660-MOV, to be open with SI PP RECIRC LOCKOUT handswitch, 1-HS-3660A, in LOCKOUT during normal operations (Mode 1,2 or 3 with greater than 1750 PSIA).

CONDITION	RESPONSE
1. One of the following conditions has occurred: <ul style="list-style-type: none"> <li>• <b>IF</b> check valve leakage is suspected, <b>THEN INITIATE</b> a CR for the affected check valve(s); 12A LOOP INLET CKV, 1-SI-237 or 12B LOOP INLET CKV, 1-SI-247. <b>[B0217]</b></li> <li>• SI PP RECIRC LOCKOUT handswitch, 1-HS-3660A, is in LOCKOUT with RAS signal present</li> <li>• Combination of 1-SI-660-MOV shut and 1-HS-3660A in LOCKOUT</li> </ul>	1. <b>IF</b> the alarm occurs during normal operation, <b>THEN ENSURE</b> MINI FLOW RETURN TO RWT ISOL MOV 660, 1-SI-660-MOV, is open <b>AND</b> SI PP RECIRC LOCKOUT handswitch, 1-HS-3660A, is in LOCKOUT.

(continued)

(continued)

WINDOW

H-56

**ANNUNCIATOR COMPENSATORY ACTIONS**

- During normal operations, **CHECK** SI PP RECUR LOCKOUT handswitch, 1-HS-3660A, in LOCKOUT **AND** MINI FLOW RETURN TO RWT ISOL MOV 660, 1- SI-660-MOV, open at least every 6 hours
- During RAS, **CHECK** SI PP RECIRC LOCKOUT handswitch, 1-HS-3660A, in ON **AND** MINI FLOW RETURN TO RWT ISOL MOV 660, 1-SI-660-MOV, shut at least every 6 hours

**REFERENCES**

61-076-C Sheet 31; 61-087-B Sheet 14T; 61-087-E Sheet 7A



# RO Question #31 (ID Q50290)

Which of the following is the most likely reason for this condition?  
"SI PPS RECIRC MOV 659 CLOSED RAS BLOCKED" Alarm is ON

- A. MINI FLOW RETURN TO RWT ISOL, 1- SI-659 MOV, is shut with an inadvertent RAS present
- B. MINI FLOW RETURN TO RWT ISOL MOV, 1- SI-659 MOV is shut with no RAS present
- C. SI PP RECIR LOCKOUT handswitch, 1-HS-3659A, is ON and RAS present
- D. MINI FLOW RETURN TO RWT ISOL, 1-SI-659-MOV shut and SI PP RECIRC LOCKOUT handswitch, 1-HS-3659A in ON

Answer: B

# Answer Explanation

- Per Alarm Manual for 1C09 window H-55 different sets of conditions will give the alarm.
- B. MINI FLOW RETURN TO RWT ISOL MOV, 1- SI-659 MOV is shut with no RAS present will give this alarm
- A, C, D have conditions that do not fully satisfy any of the three requirements to get the alarm

# Reference

- Alarm manual 1C09 window H-55 page 86.

# Licensee's Justification for Change

The answer explanation states B is the correct selection because it is the only selection which satisfies the logic for alarm actuation. According to window H-55 of the 1C09 alarm manual the **“SI PPS RECIRC MOV 659 CLOSED RAS BLOCKED”** alarm will actuate when the logic for the following initiating devices are satisfied:

- 1MOV-659 position
- 1-HS-3659A (SI PP RECIRC LOCKOUT) handswitch position
- RAS

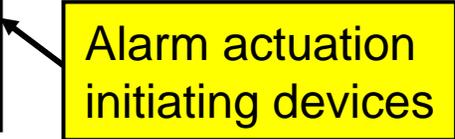
# Licensee's Justification for Change

## ESFAS 12 ALARM MANUAL

1C09-ALM  
Rev. 35/Unit 1  
Page 86 of 89

<u>DEVICE</u>	<u>SETPOINT</u>	<u>WINDOW</u>	H-55
<div data-bbox="137 773 443 1082"><p>1-SI-659-MOV 1-HS-3659A RAS relay</p></div>	N/A	<div data-bbox="1241 816 1667 1178"><p>SI PPS RECIRC MOV 659 • CLOSED • RAS BLOCKED</p></div>	

Alarm actuation  
initiating devices



# Licensee's Justification for Change

The HPSI pumps, LPSI Pumps, and Containment Spray pumps each have a recirculation line which functions to ensure that the minimum required flow is passed through the pump during all periods of operation. The minimum flow prevents the pumps from overheating when discharging at shutoff head conditions. The minimum flow line directs the pump discharge back to the RWT.

The individual pump recirculation lines combine to form a common *Minimum Flow Return Line to the RWT*. The common minimum flow return line has two normally open motor-operated isolation valves in series; 1(2)-SI-659 and 1(2)-SI-660. These isolation valves are controlled by two handswitches; 1(2)-HS-3659 and 1(2)-HS-3660 and a second pair of *SI PP RECIRC LOCKOUT* handswitches; 1(2)-HS-3659A and 1(2)-HS-3660A.

# Licensee's Justification for Change

Each recirculation valve lockout handswitch has two positions: *ON and LOCKOUT*. In the *ON* position, 1(2)-SI-659 and 1(2)-SI-660 shut automatically when a RAS is generated by ESFAS. In the *LOCKOUT* position, the two valves are locked in their present position, and do not respond to a RAS.

The *SI PPS RECIRC MOV 659 CLOSED RAS BLOCKED* alarm is provided because Technical Specifications require that 1(2)-SI-659 and 1(2)-SI-660 remain open with power removed from the valve operators in order for the ECCS pumps to be considered operable. The alarm manual has a note stating the technical specification requirements to maintain 1(2)-SI-659 open during modes 1, 2 or 3 with greater than 1750 PSIA.

# Licensee's Justification for Change

## NOTE

Technical Specifications require MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV, to be open with SI PP RECIRC LOCKOUT handswitch, 1-HS-3659A, in LOCKOUT during normal operations (Mode 1,2 or 3 with greater than 1750 PSIA).

# Licensee's Justification for Change

The 1C09 alarm manual lists three probable causes for the *SI PPS RECIRC MOV 659 CLOSED RAS BLOCKED* alarm to actuate.

## POSSIBLE CAUSES

- SI PP RECIRC LOCKOUT handswitch, 1-HS-3659A, in LOCKOUT with a RAS signal present
- MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV, shut without RAS signal present
- MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV, shut **AND** SI PP RECIRC LOCKOUT handswitch, 1-HS-3659A, in LOCKOUT with or without an RAS signal present

# Licensee's Justification for Change

The second bulleted item mentions that the “**SI PPS RECIRC MOV 659 CLOSED RAS BLOCKED**” will actuate if MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV, shut without RAS signal present.

The answer explanation for RO question #31 states that selection D (*MINI FLOW RETURN TO RWT ISOL, 1-SI-659-MOV shut and SI PP RECIR LOCKOUT handswitch, 1-HS-3659A in ON*) does not fully satisfy any of the three requirements to actuate the alarm. The post examination review for RO question #31 determined that selection D does satisfy the necessary logic to actuate the “**SI PPS RECIRC MOV 659 CLOSED RAS BLOCKED**” alarm.

# Licensee's Justification for Change

Electrical print **61076SH0031, Recirc Valve1MOV659** will be used to explain how selection D satisfies the alarm logic circuit.

The electrical print initially displays Recirc Valve 1MOV659 in the following configuration:

- **Actual Valve Position** – Open
- **1HS3659 Position** – Open with LOCKOUT light illuminated
- **1HS3659A Position** – LOCKOUT
- **SI PPS RECIRC MOV 659 CLOSED RAS BLOCKED Alarm** – Clear

# Licensee's Justification for Change

Beginning from the above configuration, the conditions provided in question #31 selection D **“MINI FLOW RETURN TO RWT ISOL, 1-SI-659-MOV shut and SI PP RECIR LOCKOUT handswitch, 1-HS-3659A in ON”** can be accomplished through the following sequence of events:

## Licensee's Justification for Change

The initial position of 1HS3659A is in the **LOCKOUT** position which means that power is interrupted from operating **Recirc Valve 1MOV659** remotely or during a RAS.

If 1HS3659A is taken from the **LOCKOUT** position to the **ON** position the next slide will display the contact configuration for the position change.

# Licensee's Justification for Change

61075SH0031

1HS3659A USED AT 1C09  
 G.E. TYPE CR2940  
 MODEL UB203A W/U206  
 MAINTAINED CONTACTS



CONTACTS	POSITION		
	NO.	LOCK- OUT	ON
1 2 O   O	1-2	X	
3 4 O O	3-4		X
5 6 O   O	5-6	X	
7 8 O O	7-8		X
9 10 O   O	9-10	X	
11 12 O O	11-12		X

If 1HS3659A position is selected to On the following contact configuration will occur:

- 3-4 closed and maintained
- 7-8 closed and maintained
- 11-12 closed and maintained

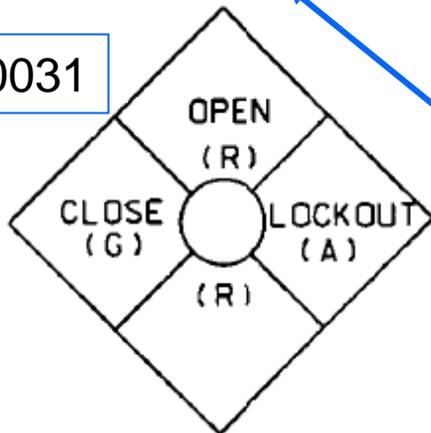
Maintained contacts will remain in their respective configurations once 1HS3659A is selected to ON.

# Licensee's Justification for Change

1HS3659 USED AT 1C09  
HONEYWELL TYPE CMC910CMC2728X  
MAINTAINED CONTACTS

CONTACTS	POSITIONS		
	NO.	CLOSE	OPEN
	3-4		X
	1-2	X	

61075SH0031



If 1HS3659 is selected to close with 1HS3659A position in ON power will be aligned to the valve's positioning circuit and allow closing the valve remotely from the control room or during a RAS actuation.

Once 1HS3659 is positioned to close, the handswitch contact configuration will change as follows:

- contact 3-4 will be maintained open
- contact 1-2 will be maintained closed

# Licensee's Justification for Change

The next slide will display the associated control switches and contact schemes for:

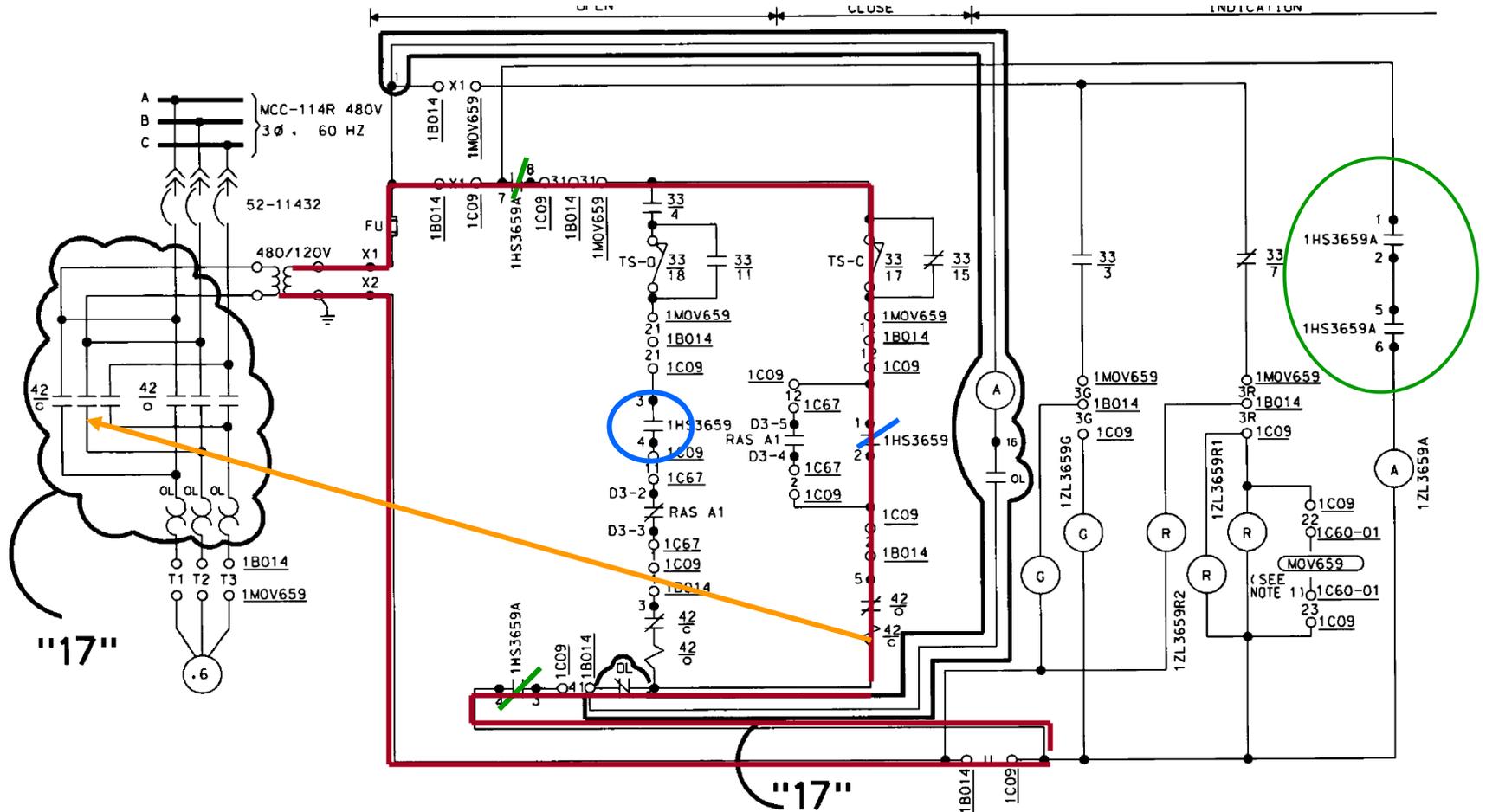
- SI PP Recirc Lockout handswitch 1HS3659A
- SI Recirc PPS MOV 659 handswitch 1HS3659
- Both handswitch contact schemes are maintained following handswitch re-positioning.

# Licensee's Justification for Change

With 1HS3659A in ON and 1HS3659 in close 1MOV659 will close.

- The **red line** on the next slide traces the flow path to enable 1MOV659 to be shut and actuate the **SI PPS RECIRC MOV 659 CLOSED RAS BLOCKED** alarm.
- Contacts **7-8 and 3-4** close
- Contacts **1-2 and 5-6** open which de-energize the LOCKOUT light on 1HS3659.
- Contacts **1-2** close and contacts **3-4** open
- Close relay **42/c** energizes and closes its **associated contacts** to shut 1MOV659.

# Licensee's Justification for Change



SCHEME 1B1432  
 VALVE SHOWN IN FULL OPEN POSITION  
 FACILITY ZA

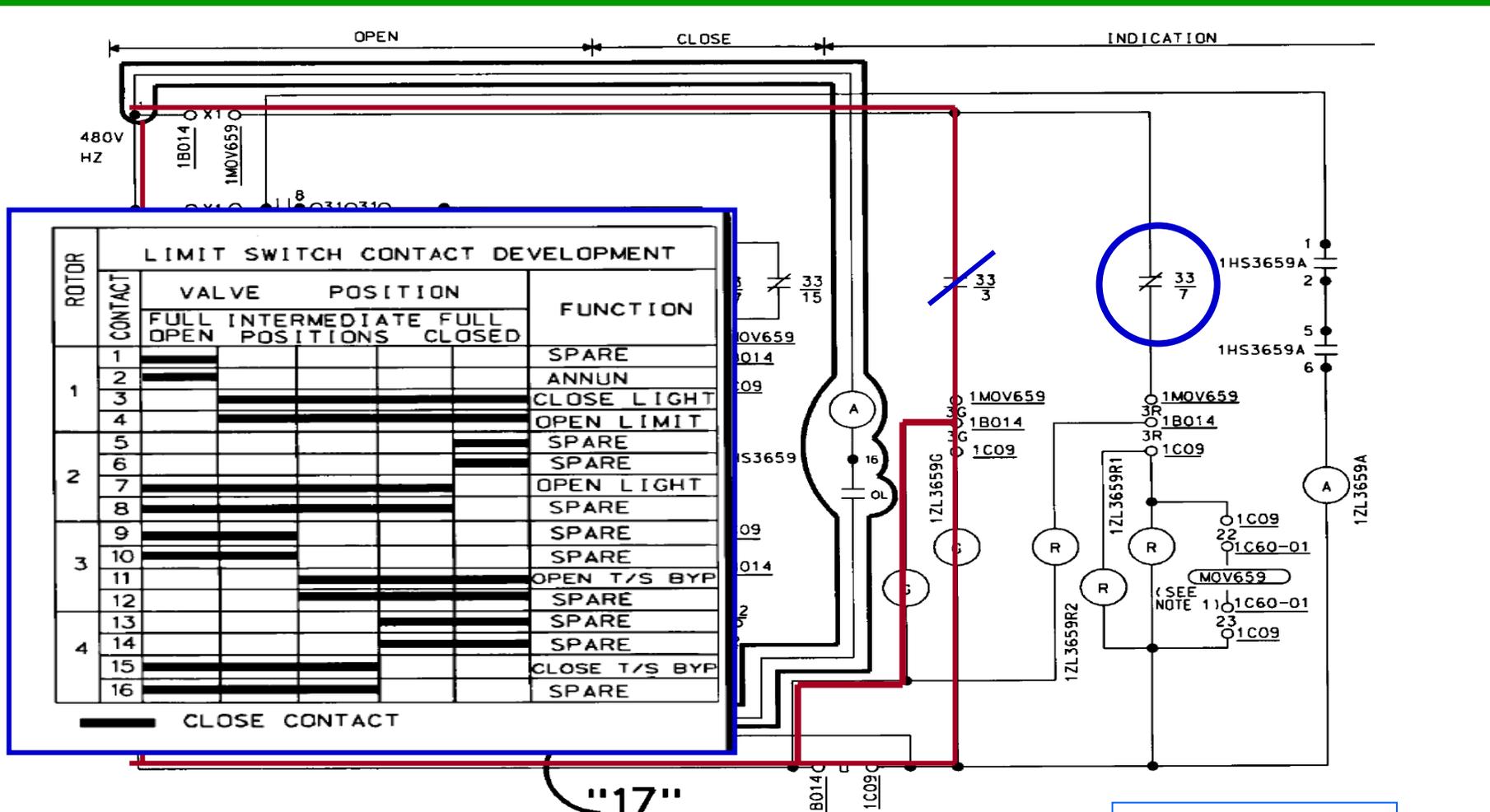
61075SH0031

# Licensee's Justification for Change

The next slide will display SI Recirc PPS MOV 1MOV659 valve position indication contact scheme during its travel to the closed position.

- The **redline** traces the flow path for closed indication.
- Contact **33/3** (rotor one contact 3) will close when 1MOV659 is 80% open
- Contact **33/7** (rotor 2 contact 7) will open when 1MOV659 is 80% closed.

# Licensee's Justification for Change



ROTOR	CONTACT	LIMIT SWITCH CONTACT DEVELOPMENT				FUNCTION
		VALVE OPEN	INTERMEDIATE POSITIONS	FULL CLOSE	FULL OPEN	
1	1					SPARE
	2					ANNUN
	3					CLOSE LIGHT
	4					OPEN LIMIT
2	5					SPARE
	6					SPARE
	7					OPEN LIGHT
	8					SPARE
3	9					SPARE
	10					SPARE
	11					OPEN T/S BYP
	12					SPARE
4	13					SPARE
	14					SPARE
	15					CLOSE T/S BYP
	16					SPARE

— CLOSE CONTACT

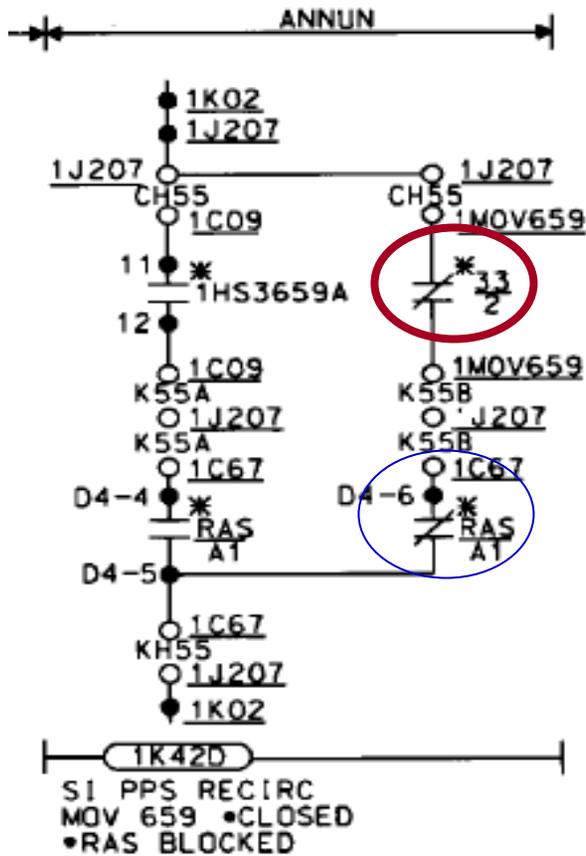
SCHEME 1B14 32  
 VALVE SHOWN IN FULL OPEN POSITION  
 FACILITY ZA

# Licensee's Justification for Change

Recall that the **“SI PPS RECIRC MOV 659 CLOSED RAS BLOCKED”** alarm will actuate when the logic for the following initiating devices are satisfied:

- 1MOV-659 position
- 1-HS-3659A (SI PP RECIRC LOCKOUT) handswitch position
- RAS

# Licensee's Justification for Change



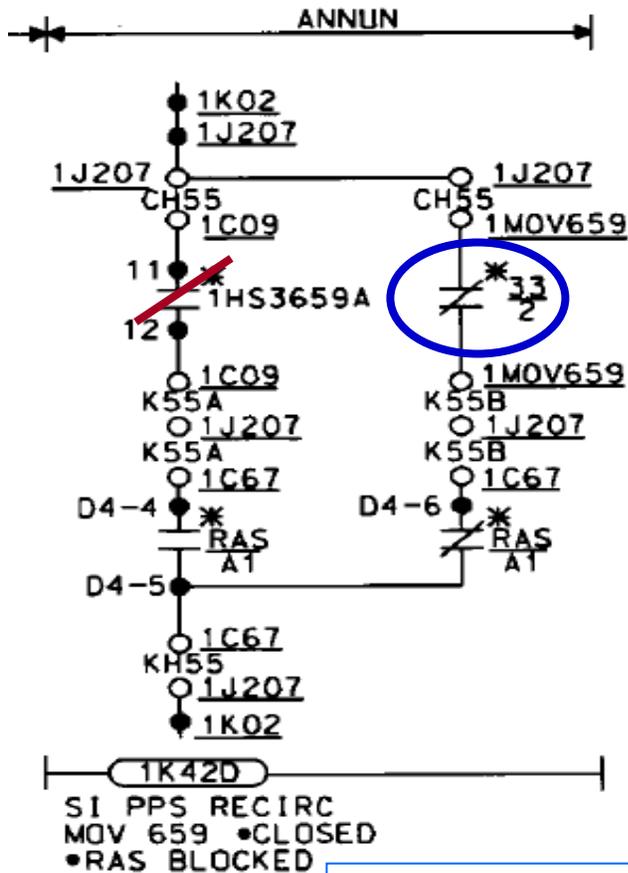
As mentioned previously, electrical print 61076SH0031 displays **SI Recirc PPS MOV 1MOV659** in the open position with 1HS3659A selected to **LOCKOUT** and 1HS3659 positioned in open.

In this configuration the **SI PPS RECIRC MOV 659 CLOSED RAS BLOCKED** alarm is clear since 1MOV 659 is open without a RAS.

The contact scheme for this configuration shows contact **33/2 (rotor one, contact 2)** closed and **RAS/A1** closed since a RAS actuation has not occurred. The alarm will remain clear if power is aligned.

61075SH0031

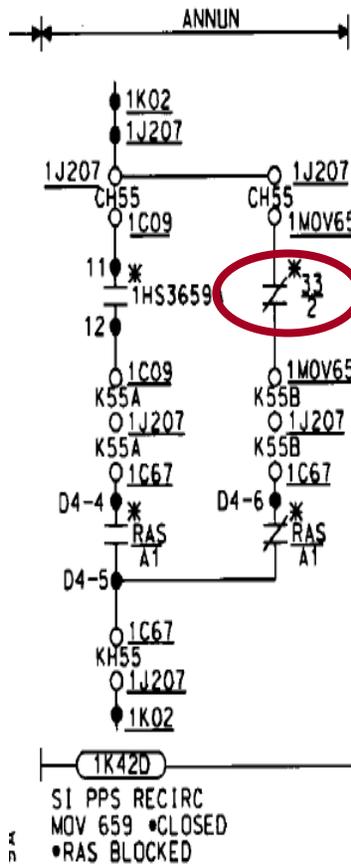
# Licensee's Justification for Change



61075SH0031

Recall if **SI PP Recirc Lockout handswitch 1HS3659A** is selected to ON, contacts **11-12** will close. If **SI Recirc PPS MOV 659** handswitch 1HS3659 is selected to close with 1HS3659A in ON the valve will travel shut. As the valve travels shut contact **33/2** (rotor one, contact 2) will open when the valve is 80% open. When contact **33/2** opens without a RAS actuation the alarm circuit will de-energize and actuate the **SI PPS RECIRC MOV 659 CLOSED RAS BLOCKED** alarm

# Licensee's Justification for Change



ROTOR CONTACT	LIMIT SWITCH CONTACT DEVELOPMENT			FUNCTION
	VALVE POSITION			
	FULL OPEN	INTERMEDIATE POSITIONS	FULL CLOSED	
1	█			SPARE
2	█			ANNUN
3		█		CLOSE LIGHT
4		█		OPEN LIMIT
5			█	SPARE
6			█	SPARE
7	█			OPEN LIGHT
8	█			SPARE
9	█			SPARE
10	█			SPARE
11		█		OPEN T/S BYP
12		█		SPARE
13			█	SPARE
14			█	SPARE
15	█			CLOSE T/S BYP
16	█			SPARE

█ CLOSE CONTACT

Contact 33/2 opens when 1MOV659 is 80% open and without a corresponding RAS the alarm circuit de-energizes and actuates the *SI PPS RECIRC MOV 659 CLOSED RAS BLOCKED* alarm

61075SH0031

# Licensee's Justification for Change

## POSSIBLE CAUSES

- SI PP RECIRC LOCKOUT handswitch, 1-HS-3659A, in LOCKOUT with a RAS signal present
- MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV, shut without RAS signal present
- MINI FLOW RETURN TO RWT ISOL MOV 659, 1-SI-659-MOV, shut **AND** SI PP RECIRC LOCKOUT handswitch, 1-HS-3659A, in LOCKOUT with or without an RAS signal present

RO question selection D “MINI FLOW RETURN TO RWT ISOL, 1-SI-659-MOV shut and SI PP RECIR LOCKOUT handswitch, 1-HS-3659A in ON” satisfies the condition of the second bulleted item per the 1C09 alarm manual and electrical print 61076SH0031.

# Licensee's Justification for Change

## References

- 61076SH0031
- 1C09 Alarm Manual Window H-55