



H.B. Robinson

ILC-13 NRC Licensing Exam
Simulator JPMs
In-Plant JPMs

~~Final~~ Submittal

DRAFT. 75 DAY



**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ILC-13 NRC JPM A
Rev 0**

Establishing RCS Cold Shutdown Boron Concentration

Concurred By: _____ **Date:** _____
Operations

Approved By: _____ **Date:** _____
Superintendent/Supervisor - Training

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: 01093127904, Respond to a Steam Generator Tube Leak IAW AOP-035.

Alternate Path:

NO

JPM #:

ILC-13 NRC JPM A

Candidate

RO/SRO

K/A **Rating (RO/SRO):**

004 A4.18 4.3 / 4.1

004 A4.04 3.2 / 3.6

Task Standard:

Required amount of Boric Acid added to establish RCS Cold Shutdown Boron Concentration.

Preferred Evaluation Location:

Simulator X In-Plant

Preferred Evaluation Method:

Perform X Simulate

References:

AOP-035, S/G Tube Leak

Validation Time: 15 Minutes **Time Critical:** NO **Time Critical Time:** N/A

Candidate:

Name _____

SSN _____

-

-

**Overall
Time**

Start: _____

Finish: _____

**Performance
Time (min):** _____

(N/A if not time
critical)

**Critical
Time**

Start: _____

Finish: _____

Performance Rating:
circle one

SAT

UNSAT

Examiner:

Print Name

Signature

Date

COMMENTS:

QUESTION DOCUMENTATION:

Question:

Response:

COMMENTS

Step 2 Critical because step has the candidate open MOV-350 to align a boric acid flow path.

Step 3 Critical because step will start a Boric Acid pump to provide motive force for the boric acid.

Step 6 Critical to calculate the appropriate time that the boric acid flow may be secure. If the time is calculated incorrectly then adequate shutdown margin may not be obtained.

Step 8 Critical to close MOV-350 after the appropriate amount of boric acid has been added.

Step 9 Critical to align the Boric Acid pump back to AUTO so that it will be aligned for an Auto-Makeup.

SIMULATOR OPERATOR INSTRUCTIONS:

1. Initialize the simulator to IC-913
2. Go to RUN ensure plant conditions are stable.
3. Place simulator in FREEZE until candidate is ready to begin the JPM.
4. An extra instructor will be needed to acknowledge alarms that do not apply to this JPM.

Tools/Equipment/Procedures Needed:

AOP-035, S/G Tube Leak, Attachment 3, Establishing RCS Cold Shutdown Boron Concentration

Calculator

DIRECTIONS TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To facilitate the examination and better enable me to assess your level of understanding, verbalize your actions and observations while performing the JPM. To indicate that you have completed your assigned task return the Candidate Cue Sheet I provided you.

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. You are the Unit 2 Control Operator.
2. Crew is implementing AOP-035, S/G Tube Leak, for a 20 gpm leak in "A" S/G.
3. The plant has been shutdown IAW AOP-038, Rapid Downpower, from 100% RTP.
4. No equipment is out of service.
5. The first three steps of AOP-035, Attachment 3, Establishing RCS Cold Shutdown Boron Concentration, has been completed and determined that 700 gallons of boric acid needs to be added to the RCS.

INITIATING CUES:

The CRS directs you to borate the RCS to the Mode 5 Shutdown Requirement using Attachment 3, Establishing RCS Cold Shutdown Boron Concentration (AOP-035 step 35). A copy of AOP-035, Attachment 3, with steps 1 – 3 completed has been provided.

START TIME: _____

<p>EXAMINER'S CUE: Candidate is given a copy of AOP-035, Attachment 3, with steps 1 – 3 completed.</p>	
<p><u>STEP 1:</u> IF the MOV-350, BA TO CHARGING PMP SUCT Valve flowpath is unavailable, THEN Borate the RCS using OP-301, Chemical and Volume Control System (CVCS) Section "RCS Boration Quick Checklist" (Step 4)</p> <p><u>STANDARD:</u> Candidate determines that MOV-350 is AVAILABLE based on information given in the cue sheet and N/A's this step.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u> IF the MOV-350, BA TO CHARGING PMP SUCT Valve flowpath will be used, THEN open MOV-350, BA TO CHARGING PMP SUCT Valve. (Step 5)</p> <p><u>STANDARD:</u> Candidate opens MOV-350 and verifies open by observing the RED open light illuminated and the GREEN closed light extinguished.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 3:</u> Start Boric Acid Pump aligned for Blended Makeup. (Step 6)</p> <p><u>STANDARD:</u> Candidate starts "A" Boric Acid Pump and verifies pump started by observing the RED on light illuminated and the GREEN off light extinguished.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4:</u> Record time boration commenced. (Step 7)</p> <p><u>TANDARD:</u> Candidate determines and records the time in blank provided.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 5:</u> Record Flowrate indicated on FI-110, BORIC ACID BYPASS FLOW. _____ gpm (Step 8)</p> <p><u>STANDARD:</u> Candidate observes flow indication on FI-110 and records flow of 70 gpm.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u> Determine time required to establish CSD boron concentration.</p> <p>$\frac{\text{Boric Acid Volume Required (gal)}}{\text{FI-110 Flowrate (gpm)}} = \text{_____ minutes}$</p> <p>(Step 9)</p> <p><u>STANDARD:</u> Candidate determines that 700 gal / 70 gpm equates to 10 minutes</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p style="text-align: center;"><u>NOTE</u></p> <p>MOV-350 may be stroked three times per hour (EE 89-076). A stroke is defined as complete travel of a valve from either the fully open to the fully closed position or vice versa.</p>	

<p><u>STEP 7:</u> IF any RCP #1 Seal Leakoff temperature approaches 170°F as indicated by TR-488, THEN cycle MOV-350 to maintain RCP#1 Seal Leakoff temperature less than 170°F (Step 10)</p> <p><u>STANDARD:</u> Candidate checks TR-488 and determines that RCP#1 Seal Leakoff temperatures are not approaching 170°F.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: Candidate may decide to utilize ERFIS RCP parameter indication to monitor RCP parameters.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8:</u> WHEN required amount of boric acid has been added, THEN close MOV-350. (Step 11)</p> <p><u>STANDARD:</u> When 10 minutes has elapsed OR informed by Examiner that 10 minutes has elapsed the candidate closes MOV-350 and observes the GREEN closed light illuminated and the RED open light extinguished.</p> <p>EXAMINER'S CUE: After candidate has demonstrated that they are monitoring RCP #1 Seal Leakoff temperature and time remaining inform the candidate that time compression has occurred and the 10 minutes has elapsed.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p style="text-align: center;"><u>NOTE</u></p> <p>If the Boric Acid Pump aligned for blend was in START to prevent exceeding starting duty limitation, then the Boric Acid Pump should remain in START.</p>	

<p><u>STEP 9:</u> Restore the Boric Acid Pump aligned for blend as follows:</p> <ul style="list-style-type: none"> • Check Boric Acid Pump aligned for blend in START <u>OR</u> • Place Boric Acid Pump aligned for blend in AUTO <p>(Step 12)</p> <p><u>STANDARD:</u> Candidate places “A” Boric Acid Pump control switch in AUTO.</p> <p>EXAMINER’S CUE: NONE</p> <p>EXAMINER’S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 10:</u> Notify Chemistry personnel to sample the RCS for boron concentration. (Step 13)</p> <p><u>STANDARD:</u> Candidate notifies Chemistry personnel to sample the RCS for boron.</p> <p>EXAMINER’S CUE: Inform the candidate that this concludes the JPM.</p> <p>EXAMINER’S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;"><u>END OF TASK</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

Terminating Cue: When boric acid addition has been terminated.

TIME STOP: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. You are the Unit 2 Control Operator.
 2. Crew is implementing AOP-035, S/G Tube Leak, for a 20 gpm leak in "A" S/G.
 3. The plant has been shutdown IAW AOP-038, Rapid Downpower, from 100% RTP.
 4. No equipment is out of service.
 5. The first three steps of AOP-035, Attachment 3, Establishing RCS Cold Shutdown Boron Concentration, has been completed and determined that 700 gallons of boric acid needs to be added to the RCS.

INITIATING CUES:

The CRS directs you to borate the RCS to the Mode 5 Shutdown Requirement using Attachment 3, Establishing RCS Cold Shutdown Boron Concentration (AOP-035 step 35).

CONTINUOUS USE

ATTACHMENT 3ESTABLISHING RCS COLD SHUTDOWN BORON CONCENTRATION

(Page 1 of 3)

1. Record the minimum required Mode 5 Boron concentration.

1302
ppm

2. Determine RCS boron concentration change required to establish CSD boron concentration.

<u>1302</u>	-	<u>1000</u>	=	<u>302</u>
Required CSD		Latest RCS		ppm
Boron Concentration		Boron Sample		

3. Determine volume of boric acid to be added using Station Curve Book.

700
gallons

4. IF the MOV-350, BA TO CHARGING PMP SUCT Valve flowpath is unavailable, THEN Borate the RCS using OP-301, Chemical and Volume Control System (CVCS) Section "RCS Boration Quick Checklist"

a. WHEN Boration is complete, THEN Go To Step 13.

5. IF the MOV-350, BA TO CHARGING PMP SUCT Valve flowpath will be used, THEN open MOV-350, BA TO CHARGING PMP SUCT Valve.

6. Start Boric Acid Pump aligned for Blended Makeup.

7. Record time boration commenced.

8. Record flowrate indicated on FI-110, BORIC ACID BYPASS FLOW.

_____ gpm

9. Determine time required to establish CSD boron concentration.

<u>Boric Acid Volume Required (gal)</u>	=	<u> </u> minutes
FI-110 Flowrate (gpm)		

CONTINUOUS USEATTACHMENT 3ESTABLISHING RCS COLD SHUTDOWN BORON CONCENTRATION

(Page 2 of 3)

NOTE

MOV-350 may be stroked three times per hour (EE 89-076). A stroke is defined as complete travel of a valve from either the fully open to the fully closed position or vice versa.

10. IF any RCP #1 Seal Leakoff temperature approaches 170°F as indicated by TR-448, THEN cycle MOV-350, BA TO CHARGING PMP SUCT, to maintain RCP #1 Seal Leakoff temperature less than 170°F.
11. WHEN required amount of boric acid has been added, THEN close MOV-350, BA TO CHARGING PMP SUCT.

NOTE

If the Boric Acid Pump aligned for blend was in START to prevent exceeding starting duty limitations, then the Boric Acid Pump should remain in START.

12. Restore the Boric Acid Pump aligned for blend as follows:

- Check Boric Acid Pump aligned for blend in START

OR

- Place Boric Acid Pump aligned for blend in AUTO

13. Notify Chemistry personnel to sample the RCS for boron concentration.

CONTINUOUS USEATTACHMENT 3ESTABLISHING RCS COLD SHUTDOWN BORON CONCENTRATION

(Page 3 of 3)

14. Adjust RCS makeup controls for blended flow at CSD boron concentration as follows:
 - a. Determine setpoint for FCV-113A, BORIC ACID FLOW Controller, using Station Curve Book.
 - b. Adjust FCV-113A potentiometer to required setpoint.
 - c. Verify RCS MAKEUP MODE Switch in AUTO.
 - d. Momentarily place RCS MAKEUP SYSTEM Switch to START.
15. Return to procedure and step in effect.

- END -

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ILC-13 NRC JPM B
Rev 0**

Place LTOP in Service

Concurred By: _____ **Date:** _____
Operations

Approved By: _____ **Date:** _____
Superintendent/Supervisor - Training

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: 0101000201, Place LTOP System in Service

Alternate Path:

NO

JPM #:

ILC-13 NRC JPM B

Candidate

RO/SRO

K/A

Rating (RO/SRO):

010A4.03

4.0 / 3.8

Task Standard:

LTOP has been placed in service.

Preferred Evaluation Location:

Simulator X In-Plant

Preferred Evaluation Method:

Perform X Simulate

References:

GP-007, Plant Cooldown From Hot Shutdown to Cold Shutdown

Validation Time: 15 Minutes **Time Critical:** NO **Time Critical Time:** N/A

Candidate:

(N/A if not time
critical)

Name

**Overall
Time**

**Critical
Time**

SSN - -

Start:

Start:

Finish:

Finish:

Performance Rating:

SAT

UNSAT

circle one

Performance

Time (min):

Examiner:

Print Name

Signature

Date

COMMENTS:

QUESTION DOCUMENTATION:

Question:

Response:

COMMENTS

Step 1 Critical because RCS pressure must be lowered to within the specified pressure band prior to placing LTOP in service.

Step 2 Critical because the step places the PZR PORVs in LOW PRESSURE operation.

SIMULATOR OPERATOR INSTRUCTIONS:

1. Initialize the simulator to IC-917
2. Go to RUN ensure plant conditions are stable.
3. Pull up cooldown plot on RO ERFIS screen (QP GP-007)
4. Place simulator in FREEZE until candidate is ready to begin the JPM.
5. An extra instructor will be needed to acknowledge alarms that do not apply to this JPM

Tools/Equipment/Procedures Needed:

GP-007

DIRECTIONS TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To facilitate the examination and better enable me to assess your level of understanding, verbalize your actions and observations while performing the JPM. To indicate that you have completed your assigned task return the Candidate Cue Sheet I provided you.

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. You are the Unit 2 Operator at Controls
2. Cooldown to Cold Shutdown is in progress.

INITIATING CUES:

The CRS directs you to place LTOP in service IAW GP-007, Step 8.3.10. All steps prior to step 8.3.10 have been completed. In addition, step 8.3.10.a has been completed by the Shift Manager.

START TIME: _____

<p><u>STEP 1:</u> WHEN RCS temperature is between 350°F and 360°F, THEN perform the following:</p> <p>b. SLOWLY ADJUST PC-444J, PZR PRESS 444J, OR Pressurizer Spray Valves in Manual to reduce RCS pressure to between 350 psig and 375 psig without exceeding 180°F/hr cooldown rate on the PZR. (Step 8.3.10.b)</p> <p><u>STANDARD:</u> Places PC-444J in Manual and raises output to lower RCS pressure OR places PZR Spray Valve Controller(s) in manual and raises output to lower RCS pressure.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: An Auto-Makeup will occur during this JPM. Inform the candidate that another operator will monitor the makeup.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
---	--

STEP 2:

IF any SI Accumulator is pressurized, THEN VERIFY each SI Accumulator isolation valve is closed and deenergized. (ITS LCO 3.4.12)

- SI Accumulator "A", SI-865A CLOSED
- MCC-5(14F) OPEN
- SI Accumulator "B", SI-865B CLOSED
- MCC-6(10J) OPEN
- SI Accumulator "C", SI-865C CLOSED
- MCC-5(9F) OPEN

(Step 8.3.10.c)

___ SAT

___ UNSAT

STANDARD:

Candidate determines that the SI Accumulators are NOT pressurized by observing the SI Accumulators Pressure indications on the RTGB (PI-921A, 923, 925, 927, 929, 931) or ERFIS and N/As this step.

EXAMINER'S CUE: If the candidate requests an AO check breaker status, report that all requested breakers are open.

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

VERIFY a maximum of one SI Pump is capable of injecting into the RCS by performing the following: (ITS LCO 3.4.12.a.2)

- (Step 8.3.10.d(1))

_____ UNSAT

COMMENTS:

BOOTH OPERATOR CUE: NONE

STEP 4:

VERIFY a maximum of one SI Pump is capable of injecting into the RCS by performing the following: (ITS LCO 3.4.12.a.2)

b. **VERIFY** each flowpath to the RCS is ISOLATD as follows:

- SI-870A (BIT OUTLET) CLOSED
- SI-870B (BIT OUTLET) CLOSED
- SI-869 (LOOPS B/C HOT LEG
INJECTIONS SHUTOFF) CLOSED
- SI-895T (BIT BYPASS) LOCKED CLOSED
- SI-883L (SI-868A,B,C TEST
LINE ISOLATION) LOCKED CLOSED

(Step 8.3.10.d(2))

___ SAT

___ UNSAT

STANDARD: Candidate verifies that SI-870A/B and SI-869 are closed by observing their GREEN closed indication illuminated. Candidate may use the Safety Injection status lights or SPDS Containment Status which will indicate that SI-870A/B and SI-869 are closed.

Candidate will contact AO to determine the status of SI-895T and SI-883L.

EXAMINER'S CUE: When candidate contacts AO, inform candidate that SI-895T and SI-883L are in the LOCKED CLOSED position.

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

STEP 5:

VERIFY a maximum of one SI Pump is capable of injecting into the RCS by performing the following: (ITS LCO 3.4.12.a.2)

- a. **PLACE** Caution Tags/Caps on the following components stating:
“Manipulating or installing this component may require entry into ITS LCO 3.4.12.a.”

(Step 8.3.10.d(3))

___ SAT

___ UNSAT

STANDARD: Candidate recognizes need to install Caution Tags/Caps

EXAMINER’S CUE: Inform the candidate that the CRS has assigned this task to another operator and requests that you continue on in GP-007 with the assigned task.

EXAMINER’S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

STEP 6: ALIGN the PZR PORVs and Block Valves as follows:

- | | |
|--|--------------|
| • MCC-6(7J), RC-535, PZR PORV PCV-456 BLOCK breaker | CLOSED |
| • RC-535, PORV BLOCK | OPEN |
| • MCC-6(8J), RC-536, PZR PORV PCV-455C BLOCK breaker | CLOSED |
| • RC-536, PORV BLOCK | OPEN |
| • PZR PCV-455C Overpressure Selector Switch | LOW PRESSURE |
| • PCV-455C, PZR PORV | AUTO |
| • PCV-455C Position Indication | CLOSED |
| • PZR PCV-456 Overpressure Selector Switch | LOW PRESSURE |
| • PCV-456, PZR PORV | AUTO |
| • PCV-456 Position Indication | CLOSED |

(Step 8.3.10.e)

STANDARD:

- Verifies RC-535 and 536 breakers closed by observing control board indicating lights
- Verifies RC 535 and 536 RED open indication on control board
- Places PCV-455C Overpressure selector switch in LOW PRESURE
- Places PCV-456 Overpressure selector switch in LOW PRESSURE
- Verifies PCV-455C and PCV-456 GREEN closed indication and in AUTO on control board

EXAMINER'S CUE: NONE**EXAMINER'S NOTE:** NONE**BOOTH OPERATOR CUE:** NONE**COMMENTS:****END OF TASK****CRITICAL
STEP**

___ SAT

___ UNSAT

Terminating Cue: When the Pressurizer PORVs are placed in LTOP mode with RCS pressure between 350 psig and 375 psig, the evaluation for this JPM is complete.

TIME STOP: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. You are the Unit 2 Control Operator.
2. Cooldown to Cold Shutdown is in progress.

INITIATING CUES:

The CRS directs you to place LTOP in service IAW GP-007, Step 8.3.10. All steps prior to step 8.3.10 have been completed. In addition, step 8.3.10.a has been completed by the Shift Manager.

INIT

NOTE: The RCS cooldown may be continued below 350 degrees F when the requirements of ITS LCO 3.5.2 and 3.4.12 are met. These requirements are met upon completion of Step 8.3.10 below.

CAUTION

RCS temperature shall **NOT** be allowed to lower below 350 degrees F until the requirements of ITS LCO 3.5.2 and 3.4.12 are met.

10. **WHEN** RCS temperature is between 350°F and 360°F, **THEN** perform the following:
- a. While continuing with this step, the SM shall **VERIFY** that the Plant Equipment Status Review started in step 8.3.2 is complete **AND** the plant is ready to enter MODE 4.
(SOER 09-1, Recommendation 3)
 - b. **SLOWLY ADJUST** PC-444J, PZR PRESS 444J, **OR** Pressurizer Spray Valves in Manual to reduce RCS pressure to between 350 psig and 375 psig without exceeding 180°F/hr cooldown rate on the PZR.

SM

8.3.10 (Continued)

INIT

NOTE: ITS LCO 3.4.12 contains a Note which amplifies when SI Accumulators are required to be isolated. The following step is a simplified method to ensure compliance and eliminates the need to use ITS LCO 3.4.3 curves.

- c. **IF** any SI Accumulator is pressurized, **THEN VERIFY** each SI Accumulator isolation valve is closed and deenergized. (ITS LCO 3.4.12)
- SI Accumulator “A”
 - SI-865A CLOSED ____
 - MCC-5(14F) OPEN ____
 - SI Accumulator “B”
 - SI-865B CLOSED ____
 - MCC-6(10J) OPEN ____
 - SI Accumulator “C”
 - SI-865C CLOSED ____
 - MCC-5(9F) OPEN ____

NOTE: ITS LCO 3.5.2 is applicable in MODE 3 and above. A Note in this LCO identifies that operation is allowed in MODE 3 with one SI Pump declared inoperable, due to the need to meet ITS LCO 3.4.12, for up to 4 hours.

The following step ensures an SI Pump can be restored if required by AOP-020 following a loss of RHR.

- d. **VERIFY** a maximum of one SI Pump is capable of injecting into the RCS by performing the following:
(ITS LCO 3.4.12.a.2)

- (1) **DEENERGIZE** SI Pump being removed from service by pulling pump fuses (do **NOT** rack out breaker). Circle SI Pump deenergized:

SI Pump “A” / SI Pump “B” / SI Pump “C” _____

8.3.10.d (Continued)

INIT VERI

- (2) **VERIFY** each flowpath to the RCS is ISOLATED as follows:

- SI-870A (BIT OUTLET) **CLOSED** _____
- SI-870B (BIT OUTLET) **CLOSED** _____
- SI-869 (LOOPS “B” AND “C” HOT LEG INJECTIONS SHUTOFF)
CLOSED _____
- SI-895T (BIT BYPASS) **LOCKED CLOSED** _____
- SI-883L (SI-868A, B, & C TEST LINE ISOLATION)
LOCKED CLOSED _____

- (3) **PLACE** Caution Tags/Caps on the following components stating: “Manipulating or installing this component may require entry into ITS LCO 3.4.12.a.”

CAUTION TAG # _____	INIT
SI-870A - BIT OUTLET, handwheel	
SI-870B - BIT OUTLET, handwheel	
SI-870A - BIT OUTLET, control switch	
SI-870B - BIT OUTLET, control switch	
SI-869 - LOOPS “B” AND “C” HOT LEG INJECTIONS SHUTOFF, handwheel	
SI-869 - LOOPS “B” AND “C” HOT LEG INJECTIONS SHUTOFF, control switch	
SI-895T - BIT BYPASS	
SI-883L - SI-868A, B, & C TEST LINE ISOLATION	
SI Pump fuses pulled in Step 8.3.10.d(1)	
Control switch for SI Pump in Step 8.3.10.d(1)	

8.3.10 (Continued)

INIT

CAUTION

The Low Temperature Overpressure Protection System shall be operable in MODES 4, 5, and 6 when the RCS is not vented to containment in accordance with ITS LCO 3.4.12. If one or both PZR PORV's become inoperable, then refer to ITS LCO 3.4.12.

e. **ALIGN** the PZR PORVs and Block Valves as follows:

- MCC-6(7J), RC-535, PRESSURIZER PORV PCV-456
BLOCK breaker CLOSED _____
- RC-535, PORV BLOCK OPEN _____
- MCC-6(8J), RC-536, PRESSURIZER PORV PCV-455C
BLOCK breaker CLOSED _____
- RC-536, PORV BLOCK OPEN _____
- PZR PCV-455C Overpressure Selector Switch
LOW PRESSURE _____
- PCV-455C, PZR PORV ATUO _____
- PCV-455C Position Indication CLOSED _____
- PZR PCV-456 Overpressure Selector Switch
LOW PRESSURE _____
- PCV-456, PZR PORV ATUO _____
- PCV-456 Position Indication CLOSED _____

INIT

CAUTION

PPP-007, Feedwater Leakage Test, allows a Feed Regulating Valve to leak by at rates up to 735 gpm. Feedwater Regulating Valve leakage can lead to violation of RCS cooldown rates and overfilling of Steam Generators.

The RCS cooldown rate shall not exceed the limits shown in ITS Figure 3.4.3-2.

The ADMINISTRATIVE limits for RCS and PZR heatup and cooldown are:

- RCS Heatup Rate: 50°F/hr
- RCS Cooldown Rate: 80°F/hr
- PZR Heatup Rate: 80°F/hr
- PZR Cooldown Rate: 180°F/hr

Refer to Precaution & Limitation 5.4.e if these limits must be exceeded

11. **WHEN** Step 8.3.10 is complete **AND** RCS temperature has lowered to 350°F, **THEN PERFORM** the following:

- a. **STATION** an Operator locally at the Feedwater Header Section Valves to monitor the cycling of the valves. _____
- b. **CYCLE** the Feedwater Header Section Valves OPEN and then CLOSED to prevent the possibility of thermal binding during cooldown of the valves (EE 89-96).

- | | |
|-------------------------|--------------|
| – V2-6A, FW HDR SECTION | OPEN _____ |
| – V2-6A, FW HDR SECTION | CLOSED _____ |
| – V2-6B, FW HDR SECTION | OPEN _____ |
| – V2-6B, FW HDR SECTION | CLOSED _____ |
| – V2-6C, FW HDR SECTION | OPEN _____ |
| – V2-6C, FW HDR SECTION | CLOSED _____ |

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ILC-13 NRC JPM C
Rev 0**

Establish RCS Bleed and Feed

Concurred By: _____ **Date:** _____
Operations

Approved By: _____ **Date:** _____
Superintendent/Supervisor - Training

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: 01113107905, Respond to Loss of Secondary Heat Sink IAW FRP-H.1

Alternate Path:

YES

JPM #:

ILC-13 NRC JPM C

Candidate

RO/SRO

K/A

Rating (RO/SRO):

002.A2.04 4.3 / 4.6

074.EA2.02 4.3 / 4.6

Task Standard:

RCS bleed and feed has been established by completion of FRP-H.1 up through and including establishing an RCS bleed path by opening the RCS head vents and depressurizing at least one S/G.

Preferred Evaluation Location:

Simulator X In-Plant

Preferred Evaluation Method:

Perform X Simulate

References:

FRP-H.1

Validation Time: 5 Minutes Time Critical: Yes Time Critical Time: 8 Minutes

Candidate:

Name

SSN

-

-

**Overall
Time**

Start: _____

Finish: _____

(N/A if not time
critical)

**Critical
Time**

Start: _____

Finish: _____

Performance Rating:

circle one

SAT

UNSAT

Performance

Time (min): _____

Examiner:

Print Name

Signature

Date

COMMENTS:



QUESTION DOCUMENTATION:

Question:

Response:



COMMENTS

Step 5 Critical because if RCPs are not secured then they will provide additional heat input to the RCS.

Step 6 Critical because safety injection pumps are utilized as the feed source for the RCS and PZR once the vent (bleed) path is established.

Step 8 Critical because IA is needed to operate the PZR PORVs.

Step 9 Critical because vent path for PZR must be established to lower RCS pressure below shutoff head of SI Pumps.

Step 11 Critical because additional vent path must be established since both PORVs cannot be verified open and are needed to lower RCS pressure to below the shutoff head of the SI pumps.

JPM is Time Critical because Heat Sink must be established in a timely manner to prevent core damage.

Time Critical Steps are steps 1 through 11 and the time for them is 8 minutes

SIMULATOR OPERATOR INSTRUCTIONS:

1. Initialize the simulator to IC-912
2. Go to RUN ensure plant conditions are stable.
3. Open SCN File 009_ILC_13_NRC_CR_JPM_C and execute.
4. Place simulator in FREEZE until candidate is ready to begin JPM.
5. An extra instructor will be needed to acknowledge alarms that do not apply to this JPM

1. If IC-912 is unavailable, reset simulator to IC-5 and perform the following:
2. Insert malfunction RPS01A and RPS01B failure to trip – Auto and Manually (BOTH)
3. Activate IMF CFW-19 (total loss of feedwater).
4. When SG WR levels <18% then manually trip the reactor
5. Verify 2 charging pumps Running
6. Freeze the simulator after SG WR levels are less than 10%

Tools/Equipment/Procedures Needed:

FRP-H.1

DIRECTIONS TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To facilitate the examination and better enable me to assess your level of understanding, verbalize your actions and observations while performing the JPM. To indicate that you have completed your assigned task return the Candidate Cue Sheet I provided you.

CANDIDATE INFORMATION:

Inform the candidate there ARE time critical steps in this JPM.

INITIAL CONDITIONS:

1. Plant was initially at 100% power.
2. A terrorist attack on the plant has resulted in a loss of all feedwater capability.
3. The reactor failed to trip automatically and from the RTGB.
4. EOP-E-0 was entered and transitioned to FRP-S.1.
5. Upon resetting SPDS, a RED terminus exists on Heat Sink due to all S/G <8% and AFW <300 gpm
6. The crew has transitioned to FRP-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.
7. You are the Reactor Operator.

INITIATING CUES:

The CRS directs you to respond to a loss of secondary heat sink IAW FRP-H.1.

START TIME: _____ TIME CRITICAL START TIME _____

<p><u>STEP 1:</u> Obtain a copy of the appropriate procedure</p> <p><u>STANDARD:</u> Operator obtains a copy of FRP-H.1 from the bookcase</p> <p>EXAMINER'S CUE: The controlled copy from the bookcase will be replaced after the JPM</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p style="text-align: center;"><u>CAUTION</u></p> <p style="text-align: center;">Feed flow is not re-established to any faulted S/G if an intact S/G is available.</p>	
<p><u>STEP 2:</u> Check total feed flow - LESS THAN 300 gpm due to operator action. (Step 1)</p> <p><u>STANDARD:</u> Candidate CHECKS total feed flow < 300 gpm and no operator action taken and, IAW RNO, goes to step 3.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 3:</u> Determine If Secondary Heat Sink Is Required As Follows:</p> <ul style="list-style-type: none"> a. Check RCS pressure - GREATER THAN ANY NON-FAULTED S/G PRESSURE. b. Check RCS temperature - GREATER THAN 350°F [310°F] (Step 3) <p><u>STANDARD:</u> Using available indications, Candidate DETERMINES</p> <ul style="list-style-type: none"> a. RCS pressure is greater than all non-faulted S/G pressures by observing RCS pressure on the ICCM monitor and individual S/G pressures on the RTGB edge meters or ERFIS computer. b. RCS temperature is greater than 350°F by observing TR-408 for Tave or TR-410 and/or TR-413 for RCS Tcold and Thot temperatures. <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: Candidate checks RCS pressure, S/G pressure, and RCS temperature. Candidate determines that Secondary Heat Sink is required and proceeds to Step 4.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4:</u> Check Any Two S/G Wide Range Levels - LESS THAN 10% [19%]. (Step 4)</p> <p><u>STANDARD:</u> Candidate DETERMINES that all 3 S/Gs levels are less than 10% wide range level by observing levels on LR-477.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 5:</u> Perform The Following:</p> <ul style="list-style-type: none"> a. Stop all RCPs b. Observe <u>CAUTION</u> prior to Step 31 and Go To Step 31 (Step 5) <p><u>STANDARD:</u> Candidate PERFORMS the following actions:</p> <ul style="list-style-type: none"> a. PLACES control switches for A, B, and C RCPs to STOP and observing the GREEN off indication illuminated. b. OBSERVES <u>CAUTION</u> prior to Step 31 and PROCEEDS to Step 31. <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p style="text-align: center;"><u>CAUTION</u></p> <p>Steps 31 through 35 must be performed quickly in order to establish RCS heat removal by RCS bleed and feed.</p>	
<p><u>STEP 6:</u> Depress the INITIATE SAFETY INJECTION Pushbutton (Step 31)</p> <p><u>STANDARD:</u> Candidate DEPRESSES either of the two INITATE SAFETY INJECTION Pushbuttons.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

STEP 7:

Verify RCS Injection Path As Follows:

- a. Verify SI Pumps - AT LEAST ONE RUNNING
- b. Verify SI Valves for at least one flow path - ALIGNED FOR COLD LEG INJECTION
(Step 32)

___ SAT

STANDARD: Candidate Verifies at least one SI pump is running by observing the RED on indication illuminated for either A or C SI pump.

___ UNSAT

Candidate determines that one flow path to the core from the SI pumps is aligned by observing that valves SI-867A or B and SI-870A or B are open by observing the RED open indication illuminated.

Candidate may use the Safety Injection status lights which will indicate that all of the SI valves are properly aligned for core injection, with the exception of the SI Accumulator Discharge valves SI-865A, B and C which have their breakers open.

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

STEP 8:

Establish Instrument Air To CV As Follows:

- a. Verify APP-002-F7, INSTR AIR HDR LO PRESS - EXTINGUISHED
- b. Place IA-1716, INSTRUMENT AIR ISO TO CV Control Switch to the OVERRIDE position
(Step 33)

STANDARD:

Candidate Verifies APP-002-F7, INSTR AIR HDR LO PRESS is Extinguished and Places IA-1716, INSTRUMENT AIR ISO TO CV Control Switch to the OVERRIDE position and observes that the INST AIR VALVE TO CONT PCV-1716 SHUT status light on the Containment Isolation Phase A status panel is extinguished.

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: PCV-1716 valve position may also be determined using the SPDS display on the ERFIS computer for Containment Phase A Status Panel display.

BOOTH OPERATOR CUE: NONE**COMMENTS:****CRITICAL
STEP**

___ SAT

___ UNSAT

STEP 9:

Establish RCS Bleed Path As Follows:

- a. Verify power to PZR PORV Block Valves - AVAILABLE.
- b. Place all PZR Heater Control Switches to the OFF position
- c. Verify PZR PORV Block Valves - BOTH OPEN
- d. Open both PZR PORVs
(Step 34)

**CRITICAL
STEP**

___ SAT

STANDARD:

Candidate PERFORMS the following:

- a. Candidate determines that power is available to PZR PORV block valves RC-535 and RC-536 by observing that indication is available on the RTGB valve indication.
- b. Candidate places the control switches for the PZR Control Group Heaters, Backup Group A and Backup Group B to the OFF position and observes the GREEN off indication illuminated.
- c. Candidate verifies that both PZR PORV block valves are open by observing the RED open indication illuminated for each valve.
- d. Candidate opens the PZR PORVs PCV-455C and PCV-456 by placing the control switches to the open position and observing the RED open indication illuminate for PCV-456. PCV-455C will indicate failed at mid-position and will have both the RED and GREEN indicators illuminated.

___ UNSAT

EXAMINER'S CUE: NONE**EXAMINER'S NOTE:** NONE**BOOTH OPERATOR CUE:** NONE**COMMENTS:**

STEP 10:

Verify Adequate RCS Bleed Path As Follows:

- PZR PORVs - BOTH OPEN
- PZR PORV Block Valves - BOTH OPEN
(Step 35)

___ SAT

STANDARD:

Candidate determines that both PZR PORVs are NOT OPEN by observing the RED and GREEN mid-position indication illuminated for PCV-455C. The candidate proceeds to the RNO step, which directs transition to Step 37.

___ UNSAT

EXAMINER'S CUE: NONE**EXAMINER'S NOTE:** NONE**BOOTH OPERATOR CUE:** NONE**COMMENTS:**

STEP 11:

Place the Key Switches for the following Vent Valves to the OPEN Position:

- RC-568, HEAD VENT
 - RC-570, PZR VENT
 - RC-572, CV ATMOS
 - RC-567, HEAD VENT
 - RC-569, PZR VENT
 - RC-571, PTR ISO
- (Step 37)

**CRITICAL
STEP**

___ SAT

___ UNSAT

STANDARD: Candidate places the key switches for valves RC-568, 570, 572, 567, 569 and 571 to the OPEN position and observes that the RED open indication for each valve is illuminated.

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: Blank keys are inserted into the key switches. The blanks will have to be removed and the keys inserted into the switches to operate the valves.

BOOTH OPERATOR CUE: NONE

COMMENTS:

Time Critical Stop Time _____

<p><u>STEP 12:</u> Depressurize At Least One Intact S/G To Atmospheric Pressure Using Steam Line PORVs. (Step 38)</p> <p><u>STANDARD:</u> Candidate depressurizes at least one of the S/Gs by opening the selected Steam Line PORV by rotating the valve control potentiometer in the clockwise direction and observing RED open indication for the PORV illuminated. Minimal steam noise will be heard since all steam generators are already at very low steam pressure.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;"><u>END OF TASK</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>Terminating Cue: When selected S/G depressurization has commenced, evaluation on the JPM is complete.</p>	

TIME STOP: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

CANDIDATE INFORMATION:

Inform the candidate there ARE time critical steps in this JPM.

INITIAL CONDITIONS:

1. Plant was initially at 100% power.
2. A terrorist attack on the plant has resulted in a loss of all feedwater capability.
3. The reactor failed to trip automatically and from the RTGB.
4. EOP-E-0 was entered and transitioned to FRP-S.1.
5. Upon resetting SPDS, a RED terminus exists on Heat Sink due to all S/G <8% and AFW <300 gpm
6. The crew has transitioned to FRP-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.
7. You are the Reactor Operator.

INITIATING CUES:

The CRS directs you to respond to a loss of secondary heat sink IAW FRP-H.1.

CONTINUOUS USE

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 3

PART 4

FUNCTION RESTORATION PROCEDURE

FRP-H.1

RESPONSE TO LOSS OF SECONDARY HEAT SINK

REVISION 25

Purpose and Entry Conditions

(Page 1 of 1)

1. PURPOSE

This procedure provides actions to respond to a loss of secondary heat sink in all Steam Generators.

2. ENTRY CONDITIONS

- a. EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 9, when minimum AFW flow is not verified AND narrow range level in all S/Gs is less than 8% [18%].
- b. CSF-3, Heat Sink Critical Safety Function Status Tree on a RED condition.

- END -

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION		
Feed flow is not re-established to any faulted S/G if an intact S/G is available.		

1.	Check Total Feed Flow - LESS THAN 300 GPM DUE TO OPERATOR ACTION	Go To Step 3.
2.	Reset SPDS And Return To Procedure And Step In Effect	
3.	Determine If Secondary Heat Sink Is Required As Follows:	
a.	Check RCS pressure - GREATER THAN ANY NON-FAULTED S/G PRESSURE	a. Reset SPDS and return to procedure and step in effect.
b.	Check RCS temperature - GREATER THAN 350°F [310°F]	b. Perform the following:
		1) Place RHR System in service using Supplement I.
		2) <u>WHEN</u> adequate cooling with RHR is established, <u>THEN</u> reset SPDS and return to procedure and step in effect.
* 4.	Check Any Two S/G Wide Range Levels - LESS THAN 10% [19%]	<u>IF</u> any two S/G Wide Range Levels lower to less than 10% [19%], <u>THEN</u> Go To Step 5.
		Go To Step 6.
5.	Perform The Following:	
a.	Stop all RCPs	
b.	Observe <u>CAUTION</u> prior to Step 31 and Go To Step 31	

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

- * 6. Check CST level - GREATER THAN 10%

Align SW backup to the AFW Pumps using OP-402, Auxiliary Feedwater System, while continuing with this procedure.

IF the CST is low due to catastrophic failure AND is inaccessible, THEN align SW backup to the MDAFW Pumps using Attachment 2, SW Backup To MDAFW Pumps.

Go To Step 14.

7. Verify All S/G Blowdown AND Sample Isolation Valves - CLOSED

8. Check AFW Lines - INTACT

Isolate break.

IF the break is isolated, THEN Go To Step 9.

IF the break can NOT be isolated, THEN Go To Step 14.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

9. Try To Establish Motor Driven
AFW Flow To At Least One S/G As
Follows:

a. Check AFW Pump Breakers -
TRIPPED

a. Go To Step 9.c.

b. Attempt to reclose any
tripped breakers as follows:

1) Position the MDAFW Pump
Control Switch to the STOP
position

2) Reset SI

3) Position the MDAFW Pump
Control Switch to the
START position

4) Check MDAFW Pump - RUNNING

4) IF the tripped breaker
will NOT reclose, THEN
contact I&C to investigate.

Go To Step 10.

c. Verify AFW HDR DISCH Valves -
OPEN:

- V2-16A
- V2-16B
- V2-16C

d. Check AFW flow to S/Gs -
GREATER THAN 300 GPM

d. Go To Step 10.

e. Reset SPDS and return to
procedure and step in effect

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

10. Attempt To Start SDAFW Pump As Follows:

- a. Verify STEAM DRIVEN AFW PUMP
STM SHUTOFF Valves - OPEN

- V1-8A
- V1-8B
- V1-8C

- b. Verify STEAM DRIVEN AFW PUMP
DISCH Valves - OPEN

- V2-14A
- V2-14B
- V2-14C

- c. Check AFW flow to S/Gs -
GREATER THAN 300 GPM

- d. Reset SPDS and return to
procedure and step in effect

- a. IF the steam supply valves
can NOT be opened, THEN Go To
Step 11.

- c. Go To Step 11.

11. Locally Investigate AND Attempt To Restore AFW Flow As Follows:

- a. Verify AFW Pump suction
supply is available

- b. Position the MDAFW Pump
LOCAL/REMOTE Switch to LOCAL

- c. Attempt to start a MDAFW Pump
as follows:

- 1) Depress the MDAFW Pump
local STOP Pushbutton

- 2) Depress the MDAFW Pump
local START Pushbutton

- 3) Check MDAFW Pump - STARTED

- 3) Place the LOCAL/REMOTE
Switch to REMOTE.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

- *12. Check AFW Flow To S/Gs - GREATER THAN 300 GPM

IF feed flow to at least one S/G verified, THEN perform the following:

- a. Maintain flow to restore narrow range level to greater than 8% [18%].
- b. WHEN narrow range level is greater than 8% [18%], THEN reset SPDS AND return to procedure and step in effect.

Go To Step 14.

13. Reset SPDS And Return To Procedure And Step In Effect

14. Stop All RCPs

15. Check Condensate System - IN SERVICE

Place the Condensate System in service as follows:

- a. IF the Condensate System is NOT available, THEN Go To Step 30.
- b. Open QCV-10426, COND POL SEC BYP.
- c. Close V5-3, COND PUMP DISCH.
- d. Momentarily place V5-3 to OPEN.
- e. Start one Condensate Pump.
- f. WHEN feedwater pressure is greater than 300 psig, THEN verify V5-3 full open.
- g. Open HCV-1459, LP HEATERS BYP.

IF at least one Condensate Pump can NOT be started, THEN Go To Step 30.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE

The subsequent step will defeat all FW Isolation signals which is necessary to allow starting of a Main Feedwater Pump. Manual Operator action will be required to initiate a FW Isolation.

16. Place ALL The **FEEDWATER ISOLATION** Key Switches In The **OVRD/RESET** Position

- STM GEN A
- STM GEN B
- STM GEN C

NOTE

Local operation of the FRV and B/P valves below is via reverse acting handwheels.

17. Attempt To Establish Feedwater Flow As Follows:

- a. Verify the FW HDR SECTION Valves - CLOSED

- V2-6A
- V2-6B
- V2-6C

- b. Start one Main FW Pump

- c. Open the FRV Bypass Valves:

- FCV-479
- FCV-489
- FCV-499

- d. Check FW Flow - ESTABLISHED

- b. Go To Step 20.

- c. Locally open the FRV Bypass Valve using the Manual Handwheel. (Requires small Locked Valve Key.)

- d. Go To Step 20.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

18. Check S/G Levels As Follows:

- a. Level In At Least One S/G -
GREATER THAN 8% [18%]
- b. Reset SPDS And Return To
Procedure And Step In Effect

a. Go To Step 19.

19. Determine If Feedwater Flow Is Adequate:

- a. Check the following:
 - Core Exit T/C Temperature
- LOWERING

OR

 - S/G Wide Range Level -
RISING IN AT LEAST ONE S/G
- b. Maintain FW flow to restore
S/G Level to greater than 8%
[18%]
- c. Reset SPDS And Return To
Procedure And Step In Effect

a. Go To Step 20.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE

Supplement K is available for optimizing Auxiliary Spray below.

20. Depressurize The RCS As Follows:

- | | |
|---|--|
| a. Check letdown - IN SERVICE | a. <u>IF</u> a PZR PORV is available, <u>THEN</u> Go To Step 20.e. |
| | <u>IF</u> a PZR PORV is <u>NOT</u> available, <u>THEN</u> Go To Step 20.b. |
| b. Open CVC-311, AUX SPRAY | |
| c. <u>WHEN</u> RCS pressure is less than 1950 psig, <u>THEN</u> close CVC-311 | |
| d. Observe the <u>CAUTION</u> prior to step 21 and Go To Step 21 | |
| e. Open one PZR PORV to depressurize the RCS to less than 1950 psig. | |
| f. <u>WHEN</u> pressure is less than 1950 psig, <u>THEN</u> close the PORV. | |

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

Following block of automatic SI initiation, manual SI initiation may be required if conditions degrade.

*21. Block SAFETY INJECTION As
Follows:

a. Momentarily Place the PZR
PRESS/HI STM LINE DP Switch
to the BLOCK position

b. Check Tavg - LESS THAN 543°F

b. WHEN Tavg is less than 543°F,
THEN perform Step 21.c.

Observe the CAUTION prior to
Step 22 and Go To Step 22.

c. Momentarily Place the T-AVG
Switch to the BLOCK position

22. Identify S/G With Lowest Level
To Select For Depressurization

23. Verify Closed MSIVs For
Remaining S/Gs With Higher Levels

FRP-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	Rev. 25 Page 12 of 42
---------	---	--------------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>The SI Accumulator Discharge Valves must be closed when S/G pressure is less than 240 psig to prevent nitrogen injection into the RCS.</p> <p>*****</p>		
24.	<p>Depressurize Selected S/G With The Lowest Level To Less Than 600 PSIG By Dumping Steam At Maximum Rate Using One Of The Following Methods Listed In Order Of Preference:</p> <ul style="list-style-type: none"> • Steam Dump to condenser via the pressure control mode <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> • Steam Line PORVs controlled by Instrument Air <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> • Steam Line PORVs controlled by Nitrogen per Attachment 2 of AOP-017, Loss of Instrument Air 	

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

25. Check Selected S/G Pressure -
GREATER THAN 240 PSIG

Isolate SI Accumulators as
follows:

a. Locally close the breakers
for the following valves:

- SI-865C, ACCUMULATOR C
DISCHARGE (MCC-5, CMPT 9F)
- SI-865A, ACCUMULATOR A
DISCHARGE (MCC-5, CMPT
14F)
- SI-865B, ACCUMULATOR B
DISCHARGE (MCC-6, CMPT
10J)

b. Verify CLOSED all ACCUMULATOR
DISCHs

- SI-865A
- SI-865B
- SI-865C

Vent any unisolated
accumulator as follows:

- 1) Verify SI-855, ACC
NITROGEN ISO, is closed.
- 2) Open the appropriate ACCUM
VENT Valves:
 - SI-853A
 - SI-853B
 - SI-853C
- 3) Open HIC-936, ACC VENT HDR
FLOW.

26. Maintain Selected S/G pressure -
BETWEEN 240 PSIG AND 600 PSIG

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

27. Try To Establish Feed Flow From Condensate System As Follows:

- a. Check Condensate Pump status
- AT LEAST ONE RUNNING

- a. Start one Condensate Pump as follows:

- 1) Open QCV-10426, COND POL SEC BYP.
- 2) Close V5-3, COND PUMP DISCH.
- 3) Momentarily place V5-3 control switch to OPEN.
- 4) Start one Condensate Pump.
- 5) WHEN feedwater pressure is greater than 300 psig, THEN verify V5-3 goes full open.
- 6) Open HCV-1459, LP HEATERS BYP.

IF at least one Condensate Pump can NOT be started, THEN Go To Step 30.

- b. Open the FRV Bypass Valves

- FCV-479
- FCV-489
- FCV-499

- b. Locally open the FRV Bypass Valve using the Manual Handwheel. (Requires small Locked Valve Key.)

- c. Check Condensate flow -
ESTABLISHED

- c. Go To Step 30.

28. Check S/G Levels As Follows:

- a. Level in at least one S/G -
GREATER THAN 8% [18%]

- a. Go To Step 29.

- b. Reset SPDS And Return To
Procedure And Step In Effect

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

29. Determine If Condensate Flow Is Adequate:

a. Check the following:

- Core Exit T/C temperature
- LOWERING

OR

- S/G Wide Range level -
RISING IN AT LEAST ONE S/G

b. Maintain FW flow to restore
S/G level to greater than 8%
[18%]c. Reset SPDS And Return To
Procedure And Step In Effect

a. Go To Step 30.

***30. Any Two S/G Wide Range Levels -
LESS THAN 10% [19%]**IF FW flow is restored during
steps prior to step 31, THEN Go
To Step 28.

Go To Step 3.

CAUTIONSteps 31 through 35 must be performed quickly in order to establish RCS
heat removal by RCS bleed and feed.

**31. Depress the INITIATE SAFETY
INJECTION Pushbutton**

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

32. Verify RCS Injection Path As Follows:

- a. Verify SI Pumps - AT LEAST ONE RUNNING
- b. At the RTGB, verify SI Valves for at least one flow path - ALIGNED FOR COLD LEG INJECTION

- a. Go To Step 6.
- b. Perform the following:
 - 1) Locally align valves.
 - 2) Continue efforts to establish feed flow.
 - 3) IF Cold Leg Injection can NOT be verified, THEN Go To Step 6.

33. Establish Instrument Air To CV As Follows:

- a. Verify APP-002-F7, INSTR AIR HDR LO PRESS - EXTINGUISHED

- a. Start Instrument Air Compressors as required to extinguish APP-002-F7.

IF instrument air header pressure can NOT be established, THEN Go To Step 34.

- b. Place IA PCV-1716, INSTRUMENT AIR ISO TO CV Control Switch to the OVERRIDE position

34. Establish RCS Bleed Path As Follows:

- a. Verify power to PZR PORV Block Valves - AVAILABLE
- b. Place all PZR Heater Control Switches to the OFF position
- c. Verify PZR PORV Block Valves - BOTH OPEN
- d. Open both PZR PORVs

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

35. Verify Adequate RCS Bleed Path
As Follows:

- PZR PORVs - BOTH OPEN
- PZR PORV Block Valves - BOTH
OPEN

Go To Step 37.

36. Go To Step 41

37. Place the Key Switches for the
following Vent Valves to the
OPEN Position:

- RC-568, HEAD VENT
- RC-570, PZR VENT
- RC-572, CV ATMOS
- RC-567, HEAD VENT
- RC-569, PZR VENT
- RC-571, PRT ISO

38. Depressurize At Least One Intact
S/G To Atmospheric Pressure
Using Steam Line PORVs

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

39. Isolate SI Accumulators As
Follows:

a. Locally close the breakers
for the following valves:

- SI-865C, ACCUMULATOR C
DISCHARGE (MCC-5, CMPT 9F)
- SI-865A, ACCUMULATOR A
DISCHARGE (MCC-5, CMPT
14F)
- SI-865B, ACCUMULATOR B
DISCHARGE (MCC-6, CMPT
10J)

b. Verify CLOSED all ACCUMULATOR
DISCHs

- SI-865A
- SI-865B
- SI-865C

b. Vent any unisolated
accumulator as follows:

- 1) Verify SI-855, ACC
NITROGEN ISO, is closed.
- 2) Open the appropriate ACCUM
VENT Valves:
 - SI-853A
 - SI-853B
 - SI-853C
- 3) Open HIC-936, ACC VENT HDR
FLOW.

40. Align Fire Water To The
Depressurized S/G Using
Attachment 1, While Continuing
With This Procedure

41. Verify Auto Start Of All SI
Equipment Using Supplement L,
While Continuing With This
Procedure

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

The RCS bleed path must be maintained even if RCS pressure remains greater than SI Pump shutoff head.

42. **Maintain RCS Heat Removal As Follows:**

- Maintain Safety Injection flow
- Maintain PZR PORVs - BOTH OPEN

NOTE

The Safeguards System requires 2 min between SI initiation and reset.

43. **Perform The Following:**

- a. Reset SAFETY INJECTION
- b. Momentarily place the CONTAINMENT SPRAY Key Switch to the OVRD/RESET position AND return to the NORMAL position

44. **Reset The Following Containment Isolations:**

- a. PHASE A
- b. PHASE B

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

45. Establish Instrument Air To CV
As Follows:

- a. Check Status of PCV-1716,
INSTRUMENT AIR ISO TO CV - IN
OVERRIDE POSITION

- a. IF APP-002-F7, INSTR AIR HDR
LO PRESS is illuminated, THEN
Start Instrument Air
Compressors as required to
extinguish APP-002-F7 AND Go
To Step 45.b.

IF instrument air header
pressure can NOT be
established, THEN observe the
NOTE prior to Step 46 and Go
To Step 46.

- b. Momentarily place IA
PCV-1716, INSTRUMENT AIR ISO
TO CV Switch, to RESET AND
return to AUTO

NOTE

Supplement F, EDG Capability Load List, provides a listing of power
requirements of loads that will be started.

46. Check Charging Pump Power Supply
As Follows:

- a. Check E-1 OR E-2 - ENERGIZED
BY EDG

- a. Go To Step 47.

- b. Check EDG capacity -
AVAILABLE FOR EACH CHARGING
PUMP TO BE STARTED

- b. Perform the following:

- 1) Determine Supplement F
loads to shed in order to
achieve EDG capacity.

- 2) Shed loads.

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ILC-13 NRC JPM D
Rev. 0**

**REACTOR TRIP RESPONSE - EXCESSIVE RCS
COOLDOWN**

Concurred By: _____ **Date:** _____
Operations

Approved By: _____ **Date:** _____
Superintendent/Supervisor - Training

LICENSE EXAMINATION JOB PERFORMANCE MEASURE

Task:

01118102605, Perform Actions for Post Reactor Trip Stabilization without SI Actuation IAW EOP-ES-0.1

Alternate Path:

YES

JPM #:

ILC-13 NRC JPM D

Candidate

RO/SRO

K/A**Rating (RO/SRO):**

007.EA1.10 3.7/3.7

007 EA 1.03 4.2/4.1

Task Standard:

MSIV's are shut to stop the RCS cooldown AND RCS temperature controlled via S/G PORVs.

Preferred Evaluation Location:

Simulator X In-Plant

Preferred Evaluation Method:

Perform X Simulate

References:

EOP-ES-0.1

Validation Time: 10 Minutes. **Time Critical:** No **Time Critical Time:** N/A

Candidate:

(N/A if not time critical)

Name _____

**Overall
Time**

**Critical
Time**

SSN - - _____

Start: _____

Start: _____

Finish: _____

Finish: _____

Performance Rating: SAT UNSAT
circle one

**Performance
Time (min):** _____

Examiner:

Print Name

Signature

Date

COMMENTS:

QUESTION DOCUMENTATION:

Question:

Response:

COMMENTS

Step 5 is critical because closing the MSIVs and MSIV bypass valves ends the overcooling

Step 7 is critical because the RCS temperature must be controlled by operating the S/G PORVs

SIMULATOR OPERATOR INSTRUCTIONS:

1. Reset to IC-910
2. Place Simulator in Run, acknowledge alarms, and then place in FREEZE.
3. Open SCN 009_ILC_13_CR_NRC_JPM_D and follow instructions

Tools/Equipment/Procedures Needed:

Marked up EOP-E-0

EOP-ES-0.1

DIRECTIONS TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To facilitate the examination and better enable me to assess your level of understanding, verbalize your actions and observations while performing the JPM. To indicate that you have completed your assigned task return the Candidate Cue Sheet I provided you.

CANDIDATE INFORMATION:

- Inform the candidate there are NO time critical steps in this JPM.
- Provide with a marked up copy of EOP-E-0 (Steps 1-4 marked)

INITIAL CONDITIONS:

1. The plant was initially at 100% power.
2. A manual reactor trip was initiated due to loss of both feed pumps.
3. EOP-E-0 complete through step 4 RNO
4. You are the BOP.

INITIATING CUE:

The CRS has directed you to stabilize the plant IAW EOP-ES-0.1 commencing at step 1.

START TIME: _____

CAUTION

If SI actuation occurs during this procedure, EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, should be performed.

NOTE

FOLDOUT for EOP-ES-0.1 is in effect.

STEP 1:**Check RCS Temperatures:**

- With any RCP running, RCS average temperature - STABLE AT OR TRENDING TO 547°F (EOP-ES-0.1 Step 1)

___ SAT

STANDARD:

Candidate checks RCS temperature on any of the following: ERFIS computer, ICCM, TR-408, or RTGB loop Tavg indication and goes to Step 1 RNO

___ UNSAT

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: Place Simulator in RUN at Examiners CUE

COMMENTS:**STEP 2:**

IF temperature is less than 547°F AND lowering, THEN perform the following:

- a. Stop dumping steam.
(Step 1.a RNO)

___ SAT

STANDARD:

Candidate determines Condenser Steam dumps and Steam Line PORV's are closed by the GREEN closed indication illuminated on RTGB

___ UNSAT

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

<p><u>STEP 3:</u> Verify S/G blowdown isolation valves are closed:</p> <ul style="list-style-type: none"> • FCV-1930 A & B • FCV-1931 A & B • FCV-1932 A & B (Step 1.b RNO) <p><u>STANDARD:</u> Candidate determines S/G Blowdown Isolations are open and directs the AO or Chem Tech to close the Blowdown valves via R-19 Radiation Monitors</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: If AO is called to investigate the steam leak, report back that a leak is on the main steam header. Wait 5 minutes after request to make report.</p> <p style="text-align: center;">When directed to close SGBD valves, wait 2 minutes and execute command to deenergize R-19A,B & C IAW SCN File.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4:</u> IF cooldown continues, THEN reduce total feed flow to minimum for decay heat removal:</p> <ul style="list-style-type: none"> • Maintain total feed flow greater than 300 gpm (0.2x106 pph) until narrow range level is greater than 8% in at least one S/G. (Step 1.c RNO) <p><u>STANDARD:</u> Candidate lowers or isolates AFW flow to Steam Generators. Maintains minimum required flow (> 300 gpm) until one S/G level is greater than 8 percent.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 5:</u> IF cooldown continues, THEN close MSIV and bypass valves. (Step 1.d RNO)</p> <p><u>STANDARD:</u> Candidate locates control switches for MSIV's and takes them to CLOSE and verifies closed by observing the GREEN closed indication.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: Candidate may have taken a prompt and prudent action to close the MSIVs when told to "Stop Dumping Steam" in Step 1.a RNO.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u> IF temperature lowers to less than 530°F, THEN borate RCS to cold shutdown boron concentration while continuing with this procedure. (Step 1.e RNO)</p> <p><u>STANDARD:</u> Candidate determines RCS temperature is Greater than 530°F</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 7:</u> IF temperature is greater than 547°F AND rising, THEN perform the following:</p> <ul style="list-style-type: none"> • Dump steam to condenser: <ul style="list-style-type: none"> a. Place steam dump mode switch in Steam Pressure mode. b. Adjust steam pressure controller as necessary. <li style="text-align: center;"><u>OR</u> • Dump steam using S/G steam line PORVs. (Step 1.e RNO) <p><u>STANDARD:</u> Candidate recognizes that steam dump to condenser is NOT available and manually controls the Steam Line PORV controllers to obtain 547°F</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: Temperature will initially be less than 547°F but will rise until S/G PORVs are used to control RCS Temperature. This is a Continuous Action Step.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u> Candidate will recognize the need to establish higher AFW flows to allow for controlling RCS Temperatures</p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8:</u> Check Feedwater Status</p> <ul style="list-style-type: none"> a. RCS average temperatures - LESS THAN 554°F (Step 2.a) <p><u>STANDARD:</u> Candidate recognizes RCS average temperature is less than 554°F</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 9:</u> Check Feedwater Status b. Main feedwater reg valves – CLOSED c. Total feed flow to S/Gs - GREATER THAN 300 GPM (0.2x106 PPH) (Steps 2.b & c)</p> <p><u>STANDARD:</u> Candidate recognizes feedwater reg valves are closed and the feedwater flow is >300gpm</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 10:</u> Check S/G Levels: a. Narrow range levels – GREATER Than 8% RNO - Maintain total feed flow THAN 8% greater than 300 gpm (0.2x106 pph) until narrow range level is greater than 8% in at least one S/G. (Step 3.a RNO)</p> <p><u>STANDARD:</u> Candidate recognizes need to adjust AFW flow to raise S/G levels and control between 8% and 50%</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;"><u>END OF TASK</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>Terminating Cue: When Candidate has taken action(s) to stabilize RCS Average temperature at approximately 547°F.</p>	

TIME STOP: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

CANDIDATE INFORMATION:

- Inform the candidate there are NO time critical steps in this JPM.
- Provide with a marked up copy of EOP-E-0 (Steps 1-4 marked)

INITIAL CONDITIONS:

5. The plant was initially at 100% power.
6. A manual reactor trip was initiated due to loss of both feed pumps.
7. EOP-E-0 complete through step 4 RNO
8. You are the BOP.

INITIATING CUE:

The CRS has directed you to stabilize the plant IAW EOP-ES-0.1 commencing at step 1.

CONTINUOUS USE

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 3

PART 4

EMERGENCY OPERATING PROCEDURE

EOP-ES-0.1

REACTOR TRIP RESPONSE

REVISION 4

Purpose and Entry Conditions

(Page 1 of 1)

1. PURPOSE

This procedure provides instructions to stabilize and control the plant following a reactor trip without a safety injection.

2. ENTRY CONDITIONS

This procedure is entered from EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 4, when SI is neither actuated nor required.

- END -

1. SI ACTUATION CRITERIA

IF either condition listed below occurs, THEN manually actuate BOTH trains of SI AND Go To EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

- RCS subcooling based on core exit TCs - LESS THAN 35°F
- OR
- PZR level - CANNOT BE MAINTAINED GREATER THAN 7%

2. LOSS OF POWER CRITERIA

IF power is lost, THEN perform the following:

- a. IF NO charging pumps are running, THEN isolate letdown.
- b. Locally reset and load instrument air compressor(s) as necessary:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- c. Restore affected controls to automatic as necessary.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 7, DC Bus Or Instrument Bus Failure.

5. LOSS OF ULTIMATE HEAT SINK CRITERIA

IF attack on RNP Site is in progress AND either condition listed below occurs, THEN Go To EPP-28, LOSS OF ULTIMATE HEAT SINK, Step 1:

- Total Loss Of SW
- OR
- Loss Of Lake Robinson Dam integrity

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

If SI actuation occurs during this procedure, EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, should be performed.

NOTE

FOLDOUT for EOP-ES-0.1 is in effect.

* 1. Check RCS Temperatures:

- With any RCP running,
RCS average temperature -
STABLE AT OR TRENDING TO
547°F

OR

- With NO RCP running,
RCS cold leg temperatures -
STABLE AT OR TRENDING TO
547°F

IF temperature is less than
547°F AND lowering, THEN perform
the following:

- a. Stop dumping steam.
- b. Verify S/G blowdown isolation
valves are closed:

- FCV-1930 A & B
- FCV-1931 A & B
- FCV-1932 A & B

- c. IF cooldown continues, THEN
reduce total feed flow to
minimum for decay heat
removal:

- Maintain total feed flow
greater than 300 gpm
(0.2x10⁶ pph)
until narrow range level
is greater than 8% in at
least one S/G.

- d. IF cooldown continues, THEN
close MSIV and bypass valves.

- e. IF temperature lowers to less
than 530°F, THEN borate RCS
to cold shutdown boron
concentration while
continuing with this
procedure.

(CONTINUED NEXT PAGE)

EOP-ES-0.1	FOLDOUT FOR EOP-ES-0.1	Rev. 4
------------	------------------------	--------

1. SI ACTUATION CRITERIA

IF either condition listed below occurs, THEN manually actuate BOTH trains of SI AND Go To EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

- RCS subcooling based on core exit TCs - LESS THAN 35°F
- OR
- PZR level - CANNOT BE MAINTAINED GREATER THAN 7%

2. LOSS OF POWER CRITERIA

IF power is lost, THEN perform the following:

- a. IF NO charging pumps are running, THEN isolate letdown.
- b. Locally reset and load instrument air compressor(s) as necessary:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- c. Restore affected controls to automatic as necessary.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 7, DC Bus Or Instrument Bus Failure.

5. LOSS OF ULTIMATE HEAT SINK CRITERIA

IF attack on RNP Site is in progress AND either condition listed below occurs, THEN Go To EPP-28, LOSS OF ULTIMATE HEAT SINK, Step 1:

- Total Loss Of SW
- OR
- Loss Of Lake Robinson Dam integrity

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

1. (CONTINUED)

IF temperature is greater than 547°F AND rising, THEN perform the following:

- Dump steam to condenser:
 - a. Place steam dump mode switch in Steam Pressure mode.
 - b. Adjust steam pressure controller as necessary.

OR

- Dump steam using S/G steam line PORVs.

2. Check Feedwater Status

- a. RCS average temperatures - LESS THAN 554°F

- a. WHEN temperature is less than 554°F, THEN do Steps 2.b through 2.c.

Continue With Step 3.

- b. Main feedwater reg valves - CLOSED

- b. Manually close valve(s).

IF any valve(s) can NOT be closed, THEN manually close associated feedwater header section valve(s).

- c. Total feed flow to S/Gs - GREATER THAN 300 GPM (0.2x10⁶ PPH)

- c. Establish feed flow to S/Gs as necessary:

- AFW

OR

- Main feedwater on bypass

EOP-ES-0.1	FOLDOUT FOR EOP-ES-0.1	Rev. 4
------------	------------------------	--------

1. SI ACTUATION CRITERIA

IF either condition listed below occurs, THEN manually actuate BOTH trains of SI AND Go To EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

- RCS subcooling based on core exit TCs - LESS THAN 35°F
- OR
- PZR level - CANNOT BE MAINTAINED GREATER THAN 7%

2. LOSS OF POWER CRITERIA

IF power is lost, THEN perform the following:

- a. IF NO charging pumps are running, THEN isolate letdown.
- b. Locally reset and load instrument air compressor(s) as necessary:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- c. Restore affected controls to automatic as necessary.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 7, DC Bus Or Instrument Bus Failure.

5. LOSS OF ULTIMATE HEAT SINK CRITERIA

IF attack on RNP Site is in progress AND either condition listed below occurs, THEN Go To EPP-28, LOSS OF ULTIMATE HEAT SINK, Step 1:

- Total Loss Of SW
- OR
- Loss Of Lake Robinson Dam integrity

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

* 3. Check S/G Levels:

a. Narrow range levels - GREATER THAN 8%

b. Control feed flow to maintain narrow range levels - BETWEEN 8% AND 50%

a. Maintain total feed flow greater than 300 gpm (0.2×10^6 pph) until narrow range level is greater than 8% in at least one S/G.

b. IF narrow range level in any S/G continues to rise, THEN stop feed flow to that S/G.

1. SI ACTUATION CRITERIA

IF either condition listed below occurs, THEN manually actuate BOTH trains of SI AND Go To EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

- RCS subcooling based on core exit TCs - LESS THAN 35°F
- OR
- PZR level - CANNOT BE MAINTAINED GREATER THAN 7%

2. LOSS OF POWER CRITERIA

IF power is lost, THEN perform the following:

- a. IF NO charging pumps are running, THEN isolate letdown.
- b. Locally reset and load instrument air compressor(s) as necessary:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- c. Restore affected controls to automatic as necessary.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 7, DC Bus Or Instrument Bus Failure.

5. LOSS OF ULTIMATE HEAT SINK CRITERIA

IF attack on RNP Site is in progress AND either condition listed below occurs, THEN Go To EPP-28, LOSS OF ULTIMATE HEAT SINK, Step 1:

- Total Loss Of SW
- OR
- Loss Of Lake Robinson Dam integrity

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

- * 4. Check All AC Busses - ENERGIZED
BY OFFSITE POWER

Perform the following:

- a. IF any AC emergency buss(es) are NOT energized by offsite power, THEN perform the following:

- 1) Verify EDG(s) running.
- 2) Verify EDG(s) have assumed the following loads:

- MDAFW pump
- CCW pump
- SW pump

- 3) Perform Attachment 2, EDG Support Verification, while continuing with this procedure.

- b. Try to restore offsite power to AC busses, using the following resources as necessary, while continuing with this procedure:

- Load Dispatcher
- IC Turbines and Unit One
- Backfeed using auxiliary transformer
- OP-603, Electrical Distribution

- c. IF any AC emergency bus is NOT energized, THEN try to restore power to affected bus from EDG.

(CONTINUED NEXT PAGE)

EOP-ES-0.1	FOLDOUT FOR EOP-ES-0.1	Rev. 4
------------	------------------------	--------

1. SI ACTUATION CRITERIA

IF either condition listed below occurs, THEN manually actuate BOTH trains of SI AND Go To EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

- RCS subcooling based on core exit TCs - LESS THAN 35°F
- OR
- PZR level - CANNOT BE MAINTAINED GREATER THAN 7%

2. LOSS OF POWER CRITERIA

IF power is lost, THEN perform the following:

- a. IF NO charging pumps are running, THEN isolate letdown.
- b. Locally reset and load instrument air compressor(s) as necessary:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- c. Restore affected controls to automatic as necessary.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 7, DC Bus Or Instrument Bus Failure.

5. LOSS OF ULTIMATE HEAT SINK CRITERIA

IF attack on RNP Site is in progress AND either condition listed below occurs, THEN Go To EPP-28, LOSS OF ULTIMATE HEAT SINK, Step 1:

- Total Loss Of SW
- OR
- Loss Of Lake Robinson Dam integrity

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

4. (CONTINUED)

d. Locally load the following equipment on AC emergency buss(es) as necessary:

- 150 KW of PZR heaters using EPP-21, ENERGIZING PRESSURIZER HEATERS FROM EMERGENCY BUSES
- Instrument air compressor(s) after reset:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- Battery chargers (within 30 minutes of power loss) using OP-601, DC Supply System.

e. Periodically check status of spent fuel pool until SFP cooling is restored:

- Fuel pool level
- Fuel pool temperature

f. IF DS bus is NOT energized, THEN place DSDG in service within one hour of the power loss, as time and manpower permit, using EPP-25, ENERGIZING SUPPLEMENTAL PLANT EQUIPMENT USING THE DSDG:

- IF EPP-21 is NOT in effect to load PZR heaters, THEN restore power to PZR heaters using EPP-25, ENERGIZING SUPPLEMENTAL PLANT EQUIPMENT USING THE DSDG.

g. Verify emergency oil pump is running.

(CONTINUED NEXT PAGE)

EOP-ES-0.1	FOLDOUT FOR EOP-ES-0.1	Rev. 4
------------	------------------------	--------

1. SI ACTUATION CRITERIA

IF either condition listed below occurs, THEN manually actuate BOTH trains of SI AND Go To EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

- RCS subcooling based on core exit TCs - LESS THAN 35°F
- OR
- PZR level - CANNOT BE MAINTAINED GREATER THAN 7%

2. LOSS OF POWER CRITERIA

IF power is lost, THEN perform the following:

- a. IF NO charging pumps are running, THEN isolate letdown.
- b. Locally reset and load instrument air compressor(s) as necessary:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- c. Restore affected controls to automatic as necessary.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 7, DC Bus Or Instrument Bus Failure.

5. LOSS OF ULTIMATE HEAT SINK CRITERIA

IF attack on RNP Site is in progress AND either condition listed below occurs, THEN Go To EPP-28, LOSS OF ULTIMATE HEAT SINK, Step 1:

- Total Loss Of SW
- OR
- Loss Of Lake Robinson Dam integrity

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

4. (CONTINUED)

h. Locally verify air side seal
oil backup pump is running.

1. SI ACTUATION CRITERIA

IF either condition listed below occurs, THEN manually actuate BOTH trains of SI AND Go To EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

- RCS subcooling based on core exit TCs - LESS THAN 35°F
- OR
- PZR level - CANNOT BE MAINTAINED GREATER THAN 7%

2. LOSS OF POWER CRITERIA

IF power is lost, THEN perform the following:

- a. IF NO charging pumps are running, THEN isolate letdown.
- b. Locally reset and load instrument air compressor(s) as necessary:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- c. Restore affected controls to automatic as necessary.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 7, DC Bus Or Instrument Bus Failure.

5. LOSS OF ULTIMATE HEAT SINK CRITERIA

IF attack on RNP Site is in progress AND either condition listed below occurs, THEN Go To EPP-28, LOSS OF ULTIMATE HEAT SINK, Step 1:

- Total Loss Of SW
- OR
- Loss Of Lake Robinson Dam integrity

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

5. Check PZR Level Control:

a. PZR Level - GREATER THAN 14%

a. Perform the following:

1) Verify letdown is isolated:

- Letdown line isolation valves closed:
 - CVC-204A
 - CVC-204B
- Letdown orifice valves closed:
 - CVC-200A
 - CVC-200B
 - CVC-200C
- Excess letdown stop valve closed:
 - CVC-387

2) Verify all PZR heaters are off.

3) WHEN charging is available, THEN control charging to restore PZR level to greater than 14%.4) WHEN PZR level is greater than 14% AND power is available, THEN reenergize PZR heaters as necessary.

(CONTINUED NEXT PAGE)

EOP-ES-0.1	FOLDOUT FOR EOP-ES-0.1	Rev. 4
------------	------------------------	--------

1. SI ACTUATION CRITERIA

IF either condition listed below occurs, THEN manually actuate BOTH trains of SI AND Go To EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

- RCS subcooling based on core exit TCs - LESS THAN 35°F
- OR
- PZR level - CANNOT BE MAINTAINED GREATER THAN 7%

2. LOSS OF POWER CRITERIA

IF power is lost, THEN perform the following:

- a. IF NO charging pumps are running, THEN isolate letdown.
- b. Locally reset and load instrument air compressor(s) as necessary:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- c. Restore affected controls to automatic as necessary.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 7, DC Bus Or Instrument Bus Failure.

5. LOSS OF ULTIMATE HEAT SINK CRITERIA

IF attack on RNP Site is in progress AND either condition listed below occurs, THEN Go To EPP-28, LOSS OF ULTIMATE HEAT SINK, Step 1:

- Total Loss Of SW
- OR
- Loss Of Lake Robinson Dam integrity

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

5. (CONTINUED)

b. Charging - IN SERVICE

b. Place charging in service:

- 1) Start at least one charging pump.
- 2) Adjust charging pump speed controllers as necessary to establish desired charging flow.
- 3) Adjust HIC-121, charging flow control valve, as necessary to maintain seal injection flow between 8 gpm and 13 gpm per RCP.
- 4) WHEN VCT automatic makeup is available, THEN verify makeup is set for automatic control:
 - a) RCS makeup mode switch in auto.
 - b) RCS makeup system switch in start.

c. Letdown - IN SERVICE

c. WHEN PZR level is greater than 14%, THEN place letdown in service using Attachment 4, Establishing Letdown.

IF letdown can NOT be established, THEN establish excess letdown using Attachment 5, Establishing Excess Letdown.

d. PZR Level - TRENDING TO 22%

d. Control charging and letdown to maintain PZR level at 22%.

1. SI ACTUATION CRITERIA

IF either condition listed below occurs, THEN manually actuate BOTH trains of SI AND Go To EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

- RCS subcooling based on core exit TCs - LESS THAN 35°F
- OR
- PZR level - CANNOT BE MAINTAINED GREATER THAN 7%

2. LOSS OF POWER CRITERIA

IF power is lost, THEN perform the following:

- a. IF NO charging pumps are running, THEN isolate letdown.
- b. Locally reset and load instrument air compressor(s) as necessary:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- c. Restore affected controls to automatic as necessary.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 7, DC Bus Or Instrument Bus Failure.

5. LOSS OF ULTIMATE HEAT SINK CRITERIA

IF attack on RNP Site is in progress AND either condition listed below occurs, THEN Go To EPP-28, LOSS OF ULTIMATE HEAT SINK, Step 1:

- Total Loss Of SW
- OR
- Loss Of Lake Robinson Dam integrity

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

6. Check All Control Rods - FULLY INSERTED

IF two or more control rods are NOT fully inserted, THEN emergency borate to cold shutdown boron concentration:

- Use BAST:
 - a. Open boric acid to charging pump suction, MOV-350.
 - b. Start boric acid pump aligned for blend.
 - c. Verify boric acid flow on FI-110.
 - d. Verify total charging flow is greater than boric acid flow.

OR

- Use RWST:
 - a. Open emergency makeup to charging suction, LCV-115B.

IF LCV-115B can NOT be opened, THEN locally open CVC-358, RWST to charging pump suction.
 - b. Close VCT outlet, LCV-115C.

1. SI ACTUATION CRITERIA

IF either condition listed below occurs, THEN manually actuate BOTH trains of SI AND Go To EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

- RCS subcooling based on core exit TCs - LESS THAN 35°F
- OR
- PZR level - CANNOT BE MAINTAINED GREATER THAN 7%

2. LOSS OF POWER CRITERIA

IF power is lost, THEN perform the following:

- a. IF NO charging pumps are running, THEN isolate letdown.
- b. Locally reset and load instrument air compressor(s) as necessary:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- c. Restore affected controls to automatic as necessary.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 7, DC Bus Or Instrument Bus Failure.

5. LOSS OF ULTIMATE HEAT SINK CRITERIA

IF attack on RNP Site is in progress AND either condition listed below occurs, THEN Go To EPP-28, LOSS OF ULTIMATE HEAT SINK, Step 1:

- Total Loss Of SW
- OR
- Loss Of Lake Robinson Dam integrity

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

7. Check PZR Pressure Control:

a. Pressure - GREATER THAN
1715 PSIG

a. Perform the following:

1) Check for SI actuation.

IF SI is NOT actuated,
THEN manually actuate BOTH
trains of SI.

2) Go To EOP-E-0, REACTOR
TRIP OR SAFETY INJECTION,
Step 1.

b. Pressure - STABLE AT OR
TRENDING TO 2235 PSIG

b. IF pressure is less than
2235 psig AND lowering, THEN
perform the following:

1) Verify PZR PORVs are
closed.

IF any valve can NOT be
closed, THEN manually
close its block valve.

2) Verify PZR spray valves
are closed.

IF valve(s) can NOT be
closed, THEN stop RCP(s)
as necessary to stop spray
flow:

- IF PCV-455A can NOT be
closed, THEN stop
RCP B and RCP C.

OR

- IF PCV-455B can NOT be
closed, THEN stop
RCP C.

3) WHEN power is available,
THEN verify PZR heaters
are on.

(CONTINUED NEXT PAGE)

1. SI ACTUATION CRITERIA

IF either condition listed below occurs, THEN manually actuate BOTH trains of SI AND Go To EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

- RCS subcooling based on core exit TCs - LESS THAN 35°F

OR

- PZR level - CANNOT BE MAINTAINED GREATER THAN 7%

2. LOSS OF POWER CRITERIA

IF power is lost, THEN perform the following:

- IF NO charging pumps are running, THEN isolate letdown.
- Locally reset and load instrument air compressor(s) as necessary:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- Restore affected controls to automatic as necessary.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 7, DC Bus Or Instrument Bus Failure.

5. LOSS OF ULTIMATE HEAT SINK CRITERIA

IF attack on RNP Site is in progress AND either condition listed below occurs, THEN Go To EPP-28, LOSS OF ULTIMATE HEAT SINK, Step 1:

- Total Loss Of SW

OR

- Loss Of Lake Robinson Dam integrity

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

7. (CONTINUED)

IF pressure is greater than 2235 psig AND rising, THEN perform the following:

- 1) Verify PZR heaters are off.
- 2) Control pressure using normal PZR spray:

- PCV-455A, loop B
- PCV-455B, loop C

IF normal PZR spray is NOT available AND letdown is in service, THEN use aux spray:

- Refer to Attachment 6, Establishing Aux Spray Without SI, as necessary.

IF auxiliary spray is NOT available or effective, THEN use PZR PORV(s).

8. Transfer Condenser Steam Dump To Pressure Control Mode:

- a. Check condenser - AVAILABLE
- b. Place steam dump mode switch in Steam Pressure mode
- c. Set steam pressure controller to maintain existing S/G pressure

IF condenser steam dumps are NOT available, THEN set S/G steam line PORV controllers to maintain existing S/G pressure.

EOP-ES-0.1	FOLDOUT FOR EOP-ES-0.1	Rev. 4
------------	------------------------	--------

1. SI ACTUATION CRITERIA

IF either condition listed below occurs, THEN manually actuate BOTH trains of SI AND Go To EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

- RCS subcooling based on core exit TCs - LESS THAN 35°F
- OR
- PZR level - CANNOT BE MAINTAINED GREATER THAN 7%

2. LOSS OF POWER CRITERIA

IF power is lost, THEN perform the following:

- a. IF NO charging pumps are running, THEN isolate letdown.
- b. Locally reset and load instrument air compressor(s) as necessary:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- c. Restore affected controls to automatic as necessary.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 7, DC Bus Or Instrument Bus Failure.

5. LOSS OF ULTIMATE HEAT SINK CRITERIA

IF attack on RNP Site is in progress AND either condition listed below occurs, THEN Go To EPP-28, LOSS OF ULTIMATE HEAT SINK, Step 1:

- Total Loss Of SW
- OR
- Loss Of Lake Robinson Dam integrity

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE

RCPs should be run in order of priority to provide normal PZR spray.
(C, B+A, B)

9. Check RCP C - RUNNING

Try to start RCP(s) to provide normal PZR spray:

a. IF offsite power is available, THEN establish conditions for starting RCP(s) using OP-101, Reactor Coolant System And Reactor Coolant Pump Startup And Operation.

b. IF conditions are established for RCP C, THEN start RCP C.

IF RCP C can NOT be started AND conditions are established for other RCP(s), THEN try to start other RCP(s) as necessary to provide normal PZR spray (or forced flow).

IF NO RCP can be started, THEN verify natural circulation using Attachment 1, Natural Circulation Verification.

IF natural circulation can NOT be verified, THEN dump more steam.

1. SI ACTUATION CRITERIA

IF either condition listed below occurs, THEN manually actuate BOTH trains of SI AND Go To EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

- RCS subcooling based on core exit TCs - LESS THAN 35°F

OR

- PZR level - CANNOT BE MAINTAINED GREATER THAN 7%

2. LOSS OF POWER CRITERIA

IF power is lost, THEN perform the following:

- IF NO charging pumps are running, THEN isolate letdown.
- Locally reset and load instrument air compressor(s) as necessary:
 - Compressor A (MCC-5 CMPT 7M)
 - Compressor B (MCC-6 CMPT 3G)
- Restore affected controls to automatic as necessary.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 7, DC Bus Or Instrument Bus Failure.

5. LOSS OF ULTIMATE HEAT SINK CRITERIA

IF attack on RNP Site is in progress AND either condition listed below occurs, THEN Go To EPP-28, LOSS OF ULTIMATE HEAT SINK, Step 1:

- Total Loss Of SW

OR

- Loss Of Lake Robinson Dam integrity

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ILC-13 NRC JPM E
Rev 0**

Verify Phase B Containment Isolation and CV Spray Alignment

Concurred By: _____ **Date:** _____
Operations

Approved By: _____ **Date:** _____
Superintendent/Supervisor - Training

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: 01000151705, Perform Auto Action Verification IAW EOP-E-0.

Alternate Path:

YES

JPM #:

ILC-13 NRC JPM E

Candidate

RO/SRO

K/A

Rating (RO/SRO):

026 A4.01	4.5 / 4.3
103 A3.01	3.9 / 4.2

Task Standard:

Align Phase B Isolation Valves and CV Spray Valves IAW EOP-E-0.

Preferred Evaluation Location:

Simulator X In-Plant

Preferred Evaluation Method:

Perform X Simulate

References:

EOP-E-0

Validation Time: 4 Minutes **Time Critical:** No **Time Critical Time:** N/A

Candidate:

Name

SSN

-

-

**Overall
Time**

Start: _____

Finish: _____

(N/A if not time
critical)

**Critical
Time**

Start: _____

Finish: _____

Performance Rating:

circle one

SAT

UNSAT

Performance

Time (min): _____

Examiner:

Print Name

Signature

Date

COMMENTS:

QUESTION DOCUMENTATION:

Question:

Response:

COMMENTS

Step 3 Critical since at least one SI-880 valve per train must be opened to provide spray flow.

Step 5 Critical since manual action is required to obtain the desired SAT flow.

Step 6 Critical since manual actions are required to close the Phase B valves that should have automatically closed.

Step 7 Critical since stopping the RCPs is required due to component cooling water being isolated to all RCPs.

SIMULATOR OPERATOR INSTRUCTIONS:

1. Initialize the simulator to IC-915
2. Go to RUN ensure plant conditions are stable, acknowledge alarms and FREEZE.
3. An extra instructor will be needed to acknowledge alarms that do not apply to this JPM.
4. Place simulator in RUN when directed by the examiner.

Tools/Equipment/Procedures Needed:

EOP-E-0

DIRECTIONS TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To facilitate the examination and better enable me to assess your level of understanding, verbalize your actions and observations while performing the JPM. To indicate that you have completed your assigned task return the Candidate Cue Sheet I provided you.

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. Plant was initially at 100% RTP when a Large Break LOCA occurred.
2. Automatic Reactor Trip and Safety Injection actuated.
3. EOP-E-0 has been implemented.
4. EOP-E-0, Step 9.a "CV pressure – HAS REMAINED LESS THAN 10 PSIG" has been answered as "NO."

INITIATING CUES:

The CRS has directed you to perform the RNO steps of EOP-E-0, Step 9.a. Candidate is given a marked up copy of EOP-E-0, Step 9.

START TIME: _____

<p><u>STEP 1:</u> Check CV spray actuated. (RNO Step 9.a.1)</p> <p><u>STANDARD:</u> Candidate observes that the CV Spray signal has initiated by observing annunciator APP-002-D1, SPRAY ACTUATION and bistables for the CV High-High Pressure are illuminated.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: Candidate may observe that neither CV Spray Pump is running and take action to start both pumps at this time,</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u> Verify the following: a) Both CV Spray pumps are running. (RNO Step 9.a.2.a)</p> <p><u>STANDARD:</u> Candidate determines that both CV Spray Pumps are operating by observing the RED on light illuminated and the GREEN off light extinguished.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: Candidate may note that FI-958A/B, Spray Header Flow, is reading zero flow.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STEP 3:

Verify the following:

b) CV spray pump discharge valves are open:

- SI-880A
- SI-880B
- SI-880C
- SI-880D

(RNO Step 9.a.2.b)

**CRITICAL
STEP**

___ SAT

___ UNSAT

STANDARD:

Candidate observes that all SI-880 valves are closed as indicated by the RED open light extinguished and GREEN shut light illuminated. Candidate takes manual action to open all SI-880 valves by placing the individual valve control switches momentarily to the OPEN position. Candidate monitors valves and verifies they are all open as indicated by the RED open lights illuminated and the GREEN shut lights extinguished.

EXAMINER'S CUE: NONE**EXAMINER'S NOTE:** NONE**BOOTH OPERATOR CUE:** NONE**COMMENTS:**

<p><u>STEP 4:</u> Verify the following:</p> <ul style="list-style-type: none"> c) CV spray additive tank discharge valves are open: <ul style="list-style-type: none"> • SI-845A • SI-845B <p>(RNO Step 9.a.2.c)</p> <p><u>STANDARD:</u> Candidate observes that SI-845A and SI-845B are open as indicated by the RED light illuminated and GREEN light extinguished.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5:</u> Verify the following:</p> <ul style="list-style-type: none"> d) Spray additive tank flow is approximately 12 gpm: <ul style="list-style-type: none"> • Adjust SI-845C, SAT throttling valve, as necessary. <p>(RNO Step 9.a.2.d)</p> <p><u>STANDARD:</u> Candidate observes flow indicator FI-949, Spray Additive Flow, and throttles valve SI-845C to reduce flow to approximately 12 gpm. (Tolerance 8 – 16 gpm)</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: SI-845C is a throttle valve and will have to be manipulated to reduce the Spray Additive Tank flow to ~ 12 gpm.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 6:</u> Verify Containment Isolation Phase B valves are closed. (RNO Step 9.a.3)</p> <p><u>STANDARD:</u> Candidate observes that the following Phase B isolation valves are Open: CCW-716A, CCW-716B, CCW-730, CCW-735, FCV-626, CVC-381.</p> <p>This observation can be made by the individual valve(s) indication on the RTGB, the Containment Phase B status panel, SPDS Containment status or by use of Supplement B for Phase B and CV Spray Component Alignment.</p> <p>The candidate will close the following valves :</p> <p>CCW-716A, CCW-716B, CCW-730, CCW-735, FCV-626, CVC-381 by positioning the control switches for each valve to the Close position and observing the GREEN closed indication illuminated and the RED open indication extinguished.</p> <p>The candidate can verify the Phase B isolation by observing the Phase B Status Panel on the RTGB or SPDS Containment status.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
--	--

<p><u>STEP 7:</u> Stop all RCPs. (RNO Step 9.a.4)</p> <p><u>STANDARD:</u> Candidate observes all of the RCPs operating and secures each RCP by placing the control switches for RCP A, B and C to the Stop position and observing the GREEN stop indication illuminated and the RED Start indication extinguished.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: Candidate may note earlier in the JPM that the RCPs need to be stopped and secure them prior to reaching this step in EOP-E-0 due to meeting EOP-E-0 Foldout RCP trip criteria.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8:</u> Observe CAUTION prior to Step 10 and Go to Step 10 (RNO Step 9.a.5)</p> <p><u>STANDARD:</u> Candidate reads step and determines that Step 9 is complete.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;"><u>END OF TASK</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>Terminating Cue: When CV Spray properly aligned, all Containment Phase B valves manually closed and all RCPs secured.</p>	

TIME STOP: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. Plant was initially at 100% RTP when a Large Break LOCA occurred.
2. Automatic Reactor Trip and Safety Injection actuated.
3. EOP-E-0 has been implemented.
4. EOP-E-0, Step 9.a “CV pressure – HAS REMAINED LESS THAN 10 PSIG” has been answered as “NO.”

INITIATING CUES:

The CRS has directed you to perform the RNO steps of EOP-E-O, Step 9.a. Candidate is given a marked up copy of EOP-E-0, Step 9.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

* 9. Check CV Spray NOT Required:

a. CV pressure - HAS REMAINED
LESS THAN 10 PSIG

a. Perform the following:

1) Check CV spray actuated.

IF CV spray is NOT
actuated, THEN manually
actuate BOTH trains of CV
spray.

2) Verify the following:

a) Both CV spray pumps are
running.

b) CV spray pump discharge
valves are open:

- SI-880A
- SI-880B
- SI-880C
- SI-880D

c) CV spray additive tank
discharge valves are
open:

- SI-845A
- SI-845B

d) Spray additive tank
flow is approximately
12 gpm:

- Adjust SI-845C, SAT
throttling valve,
as necessary.

3) Verify Containment
Isolation Phase B valves
are closed.

4) Stop all RCPs.

5) Observe CAUTION prior to
Step 10 and Go To Step 10.

(CONTINUED NEXT PAGE)

1. RCP TRIP CRITERIA

IF either condition listed below occurs, THEN trip all RCPs:

- Containment Isolation Phase B - ACTUATED
- OR
- BOTH of the following satisfied:
 - SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
 - AND
 - RCS subcooling based on core exit TCs - LESS THAN 30°F [50°F]

2. FAULTED S/G AFW ISOLATION CRITERIA

IF both conditions listed below are met,

- Any S/G pressure is lowering in an uncontrolled manner
- OR has completely depressurized
- AND

- Any S/G is NOT faulted

THEN perform the following:

- a. Reset SI.
- b. Close steam driven AFW pump discharge valve for faulted S/G(s):
 - V2-14A (S/G A)
 - V2-14B (S/G B)
 - V2-14C (S/G C)
- c. Close AFW header discharge valve for faulted S/G(s):
 - V2-16A (S/G A)
 - V2-16B (S/G B)
 - V2-16C (S/G C)
- d. Perform Attachment 2, Deenergizing AFW Valves For Faulted S/G(s).
- e. Maintain total feed flow greater than 300 gpm until narrow range level is greater than 8% [18%] in at least one S/G.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 3, DC Bus Or Instrument Bus Failure.

5. SPENT FUEL POOL COOLING CRITERIA

IF offsite power is lost, THEN periodically monitor spent fuel pool level and temperature until SFP cooling is restored.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

9. (CONTINUED)

b. CV spray - NOT ACTUATED

b. IF CV spray inadvertently actuated, THEN perform the following:

- 1) Stop all RCPs.
- 2) Override containment spray signal:
 - Place Containment Spray key switch to OVRD/RESET.
- 3) Reset containment isolation Phase B.
- 4) Stop CV spray pumps.
- 5) Close CV spray pump discharge valves:
 - SI-880A
 - SI-880B
 - SI-880C
 - SI-880D
- 6) Close CV spray additive tank discharge valves:
 - SI-845A
 - SI-845B

EOP-E-0	FOLDOUT FOR EOP-E-0	Rev. 2
---------	---------------------	--------

1. RCP TRIP CRITERIA

IF either condition listed below occurs, THEN trip all RCPs:

- Containment Isolation Phase B - ACTUATED
OR
- BOTH of the following satisfied:
 - SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
AND
 - RCS subcooling based on core exit TCs - LESS THAN 30°F [50°F]

2. FAULTED S/G AFW ISOLATION CRITERIA

IF both conditions listed below are met,

- Any S/G pressure is lowering in an uncontrolled manner
OR has completely depressurized
AND

- Any S/G is NOT faulted

THEN perform the following:

- a. Reset SI.
- b. Close steam driven AFW pump discharge valve for faulted S/G(s):
 - V2-14A (S/G A)
 - V2-14B (S/G B)
 - V2-14C (S/G C)
- c. Close AFW header discharge valve for faulted S/G(s):
 - V2-16A (S/G A)
 - V2-16B (S/G B)
 - V2-16C (S/G C)
- d. Perform Attachment 2, Deenergizing AFW Valves For Faulted S/G(s).
- e. Maintain total feed flow greater than 300 gpm until narrow range level is greater than 8% [18%] in at least one S/G.

3. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 10%, THEN switch to backup water supply using OP-402, Auxiliary Feedwater System.

4. DC BUS, INSTRUMENT BUS, OR MCC-5 FAILURE CRITERIA

IF DC bus A, DC bus B, any instrument bus, or MCC-5 is deenergized, THEN perform Attachment 3, DC Bus Or Instrument Bus Failure.

5. SPENT FUEL POOL COOLING CRITERIA

IF offsite power is lost, THEN periodically monitor spent fuel pool level and temperature until SFP cooling is restored.

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ILC-13 NRC JPM F
Rev. 0**

Operation with High Switchyard Voltage

Concurred By: _____ **Date:** _____
Operations

Approved By: _____ **Date:** _____
Superintendent/Supervisor - Training

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: 01093124604, Respond to High Switchyard Voltage IAW AOP-031

Alternate Path:

Yes

JPM #:

ILC-13 NRC JPM F

Candidate

RO/SRO

K/A Rating (RO/SRO):

062 A2.08

2.7/3.0

Task Standard:

Voltage on 480V Bus E-2 lowered to less than 505 Volts IAW AOP-031.

Preferred Evaluation Location:

Simulator X In-Plant

Preferred Evaluation Method:

Perform X Simulate

References:

AOP-031, Operation with High Switchyard Voltage

Validation Time: 10 Minutes. **Time Critical:** No **Time Critical Time:** N/A

Candidate:

(N/A if not time
critical)

Name

**Overall
Time**

**Critical
Time**

SSN

-

-

Start: _____

Start: _____

Finish: _____

Finish: _____

Performance Rating:
circle one

SAT

UNSAT

**Performance
Time (min):** _____

Examiner:

Print Name

Signature

Date

COMMENTS:

C

QUESTION DOCUMENTATION:

Question:

Response:

C

C

COMMENTS

Step 12 is critical because starting HVH-5B will lower voltage on Bus E-2.

Step 14 is critical because starting HVE-2B will lower voltage on Bus E-2.

Step 22 is critical because the Synchroscope Key Switch must be selected to Bus 3 & 4 position.

Step 24 is critical because closing BKR 52/19 will transfer load to the SUT in an attempt to lower voltage on Bus E-2.

Step 27 is critical because BKR 52/20 should have AUTO-OPENED when BKR 52/19 was CLOSED. Manual action by the operator is required to unparallel the SUT and UAT.

SIMULATOR OPERATOR INSTRUCTIONS:

1. IC 916
2. SCN: 009_ILC_13_NRC_CR_JPM_F (Not needed. All malfunctions snapped into IC.)
3. AOP-031 performed and marked up to step 21.
4. Reset to IC 916 and place in Run, clear alarms and then place in Freeze.
5. Place simulator to Run when Candidate assumes the watch.

Tools/Equipment/Procedures Needed:

AOP-031 marked up to step 21

DIRECTIONS TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To facilitate the examination and better enable me to assess your level of understanding, verbalize your actions and observations while performing the JPM. To indicate that you have completed your assigned task return the Candidate Cue Sheet I provided you.

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. Plant is at 100% power.
2. Due to abnormal conditions on the Grid, 480V Bus E-2 currently exceeds 505 Volts.
3. AOP-031, Operation with High Switchyard Voltage, has been completed up to step 21.
4. You are the BOP.
5. "D" IAC is in service with "A" and "B" IACs in AUTO.
6. The DSDG is secured and aligned for AUTO.
7. The Load on Emergency Bus E-1 has NOT been altered since entering this AOP.

INITIATING CUES:

The CRS has directed you to continue with AOP-031 until 480V Bus E-2 voltage is restored to less than 505 Volts.

START TIME: _____

<p><u>STEP 1:</u> Check Emergency Bus E-2 Voltage – Greater than 505 Volts (Step 21).</p> <p><u>STANDARD:</u> Candidate Determines that Bus E-2 Voltage is approximately 506.4 volts as indicated on ERFIS.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>NOTE:</u> Transferring the following safety related components will cause voltage to rise. This step is designed to protect components.</p>	
<p><u>STEP 2:</u> Check Instrument Air as follows:</p> <p>a. Check Instrument Air Compressor B – Running in Manual (Step 22.a.)</p> <p>RNO: Go to Step 23</p> <p><u>STANDARD:</u> Candidate determines that Instrument Air Compressor B is in AUTO as stated in the Cue. Candidate progresses to RNO: Go to Step 23.</p> <p>EXAMINER'S CUE: If candidate request status of IAC B, remind the candidate that the Cue sheet stated that IACs "A" and "B" were in AUTO.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 3:</u> Check EDG "B" Status as Follows: a. Check Main Generator – ON LINE (Step 23.a.)</p> <p><u>STANDARD:</u> Candidate determines that the Main Generator is ON Line based on Plant Conditions and Cue Sheet.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4:</u> Check EDG "B" Status as Follows: b. Check EMERGENCY DIESEL GENERATOR B - RUNNING (Step 23.b.)</p> <p><u>STANDARD:</u> Determines that "B" EDG is NOT running</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 5:</u> Check EDG “B” Status as Follows: b. RNO: Postpone EDG “B” testing while in the AOP. Go to Step 24. Check EMERGENCY DIESEL GENERATOR B - RUNNING (Step 23.b. RNO)</p> <p><u>STANDARD:</u> Candidate transitions to Step 24.</p> <p>EXAMINER’S CUE: NONE</p> <p>EXAMINER’S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u> Log the Time That Any of the Following Equipment Is OR Was Running Above 505 Volts.</p> <ul style="list-style-type: none"> • INSTRUMENT AIR COMPRESSOR B • EDG B PRE-LUBE OIL PUMP • Fuel Oil Transfer Pump B (Step 24) <p><u>STANDARD:</u> Determines that NONE of these components are running.</p> <p>EXAMINER’S CUE: Inform candidate that another candidate will track the run times.</p> <p>EXAMINER’S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 7:</u> Check Load On Emergency Bus E-1 – HAS BEEN RAISED USING STEP 18. (Step 25) Go to Step 27 (Step 25 RNO)</p> <p><u>STANDARD:</u> Candidate determines that load on Emergency Bus E-1 has NOT been raised based on information given in the Cue.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8:</u> Raise Load On Emergency BUS E-2 As Follows: a. Check Charging Pump C - Running (Step 27.a)</p> <p><u>STANDARD:</u> Candidate determines that Charging Pump C is running.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 9:</u> Raise Load On Emergency BUS E-2 As Follows:</p> <p>b. Verify CV RECIRC FANS – RUNNING</p> <ul style="list-style-type: none">- HVH-3- HVH-4 <p>(Step 27.b)</p> <p><u>STANDARD:</u> Determines that HVH-3 and HVH-4 are running.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 10:</u> Check CONT RM AIR HANDLING HVA-1B - RUNNING (Step 27.c)</p> <p><u>STANDARD:</u> Determines that HVA-1B is running.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 11:</u> Check CRDM COOLING FAN, HVH-5B – RUNNING (Step 27.d)</p> <p><u>STANDARD:</u> Candidate Determines that HVH-5B is NOT RUNNING. Go to Step 27.d RNO.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 12:</u> Transfer CRDM COOLING FANS as follows:</p> <ol style="list-style-type: none"> 1. Start HVH-5B 2. Stop HVH-5A (Step 27.d RNO) <p><u>STANDARD:</u> Candidate starts HVH-5B and stops HVH-5A.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: E-2 Voltage should lower to approx. 505.9 Volts.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 13:</u> Check AUX BLDG EXH FAN, HVE-2B - RUNNING (Step 27.e)</p> <p><u>STANDARD:</u> Candidate determines that HVE-2B is NOT running. Go to Step 27.e RNO.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 14:</u> Transfer AUX BLDG EXH FANs as follows: 1) Start HVE-2B 2) Stop HVE-2A (Step 27.e RNO)</p> <p><u>STANDARD:</u> Candidate starts HVE-2B and stops HVE-2A.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: E-2 Voltage should lower to approx. 505.4 Volts.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 15:</u> Check RHR – IN SERVICE. (Step 27. f)</p> <p><u>STANDARD:</u> Candidate determines that RHR is NOT is IN SERVICE. Go to Step 27.f RNO which directs Candidate to Step 28.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 16:</u> Check Emergency BUS E-2 Voltage – GREATER THAN 505 VOLTS (Step 28)</p> <p><u>STANDARD:</u> Candidate determines that Bus E-2 Voltage IS greater than 505 Volts.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 17:</u> Check DSDG Status As Follows:</p> <p>a. Check Main Generator – ON LINE (Step 29.a)</p> <p><u>STANDARD:</u> Candidate determines that the Main Generator is ON LINE.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 18:</u> Check DSDG Status As Follows:</p> <p>b. Check DSDG - RUNNING (Step 29.b)</p> <p><u>STANDARD:</u> Candidate determines that the DSDG is NOT running base on Cue. Go to Step 29.b RNO.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 19:</u> Check DSDG Status As Follows:</p> <p>b. RNO: Postpone DSDG testing while in this AOP. Go to Step 30. (Step 29.b RNO)</p> <p><u>STANDARD:</u> Candidate transitions to step 30.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 20:</u> Check 4KV BUS 3-4 TIE, BKR 52-19 - OPEN (Step 30)</p> <p><u>STANDARD:</u> Candidate determines that 4KV BUS 3-4 TIE, BKR 52-19 IS OPEN.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: BKR 52-19 indicates OPEN (TRIP) by GREEN light lit.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 21:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows: a. Insert the Synchroscope Key into 4 KV TIES Synchroscope Key Switch (Step 31.a)</p> <p><u>STANDARD:</u> Candidate insets the synchroscope key into 4 KV TIES Synchroscope Key Switch.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 22:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows: b. Place the Synchroscope Switch to the BUS 3 & 4 position (Step 31.b)</p> <p><u>STANDARD:</u> Candidate places the Synchroscope Switch to the BUS 3 & 4 position.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 23:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows: c. Verify the Synchroscope comes to approximately the 12 o'clock position. (Step 31.c)</p> <p><u>STANDARD:</u> Candidate verifies that the Synchroscope is pointing to the 12 o'clock position.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 24:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows: d. Momentarily place the Control Switch for 4KV BUS 3-4 TIE, BKR 52/19 to the CLOSE position. (Step 31.d)</p> <p><u>STANDARD:</u> Candidate momentarily places the control switch for BKR 52/19 to the CLOSE position.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 25:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows: e. Check BKR 52/19 - CLOSED (Step 31.e)</p> <p><u>STANDARD:</u> Candidate confirms that BKR 52/19 is CLOSED as indicated on RTGB.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: BKR 52-19 indicates CLOSED with RED light lit.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 26:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows: f. Check UNIT AUX TO 4 KV BUS 4 BKR, 52/20 - OPEN (Step 31.f)</p> <p><u>STANDARD:</u> Candidate identifies that BKR 52/20 has remained in the CLOSED position. Transitions to Step 31.f RNO</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: BKR 52-20 indicates CLOSED with RED light lit.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 27:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows: f. RNO: Perform the following</p> <ul style="list-style-type: none"> • Simultaneously depress the THINK pushbutton AND place the control switch for BKR 52/20 to the OPEN position. <p>(Step 31.f RNO)</p> <p><u>STANDARD:</u> Candidate locates and depresses the THINK pushbutton and places the control switch for BKR 52/20 to the OPEN (TRIP) position. Identifies that BKR 52/20 is now OPEN.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: BKR 52/20 indicates OPEN (TRIP) with GREEN light lit.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 28:</u> Place the 4 KV TIES Synchroscope Key Switch to the mid position. (Step 31.g)</p> <p><u>STANDARD:</u> Candidate places the 4KV TIES Synchroscope Key Switch to the mid position.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STEP 29:

Check the following:

- Emergency BUS E-1 Voltage - LESS THAN 505 VOLTS
AND
- Emergency BUS E-2 Voltage - LESS THAN 505 VOLTS
(Step 32)

___ SAT

STANDARD:

Candidate determines that BOTH Emergency BUS E-1 and E-2 are LESS THAN 505 VOLTS

___ UNSAT

EXAMINER'S CUE:

When candidate identifies that BOTH Bus E-1 and E-2 are less than 505 VOLTS inform the candidate that this completes the JPM.

EXAMINER'S NOTE:

Bus E-2 Voltage should be approx. 496.5 Volts.

BOOTH OPERATOR CUE:

NONE

COMMENTS:

END OF TASK

Terminating Cue: Voltage on 480V Bus E-2 lowered to less than 505 Volts.

TIME STOP: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. Plant is at 100% power.
2. Due to abnormal conditions on the Grid, 480V Bus E-2 currently exceeds 505 Volts.
3. AOP-031, Operation with High Switchyard Voltage, has been completed up to step 21.
4. You are the BOP.
5. "D" IAC is in service with "A" and "B" IACs in AUTO.
6. The DSDG is secured and aligned for AUTO.
7. The Load on Emergency Bus E-1 has NOT been altered since entering this AOP.

INITIATING CUES:

The CRS has directed you to continue with AOP-031 until 480V Bus E-2 voltage is restored to less than 505 Volts.

CONTINUOUS USE

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL
VOLUME 3
PART 5
ABNORMAL OPERATING PROCEDURE

AOP-031

OPERATION WITH HIGH SWITCHYARD VOLTAGE

REVISION 14

Purpose and Entry Conditions

(Page 1 of 1)

1. PURPOSE

- a. This procedure provides instructions in the event of high switchyard or Emergency Bus voltage. The intent of the procedure is to protect safety related loads with 440 volt motor nameplate ratings from extended operation above design voltage.

NOTE

Entry to this procedure is NOT required for momentary spikes in system voltage caused by instability problems OR due to momentary spikes caused by starting an EDG.

2. ENTRY CONDITIONS

- a. High alarm on APP-036-E3, SUT PRI OVER/UNDER VOLTAGE
- b. ERFIS readings for Emergency Bus E-1 OR E-2 exceed 505 volts.
- c. WEST 115KV BUS VOLTAGE indication greater than 119 KV.

- END -

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

- | | |
|--|--|
| <p>1. Make PA Announcement For Procedure Entry.</p> <p>2. Check Main Generator - IN SERVICE</p> <p>3. Check Generator Reactive Load - At 35 MVARs</p> <p>4. Contact The Load Dispatcher To Take Action To Lower Grid Voltage</p> <p>5. Check Load Dispatcher Actions - COMPLETE</p> <p>6. Check Voltage As Follows:</p> <p> APP-036-E3, SUT PRI OVER/UNDER VOLTAGE - ILLUMINATED</p> <p> <u>OR</u></p> <p> WEST 115KV BUS VOLTAGE - GREATER THAN 119 KV</p> <p> <u>OR</u></p> <p> Emergency BUS E-1 Voltage - GREATER THAN 505 VOLTS</p> <p> <u>OR</u></p> <p> Emergency BUS E-2 Voltage - GREATER THAN 505 VOLTS</p> | <p>Go To Step 4.</p> <p>Position the VOLTAGE ADJUSTER Switch, as necessary to maintain reactive load at 35 MVARs.</p> <p></p> <p></p> <p>WHEN the Load Dispatcher has completed actions to lower voltage, THEN Go To Step 6</p> <p>Return to procedure and step in effect.</p> |
|--|--|

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE

- The order of preference for monitoring voltage is ERFIS, Attachment 1, then local indication.
- The following points are found on QP E1E2.

* ~~7~~ Check The Following ERFIS
Points And Plots- AVAILABLE

- ELV3020A - E-1
- ELV3021A - E-2
- QP E1E2 - Plot

Perform the following:

- a. Contact I&C personnel to obtain voltage for the unavailable ERFIS points using Attachment 1.
- b. Direct an Operator to obtain Emergency Bus voltage for the unavailable ERFIS points using local indication at 1 hour intervals:
 - EI-213 - 480V BUS E-1
 - EI-214 - 480V BUS E-2
- c. WHEN I&C has commenced obtaining voltage with Attachment 1, THEN discontinue use of local indication.

Go To Step 9.

~~8~~ Monitor Emergency Bus Voltage
Using ERFIS

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

~~9.~~

Implement The EALs

~~*10.~~

Check Emergency BUS E-1 Voltage
- GREATER THAN 505 VOLTS →

IF Emergency BUS E-1 voltage exceeds 505 volts, THEN observe the NOTE prior to Step 11 and Go To Step 11.

Go To Step ~~21~~NOTE

Transferring the following safety related components will cause voltage to rise. This step is designed to protect the components.

11. Check CCW Pumps as follows:

- | | |
|---|-------------------|
| a. Check CCW PUMP B - RUNNING | a. Go To Step 12. |
| b. Check CCW PUMP A - AVAILABLE | b. Go To Step 12. |
| c. Perform the following using OP-306, Operating CCW Pumps: | |
| 1) Start CCW PUMP A | |
| 2) Stop CCW PUMP B | |

12. Check Instrument Air As Follows:

- | | |
|--|--|
| a. Check INSTRUMENT AIR COMPRESSOR A - RUNNING IN MANUAL | a. Go To Step 13. |
| b. Check One Of The Following Compressors - IN SERVICE Using OP 905, Instrument And Station Air System | b. Place One Of The Following Compressors - IN SERVICE Using OP 905, Instrument And Station Air System |
| • INSTRUMENT AIR COMPRESSOR D | • INSTRUMENT AIR COMPRESSOR D |
| • PRIMARY AIR COMPRESSOR | • PRIMARY AIR COMPRESSOR |
| c. Place INSTRUMENT AIR COMPRESSOR A In AUTO | |

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

13. Check EDG "A" Status As Follows:

a. Check Main Generator - ON LINE

a. IF EDG "A" is Paralleled to Emergency Bus E-1, THEN Go To Step 13.c.

Go To Step 14.

b. Check EMERGENCY DIESEL GENERATOR A - RUNNING

b. Postpone EMERGENCY DIESEL GENERATOR A testing while in this AOP.

Go To Step 14.

c. Shutdown EMERGENCY DIESEL GENERATOR A, Using Applicable In-Progress Procedure

14. Log The Time That Any Of The Following Equipment Is OR Was Running Above 505 VOLTS:

- INSTRUMENT AIR COMPRESSOR A
- EDG A PRE-LUBE OIL PUMP
- Fuel Oil Transfer Pump A
- CCW PUMP B

15. Check Emergency BUS E-1 Voltage - GREATER THAN EMERGENCY BUS E-2 VOLTAGE

Go To Step 21.

16. Check Load On Emergency Bus E-2 - HAS BEEN RAISED USING STEP 27

Go To Step 18.

17. Go To Step 32.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

18. Raise Load On Emergency Bus E-1
As Follows:

a. Check CHARGING PUMP B RUNNING

a. Perform the following:

1) Start CHARGING PUMP B.

2) Stop CHARGING PUMP A OR C.b. Verify CV RECIRC FANS -
RUNNING

- HVH-1
- HVH-2

c. Check CONT RM AIR HANDLING,
HVA-1A - RUNNINGc. Switch Control Room
Ventilation to Train A using
OP-906, Heating, Ventilation,
and Air Conditioning,
Switching Control Room
Ventilation System Unit in
Service.d. Check CRDM COOLING FAN,
HVH-5A - RUNNINGd. Transfer CRDM COOLING FANS as
follows:

1) Start HVH-5A

2) Stop HVH-5B

e. Check AUX BLDG EXH FAN,
HVE-2A - RUNNINGe. Transfer AUX BLDG EXH FANS as
follows:

1) Start HVE-2A

2) Stop HVE-2B

f. Check RHR - IN SERVICE

f. Go To Step 19.

g. Check RHR PUMP A - RUNNING

g. Start RHR Pump A by
performing OP-201, Residual
heat Removal System,
Switching RHR Pumps In The
Core Cooling Mode.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

- *19. Check Emergency BUS E-1 Voltage
- GREATER THAN 505 VOLTS

IF Emergency BUS E-1 voltage rises to greater than 505 volts, THEN Go To Step 32.

Go To Step 21.

20. Go To Step 32

- *21. Check Emergency BUS E-2 Voltage
- GREATER THAN 505 VOLTS

IF Emergency BUS E-2 voltage exceeds 505 volts, THEN Observe the NOTE prior to Step 22 and Go To Step 22.

Go To Step 33.

NOTE

Transferring the following safety related components will cause voltage to rise. This step is designed to protect the components.

22. Check Instrument Air As Follows:

- a. Check INSTRUMENT AIR
COMPRESSOR B - RUNNING IN
MANUAL
- b. Check One Of The Following
Compressors - IN SERVICE
Using OP 905, Instrument And
Station Air System
- INSTRUMENT AIR
COMPRESSOR D
 - PRIMARY AIR COMPRESSOR
- c. Place INSTRUMENT AIR
COMPRESSOR B in AUTO

- a. Go To Step 23.
- b. Place One Of The Following
Compressors - IN SERVICE
Using OP 905, Instrument And
Station Air System
- INSTRUMENT AIR
COMPRESSOR D
 - PRIMARY AIR COMPRESSOR

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

23. Check EDG "B" Status As Follows:

a. Check Main Generator - ON LINE

a. IF EDG "B" is Paralleled to
Emergency Bus E-2, THEN Go To
Step 23.c

Go To Step 24.

b. Check EMERGENCY DIESEL
GENERATOR B - RUNNINGb. Postpone EMERGENCY DIESEL
GENERATOR B testing while in
this AOP.

Go To Step 24.

c. Perform An Orderly Shutdown
Of EMERGENCY DIESEL GENERATOR
B, Using Applicable
In-Progress Procedure24. Log The Time That Any Of The
Following Equipment Is OR Was
Running Above 505 VOLTS

- INSTRUMENT AIR COMPRESSOR B
- EDG B PRE-LUBE OIL PUMP
- Fuel Oil Transfer Pump B

25. Check Load On Emergency Bus E-1
- HAS BEEN RAISED USING STEP 18

Go To Step 27.

26. Go To Step 28.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

27. Raise Load On Emergency BUS E-2
As Follows:a. Check CHARGING PUMP C -
RUNNING

a. Perform the following:

- 1) Start CHARGING PUMP C.
- 2) Stop CHARGING PUMP A OR B.

b. Verify CV RECIRC FANS -
RUNNING

- HVH-3
- HVH-4

c. Check CONT RM AIR HANDLING,
HVA-1B - RUNNINGc. Switch Control Room
Ventilation to Train B using
OP-906, Heating, Ventilation,
and Air Conditioning,
Switching Control Room
Ventilation System Unit in
Service.d. Check CRDM COOLING FAN,
HVH-5B - RUNNINGd. Transfer CRDM COOLING FANS as
follows:

- 1) Start HVH-5B.
- 2) Stop HVH-5A.

e. Check AUX BLDG EXH FAN,
HVE-2B - RUNNNINGe. Transfer AUX BLDG EXH FANS as
follows:

- 1) Start HVE-2B.
- 2) Stop HVE-2A.

f. Check RHR - IN SERVICE

f. Go To Step 28.

g. Check RHR PUMP B - RUNNING

g. Start RHR Pump B by
performing OP-201, Residual
Heat Removal System,
Switching RHR Pumps In The
Core Cooling Mode.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

- *28. Check Emergency BUS E-2 Voltage
- GREATER THAN 505 VOLTS

IF Emergency BUS E-2 voltage
rises to greater than 505 volts,
THEN Go To Step 29.

Go To Step 33.

29. Check DSDG Status As Follows:

a. Check Main Generator - ON LINE

a. Go To Step 30.

b. Check DSDG - RUNNING

b. Postpone DSDG testing while
in this AOP.

Go To Step 30.

c. Stop the DSDG, using
Applicable In-Progress
Procedure

30. Check 4KV BUS 3-4 TIE, BKR 52/19
- OPEN

Go To Step 32.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

31. Transfer 4160V BUS 4 To The
STARTUP TRANSFORMER As Follows:

- a. Insert the Synchroscope Key into 4 KV TIES Synchroscope Key Switch
- b. Place the Synchroscope Switch to the BUS 3 & 4 position
- c. Verify the Synchroscope comes to approximately the 12 o'clock position
- d. Momentarily place the Control Switch for 4KV BUS 3-4 TIE, BKR 52/19 to the CLOSE position

e. Check BKR 52/19 - CLOSED

f. Check UNIT AUX TO 4KV BUS 4 BKR, 52/20 - OPEN

e. Contact I&C to check BKR 52/19.

Go To Step 31.g.

f. Perform the following:

- Simultaneously depress the THINK pushbutton AND place the control switch for BKR 52/20 to the OPEN position.

OR

- Using the Control Switch At 4160V BUS 4, open BKR 52/20, UNIT AUX TO 4KV BUS 4.

OR

- Inside Cubicle 20 trip BKR 52/20 by lifting the trip tab at the bottom of the breaker.

g. Place the 4 KV TIES Synchroscope Key Switch to the mid position

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
32.	Check The Following: <ul style="list-style-type: none">Emergency BUS E-1 Voltage - LESS THAN 505 VOLTS <p style="text-align: center;"><u>AND</u></p> <ul style="list-style-type: none">Emergency BUS E-2 Voltage - LESS THAN 505 VOLTS	Start additional plant loads as follows: <ul style="list-style-type: none">a. Evaluate present plant conditions for idle loads.b. Balance loads started such that voltage on BUSSES E-1 <u>AND</u> E-2 are equalized.c. Minimize the run time of the components listed below:<ul style="list-style-type: none">INSTRUMENT AIR COMPRESSOR A <u>AND</u> BCCW PUMP Bd. Using the applicable plant procedure, start idle loads.
*33.	Check Voltage As Follows: <ul style="list-style-type: none">APP-036-E3, SUT PRI OVER/UNDER VOLTAGE - EXTINGUISHED <p style="text-align: center;"><u>AND</u></p> <ul style="list-style-type: none">WEST 115KV BUS VOLTAGE - LESS THAN 119 KV <p style="text-align: center;"><u>AND</u></p> <ul style="list-style-type: none">Emergency BUS E-1 Voltage - LESS THAN 502 VOLTS <p style="text-align: center;"><u>AND</u></p> <ul style="list-style-type: none">Emergency BUS E-2 Voltage - LESS THAN 502 VOLTS	<p><u>WHEN</u> APP-036-E3 is Extinguished, West 115KV Bus voltage is less than 119 KV, and Emergency BUS E-1 <u>AND</u> Emergency BUS E-2 voltage are less than 502 volts, <u>THEN</u> Go To Step 34.</p> <p>Go To Step 10.</p>
34.	Terminate Monitoring Of Emergency BUS E-1 <u>AND</u> E-2 Voltage	
35.	Record In The Control Operators Log The Duration That Each Emergency Bus Was Greater Than 505 VOLTS	

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

36. Determine If Auxiliaries Should
Be Transferred As Follows:

a. Check UNIT AUXILIARY
TRANSFORMER - AVAILABLE

a. Go To Step 38.

b. Check 4KV BUS 3-4 TIE, BKR
52/19 - CLOSED

b. Go To Step 38.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

SAF NGCC, Electrical Safety and Arc Flash Protection, Must be reviewed for operation of breakers locally.

37. Transfer 4160V BUS 4 To The UNIT
AUXILIARY TRANSFORMER As Follows:

- a. Insert the Synchroscope Key
into UNIT AUX TRANSF
Synchroscope Key Switch
 - b. Place the Synchroscope Switch
to the UNIT AUX BUS 4 position
 - c. Verify the synchroscope comes
to approximately the 12
o'clock position
 - d. Momentarily place the Control
Switch for UNIT AUX TO 4KV
BUS 4, BKR 52/20 to the CLOSE
position
 - e. Check BKR 52/20 - CLOSED
- e. Perform the following:
- 1) Contact I&C to check BKR
52/20.
 - 2) Initiate an Operability
Determination due to 4KV
BUS 4 being powered from
the SUT.
 - 3) When BKR 52/20 is closed,
THEN Go To Step 37.f.

(CONTINUED NEXT PAGE)

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

37. (CONTINUED)

f. Check 4KV BUS 3-4 TIE BKR,
52/19 - OPEN

f. Perform the following:

- Simultaneously depress the THINK pushbutton AND place the Control Switch for BKR 52/19 to the OPEN position.

OR

- Using the Control Switch At 4160V BUS 4, open BKR 52/19, 4KV BUS 3-4 TIE.

OR

- Inside Cubicle 19 trip BKR 52/19 by lifting the trip tab at the bottom of the breaker.

g. Place the UNIT AUX TRANSF
Synchroscope Key Switch to
the mid position

38. Restore The Following Electrical
Lineups As Directed By The SM

- CCW Pumps A and B,
- Instrument Air Compressors A & B
- Any loads started or shifted as part of Steps 11 - 13, 22 - 23, AND 32

39. Restore Routine Testing Of The
Emergency Diesel Generators AND
The DS Diesel Generator

40. Return To Procedure And Step In
Effect

- END -

CONTINUOUS USEATTACHMENT 1OBTAINING EMERGENCY BUS VOLTAGE USING A VOLTMETER

(Page 1 of 3)

CAUTION

Circuits inside Emergency BUS E-1 AND E-2 are energized and exposed. Proper precautions shall be followed when working on or near energized circuits.

NOTE

- This attachment is written to be used by an I&C Technician locally at Emergency Bus E-1 AND E-2.
- Steps 1 through 6 give the directions for obtaining voltage on Emergency BUS E-1. Steps 9 through 13 are for Emergency BUS E-2.

1. Obtain a Fluke 8520A Digital Voltmeter (or similar meter with an accuracy of ± 1.75 volts @ 100 volts).
2. IF obtaining voltage on Emergency BUS E-1 is unnecessary, THEN Go To Step 9.
3. Open the door of Metering Cubicle 17A on Emergency BUS E-1.
4. Select the appropriate range on the multimeter to allow reading at least 125 volts AC.
5. Clamp or lug the multimeter probes to the input terminals of the local voltmeter (EI-213), inside Cubicle 17A.
6. Notify the Control Room that Emergency BUS E-1 voltage readings may now be taken.

CONTINUOUS USEATTACHMENT 1OBTAINING EMERGENCY BUS VOLTAGE USING A VOLTMETER

(Page 2 of 3)

7. Take voltage readings at hourly intervals or as directed by the Control Room as follows:
 - a. Use the BUS E-1 VOLTMETER SWITCH on the front of Cubicle 17A to select one of the three phases.
 - b. Multiply the multimeter reading by 4 and report the voltage to the Control Room.
 - c. Repeat Step 7.a and 7.b for each of the three phases.
 - MULTIMETER READING X 4 = VOLTAGE
8. WHEN notified by the Control Room that voltage monitoring is no longer required, THEN restore as follows:
 - a. Remove the multimeter probes from the local voltmeter (EI-213).
 - b. Close the door on Cubicle 17A.
 - c. Read each phase on the installed bus voltmeter (EI-213) to ensure circuit operability.
 - d. Notify the Control Room that Bus E-1 has been restored to normal and that this Attachment is complete.
9. Obtain a Fluke 8520A Digital Voltmeter (or similar meter with an accuracy of ± 1.75 volts @ 100 volts).
10. Open the door of Metering Cubicle 27A on Emergency BUS E-2.
11. Select the appropriate range on the multimeter to allow reading at least 125 volts AC.
12. Clamp or lug the multimeter probes to the input terminals of the local voltmeter (EI-214), inside Cubicle 27A.
13. Notify the Control Room that Emergency BUS E-2 voltage readings may now be taken.

CONTINUOUS USEATTACHMENT 1OBTAINING EMERGENCY BUS VOLTAGE USING A VOLTMETER

(Page 3 of 3)

14. Take voltage readings at hourly intervals or as directed by the Control Room as follows:
 - a. Use the BUS E-2 VOLTMETER SWITCH on the front of Cubicle 27A to select one of the three phases.
 - b. Multiply the multimeter reading by 4 and report the voltage to the Control Room.
 - c. Repeat Step 14.a and 14.b for each of the three phases.
 - MULTIMETER READING X 4 = VOLTAGE
15. WHEN notified by the Control Room that voltage monitoring is no longer required, THEN restore as follows:
 - a. Remove the multimeter probes from the local voltmeter (EI-214).
 - b. Close the door on Cubicle 27A.
 - c. Read each phase on the installed bus voltmeter (EI-214) to ensure circuit operability.
 - d. Notify the Control Room that Bus E-2 has been restored to normal and that this attachment is complete.

- END -

CONTINUOUS USEATTACHMENT 2AContinuous Action Steps

(Page 1 of 1)

7. WHEN I&C has commenced obtaining voltage with Attachment 1, THEN discontinue use of local indication.
10. IF Emergency BUS E-1 voltage exceeds 505 volts, THEN observe the NOTE prior to Step 11 and Go To Step 11.
19. IF Emergency BUS E-1 voltage rises to greater than 505 volts, THEN Go To Step 32.
21. IF Emergency BUS E-2 voltage exceeds 505 volts, THEN Observe the NOTE prior to Step 22 and Go To Step 22.
28. IF Emergency BUS E-2 voltage rises to greater than 505 volts, THEN Go To Step 29.
33. WHEN APP-036-E3 is Extinguished, West 115KV Bus voltage is less than 119 KV, and 480V BUS E-1 AND 480V BUS E-2 voltage are less than 502 volts, THEN Go To Step 34.

CONTINUOUS USE
ATTACHMENT 2B

Continuous Action Steps

(Page 1 of 1)

7. WHEN I&C has commenced obtaining voltage with Attachment 1, THEN discontinue use of local indication.
10. IF Emergency BUS E-1 voltage exceeds 505 volts, THEN observe the NOTE prior to Step 11 and Go To Step 11.
19. IF Emergency BUS E-1 voltage rises to greater than 505 volts, THEN Go To Step 32.
21. IF Emergency BUS E-2 voltage exceeds 505 volts, THEN Observe the NOTE prior to Step 22 and Go To Step 22.
28. IF Emergency BUS E-2 voltage rises to greater than 505 volts, THEN Go To Step 29.
33. WHEN APP-036-E3 is Extinguished, West 115KV Bus voltage is less than 119 KV, and 480V BUS E-1 AND 480V BUS E-2 voltage are less than 502 volts, THEN Go To Step 34.

AOP-031, Revision 14
Summary of Changes (PRR 512566)

Main Body

- Step 12.b Reworded this step to allow for equalizing run time between Instrument Air Compressor D and the Primary Air Compressor. This is consistent with the operating procedure, OP-905. (PRR 512566)
- Step 13.a Added this guidance to address the possibility that
RNO Emergency Diesel Generator "A" is paralleled to Emergency Bus E-1 with the Main Generator off line. (PRR 463792)
- Step 15 This step is being added to prioritize the sequence of steps being performed.
- Steps 16 Steps added to direct procedure flow path based on the
and 17 possibility that Emergency Bus E-2 Load has already been raised per step 27.
- Steps 18, Added these steps to provide guidance for raising load on
19 and 20 Emergency Bus E-1 in the event that E-1 voltage is greater than 505 volts. This guidance is similar to steps already in the procedure for raising load on Emergency Bus E-2. (PRR 512566)
- Step 22.b Reworded this step to allow for equalizing run time between Instrument Air Compressor D and the Primary Air Compressor. This is consistent with the operating procedure, OP-905. (PRR 512566)
- Step 23.a Added this guidance to address the possibility that
RNO Emergency Diesel Generator "B" is paralleled to Emergency Bus E-2 with the Main Generator off line. (PRR 463792)
- Steps 25 Steps added to direct procedure flow path based on the
and 26 possibility that Emergency Bus E-1 Load has already been raised per step 18.

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ILC-13 NRC JPM G
Rev 0**

Respond to a Loss of CCW IAW AOP-014

Concurred By: _____ **Date:** _____
Operations

Approved By: _____ **Date:** _____
Superintendent/Supervisor - Training

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: 01093109404 Respond to a Complete Loss of CCW Surge Tank Level IAW AOP-014.

Alternate Path:

NO

JPM #:

ILC-13 NRC JPM G

Candidate

RO/SRO

K/A **Rating (RO/SRO):**

008K1.02 3.3 / 3.4

008K3.03 4.1 / 4.2

026AK3.03 4.0 / 4.2

Task Standard:

AOP-014 actions taken to ensure the RCPs are not damaged.

Preferred Evaluation Location:

Simulator X In-Plant

Preferred Evaluation Method:

Perform X Simulate

References:

AOP-014

Validation Time: 10 Minutes **Time Critical:** NO **Time Critical Time:** N/A

Candidate:

(N/A if not time
critical)

Name

**Overall
Time**

**Critical
Time**

SSN - -

Start: _____

Start: _____

Finish: _____

Finish: _____

Performance Rating: SAT UNSAT
circle one

**Performance
Time (min):** _____

Examiner:

Print Name

Signature

Date

COMMENTS:

QUESTION DOCUMENTATION:

Question:

Response:

COMMENTS

Step 7 Critical in order to prevent challenging a safety function prior to securing the RCPs.

Step 8 Critical in order to prevent over-heating of pump motor bearing.

Step 10 Critical to prevent the CCW pumps for auto-starting due to low pressure.

Step 22 Critical since this will isolate the CCW break in containment.

SIMULATOR OPERATOR INSTRUCTIONS:

1. Initialize the simulator to IC-13
2. Go to RUN ensure plant conditions are stable.
3. Place simulator in FREEZE until candidate is ready to begin the JPM.
4. Open SCN File: 009_ILC_13_NRC_CR_JPM_G
5. An extra instructor will be needed to acknowledge alarms that do not apply to this JPM and to assist with locking out the CCW Pumps (if assistance requested).

Tools/Equipment/Procedures Needed:

APP-001-A4

AOP-014, COMPONENT COOLING WATER SYSTEM MALFUNCTION

DIRECTIONS TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To facilitate the examination and better enable me to assess your level of understanding, verbalize your actions and observations while performing the JPM. To indicate that you have completed your assigned task return the Candidate Cue Sheet I provided you.

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. The plant is operating at 100% power.
2. No equipment is out of service.
3. You are the Reactor Operator.

INITIATING CUES:

The CRS is involved with a security situation and has told you to take the necessary actions for any alarm conditions that might arise.

START TIME: _____

<p><u>STEP 1:</u> Candidate refers to APP-001-A4</p> <p><u>STANDARD:</u> Candidate observes rapidly lowering CCW Surge Tank Level</p> <p> Candidate takes recommended action from APP-001-A4 and enters AOP-014, CCW System Malfunction.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u> Implement the EALs (Main Body Step 1)</p> <p><u>STANDARD:</u> Candidate notifies supervision of EAL implementation.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 3:</u> Make PA Announcement for Procedure Entry. (Main Body Step 2)</p> <p><u>STANDARD:</u> Candidate makes announcement for AOP-014 entry using the PA system.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4:</u> Go to Appropriate Section for Indicated Malfunction. (Main Body Step 3)</p> <p><u>STANDARD:</u> Candidate determines that the appropriate section is Section A based on loss of CCW inventory.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 5:</u> Determine if pump cavitation is Occurring <u>OR</u> Imminent:</p> <ul style="list-style-type: none">• Check Surge Tank Level – Less Than 5%. <u>OR</u>• Check CCW Pump Discharge Pressure (Local) <u>AND</u> Flow -WIDE OSCILLATIONS. (Section A Step 1) <p><u>STANDARD:</u> Candidate determines that CCW Surge Tank is less than 5% level and that pump cavitation is imminent.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u> Check Reactor - CRITICAL (Section A Step 2)</p> <p><u>STANDARD:</u> Candidate determines that the Reactor is critical.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 7:</u> Verify Reactor - TRIPPED (Section A Step 3)</p> <p><u>STANDARD:</u> Candidate depresses the Reactor Trip pushbutton to trip the Reactor and verifies the Reactor is tripped.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8:</u> Stop ALL RCPs (Section A Step 4)</p> <p><u>STANDARD:</u> Candidate stops ALL Reactor Coolant Pumps using the Control Switches on the RTGB and verifies they are stopped by observing the GREEN off light is illuminated.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 9:</u> Go to EOP-E-0, Reactor Trip or Safety Injection, while Continuing with this Procedure. (Section A Step 5)</p> <p><u>STANDARD:</u> Candidate informs CRS to enter EOP-E-0 while the Candidate continues in AOP-014.</p> <p>EXAMINER'S CUE: Cue or acknowledge the candidate that the CRS and the BOP will continue in EOP-E-0 and the RO will continue in AOP-014.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 10:</u> Lockout CCW Pumps As Follows:</p> <ol style="list-style-type: none"> Place AND hold all CCW Pump switches in STOP position. Check APP-001-F5, CCW PMP LO PRESS – ILLUMINATED Release CCW Pump Switches. Go to Step 13 (Section A Step 6) <p><u>STANDARD:</u> Candidate places ALL CCW pump switches to STOP and holds them while verifying APP-001-F5 is illuminated.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: Inform the Candidate that he may ask and receive assistance from the BOP to hold one of the CCW Pump Switches, if desired.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 11:</u> Dispatch Operator to Perform Attachment 3, CCW Leak Search, While Continuing With Procedure. (Section A Step 13)</p> <p><u>STANDARD:</u> Candidate contacts the AO to perform Attachment 3 to identify the source of the leak.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 12:</u> Determine if RHR Must be Stopped as Follows:</p> <ul style="list-style-type: none">a. Check CCW Pumps – ALL STOPPEDb. Check RHR Pump status – ANY PUMP RUNNING IN CORE COOLING MODE <p>RNO: Observe the <u>NOTE</u> prior to Step 18 and Go to Step 18. (Section A Step 14)</p> <p><u>STANDARD:</u> Candidate recognizes that all CCW pumps are stopped (from previous step) and determines that the RHR pumps are not in Core Cooling Mode.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STEP 13:

Check CV for CCW Break Using Control Room Indications As Follows:

a. Monitor the following CV indications:

- ERFIS CV SUMP LEVEL
- CV WATER LEVEL (White Sump Lights)
- LI-801, CHANNEL I CV WATER LEVEL
- LI-802, CHANNEL II CV WATER LEVEL
- RCP Abnormal Conditions
- Check APP-001-F5, CCW PMP LO PRESS – ILLUMINATED
(Section A Step 18.a)

___ SAT

___ UNSAT

STANDARD:

Candidate monitors ERFIS trends and CV WATER LEVEL (White Sump Lights) and determines that CV water level has increased.

EXAMINER'S CUE:

NONE

EXAMINER'S NOTE:

CV Water level rises from ~ 4.00 inches and stabilizes at a higher value.
Bottom white lights for CV Keyway Sump are illuminated.

BOOTH OPERATOR CUE: NONE**COMMENTS:****STEP 14:**

Check CV for CCW Break Using Control Room Indications As Follows:

b. Check CV – LOCATION OF CCW BREAK
(Section A Step 18.b)

___ SAT

STANDARD:

Candidate determines that CCW leak is in the CV.

EXAMINER'S CUE:

NONE

EXAMINER'S NOTE:

NONE

BOOTH OPERATOR CUE: NONE**COMMENTS:**

___ UNSAT

STEP 15: Check CV for CCW Break Using Control Room Indications As Follows:
c. Inform personnel performing leak search that the leak location is in CV.
(Section A Step 18.c)

___ SAT

STANDARD: Candidate informs AO performing leak search of leak in CV.

EXAMINER'S CUE: NONE

___ UNSAT

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

STEP 16: Determine RCP Alarm Status:
d. Check APP-001-B1, RCP BRG COOL WTR LO FLOW -
ILLUMINATED
(Section A Step 19.a)

___ SAT

STANDARD: Candidate determines that APP-001-B1 is illuminated.

EXAMINER'S CUE: NONE

___ UNSAT

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

STEP 17:

Determine RCP Alarm Status:

e. Check ANY RCP BEARING HI TEMP Alarm – ILLUMINATED

- APP-001-B3

OR

- APP-001-D3

OR

- APP-001-F3.

RNO: IF makeup capacity to the CCW Surge Tank is NOT sufficient to maintain level, THEN Go to Step 20.

(Section A Step 19.b)

___ SAT

___ UNSAT

STANDARD:

Candidate recognizes that NO RCP BEARING HI TEMP Alarm is illuminated and that makeup capacity to CCW Surge Tank is not sufficient.

EXAMINER'S CUE: NONE**EXAMINER'S NOTE:** NONE**BOOTH OPERATOR CUE:** NONECOMMENTS:**STEP 18:**

Check Reactor Critical:

(Section A Step 20)

STANDARD:

Candidate determines that the reactor is NOT critical.

___ SAT

EXAMINER'S CUE: NONE**EXAMINER'S NOTE:** NONE**BOOTH OPERATOR CUE:** NONECOMMENTS:

___ UNSAT

<p><u>STEP 19:</u> Perform the following: a. Verify Control Rods - Tripped. (Section A RNO Step 20.a)</p> <p><u>STANDARD:</u> Candidate verifies that ALL Control Rods are inserted.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 20:</u> Perform the following: b. Stop ALL RCPs. (Section A RNO Step 20.b)</p> <p><u>STANDARD:</u> Candidate verifies that ALL Reactor Coolant Pumps are stopped.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STEP 21:

Perform the following:

- c. IF Control Rods were inserted on the trip, THEN perform the following:
 - 1) IF RCS temperature is greater than OR equal to 350°F, THEN Go to Step 23.
 - 2) IF RCS temperature is less than 350°F, THEN Go to Step 24.
- d. IF Control Rods were already inserted, THEN Go to Step 24.
(Section A RNO Step 20.c and d)

___ SAT

___ UNSAT

STANDARD:

Candidate determines that the Control Rods were already inserted and transitions to Step 24.

EXAMINER'S CUE:

NONE

EXAMINER'S NOTE:

If candidate mis-reads the step and transitions to Step 23 acknowledge the report to go to EOP-E-0 and inform candidate that the CRS and BOP are continuing in EOP-E-0. Direct candidate to continue in AOP-014.

BOOTH OPERATOR CUE: NONE

COMMENTS:

<p><u>STEP 22:</u> Close the Following Valves to Isolate CCW to the RCPs:</p> <ul style="list-style-type: none"> • CC-716A, CCW TO RCP ISO • CC-716B, CCW TO RCP ISO • CC-730, BRG OUTLET ISO • CC-735, THERM BAR OUT ISO • FCV-626, THERM BAR FLOW CONT (Section A Step 24) <p><u>STANDARD:</u> Candidate uses RTGB switches to close the following valves:</p> <ul style="list-style-type: none"> • CC-716A, CCW TO RCP ISO • CC-716B, CCW TO RCP ISO • CC-730, BRG OUTLET ISO • CC-735, THERM BAR OUT ISO • FCV-626, THERM BAR FLOW CONT <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;"><u>END OF TASK</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
---	--

Terminating Cue: When CCW valves are closed to isolate CCW piping rupture in CV

TIME STOP: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. The plant is operating at 100% power.
2. No equipment is out of service.
3. You are the Reactor Operator.

INITIATING CUES:

The CRS is involved with a security situation and has told you to take the necessary actions for any alarm conditions that might arise.

CONTINUOUS USE

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL
VOLUME 3
PART 5
ABNORMAL OPERATING PROCEDURE

AOP-014

COMPONENT COOLING WATER SYSTEM MALFUNCTION

REVISION 35

Purpose and Entry Conditions

(Page 1 of 3)

1. PURPOSE

This procedure provides the instructions necessary to mitigate abnormal conditions associated with Component Cooling Water (CCW) or any reduction in cooling to components served by the CCW System. Instructions for mitigating leakage into and out of the CCW system are also provided.

Purpose and Entry Conditions

(Page 2 of 3)

NOTE

This procedure assumes valid indications are present. This procedure should NOT be entered for transmitter failures.

2. ENTRY CONDITIONS

- a. Any abnormal condition associated with the CCW System as indicated by:
 - Improper Surge Tank Level
 - Low Flow
 - High CCW Temperature
 - Unacceptable System Leakage
- b. From AOP-005, Radiation Monitoring System, following an alarm on radiation monitor R-17 AND a confirmed rise in CCW Surge Tank level.

(CONTINUED NEXT PAGE)

Purpose and Entry Conditions

(Page 3 of 3)

2. (CONTINUED)

c. From APP-001, Miscellaneous NSSS:

- APP-001-A1, RCP BRG COOL WTR HI TEMP
- APP-001-A4, CCW SURGE TK HI/LO LVL
- APP-001-A8, CCW TO CRDM LO FLOW
- APP-001-B1, RCP BRG COOL WTR LO FLOW
- APP-001-B2, RCP LABYRTH SEAL LO DELTA-P
- APP-001-B3, RCP A BEARING HI TEMP
- APP-001-B7, RHR PMP A COOL WTR LO FLOW
- APP-001-C1, RCP THERM BAR COOL WTR HI FLOW
- APP-001-C4, CCW HX A/B OUTLET HI TEMP
- APP-001-C7, RHR PMP B COOL WTR LO FLOW
- APP-001-D1, RCP THERM BAR COOL WTR LO FLOW
- APP-001-D3, RCP B BEARING HI TEMP
- APP-001-E1, RCP THERM BAR COOL WTR HI TEMP
- APP-001-F3, RCP C BEARING HI TEMP
- APP-001-F4, CCW PMP MOTOR OVLD/TRIP
- APP-001-F5, CCW PMP LO PRESS

- END -

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

1. Implement The EALs
2. Make PA Announcement For Procedure Entry

NOTE

- A loss of inventory may be indicated by a report of leakage or lowering of surge tank level.
- CCW Pump discharge pressure less than 78 psig will cause an alarm.
- CCW low flow is defined as less than 2200 gal per pump
- CCW high temperature is defined as greater than 105°F or greater than 125°F if in Mode 3.

3. Go To Appropriate Section For Indicated Malfunction:

Loss Of CCW Inventory	Go To Section A
Rising CCW inventory <u>OR</u> R-17 Alarming	Go To Section B
CCW Pump Discharge Pressure Low	Go To Section C
CCW System Low Flow <u>OR</u> High Temperature	Go To Section D

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

4. Determine If CCW Parameters Are Normal:

a. Check RCS temperature - LESS THAN 350°F

a. Perform one of the following:

- IF CCW HX outlet temperature is greater than 105°F, THEN Go To Step 3.

OR

- IF CCW HX outlet temperature is less than 105°F, THEN Go To Step 4.c.

b. Check CCW HX outlet temperature - LESS THAN 125°F

b. Go To Step 3.

c. Check CCW HX outlet temperature - STABLE OR DECREASING

c. Go To Step 3.

d. Check APP-001-F5, CCW PMP LO PRESS - EXTINGUISHED

d. Go To Step 3.

5. Refer To Technical Specifications For Applicable LCOs

- T.S. 3.4.17 - Chemical and Volume Control System (CVCS)
- T.S. 3.5.2 - ECCS - Operating
- T.S. 3.5.3 - ECCS - Shutdown
- T.S. 3.6.6 - Containment Spray and Cooling Systems
- T.S. 3.7.6 - Component Cooling Water (CCW) System

6. Return to Procedure And Step In Effect

- END -

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 1 of 19)

- * 1. Determine If Pump Cavitation Is Occuring OR Imminent As Follows:

- o Check Surge Tank Level - LESS THAN 5%

OR

- o Check CCW Pump Discharge Pressure (Local) AND Flow - WIDE OSCILLATIONS

2. Check Reactor - CRITICAL

IF CCW Surge Tank level lowers to less than 5% OR CCW Pump Cavitation occurs, THEN Go To Step 2.

Go To Step 7.

Perform the following:

- a. Verify Control Rods - TRIPPED
- b. Stop ALL RCPs.
- c. IF Control Rods were inserted on the trip, THEN perform the following:
 - 1) IF RCS temperature is greater than OR equal to 350°F, THEN Go To Step 5.
 - 2) IF RCS temperature is less than 350°F, THEN Go To Step 6.
- d. IF Control Rods were already inserted, THEN Go To Step 6.

3. Verify Reactor - TRIPPED

4. Stop ALL RCPs

5. Go To EOP-E-0, Reactor Trip or Safety Injection, While Continuing With This Procedure

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 2 of 19)

6. Lockout CCW Pumps As Follows:

- a. Place AND hold all CCW Pump switches in STOP position
- b. Check APP-001-F5, CCW PMP LO PRESS - ILLUMINATED
- c. Release CCW Pump Switches
- d. Go To Step 13

7. Verify at the RTGB, Primary Water Makeup To CCW As Follows:

Open CC-711, DEMIN WATER MAKE-UP TO CC SURGE LINE.

- a. Primary Water Pump - RUNNING
- b. CC-832, MAKEUP - OPEN

* 8. Check CCW Surge Tank level (LI-614B) - STABLE OR RISING

WHEN CCW Surge Tank level (LI-614B) is Stable OR Rising. THEN perform Step 9.

Go To Step 11.

9. Throttle CC-832 OR CC-711 To Maintain Surge Tank Level (LI-614B) 47% to 53%.

10. Go To Step 13

11. Start A Second Primary Water Pump

12. Check CCW Surge Tank level (LI-614B) - LOWERING

Throttle CC-832 OR CC-711 to maintain surge tank level 47% to 53%.

13. Dispatch Operator To Perform Attachment 3, CCW Leak Search, While Continuing With Procedure

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 3 of 19)

14. Determine If RHR Must Be Stopped
As Follows:

a. Check CCW Pumps - ALL STOPPED

b. Check RHR Pump status - ANY
PUMP RUNNING IN CORE COOLING
MODEa. Observe the NOTE prior to
Step 18 and Go To Step 18.b. Observe the NOTE prior to
Step 18 and Go To Step 18.

15. Stop RHR Pumps

16. Check CV Closure Status - ALL
PENETRATIONS CLOSED

Initiate CV Closure as follows:

a. IF the PA system is
available, THEN perform the
following:1) PLACE the VLC control
switch to EMERG2) MAKE the following
announcement: Containment
Closure is required; all
responsible personnel
close your assigned
penetration immediately.3) Perform the OMM-033
Section titled Effect CV
Closure while continuingb. IF the PA system is not
available, THEN perform the
OMM-033 Section titled Effect
CV Closure while continuing17. Go To AOP-020, Loss Of RHR,
While Continuing With This
Procedure

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 4 of 19)

NOTE

IF the location of the leak is known AND isolation is possible, THEN leak isolation may be commenced immediately.

***18. Check CV For CCW Break Using
Control Room Indications As
Follows:**

a. Monitor the following CV
indications:

- ERFIS CV SUMP LEVEL
- CV WATER LEVEL (White
Sump Lights)
- LI-801, CHANNEL I CV
WATER LEVEL
- LI-802, CHANNEL II CV
WATER LEVEL
- RCP Abnormal Conditions

b. Check CV - LOCATION OF CCW
BREAK

- b. IF subsequent parameters
indicate location of break in
the CV, THEN Go To Step 19.

Observe the NOTE Prior to
Step 29 and Go To Step 29

c. Inform personnel performing
leak search that the leak
location is in the CV

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 5 of 19)

19. Determine RCP Alarm Status:

a. Check APP-001-B1, RCP BRG
COOL WTR LO FLOW - ILLUMINATED

a. IF makeup capacity to the CCW
Surge Tank is sufficient to
maintain level, THEN Go To
Step 64.

IF makeup capacity to the CCW
Surge Tank is NOT sufficient
to maintain level, THEN Go To
Step 20.

b. Check ANY RCP BEARING HI TEMP
Alarm - ILLUMINATED

b. IF makeup capacity to the CCW
Surge Tank is sufficient to
maintain level, THEN Go To
Step 64.

IF makeup capacity to the CCW
Surge Tank is NOT sufficient
to maintain level, THEN Go To
Step 20.

- APP-001-B3

OR

- APP-001-D3

OR

- APP-001-F3

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 6 of 19)

20. Check Reactor - CRITICAL

Perform the following:

a. Verify Control Rods - TRIPPED

b. Stop ALL RCPs.

c. IF Control Rods were inserted on the trip, THEN perform the following:1) IF RCS temperature is greater than OR equal to 350°F, THEN Go To Step 23.2) IF RCS temperature is less than 350°F, THEN Go To Step 24.d. IF Control Rods were already inserted, THEN Go To Step 24.

21. Verify Reactor - TRIPPED

22. Stop ALL RCPs

23. Go To EOP-E-0, Reactor Trip or Safety Injection, While Continuing With This Procedure

24. Close The Following Valves To Isolate CCW To The RCPs:

- CC-716A, CCW TO RCP ISO
- CC-716B, CCW TO RCP ISO
- CC-730, BRG OUTLET ISO
- CC-735, THERM BAR OUT ISO
- FCV-626, THERM BAR FLOW CONT

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 7 of 19)

25. Check Indications - LEAKAGE
STOPPED

Isolate CCW To The Excess
Letdown Heat Exchanger As
Follows:

- a. In Pipe Alley, Close CC-737A,
CC TO EXCESS LETDOWN HX ISOL
(Supply line to Sleeve 35)
- b. WHEN CC-737A is confirmed
closed, THEN at the RTGB,
Close CC-739, EXCESS LTDN HX
OUTLET VALVE

26. Stop Makeup To CCW As Follows:

- a. Verify CC-832, MAKEUP - CLOSED
- b. Verify Primary Water Pump(s)
- IN NORMAL
 - ONE IN AUTO
 - ONE IN STOP

- c. Check Demin Water - BEING
USED FOR CCW MAKEUP
- d. Verify CC-711, DEMIN WATER
MAKE-UP TO CC SURGE LINE -
CLOSED

- c. Go To Step 27.

27. Dispatch Operator To Containment
To Locate AND Isolate Any
Observed Leakage

28. Go To Step 30

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 8 of 19)

NOTE

A ruler is located in the tool bag to assist the operator in determining water level.

***29. Determine If Actions For
Auxiliary Building Flooding Are
Necessary As Follows:**

a. Check for any of the
following indications of
flooding:

- Water level on Aux Bldg
first floor - GREATER
THAN 6 INCHES

OR

- APP-001-E4, RHR PIT A HI
LEVEL - ILLUMINATED

OR

- APP-001-E5, RHR PIT B HI
LEVEL - ILLUMINATED

b. Dispatch Operator to perform
Attachment 4, Flood Control
In The Auxiliary Building

a. IF at any time flooding is
indicated, THEN perform
Attachment 4, Flood Control
In The Auxiliary Building

Go To Step 30.

**30. Verify Letdown Isolated As
Follows:**

- LCV-460 A&B, LTDN LINE STOP
- CLOSED
- HIC-142, PURIFICATION FLOW -
SET TO 0%
- CVC-387, EXCESS LTDN STOP -
CLOSED

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 9 of 19)

31. Determine If Charging Pump(s)
Should Be Stopped As Follows:a. Check Charging Pumps - ANY
PUMP RUNNING

a. Go To Step 36.

b. Check RCS temperature -
GREATER THAN 150°Fb. Stop ALL Charging Pumps.
Go To Step 36.32. Establish Alternate Cooling To
Charging Pumps As Follows:

a. Stop ALL but one Charging Pump

b. Raise the speed of the
running Charging Pump to at
least 75% Demand Signalc. Dispatch an operator to
perform Attachment 1,
Emergency Cooling To Charging
Pumps

*33. Check Attachment 1 - COMPLETE

WHEN Attachment 1, EMERGENCY
COOLING TO CHARGING PUMPS, has
been completed, THEN perform
steps 34, 35 and 36.

Go To Step 37.

34. Reduce The Speed Of The Running
Charging Pump To Minimum35. Check RCP Thermal Barrier ΔP -
GREATER THAN 5 INCHES

- PI-131A
- PI-128A
- PI-125A

Locally throttle RCP SEAL WATER
FLOW CONTROL VALVE(s) to obtain
at least 6 gpm flow to each RCP.

- CVC-297A
- CVC-297B
- CVC-297C

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 10 of 19)

36. Check RCP Parameters:

- o RCP Thermal Barrier ΔP -
GREATER THAN 5 INCHES

OR

- o RCP Seal Injection Flow - AT
LEAST 6 GPM TO EACH RCP.

Raise Charging Pump speed to establish RCP Thermal Barrier ΔP greater than 5 inches OR RCP Seal Injection Flow at least 6 gpm to each RCP.

37. Notify Chemistry Personnel To Stop Any Primary Sampling In Progress

*38. Determine If Emergency Cooling To Spent Fuel Pit Heat Exchanger Is Required As Follows:

- a. Check APP-036-B4, SPENT FUEL
PIT HI TEMP - ILLUMINATED

- a. IF at any time APP-036-B4, SPENT FULE PIT HI TEMP, illuminates, THEN perform Step 38.b.

Go To Step 39.

- b. Align emergency cooling to the Spent Fuel Pit Heat Exchanger using Attachment 2, Emergency Cooling To Spent Fuel Pit Heat Exchanger, while continuing with this procedure

39. Determine If CCW May Be Restored As Follows:

- a. Check CV - LOCATION OF CCW
BREAK

- a. Go To Step 40.

- b. Check Indications - LEAKAGE
ISOLATED

- b. IF CCW to Containment can NOT be isolated, THEN Go To Step 40

- c. Go To Step 48

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 11 of 19)

40. Check Leak Source - LOCATED WHEN the source of leakage is located, THEN Go To Step 41.
41. Check Leak Source - ISOLABLE Perform ONE of the following:
- o IF Surge Tank Level is stable, THEN, Go To Step 43.
- OR
- o IF CCW Pump(s) are running AND Surge Tank Level can NOT be maintained greater than 5%, THEN Go To Step 1.
- OR
- o IF CCW Pumps have ALL been stopped, THEN Go To Step 45.
42. Go To Step 47
43. Consult Plant Operations Staff To Determine If This Procedure Should Be Exited While Maintenance Repairs The Break
44. Transition As Determined From Consultation:
- a. Check Procedure Status - WILL EXIT
 - a. IF determined that the procedure will remain in effect, THEN perform the following:
 - 1) Monitor conditions AND hold at this step for repairs.
 - 2) WHEN repairs are completed, THEN Go To Step 58.
 - b. Go To Step 58

c. When APP-001-F5 is extinguished, THEN Go To Step 52.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 13 of 19)

52. Clear The Lock Out Signal For
The Standby CCW Pumps:

a. In The Cable Spreading Room,
Press the CCW Pump Auto Start
Lockout Reset Push Button for
the Standby CCW Pumps AND
Check The Pump BX1 Relay
Reset (Relay Plunger Out):

CCW Pump	Pushbutton Location	Relay Location
A	ARP-2	Aux. Relay Rack HF, Location J (BX1/CCW-PMP-A)
B	ARP-1	Aux. Relay Rack FD, Location G (BX1/CCW-PMP-B)
C	ARP-2	Aux. Relay Rack JD, Location G (BX1/CCW-PMP-C)

a. Reset the CCW Pump lockout
function using the control
power fuses as follows (one
CCW Pump at a time if this
method used for more than one
pump):

1) Remove The Control Power
Fuses Of The Standby CCW
Pump

- o CCW PUMP A - 480V BUS
DS (AUX COMP'T 33C)

OR

- o CCW PUMP B - 480V BUS
E-1 (CMPT 22C)

OR

- o CCW PUMP C - 480V BUS
E-2 (CMPT 26C)

2) While holding the CCW Pump
handswitch to STOP on the
RTGB, reinstall the
control power fuses for
the standby CCW Pump.

53. Check Charging Pump Cooling -
SUPPLIED BY CCW

Contact Engineering to determine
actions necessary to restore
normal cooling to Charging Pumps.

54. Check Charging And Letdown -
REQUIRED

Go To Step 57.

55. Verify Charging Pump - RUNNING

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 14 of 19)

56. Establish Letdown As Follows:

a. Check Letdown status -
ISOLATED

a. Go To Step 57.

b. Perform one of the following
to establish Letdown:b. Establish excess letdown
using Attachment 12, Placing
Excess Letdown In Service.

- Establish normal letdown
using Attachment 11,
Restoration of Normal
Letdown

OR

- Establish letdown from
RHR system as follows:
 - 1) Verify RHR Pump -
RUNNING IN CORE
COOLING MODE
 - 2) Slowly open HIC-142,
PURIFICATION FLOW, to
establish desired
letdown flowrate

57. Check Spent Fuel Pit Heat
Exchanger Cooling - SUPPLIED BY
CCWContact Engineering to determine
actions necessary to restore
normal cooling to Spent Fuel Pit
Heat Exchanger.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 15 of 19)

***58. Perform The Following:**

a. Contact Chemistry to sample
CCW for Chromates.

b. Check sample results -
RECEIVED

b. WHEN the sample results are
received, THEN adjust CCW
chemistry using OP-306,
Component Cooling Water.

Go To Step 59.

c. Adjust CCW chemistry using
OP-306, Component Cooling
Water, Chemical Addition to
the Component Cooling Water
System

**59. Refer To Technical
Specifications For Applicable
LCOs**

- T.S. 3.4.17 - Chemical and
Volume Control System (CVCS)
- T.S. 3.5.2 - ECCS - Operating
- T.S. 3.5.3 - ECCS - Shutdown
- T.S. 3.6.6 - Containment
Spray and Cooling Systems
- T.S. 3.7.6 - Component
Cooling Water (CCW) System

60. Check CV - LOCATION OF CCW BREAK

Return to procedure and step in
effect.

61. Check Leak Source - LOCATED

WHEN the source of leakage is
located, THEN Go To Step 62.

62. Check Leak Source - ISOLABLE

IF the leak is NOT isolable for
maintenance inside the CV, THEN
establish the maintenance
boundary at the CV isolation
valves.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 16 of 19)

63. Return to Procedure And Step In Effect

64. Isolate CCW To The Excess Letdown Heat Exchanger As Follows:

a. In Pipe Alley, Close CC-737A, CC TO EXCESS LETDOWN HX ISOL (Supply line to Sleeve 35)

b. WHEN CC-737A is confirmed closed, THEN at the RTGB, Close CC-739, EXCESS LTDN HX OUTLET VALVE

65. Check Indications - LEAKAGE STOPPED

Dispatch personnel to the CV to perform the CV portion of Attachment 3, CCW Leak Search.

Observe the NOTE prior to Step 67 and Go To Step 67.

66. RETURN TO Step 25

NOTE

The following steps are dependent on completion of the respective sections of Attachment 3, CCW Leak Search, therefore the steps should be answered after the area has been investigated.

67. Check Leak Location - CRDM FAN COOLER

Go To Step 69.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 17 of 19)

68. Perform The Following To Isolate
The CRDM Fan Coolers:a. Verify both CRDM COOLING FANS
- STOPPED

- HVH-5A
- HVH-5B

b. Check leak location - WITHIN
BOUNDARY VALVES BELOW

- CC-719D, CC TO CRD COOL
- CC-724D, CC FROM CRD COOL
- CC-719E, CC FROM CRD COOL

c. Locally close the following:

- CC-719D, CC TO CRD COOL
- CC-724D, CC FROM CRD COOL
- CC-719E, CC FROM CRD COOL

d. Observe The NOTE Prior To
Step 39 AND RETURN TO Step 39*69. Check Makeup Capacity To The CCW
Surge Tank - UNABLE TO MAINTAIN
LEVELb. Observe the NOTE prior to
Step 71 and Go To Step 71.IF makeup becomes inadequate to
maintain level, THEN RETURN TO
Step 20.Observe the NOTE prior to
Step 71 and Go To Step 71.

70. RETURN TO Step 20.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 18 of 19)

NOTE

Since the leak has been determined to NOT be on the CRDM Coolers OR the Excess Letdown heat Exchanger, it is on a RCP line OR common line.

71. Determine Leak Status As Follows:

a. Check leak location - CAN BE
REPAIRED ON LINE

a. Contact Plant Operations
Staff for the following:

1) Determine shutdown rate of
the plant.

2) Determine if this
procedure is to remain in
effect during shutdown.

3) Begin shutdown of plant
per GP-006-1, Normal Plant
Shutdown from Power
Operation to Hot Shutdown
OR AOP-038, Rapid
Downpower.

4) IF determined that the
procedure will remain in
effect, THEN perform the
following:

a) Monitor conditions AND
hold at this step for
repairs.

b) WHEN repairs are
completed, THEN Go To
Step 58.

5) IF this procedure is to be
exited, THEN Go To Step 58.

b. Contact Maintenance to repair
the leak.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

SECTION ALOSS OF CCW INVENTORY

(Page 19 of 19)

72. Check Leak - REPAIRED

Monitor the following parameters:

- RCP Temperatures
- CCW Surge Tank Level
- CV Sump Level

IF an unsafe condition becomes apparent, THEN RETURN TO Step 20.

WHEN the leak has been repaired, THEN RETURN TO Step 48.

73. RETURN TO Step 48.

- END -

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ILC-13 NRC JPM H
Rev 0**

Fill a Safety Injection Accumulator IAW OP-202

Concurred By: _____ **Date:** _____
Operations

Approved By: _____ **Date:** _____
Superintendent/Supervisor - Training

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: 01006100301 Fill the SI Accumulators IAW OP-202

Alternate Path:

NO

JPM #:

ILC-13 NRC JPM H

Candidate

RO/SRO

K/A **Rating (RO/SRO):**

006 A4.01	4.1 / 3.9
006 A4.02	4.0 / 3.8
006 A1.07	3.3 / 3.6
006 A1.13	3.5 / 3.7

Task Standard:

SI Accumulator "C" filled to reset the low level alarm without exceeding specified limits.

Preferred Evaluation Location:

Simulator X In-Plant

Preferred Evaluation Method:

Perform X Simulate

References:

OP-202, Section 8.2.1, Filling the Safety Injection Accumulators

Validation Time: 9 Minutes **Time Critical:** NO **Time Critical Time:** N/A

Candidate:

Name _____

SSN - - _____

(N/A if not time
critical)

**Overall
Time**

**Critical
Time**

Start: _____

Start: _____

Finish: _____

Finish: _____

Performance Rating: SAT UNSAT
circle one

**Performance
Time (min):** _____

Examiner:

Print Name

Signature

Date

COMMENTS:



QUESTION DOCUMENTATION:

Question:

Response:



COMMENTS

Step 2 Critical because control power must be aligned to the valve to allow for RTGB operation.

Step 4 Critical to open valve to align flowpath to SI Accumulator.

Step 5 Critical to start pump to provide adequate flow and pressure to fill the SI Accumulator.

Step 7 Critical to align fill path to appropriate accumulator and to secure filling at desired level without exceeding specified limits.

Step 8 Critical to secure fill source and prevent operating on recirculation for an extended period.

Step 10 Critical to realign SI-869 to its normal Mode 1 alignment.

Step 11 Critical to properly align SI-869 Control Power Defeat Switch as required for Mode 1.

SIMULATOR OPERATOR INSTRUCTIONS:

1. Initialize the simulator to IC-918
2. Go to RUN ensure plant conditions are stable.
3. No SCN required.
4. Place simulator in FREEZE until candidate is ready to begin the JPM.
5. Marked up copy of OP-202, Section 8.2.1, with Initial Conditions 8.2.1.1.a through 8.2.1.1.f.2 completed.

Tools/Equipment/Procedures Needed:

OP-202, Section 8.2.1

DIRECTIONS TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To facilitate the examination and better enable me to assess your level of understanding, verbalize your actions and observations while performing the JPM. To indicate that you have completed your assigned task return the Candidate Cue Sheet I provided you.

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. The plant is operating at 100% RTP.
2. SI ACCUM C HI/LO LVL (APP-002-E4) alarm has been received and actions have been reviewed by the RO.
3. OP-202, Section 8.2.1.1 Initial Conditions have been completed.
4. Refueling Water Purification is NOT in progress.
5. You are the Licensed Dedicated Operator referred to in OP-202.
6. Safety Injection Pump "A" has been walked down and pre-start checks are complete.

INITIATING CUES:

The CRS has briefed and directed you to fill SI Accumulator "C" to reset the low level alarm IAW OP-202, Section 8.2.1.

START TIME: _____

<p><u>STEP 1:</u> Check open SI-856A, SI PUMP RECIRC and SI-856B, SI PUMP RECIRC (Steps 8.2.1.2.a and b).</p> <p><u>STANDARD:</u> Valves SI-856A and B checked OPEN by observing the RED open indication on the RTGB.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: The candidate may use ERFIS to monitor SI Accumulator "C" level. (ERFIS: QP ACCUM C)</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
--	---------------------------------

STEP 2: Verify the Control Power Defeat Switch for SI-869 is in the NORMAL position. (Step 8.2.1.c)

**CRITICAL
STEP**

STANDARD: Locates NORMAL / DEFEAT key switch behind the RTGB for SI-869 and places the switch in the NORMAL position and identifies the amber light above the key switch is illuminated.

___ SAT

EXAMINER'S CUE: If the candidate requests an AO check breaker status, report that all requested breakers are open.

___ UNSAT

EXAMINER'S NOTE: Key switch for SI-869 is located in the rear of the RTGB on the ECCS VALVES CONTROL POWER DEFEAT PANEL.

BOOTH OPERATOR CUE: NONE

COMMENTS:

NOTE: Based upon the numerous indications available to the Dedicated Operator of an SI actuation at the RTGB and the immediate response to isolate the SI Accumulator flowpath, an LCO declaration for SI Pump **OR** SI Flowpath Operability is **NOT** required.

The following step is a continuous action step which shall be performed when the stated condition is met.

<p><u>STEP 3:</u> IF an SI actuation is received during filling, THEN IMMEDIATELY CLOSE the applicable SI Accumulator makeup valve AND PERFORM Step 8.2.1.2.m to restore the SI System lineup. (Step 8.2.1.d)</p> <p><u>STANDARD:</u> Candidate reads step and acknowledges continuous actions step in the event of an SI actuation.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4:</u> Open SI-869, SI HOT LEG HDR. (Step 8.2.1.2.e)</p> <p><u>STANDARD:</u> Valve SI-869 opened by placing the control switch to the OPEN position and noting GREEN closed light extinguished and RED open light illuminated.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 5:</u> Start an SI Pump. (Step 8.2.1.2.f)</p> <p><u>STANDARD:</u> SI Pump "A" started by placing the control switch to the START position and observing the RED operating light illuminated and the GREEN stopped light extinguished.</p> <p>EXAMINER'S CUE: Inform the candidate that the CRS has assigned this task to another operator and requests that you continue on in GP-007 with the assigned task.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>NOTE: If the cooling unit for the train of the SI pump started is NOT operable, the opposite train unit can be started by placing its AUTO/RUN switch on the power supply breaker to RUN.</p>	
<p><u>STEP 6:</u> Verify at least one SI Pump Area Cooling unit (HVH-6A OR HVH-6B OR both) is operating. (Step 8.2.1.2.g)</p> <p><u>STANDARD:</u> HVH-6A and/or 6B verified operating by noting RED operating light illuminated on the HVAC display panel and the GREEN off light extinguished.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

NOTE: The following are pressure and level limits/alarms for the SI Accumulators:

- High Pressure Alarm 646 psig
- Normal Operating Pressure 630 psig
- High Level Alarm 75 percent
- Low Level Alarm 67 percent

CAUTION

Filling the SI Accumulators can result in rapid indicated level changes due to the narrow span (approx. 14 inches) associated with the SI Accumulator level instruments and should be closely monitored.

STEP 7: IF SI Accumulator "C" is to be filled, THEN perform the following:
(Step 8.2.1.2.j)

- 1) Open SI-851C, MAKEUP.
- 2) Monitor the level and pressure of SI Accumulator "C".
- 3) When desired level is obtained, then close SI-851C.

STANDARD:

- 1) Valve SI-851C opened by placing the control switch to the OPEN position and observing the RED open light illuminated and the GREEN closed light extinguished.
- 2) Maintained > 614 psig and < 646 psig pressure limits as indicated on PI-929/931 and refills accumulator to > 67% and < 75% level limits as indicated on LI-928/930.
- 3) Valve SI-851C closed by placing the control switch to the CLOSED position.

**CRITICAL
STEP**

___ SAT

___ UNSAT

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: Technical Specification limits for SI Accumulators:
Pressure band of 600 – 660 psig.
Level band of 61.5 – 80.4%.

BOOTH OPERATOR CUE: NONE

COMMENTS:

<p><u>STEP 8:</u> Stop the operating SI Pump. (Step 8.2.1.2.k)</p> <p><u>STANDARD:</u> Operating SI Pump stopped by placing the control switch to STOP and switch returned to the MID position.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 9:</u> Verify both SI Pump Area Cooling units are OFF. (Step 8.2.1.2.l)</p> <p>1) HVH-6A 2) HVH-6B</p> <p><u>STANDARD:</u> Verifies HVH-6A and 6B are OFF by noting RED operating light extinguished on the HVAC display panel and the GREEN off light illuminated.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 10:</u> Close SI-869, SI HOT LEG HDR. (Step 8.2.1.2.m)</p> <p><u>STANDARD:</u> Valve SI-869 closed by placing the control switch to the CLOSED position and observing the GREEN closed light illuminated and the RED open light extinguished.</p> <p>EXAMINER'S CUE: IF an independent verification of valve SI-869 is requested, inform the candidate that the valve has been independently verified.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>NOTE: In Mode 1, 2 OR 3 the Control Power Defeat switch for SI-869 should be in the DEFEAT position. In Mode 5 OR 6 the Control Power Defeat switch for SI-869 should be in the NORMAL position. In Mode 4 the position of the Control Power Defeat switch for SI-869 is determined by GP-002 OR GP-007.</p>	
<p><u>STEP 11:</u> Verify the Control Power Defeat switch for SI-869 in the position determined by plant status. (Step 8.2.1.2.n)</p> <p><u>STANDARD:</u> With the plant in Mode 1, valve SI-869 control power switch positioned to DEFEAT and identify the amber light above the switch is extinguished. Candidate will circle the word DEFEAT as the restored position.</p> <p>EXAMINER'S CUE: IF an independent verification of valve SI-869 Control Power switch is requested, inform the candidate that the switch has been independently verified.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

STEP 6: IF the Refueling Water Purification Pump was stopped in Step 8.2.1.1.f, THEN perform the following: (Step 8.2.1.2.o)

- 1) Open SFPC-805B, RWST RETURN.
- 2) Start the Refueling Water Purification Pump.

STANDARD: Candidate determines that the RWST purification was NOT in progress from the initial conditions and places N/As in these steps.

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

END OF TASK

___ SAT

___ UNSAT

Terminating Cue: SI Accumulator "C" has been filled to clear the low level alarm.

TIME STOP: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. The plant is operating at 100% RTP.
2. SI ACCUM C HI/LO LVL (APP-002-E4) alarm has been received and actions have been reviewed by the RO.
3. OP-202, Section 8.2.1.1 Initial Conditions have been completed.
4. Refueling Water Purification is NOT in progress.
5. You are the Licensed Dedicated Operator referred to in OP-202.
6. Safety Injection Pump "A" has been walked down and pre-start checks are complete.

INITIATING CUES:

The CRS has briefed and directed you to fill SI Accumulator "C" to reset the low level alarm IAW OP-202, Section 8.2.1.

CONTINUOUS USE

Section 8.2.1
Page 1 of 5

INIT

8.2 Normal Operation

8.2.1 Filling the Safety Injection Accumulators

1. Initial Conditions

- a. This revision has been verified to be the latest revision available. _____
Date _____
- b. A Safety Injection Pump is available for filling the SI Accumulator(s). _____
- c. An SI Accumulator needs to be refilled **OR** the level raised to restore or maintain the TECH SPECS limit of 61.5 percent. _____
- d. **IF** RCS pressure is less than 650 psig, **THEN** **VERIFY** the accumulator discharge valve(s) (SI-865A/B/C, DISCH) of the accumulator(s) to be filled are **CLOSED**. _____
- e. A licensed Dedicated Operator is available to fill the SI Accumulator(s) and isolate the accumulator(s) makeup flowpath if a Safety Injection actuation occurs. _____
- f. **IF** Refueling Water Purification is in progress, **THEN** **PERFORM** the following:
 - 1) **STOP** the Refueling Water Purification Pump. _____
 - 2) **CLOSE** SFPC-805B, RWST RETURN. _____

8.2.1 (continued)

INIT

2. Instructions

- a. **CHECK OPEN** SI-856A, SI PUMP RECIRC. _____
- b. **CHECK OPEN** SI-856B, SI PUMP RECIRC. _____
- c. **VERIFY** the Control Power Defeat switch for SI-869 is in the NORMAL position. _____

NOTE: Based upon the numerous indications available to the Dedicated Operator of an SI actuation at the RTGB and the immediate response to isolate the SI Accumulator flowpath, an LCO declaration for SI Pump **OR** SI Flowpath Operability is **NOT** required.

The following step is a continuous action step which shall be performed when the stated condition is met.

- d. **IF** an SI actuation is received during filling, **THEN IMMEDIATELY CLOSE** the applicable SI Accumulator makeup valve **AND PERFORM** Step 8.2.1.2.m to restore the SI System lineup. _____
- e. **OPEN** SI-869, SI HOT LEG HDR. _____
- f. **START** an SI Pump. _____

NOTE: If the cooling unit for the train of the SI pump started is **NOT** operable, the opposite train unit can be started by placing its AUTO/RUN switch on the power supply breaker to RUN.

- g. **VERIFY** at least one SI Pump Area Cooling unit (HVH-6A **OR** HVH-6B **OR** both) is operating. _____

8.2.1.2 (Continued)

INIT

NOTE: The following are pressure and level limits/alarms for the SI Accumulators:

- High Pressure Alarm 646 psig
- Normal Operating Pressure 630 psig
- High Level Alarm 75 percent
- Low Level Alarm 67 percent

CAUTION

Filling the SI Accumulators can result in rapid indicated level changes due to the narrow span (approx. 14 inches) associated with the SI Accumulator level instruments and should be closely monitored.

h. **IF** SI Accumulator "A" is to be filled, **THEN**
 PERFORM the following:

- 1) **OPEN** SI-851A, MAKEUP. _____
- 2) **MONITOR** the level and pressure of SI
 Accumulator "A". _____
- 3) **WHEN** desired level is obtained, **THEN**
 CLOSE SI-851A. _____

i. **IF** SI Accumulator "B" is to be filled, **THEN**
 PERFORM the following:

- 1) **OPEN** SI-851B, MAKEUP. _____
- 2) **MONITOR** the level and pressure of SI
 Accumulator "B". _____
- 3) **WHEN** desired level is obtained, **THEN**
 CLOSE SI-851B. _____

8.2.1.2 (Continued)

INIT VERI

- j. **IF** SI Accumulator "C" is to be filled, **THEN**
PERFORM the following:
 - 1) **OPEN** SI-851C, MAKEUP. _____
 - 2) **MONITOR** the level and pressure of SI
Accumulator "C". _____
 - 3) **WHEN** desired level is obtained,
THEN CLOSE SI-851C. _____
- k. **STOP** the operating SI Pump. _____
- l. **VERIFY** both SI Pump Area Cooling units
are OFF:
 - 1) HVH-6A _____
 - 2) HVH-6B _____
- m. **CLOSE** SI-869, SI HOT LEG HDR. _____

NOTE: In Mode 1, 2 **OR** 3 the Control Power Defeat switch for SI-869 should be in the DEFEAT position. In Mode 5 **OR** 6 the Control Power Defeat switch for SI-869 should be in the NORMAL position. In Mode 4 the position of the Control Power Defeat switch for SI-869 is determined by GP-002 **OR** GP-007.

- n. **VERIFY** the Control Power Defeat switch for
SI-869 in the position determined by plant
status:

DEFEAT / NORMAL _____
(Circle one)

8.2.1.2 (Continued)

INIT

- o. **IF** the Refueling Water Purification Pump was stopped in Step 8.2.1.1.f, **THEN PERFORM** the following:

- 1) **OPEN** SFPC-805B, RWST RETURN. _____
- 2) **START** the Refueling Water Purification Pump. _____

CAUTION

If any SI Accumulator level rises by 10% (70 gal) when the RCS pressure is greater than 1000 psig, then the affected accumulator is required to be sampled to verify boron concentration is greater than or equal to 2000 ppm and less than or equal to 2400 ppm within the next 6 hours. (ITS SR 3.5.1.4 and Bases)

- p. **IF** the RCS pressure is greater than 1000 psig **AND** any SI Accumulator level was raised by 10% (70 gal.), **THEN REQUEST** E&C to sample the affected SI Accumulator(s) for boron concentration. _____

- q. **IF** SI Accumulator sample(s) were required in the previous step, **THEN RECORD** the affected SI Accumulator(s) boron sample results below:
(N/A those **NOT** required to be sampled)

SI Accum "A" boron concentration _____ppm _____

SI Accum "B" boron concentration _____ppm _____

SI Accum "C" boron concentration _____ppm _____

Initials

Name (Print)

Date

Performed By: _____

Approved By: _____
Shift Manager Date

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ILC-13 NRC JPM I
Rev 0**

Auxiliary Building Operator Actions IAW DSP-002, Att. 3

Concurred By: _____ **Date:** _____
Operations

Approved By: _____ **Date:** _____
Superintendent/Supervisor - Training

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: 01104100905, Perform the Actions of the Auxiliary Building Operator IAW DSP-002

Alternate Path:

YES

JPM #:

ILC-13 NRC JPM I

Candidate

RO/SRO

K/A **Rating (RO/SRO):**

004 G2.1.30 4.4/4.0

004 A1.11 3.0/3.0

Task Standard:

Charging flow has been established to the RCS and seal injection aligned to the RCPs.

Preferred Evaluation Location:

Simulator _____ In-Plant X

Preferred Evaluation Method:

Perform _____ Simulate X

References:

DSP-002, Att. 3

Validation Time: 14 Minutes **Time Critical:** YES **Time Critical Time:** 13 min. to xfer to RWST
15 min. to est. seal inj.

Candidate: _____
Name

SSN - -

**Overall
Time**

Start: _____

Finish: _____

**Performance
Time (min):** _____

**Critical
Time**

Start: _____

Finish: /

_____ /

Performance Rating: SAT UNSAT
circle one

Examiner:

Print Name

Signature

Date

NOTE: The time critical times are based on times from the event initiation. The JPM begins with 2 minutes already elapsed.

COMMENTS:

QUESTION DOCUMENTATION:

Question:

Response:

COMMENTS

Step 3 Critical because the charging pump must be in LOCAL for operator control.

Step 4 Critical to provide flowpath around HCV-121.

Step 5 Critical to isolate the flowpath through HCV-121.

Step 6 Critical to align RWST to Charging Pump Suction.

Step 8 Critical to isolate the VCT from the Charging Pump Suction.

Step 12 Critical to provide makeup to the RCS and RCP seal injection flow.

Step 13 Critical to allow the charging pump speed to be controlled locally.

Step 14 Critical to extend the time until the PZR approaches full to greater than one hour.

Step 17 Critical to establish adequate RCP seal injection flows.

Tools/Equipment/Procedures Needed:

DSP-002, Attachment 3

READ TO OPERATOR

DIRECTIONS TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, **shall be simulated** for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To facilitate the examination and better enable me to assess your level of understanding, verbalize your actions and observations while performing the JPM. To indicate that you have completed your assigned task return the Operator Cue Sheet I provided you.

CANDIDATE INFORMATION:

Inform the candidate there **ARE** time critical steps in this JPM.

INITIAL CONDITIONS:

1. At 1200, the Control Room was evacuated due to a fire on the RTGB.
2. At the time the Control Room was evacuated, Charging Pumps "B" and "C" were running.
3. DSP-002, Hot Shutdown Using the Dedicated / Alternate Shutdown System, has been implemented.

INITIATING CUES:

You have been assigned to perform DSP-002, Attachment 3. Enter the Auxiliary Building through the normal Auxiliary Building RCS Entrance. Assume that you have all of the equipment required by Attachment 3, Step 1. Inform the Shift Manager when a Charging Pump is running at minimum speed and adequate seal injection flow is being supplied to the RCPs.

The time now is 1202.

START TIME: _____ TIME CRITICAL START TIME: _____

EXAMINER'S NOTE: PROVIDE THE CANDIDATE WITH THE JPM CUE SHEET AND COPY OF DSP-002, ATT. 3 AT A LOCATION OUTSIDE OF THE RCA.

NOTE

- Time Critical Action: Transfer Charging Pump Suction to the RWST within 13 minutes of event initiation per step 5.
- Time Critical Action: Re-establish Charging/Seal Injection within 15 minutes of event initiation per step 7.
- Time Critical Action: Establish CCW to RCPs within 93 minutes of event initiation per step 19.

STEP 1: Obtain the Following Prior to Leaving the Old Fire Equipment Building

- Two – way radio
 - Flahsight
 - Locked valve keys (Keys 1, 1a or 1b)
 - Locked high rad area key (in holder near door)
- (Att. 3 Step 1)

___ SAT

___ UNSAT

STANDARD: N/A

As Found: N/A

EXAMINER'S NOTE: NONE

EXAMINER'S CUE: Remind the candidate that the cue stated to assume that all equipment required for step 1 has been obtained.

COMMENTS:

<p><u>STEP 2:</u> Check Fire Location – In E1/E2 ROOM (AREA A5) (Att. 3 Step 2)</p> <p><u>STANDARD:</u> Candidate determines, from the initial conditions, that the fire is NOT in the E1/E2 Room and takes RNO path to Step 4.</p> <p>As Found: N/A</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p style="text-align: center;"><u>NOTE</u></p> <p>Access to the Charging Pump Room can be gained via the Nonregenerative and Seal Water Return Heat Exchanger Room on the second level of the Aux Bldg in the event of a fire in the Aux Bldg hallway.</p> <p>CVC-309A is located near HCV-121 on the West Wall of the Charging Pump Room.</p>	
<p><u>STEP 3:</u> Place Transfer Switch for Charging Pump A to LOCAL (Att. 3 Step 4.a)</p> <p><u>STANDARD:</u> Candidate simulates placing Charging Pump A Transfer Switch to LOCAL</p> <p>As Found: Charging Pump A Transfer Switch in REMOTE.</p> <p>EXAMINER'S CUE: Charging Pump A Transfer Switch is in LOCAL and the GREEN stop light is illuminated</p> <p>EXAMINER'S NOTE: If candidate requests status of Charging Pumps inform the candidate that there is no motor or pump noise in the Charging Pump room. No charging pumps are operating.</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 4:</u> Open CVC-309A, HCV-121 BYPASS (Att. 3 Step 4.b)</p> <p><u>STANDARD:</u> Candidate simulates opening CVC-309A by rotating the handwheel in the CCW direction.</p> <p>As Found: CVC-309A is closed.</p> <p>EXAMINER'S CUE: CVC-309A handwheel has stopped rotating and the stem is full out.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5:</u> Close CVC-202B, HCV-121 INLET ISOL (Att. 3 Step 4.c)</p> <p><u>STANDARD:</u> Candidate simulates closing CVC-202B by rotating the handwheel in the CS direction.</p> <p>As Found: CVC-202B is open.</p> <p>EXAMINER'S CUE: CVC-202B handwheel has stopped rotating and the stem is fully inserted.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p style="text-align: center;"><u>NOTE</u></p> <ul style="list-style-type: none"> • CVC-358 is located in the overhead West of Charging Pump B. • LCV-115C is located in the overhead between Charging Pumps B & C 	

<p><u>STEP 6:</u> Open CVC-358, RWST TO CHARGING PUMP SUCTION (Att. 3 Step 5.a)</p> <p><u>STANDARD:</u> Candidate simulates opening CVC-358 by rotating handle 90 degrees CCW to align the valve handle with the pipe.</p> <p>As Found: CVC-358 is closed with handle perpendicular with pipe.</p> <p>EXAMINER'S CUE: CVC-358 handle is aligned with the pipe.</p> <p>EXAMINER'S NOTE: Ladder is located in the SE corner of the Charging Pump Room next to the Charging Pump Room DS Control Panel.</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7:</u> Obtain verification from the SM that the emergency buses are deenergized. (Att. 3 Step 5.b)</p> <p><u>STANDARD:</u> Candidate simulates using the radio to contact the SM for the status of the emergency buses.</p> <p>As Found: N/A</p> <p>EXAMINER'S CUE: SM reports that both emergency buses are deenergized.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 8:</u> Close LCV-115C, VCT OUTLET ISOLATION (Att. 3 Step 5.c)</p> <p><u>STANDARD:</u> Candidate simulates closing valve LCV-115C by declutching the motor by downward motion of the lever and then rotating the handwheel in the CW direction.</p> <p>As Found: LCV-115C is open.</p> <p>EXAMINER'S CUE: The motor is de-clutched and LCV-115C handwheel has stopped rotating and the valve stem is fully inserted.</p> <p>EXAMINER'S NOTE: For safety purposes the candidate is allowed to point to the valve from the floor and discuss how the valve is operated.</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>TIME CRITICAL TIME STOP: _____ (Aligned to RWST: 11 min. from start of JPM)</p>	
<p><u>STEP 9:</u> Check Charging Pump "A" - STOPPED (Att. 3 Step 6)</p> <p><u>STANDARD:</u> Candidate determines from initial conditions and / or observations in Charging Pump Room that Charging Pump "A" is stopped.</p> <p>As Found: Depends on actual plant conditions.</p> <p>EXAMINER'S CUE: If requested, report that the charging pump room is quiet. There is no movement on any of the pumps. Charging Pump "A" GREEN stop light is illuminated.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p style="text-align: center;"><u>NOTE</u></p> <p>A ladder is located to the left of the Charging Pump Room Control Panel if closure of the CVC-297 valves is required.</p>	

<p><u>STEP 10:</u> Obtain verification from the SM that the DS Bus is energized AND elapsed time since Seal Injection was lost. (Att. 3 Step 7.a)</p> <p><u>STANDARD:</u> Candidate simulates using radio to contact the SM.</p> <p>As Found: N/A</p> <p>EXAMINER'S CUE: SM reports that the DS Bus is energized and that seal injection has been lost for 12 minutes.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 11:</u> Check elapsed time since Seal Injection Lost – Less than 15 minutes. (Att. 3 Step 7.b)</p> <p><u>STANDARD:</u> Candidate determines that seal injection has been lost for 12 minutes.</p> <p>As Found: N/A</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 12:</u> Locally Start Charging Pump A (Att. 3 Step 7.c)</p> <p><u>STANDARD:</u> Candidate simulates starting Charging Pump A by pushing the START pushbutton. Verifies pump start, visually and audibly.</p> <p>As Found: Depend on actual plant conditions.</p> <p>EXAMINER'S CUE: - The RED run light is illuminated and Charging Pump A is running. - All post-start conditions are normal. - If the candidate checks charging flow on FI-122B, state that charging flow is 35 gpm.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>TIME CRITICAL TIME STOP: _____ (Re-est. seal inj. flow: 13 min. from start of JPM)</p>	
<p style="text-align: center;"><u>CAUTION</u></p> <p>Attempt to minimize Charging Pump starts/stops while maintaining the PZR level band in the following steps to avoid exceeding the pump start limitation of four starts per hour. However, maintaining the PZR level band overrides concerns with pump start limitations.</p>	
<p><u>STEP 13:</u> Place the local speed control station AUTO/MAN Selector Switch to the MAN position. (Att. 3 Step 8.a)</p> <p><u>STANDARD:</u> Candidate simulates rotating the AUTO/MAN selector switch for "A" Charging Pump Speed Controller to MAN position.</p> <p>As Found: AUTO/MAN selector switch in AUTO for "A" CCP</p> <p>EXAMINER'S CUE: AUTO/MAN station for "A" Charging Pump has been placed in MAN.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 14:</u> Rotate the speed controller COUNTER-CLOCKWISE to manually lower Charging Pump Speed to the minimum. (Att. 3 Step 8.b)</p> <p><u>STANDARD:</u> Candidate simulates rotating the speed controller knurled knob in the CCW direction to reduce charging pump speed to minimum. Audible is available to verify that pump speed has been lowered.</p> <p>As Found: Condition based on actual plant status.</p> <p>EXAMINER'S CUE: Speed controller has been rotated in the CCW direction and pump speed has lowered.</p> <p>EXAMINER'S NOTE: Charging Pump speed controller has an arrow that indicates increasing speed in the CW direction, and visa-versa.</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 15:</u> Check Seal Injection - Aligned (Att. 3 Step 9)</p> <p><u>STANDARD:</u> Candidate determines that seal injection is aligned based on information to the contrary given in cue and also observes seal injection flow at local indicators.</p> <p>As Found: Seal injection flow will be 8 – 12 gpm based on actual plant status.</p> <p>EXAMINER'S CUE: If requested or if local seal injection flow observed, inform the candidate that all seal injection flows indicate approximately 4 gpm each.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 16:</u> Check RCP Seal Injection Flow – Between 6 GPM AND 20 GPM (Att. 3 Step 10)</p> <p><u>STANDARD:</u> Candidate observes the local seal injection flow meters and determines that flow is NOT within the specified band.</p> <p>As Found: Seal injection flow will be 8 – 12 gpm based on actual plant status.</p> <p>EXAMINER'S CUE: When local seal injection flow observed, inform the candidate that all seal injection flows indicate approximately 4 gpm each.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 17:</u> Locally throttle RCP SEAL WATER FLOW CONTROL VALVES to obtain flow to each RCP between 6 gpm and 20 gpm.</p> <ul style="list-style-type: none"> • CVC-297A • CVC-297B • CVC-297C <p>(Att. 3 Step 10 RNO)</p> <p><u>STANDARD:</u> Candidate simulates throttling open CVC-297A/B/C by rotating the handwheels in the CCW direction while periodically checking the seal injection flows.</p> <p>As Found: Seal injection flow will be 8 – 12 gpm based on actual plant status.</p> <p>EXAMINER'S CUE: As the candidate throttles open the valve(s), inform the candidate that the seal injection flows are slowly rising and are slightly greater than 6 gpm as the applicable CVC-297 valve is fully opened. When all CVC-297 valves are fully open inform the candidate that all seal injection flows indicate 6.2 gpm.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 18:</u> IF required to maintain minimum flow, THEN throttle CVC-309A, HCV-121 BYPASS, valve while maintaining Charging Pump Discharge pressure less than 2500 psig. (Att. 3 Step 10 RNO)</p> <p><u>STANDARD:</u> Candidate determines that performance of this step is not necessary.</p> <p>As Found: CVC-309A was opened in a previous step.</p> <p>EXAMINER'S CUE: If requested, inform candidate that all seal injection flows remain steady at 6.2 gpm.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 19:</u> Notify the SM that Charging Flow has been established AND the status of seal injection. (Step 11)</p> <p><u>STANDARD:</u> Candidate simulates using the radio to contact the SM and reports that charging flow has been established to the RCS and that seal injection flow is within the desired range.</p> <p>As Found: N/A</p> <p>EXAMINER'S CUE: Acknowledge report as the SM.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;"><u>END OF TASK</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>Terminating Cue: After the SM has been notified that charging flow has been established and that seal injection flows are in the normal range.</p>	

TIME STOP: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

CANDIDATE INFORMATION:

Inform the candidate there **ARE** time critical steps in this JPM.

INITIAL CONDITIONS:

1. **At 1200**, the Control Room was evacuated due to a fire on the RTGB.
2. At the time the Control Room was evacuated, Charging Pumps “B” and “C” were running.
3. DSP-002, Hot Shutdown Using the Dedicated / Alternate Shutdown System, has been implemented.

INITIATING CUES:

You have been assigned to perform DSP-002, Attachment 3. Enter the Auxiliary Building through the normal Auxiliary Building RCS Entrance. Assume that you have all of the equipment required by Attachment 3, Step 1.

Inform the Shift Manager when a Charging Pump is running at minimum speed and adequate seal injection flow is being supplied to the RCPs.

The time now is 1202.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CONTINUOUS USEATTACHMENT 3AUXILIARY BUILDING OPERATOR ACTIONS

(Page 1 of 14)

NOTE

- Time Critical Action: Transfer Charging Pump Suction to the RWST within 13 minutes of event initiation per step 5.
- Time Critical Action: Re-establish Charging / Seal Injection within 15 minutes of event initiation per step 7.
- Time Critical Action: Establish CCW to RCPs within 93 minutes of event initiation per step 19.

1. Obtain The Following Prior To Leaving The Old Fire Equipment Building:

- Two-way radio
- Flashlight
- Locked valve keys (Keys 1, 1a, or 1b)
- Locked high rad area key (in holder near door)

2. Check Fire Location - IN E-1/E-2 ROOM (AREA A5)

Observe the NOTE prior to Step 4 and Go To Step 4.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CONTINUOUS USE

ATTACHMENT 3AUXILIARY BUILDING OPERATOR ACTIONS

(Page 2 of 14)

3. Shutdown The EDGs As Follows:

a. At EDG A Perform the following:

- Trip the Fuel Racks by depressing the EMERGENCY STOP Pushbutton
- Unlock AND close DA-21A, DG "A" UPPER AIR START OUTLET ISOLATION
- Unlock AND close DA-25A, DG "A" LOWER AIR START OUTLET ISOLATION

b. At EDG B Perform the following:

- Trip the Fuel Racks by depressing the EMERGENCY STOP Pushbutton
- Unlock AND close DA-21B, DG "B" UPPER AIR START OUTLET ISOLATION
- Unlock AND close DA-25B, DG "B" LOWER AIR START OUTLET ISOLATION

c. Notify the SM that BOTH EDGs have been tripped

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CONTINUOUS USEATTACHMENT 3AUXILIARY BUILDING OPERATOR ACTIONS

(Page 3 of 14)

NOTE

- Access to the Charging Pump Room can be gained via the Nonregenerative and Seal Water Return Heat Exchanger Room on the second level of the Aux Bldg in the event of a fire in the Aux Bldg hallway.
- CVC-309A is located near HCV-121 on the West Wall of the Charging Pump Room.

4. Locally Align Charging Flow As
Follows:

- a. Place Transfer Switch for
CHARGING PUMP A to LOCAL
- b. Open CVC-309A, HCV-121 BYPASS
- c. Close CVC-202B, HCV-121 INLET
ISOL

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CONTINUOUS USEATTACHMENT 3AUXILIARY BUILDING OPERATOR ACTIONS

(Page 4 of 14)

NOTE

- CVC-358 is located in the overhead West of Charging Pump B.
- LCV-115C is located in the overhead between Charging Pumps B & C.

5. Locally Align RWST To Charging
Pump Suction As Follows:

a. Open CVC-358, RWST TO
CHARGING PUMP SUCTION

b. Obtain verification from the
SM that the emergency buses
are deenergized

b. WHEN verification received,
THEN Go To Step 5.c.

c. Close LCV-115C, VCT OUTLET
ISOLATION

6. Check Charging Pump "A" - STOPPED Go To Step 8.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CONTINUOUS USE

ATTACHMENT 3AUXILIARY BUILDING OPERATOR ACTIONS

(Page 5 of 14)

NOTE

A ladder is located to the left of the Charging Pump Room Control Panel if closure of the CVC-297 valves is required.

- * 7. At the Charging Pump Room
Control Panel Start Charging
Pump A As Follows:

a. Obtain verification from the
SM that the DS Bus is
energized AND elapsed time
since Seal Injection was lost

b. Check elapsed time since Seal
Injection Lost - LESS THAN
15 MINUTES

a. WHEN verification is
received, THEN Go To Step 7.b.

b. Perform the following:

1) Close the RCP SEAL WATER
FLOW CONTROL VALVES:

- CVC-297A
- CVC-297B
- CVC-297C

2) WHEN Pipe Alley is
accessible, THEN Locally
close ONE of the below
valves:

- FCV-626, THERM BARRIER
OUTLET

OR

- CC-736, CC FROM RCP
"A", "B", "C" THERMAL
BARRIER

3) Go To Step 7.c.

c. Locally Start CHARGING PUMP A

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p align="center">CONTINUOUS USE <u>ATTACHMENT 3</u></p> <p align="center"><u>AUXILIARY BUILDING OPERATOR ACTIONS</u></p> <p align="center">(Page 6 of 14)</p> <p align="center">*****</p> <p align="center"><u>CAUTION</u></p> <p>Attempt to minimize Charging Pump starts/stops while maintaining the PZR level band in the following steps to avoid exceeding the pump start limitation of four starts per hour. However, maintaining the PZR level band overrides concerns with pump start limitations.</p> <p align="center">*****</p>		
8.	Establish Local Speed Control Of The Running Charging Pump As Follows:	
	<ul style="list-style-type: none"> a. Place the local speed control station AUTO/MAN Selector Switch to the MAN position b. Rotate the speed controller COUNTER-CLOCKWISE to manually lower Charging Pump Speed to the minimum 	
9.	Check Seal Injection - ALIGNED	Go To Step 11.
10.	Check RCP Seal Injection Flow - BETWEEN 6 GPM <u>AND</u> 20 GPM	<p>Locally throttle RCP SEAL WATER FLOW CONTROL VALVES to obtain flow to each RCP between 6 gpm and 20 gpm.</p> <ul style="list-style-type: none"> • CVC-297A • CVC-297B • CVC-297C <p><u>IF</u> required to maintain minimum flow, <u>THEN</u> throttle CVC-309A, HCV-121 BYPASS valve while maintaining Charging Pump Discharge pressure less than 2500 psig.</p>

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CONTINUOUS USEATTACHMENT 3AUXILIARY BUILDING OPERATOR ACTIONS

(Page 7 of 14)

11. Notify The SM That Charging Flow
Has Been Established AND The
Status Of Seal Injection

NOTE

Attachment 11, Credited Instrumentation Available, provides a list of the credited instrumentation not affected by the fire based on the fire location.

12. At the Charging Pump Control
Panel Perform the following:

- a. Verify Transfer Switch for
CCW PUMP A in LOCAL position.
- b. Check CCW PUMP A Status -
STOPPED.
- b. IF RCP Seal Injection has
been established, THEN notify
SM that CCW has been
established AND Go To Step 15.
- IF RCP Seal Injection has NOT
been established, THEN
Locally Stop CCW Pump A.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CONTINUOUS USE

ATTACHMENT 3AUXILIARY BUILDING OPERATOR ACTIONS

(Page 8 of 14)

NOTE

When dumping steam from the secondary a cooldown rate of 10°F/Hr is the maximum rate allowed.

13. At the Charging Pump Control
Panel Start CCW PUMP A As
Follows:

- a. Check RCP Seal Injection -
ESTABLISHED

- a. Perform the following:

- 1) Locally Raise speed on the
Charging Pump to 100%.
- 2) IF required to maintain
PZR level stable, THEN
coordinate with the
Turbine Building Operator
to dump steam from the
secondary.
- 3) WHEN FCV-626 OR CC-736 is
closed, THEN Go To Step 14.

- b. Start CCW PUMP A

- c. Locally Check CCW flow on
FI-660, CHARGING PUMP OIL
COOLER RETURN FLOW - FLOW
INDICATED

- c. Locally Verify Charging Pump
A CCW alignment correct:

- CC-825C, CC TO CHG PUMP
"A" OIL COOL - OPEN
- CC-825F, CC FROM CHG PUMP
A OIL COOL - OPEN

- d. Notify the SM that CCW flow
has been established

- e. Go To Step 15

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CONTINUOUS USE

ATTACHMENT 3AUXILIARY BUILDING OPERATOR ACTIONS

(Page 9 of 14)

*14. Perform The Following:

- a. At the Charging Pump Room
Control Panel Start CCW PUMP A
- b. Notify the SM that CCW flow
has been established
- c. Check CCW flow on FI-660,
CHARGING PUMP OIL COOLER
RETURN FLOW - FLOW INDICATED
- c. Verify Charging Pump A CCW
alignment correct:
 - CC-825C, CC TO CHG PUMP
"A" OIL COOL - OPEN
 - CC-825F, CC FROM CHG PUMP
A OIL COOL - OPEN
- d. Maintain PZR Level between
15% and 25% by a combination
of the following:
 - Local control of Charging
Pump speed
 - Dumping steam on the
secondary
 - Starting and stopping
Charging Pump A as
required

15. Go To The Appropriate Step Based
On Fire Location:

FIRE LOCATION	STEP
E-1/E-2 ROOM	17
AUX BLDG HALL	21
ANYWHERE ELSE	16

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CONTINUOUS USE

ATTACHMENT 3AUXILIARY BUILDING OPERATOR ACTIONS

(Page 10 of 14)

*16. Shutdown The EDGs As Follows:

a. At EDG A Perform the
following:

- Trip the Fuel Racks by
depressing the EMERGENCY
STOP Pushbutton
- Unlock AND close DA-21A,
DG "A" UPPER AIR START
OUTLET ISOLATION
- Unlock AND close DA-25A,
DG "A" LOWER AIR START
OUTLET ISOLATION

b. At EDG B Perform the
following:

- Trip the Fuel Racks by
depressing the EMERGENCY
STOP Pushbutton
- Unlock AND close DA-21B,
DG "B" UPPER AIR START
OUTLET ISOLATION
- Unlock AND close DA-25B,
DG "B" LOWER AIR START
OUTLET ISOLATION

c. Notify the SM that BOTH EDGs
have been tripped17. Check RCP Seal Injection Status
- ALIGNED

Go To Step 24.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CONTINUOUS USE

ATTACHMENT 3AUXILIARY BUILDING OPERATOR ACTIONS

(Page 11 of 14)

- *18. Check CCW Flow From The Thermal
Barrier On FIC-626 - GREATER
THAN 50 GPM

WHEN Pipe Alley is accessible,
THEN check flow.

IF flow is less than 50 gpm,
THEN locally UNLOCK AND OPEN
CC-932, "FCV-626 and CC-735
BYPASS ISOLATION". (Pipe Alley,
middle penetrations, sleeve 16)

IF flow remains below 50 gpm,
THEN locally verify OPEN the
following valves:

- CC-716A, COOLING WATER INLET
(Located 20 feet in overhead
near Sleeve 8)
- CC-716B, COOLING WATER INLET
(Located 20 feet in overhead
near sleeve 8.)

19. Notify The SM That CCW Flow To
The RCPs Has Been Established
20. Go To Step 24
21. Direct The Electrical Operator
To Locally Trip Both Emergency
Diesel Generators AND Isolate
The Air Start Outlet Isolation
Valves When The Fire Is Out
(Step 16)

DSP-002	HOT SHUTDOWN USING THE DEDICATED/ALTERNATE SHUTDOWN SYSTEM	Rev. 47 Page 37 of 71
---------	--	--------------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;">CONTINUOUS USE <u>ATTACHMENT 3</u> <u>AUXILIARY BUILDING OPERATOR ACTIONS</u> (Page 12 of 14)</p>		
*22.	Check Fire - EXTINGUISHED	<p><u>WHEN</u> the fire has been extinguished, <u>THEN</u> perform ONE of the below Steps:</p> <ul style="list-style-type: none"> <u>IF</u> Seal Injection has been established, <u>THEN</u> perform Steps 17 through 19. <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> <u>IF</u> Seal Injection has <u>NOT</u> been established, <u>THEN</u> leave FCV-626 <u>OR</u> CC-736 closed <u>AND</u> Go To Step 24. <p>Go To Step 24.</p>
23.	Check Seal Injection Status - ISOLATED	Go To Step 17.
*24.	Check PZR Level - GREATER THAN 90%	<p><u>IF</u> PZR Level rises to 90%, <u>THEN</u> perform Steps 25 <u>AND</u> 26.</p> <p>Observe the <u>NOTE</u> prior to Step 26 and Go To Step 26.</p>
25.	Stop CHARGING PUMP A	

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CONTINUOUS USEATTACHMENT 3AUXILIARY BUILDING OPERATOR ACTIONS

(Page 13 of 14)

NOTE

PZR level control may be assisted by dumping steam from the secondary as long as a cooldown rate of 10°F/Hr is NOT exceeded.

***26. Maintain PZR Level As Follows:**

- | | |
|--|---------------------|
| a. Check RCP Seal Cooling -
ALIGNED | a. Go To Step 26.d. |
|--|---------------------|
- b. Maintain PZR Level between
27% And 73% by a combination
of the following:
- Local control of Charging
Pump speed
 - Dumping steam on the
secondary
 - Starting and stopping
Charging Pump A as
required
- c. Go To Step 27
- d. Maintain PZR Level between
15% And 25% by a combination
of the following:
- Local control of Charging
Pump speed
 - Dumping steam on the
secondary
 - Starting and stopping
Charging Pump A as
required

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CONTINUOUS USE

ATTACHMENT 3AUXILIARY BUILDING OPERATOR ACTIONS

(Page 14 of 14)

- *27. Periodically Monitor Charging Pump "A" Seal Lubricating Tank - Level Normal Perform the following:
- a. Open PW-48.
 - b. WHEN tank level is in the normal range, THEN close PW-48.
- *28. Check RWST Level Using LIC-947 - LESS THAN 50% WHEN RWST level is less than 50%, THEN notify the SM to contact the TSC to determine RWST makeup options.
- Observe the NOTE prior to Step 30 and Go To Step 30.
- *29. Notify The SM To Contact The TSC To Determine RWST Makeup Options

NOTE

Portable generators and blowers are available in a cabinet on the 2nd level of the Turbine Building.

30. Notify The SM To Have Portable Cooling Powered From Portable Generators Installed In The Charging Pump Room As Additional Personnel Become Available

- END -

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ILC-13 NRC JPM J
Rev 0**

**ALIGNING SW BACKUP TO SDAFW PUMP SUCTION
IAW DSP-007, Attachment 7**

Concurred By: _____ **Date:** _____
Operations

Approved By: _____ **Date:** _____
Superintendent/Supervisor - Training

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: 04061101001, Aligning SW Backup to SDAFW Pump Suction
01104104205, Perform Cooldown to CSD Using the Dedicated/Alternate Shutdown
System IAW DSP-007.

Alternate Path:

YES

JPM #:

ILC-13 NRC JPM J

Candidate

RO/SRO

K/A **Rating (RO/SRO):**

061 G2.1.30	4.4 / 4.0
061 K1.01	4.1 / 4.1
061 K4.01	4.1 / 4.2
076 K1.20	3.4 / 3.4

Task Standard:

SW Backup Aligned to Supply Suction to SDAFW Pump IAW DSP-007, Att. 7

Preferred Evaluation Location:Simulator _____ In-Plant X **Preferred Evaluation Method:**Perform _____ Simulate X **References:**

DSP-007, Att. 7

Validation Time: 15 Minutes **Time Critical:** NO **Time Critical Time:** N/A**Candidate:**

(N/A if not time critical)

Name _____

**Overall
Time****Critical
Time**

SSN

-

-

Start: _____

Start: _____

Finish: _____

Finish: _____

Performance Rating:

circle one

SAT

UNSAT

Performance**Time (min):** _____**Examiner:**

Print Name

Signature

Date

COMMENTS:

QUESTION DOCUMENTATION:

Question:

Response:

COMMENTS

- Step 1** Critical because these actions will ensure the SDAFW pump is NOT in service while swapping the supply from CST to SW.
-
- Step 2** Critical because the supply from the CST must be isolated to prevent SW flow back to the CST. Also because actions ensure the drain is closed and opens the supply from SW to SDAFW pump.
-
- Step 3** Critical because the pump must be vented to ensure water is up to the pump.
-
- Step 6** Critical because a steam supply valve must be opened to start the pump, the initial valve chose by the CRS is stuck closed and the operator must open another steam supply valve to start the pump.
-
- Step 7** Critical because venting the pump casing ensures there is not trapped air that may not have vented using the SW supply line in a previous step.
-

Tools/Equipment/Procedures Needed:

DSP-007, Attachment 7

READ TO OPERATOR**DIRECTIONS TO CANDIDATE:**

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, **shall be simulated** for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To facilitate the examination and better enable me to assess your level of understanding, verbalize your actions and observations while performing the JPM. To indicate that you have completed your assigned task return the Operator Cue Sheet I provided you.

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. DSP-007, Cold Shutdown Using the Dedicated / Alternate Shutdown System, has been implemented and the CRS has determined the need to initiate cool down to cold shutdown.
2. The CRS has determined it is necessary to align SW to the suction of SDAFW pump.
3. You have all equipment and tools necessary to complete this assignment.
4. Due to plant conditions, all communications outside the Control Room will be via radio.

INITIATING CUES:

The CRS directs you to complete DSP-007, Attachment 7 to align SW to the suction of the SDAFW pump. When SW is aligned to supply the pump, start it by opening the steam supply valve from "C" S/G.

START TIME: _____

NOTE

The maximum allowable flow rate for the SDAFW Pump is 345 gpm. This total includes 90 gpm seal leak off and 165 gpm flow to prevent exceeding the 600 gpm maximum designed flow with the SW System as a backup source of water to AFW.

STEP 1:

Verify CLOSED, Steam Supply to SDAFW Pump Valves:

- V1-8A, SG "A" Stm Supply to SDAFW Pump
 - V1-8B, SG "B" Stm Supply to SDAFW Pump
 - V1-8C, SG "C" Stm Supply to SDAFW Pump
- (Step 1)

STANDARD:

Simulates declutching the motor by pushing the lever down, and closing the valve by rotating the handwheel in the CW direction.

As Found: N/A

EXAMINER'S CUE: Motor declutch lever lowered, handwheel turned in the CW direction and will no longer move.

Once the operator has demonstrated manipulation of one of the valves, tell him the other two valves are closed.

EXAMINER'S NOTE: If necessary, inform the operator that the Control Room is evacuated and local actions are necessary. All 3 valves operate the same and are in the same area.

COMMENTS:**CRITICAL
STEP**

___ SAT

___ UNSAT

STEP 2:

Locally align the following valves:

- a. Unlock and close AFW-1, AFW Pumps suction from CST
- b. Unlock and close AFW-104, AFW Pumps suction from CST
- c. Close AFW-24A, AFW Suction From SW Emergency B/U Tell-Tail Drain
- d. Unlock and OPEN AFW-24, AFW Suction Isolation From SW Emergency Backup
- e. Unlock and OPEN SW-118, SW Emergency Backup to AFW Suction. (Step 2)

CRITICAL STEP

___ SAT

___ UNSAT

STANDARD:

Simulates unlocking and closing AFW-1 and AFW-104.
Simulates closing AFW-24A.
Simulates unlocking and opening AFW-24 and SW-118.

As Found: Both AFW-1 and AFW-104 are open, stem extended. There is one chain and lock shared between the valve handwheels.

Tell-tail drain AFW-24A is open.

AFW-24 and SW-118 are locked closed.

EXAMINER'S CUE:

- Lock is removed; AFW-1 and AFW-104 handwheels turned in the CW direction until it will not move anymore, the stem is inserted.
- AFW-24A tell-tail handwheel is turned in the CW direction until it will not move anymore, the stem is inserted.
- The lock is removed from AFW-24; the handwheel is turned in the CCW direction until it will not move anymore and the stem is extended.
- The lock is removed from SW-118; the handwheel turned in the CCW direction until it will not move anymore and the stem is extended.

EXAMINER'S NOTE:

NONE

COMMENTS:

STEP 3:

Vent the SDAFW Pump by performing the following:

- a. Remove cap from AFW-7, SDAFW Pump Suction Vent (10 ft in overhead, above TCV-1902A)
- b. OPEN AFW-7, SDAFW Pump Suction Vent
- c. WHEN a solid stream of water issues from AFW-7, THEN Close AFW-7
- d. Install cap on AFW-7
(Step 3)

**CRITICAL
STEP**

___ SAT

___ UNSAT

STANDARD: Simulates venting the SDAFW Pump as follows:

- Removes cap from AFW-7 tail pipe.
- Turns handwheel in the CCW direction until water issues.
- Monitors the flow until a solid stream is observed, THEN turns handwheel in the CW direction until it stops moving and observes NO flow of water.
- Installs the cap on AFW-7 tail pipe.

As Found: AFW-7 closed with cap installed.

EXAMINER'S CUE:

- Cap is removed from AFW-7 tail pipe.
- Handwheel is turned in the CCW direction until water issues.
- Flow begins to issue and is now a solid stream, THEN handwheel turns in the CW direction until stops and no flow of water.
- The cap is installed on AFW-7 tail pipe.

EXAMINER'S NOTE: If candidate attempts to go to WCC for a pipe wrench inform the candidate that all tools were provided as stated in the JPM CUE.

AFW-7 is 10 feet overhead above the TCV-1902A. It will suffice for the Operator to point at the valve, preferably with a flashlight and describe where he would obtain a ladder and describe his actions.

COMMENTS:

<p><u>STEP 4:</u> Notify Shift Manager that the SDAFW Pump is ready to be started. (Step 4)</p> <p><u>STANDARD:</u> Simulates contacting SM / CRS and reports the SW has been aligned to supply the SDAFW pump, and the pump has been vented and is ready to start.</p> <p>As Found: N/A</p> <p>EXAMINER'S CUE: Acknowledge the report and direct starting the pump using the "C" S/G steam supply.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
--	---------------------------------

STEP 5:

Locally WHEN directed by the Shift Manager start the SDAFW Pump by opening one of the following valves:

- V1-8A, SG "A" Stm Supply to SDAFW Pump
 - V1-8B, SG "B" Stm Supply to SDAFW Pump
 - **V1-8C, SG "C" Stm Supply to SDAFW Pump**
- (Step 5)

___ SAT

STANDARD:

Candidate simulates opening V1-8C. Recognizes / reports V1-8C will not open.

___ UNSAT

As Found: The valves were verified closed in Step 1, the motor clutch is disengaged.

EXAMINER'S CUE: Direct the Operator to start the SDAFW pump by opening the steam supply valve from the "C" S/G.

V1-8C handwheel did NOT move in the CCW direction.

When contacted, respond as CRS/SM and direct candidate use the steam supply valve from "B" S/G.

EXAMINER'S NOTE: The Operator may NOT push the clutch lever, it was disengaged in the first step and remains disengaged until the motor is actuated.

V1-8C valve is STUCK in the closed position, the Operator must contact the Control Room to inform them and choose a different S/G for steam supply.

COMMENTS:

STEP 6:

Locally WHEN directed by the Shift Manager start the SDAFW Pump by opening on of the following valves:

- V1-8A, SG "A" Stm Supply to SDAFW Pump
- **V1-8B, SG "B" Stm Supply to SDAFW Pump**
- V1-8C, SG "C" Stm Supply to SDAFW Pump

(Step 5 continued)

STANDARD:

Candidate simulates opening V1-8B by rotating the MOV handwheel in the CCW direction until it will not turn anymore and is taken ¼ turn off its backseat.

As Found: The valves were verified closed in Step 1, the motor clutch is disengaged.

EXAMINER'S CUE: V1-8B MOV handwheel is turned in the CCW direction until it will not turn anymore.

EXAMINER'S NOTE: The operator may decide NOT to push the clutch level since it was disengaged in the first step and remains disengaged until the motor is actuated.

COMMENTS:**CRITICAL
STEP**

___ SAT

___ UNSAT

STEP 7:

Locally Vent SDAFW Pump by performing the following:

- Open AFW-18, SDAFW pump vent.
- WHEN the SDAFW Pump is vented, THEN close AFW-18.
(Step 6)

STANDARD:

Candidate simulates venting the SDAFW Pump as follows:

- Turns AFW-18 handwheel in the CCW direction until water issues from the vent.
- When a solid stream of water is observed, candidate closes AFW-18 by turning the handwheel in the CW direction until the flow stops and the handwheel will not move anymore.
- Candidate contacts the Control Room to inform them the SDAFW Pump is running and has been vented.

As Found: AFW-18 closed.**EXAMINER'S CUE: When located:**

- **AFW-18 handwheel is turned in the CCW direction and water begins to issue.**
- **A solid stream of water is observed, the handwheel is then turned in the CW direction until flow is stopped and the handwheel will not move anymore.**
- **Acknowledge the report that the SDAFW Pump is running and has been vented.**

EXAMINER'S NOTE: NONE**COMMENTS:****END OF TASK****CRITICAL
STEP**

___ SAT

___ UNSAT

Terminating Cue: When the SDAFW Pump has been started and vented.**TIME STOP: _____**

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. DSP-007, Cold Shutdown Using the Dedicated / Alternate Shutdown System, has been implemented and the CRS has determined the need to initiate cool down to cold shutdown.
2. The CRS has determined it is necessary to align SW to the suction of SDAFW pump.
3. You have all equipment and tools necessary to complete this assignment.
4. Due to plant conditions, all communications outside the Control Room will be via radio.

INITIATING CUES:

The CRS directs you to complete DSP-007, Attachment 7 to align SW to the suction of the SDAFW pump. When SW is aligned to supply the pump, start it by opening the steam supply valve from "C" S/G.

CONTINUOUS USE

ATTACHMENT 7ALIGNING SW BACKUP TO SDAFW PUMP SUCTION

(Page 1 of 2)

NOTE

The maximum allowable flow rate for the SDAFW Pump is 345 gpm. This total includes 90 gpm seal leak off and 165 gpm recirc flow to prevent exceeding the 600 gpm maximum designed flow with the SW System as a backup source of water to AFW.

1. Locally Verify CLOSED, Steam Supply to SDAFW Pump Valves:
 - V1-8A, SG "A" STM SUPPLY TO STM DRIVEN AFW PUMP
 - V1-8B, SG "B" STM SUPPLY TO STM DRIVEN AFW PUMP
 - V1-8C, SG "C" STM SUPPLY TO STM DRIVEN AFW PUMP
2. Locally Align the following valves:
 - a. Unlock and close AFW-1, AFW PUMPS SUCTION FROM CST.
 - b. Unlock and close AFW-104, AFW PUMPS SUCTION FROM CST.
 - c. Close AFW-24A, AFW SUCTION FROM SW EMERGENCY B/U TELL-TAIL DRAIN
 - d. Unlock and open AFW-24, AFW SUCTION ISOLATION FROM SW EMERGENCY BACKUP.
 - e. Unlock and open SW-118, SW EMERGENCY BACKUP TO AFW SUCTION.
3. Locally Vent the SDAFW Pump by performing the following:
 - a. Remove cap from AFW-7, SDAFW PUMP SUCTION VENT (10 ft in overhead, above TCV-1902A).
 - b. Open AFW-7, SDAFW PUMP SUCTION VENT.
 - c. WHEN a solid stream of water issues from AFW-7, THEN close AFW-7.
 - d. Install cap on AFW-7, SDAFW PUMP SUCTION VENT.
4. Notify Shift Manager that the SDAFW Pump is ready to be started.

CONTINUOUS USE

ATTACHMENT 7ALIGNING SW BACKUP TO SDAFW PUMP SUCTION

(Page 2 of 2)

5. Locally WHEN directed by the Shift Manager start the SDAFW Pump by opening one of the following valves:
 - V1-8A, SG "A" STM SUPPLY TO STM DRIVEN AFW PUMP
 - V1-8B, SG "B" STM SUPPLY TO STM DRIVEN AFW PUMP
 - V1-8C, SG "C" STM SUPPLY TO STM DRIVEN AFW PUMP
6. Locally Vent SDAFW Pump by performing the following:
 - a. Open AFW-18, SDAFW PUMP VENT.
 - b. WHEN the SDAFW PUMP is vented, THEN close AFW-18.

- END -

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ILC-13 NRC JPM K
Rev 0**

**ALIGN BACKUP FUEL OIL TO THE “B” EDG IAW EPP-
28, ATTACHMENT 5**

Concurred By: _____ **Date:** _____
Operations

Approved By: _____ **Date:** _____
Superintendent/Supervisor - Training

**LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: 04118117205, Perform the Local Actions to Align Backup Fuel Oil from the Alternate Fuel Oil Storage Tanks to the EDGs Day Tanks IAW EPP-28 (Commitment)

01118115705, Respond to EPP-28 Loss of Ultimate Heat Sink (Commitment)

Alternate Path:

NO

JPM #:

ILC-13 NRC JPM K

Candidate

RO/SRO

K/A **Rating (RO/SRO):**

062.AK3.03 4.0/4.2

064.K1.03 3.6/4.0

064.K6.08 3.2/3.3

Task Standard:

Backup fuel oil is aligned to the "B" EDG IAW EPP-28 Attachment 5

Preferred Evaluation Location:

Simulator _____ In-Plant X

Preferred Evaluation Method:

Perform _____ Simulate X

References:

EPP-28, Attachment 5

Validation Time: 15 Minutes **Time Critical:** NO **Time Critical Time:** N/A

Candidate:

Name

SSN - -

**Overall
Time**

Start: _____

Finish: _____

(N/A if not time
critical)

**Critical
Time**

Start: _____

Finish: _____

Performance Rating: SAT UNSAT
circle one

**Performance
Time (min):** _____

Examiner:

Print Name

Signature

Date

COMMENTS:

QUESTION DOCUMENTATION:

Question:

Response:

COMMENTS

Steps 2, 3 & 4 Critical to establish a flowpath from the AFOST to the EDG Day Tank.

Step 5 & 6 Critical to control EDG Day Tank Level.

Tools/Equipment/Procedures Needed:

EPP-28, Attachment 5

READ TO OPERATOR

DIRECTIONS TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, **shall be simulated** for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To facilitate the examination and better enable me to assess your level of understanding, verbalize your actions and observations while performing the JPM. To indicate that you have completed your assigned task return the Operator Cue Sheet I provided you.

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. You are the Inside Auxiliary Operator.
2. A hostile action has resulted in a loss of off-site power and severely damaged the intake, with a subsequent loss of the ability to move water from the lake to cool plant equipment.
3. The Security Event has been terminated.
4. EPP-28 (Loss of Ultimate Heat Sink) has been implemented.
5. The "B" EDG is running and "A" EDG is secured.

INITIATING CUES:

The CRS has directed you to perform EPP-28 Attachment 5

START TIME: _____

<p><u>STEP 1:</u> Obtain a copy of the appropriate procedure (Step 1)</p> <p><u>STANDARD:</u> Candidate obtains and verifies current copy of EPP-28.</p> <p>As Found: N/A</p> <p>EXAMINER'S CUE: After Candidate locates and verifies the revision of the procedure, hand the candidate a copy of EPP-28, Attachment 5.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p style="text-align: center;"><u>NOTE</u></p> <ul style="list-style-type: none">• The Alternate Fuel Oil Storage Tanks (AFOSTs) should only be used to supply the EDG Day Tanks during a design basis threat. The use of the AFOSTs for any other reason may constitute a violation of the renewed operating license. Reference RNP-L/LR-0009 Section 3.4.3.1.• Operators are NOT required for performance of this attachment.• A fill rate from the Alternate Fuel Oil Tanks of 30 gpm is expected.• The intent of the two C/A steps is to open and close the fill valve to maintain level between 1/4 and 3/4 full.	

<p><u>STEP 2:</u> Close the normal EDG Day Tank header isolation valve for the running EDG(s):</p> <ul style="list-style-type: none"> • "A" EDG - FO-25A, DIESEL OIL DAY TANK "A" HEADER ISOLATION • "B" EDG - FO-25B, DIESEL OIL DAY TANK "B" HEADER ISOLATION (Step 1) <p><u>STANDARD:</u> Candidate Simulates closing FO-25B by rotating the handwheel in the CW direction.</p> <p>AS FOUND: Open</p> <p>EXAMINER'S CUE: FO-25B is turned in the CW direction until it will not move anymore, the stem is inserted.</p> <p>EXAMINER'S NOTE: Valve is located at the Day Tank</p> <p><u>COMMENTS:</u></p>	<p><u>Critical Step</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u> Open the EDG Day Tank Fill valve for the running EDG(s):</p> <ul style="list-style-type: none"> • "A" EDG - FO-26A, ALT / EMERG SUPPLY TO FUEL OIL DAY TANK "A" • "B" EDG - FO-26B, ALT / EMERG SUPPLY TO FUEL OIL DAY TANK "B" (Step 2) <p><u>STANDARD:</u> Candidate Simulates opening FO-26B by rotating the handwheel fully CCW.</p> <p>AS FOUND: Closed</p> <p>EXAMINER'S CUE: FO-26A has been rotated fully counter-clockwise and placed approximately ¼ turn off its backseat. (stem fully withdrawn)</p> <p>EXAMINER'S NOTE: Valve is located at the Day Tank</p> <p><u>COMMENTS:</u></p>	<p><u>Critical Step</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 4:</u> Open the EDG Day Tank Solenoid Bypass valve for the tank(s) being filled:</p> <ul style="list-style-type: none"> • "A" EDG - FO-28A, DIESEL OIL DAY TANK "A" SOLENOID BYPASS • "B" EDG - FO-28B, DIESEL OIL DAY TANK "B" SOLENOID BYPASS (Step 3) <p><u>STANDARD:</u> Candidate Simulates Opening FO-28B by rotating the handwheel fully CCW.</p> <p>AS FOUND: Closed</p> <p>EXAMINER'S CUE: FO-28B has been rotated fully counter-clockwise and placed approximately ¼ turn off its backseat. (stem fully withdrawn)</p> <p>EXAMINER'S NOTE: Valve is located at the Day Tank</p> <p><u>COMMENTS:</u></p>	<p><u>Critical Step</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p style="text-align: center;"><u>NOTE</u></p> <p>Only one tank should be filled at a time.</p>	

<p><u>STEP 5:</u> WHEN day tank level reaches 1/4 full, THEN open the AFOST SUPPLY TO FUEL OIL DAY TANK for the day tank to be filled:</p> <ul style="list-style-type: none"> • FO-231, AFOST SUPPLY TO FUEL OIL DAY TANK "A" <p>OR</p> <ul style="list-style-type: none"> • FO-236, AFOST SUPPLY TO FUEL OIL DAY TANK "B" (Step 4) <p><u>STANDARD:</u> Candidate locates Day Tank Level indication and simulates reading level and then simulates opening FO-236 by rotating the valve handle until it is in line with the pipe.</p> <p>AS FOUND: Closed</p> <p>EXAMINER'S CUE: Inform Candidate the Day Tank level is at ¼ full FO-236 valve handle has been rotated in line with the pipe and is open.</p> <p>EXAMINER'S NOTE: Valve is located at the Day Tank</p> <p><u>COMMENTS:</u></p>	<p><u>Critical Step</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u> WHEN the day tank reaches 3/4 full, THEN close the AFOST SUPPLY TO FUEL OIL DAY TANK for the day tank filled:</p> <ul style="list-style-type: none"> • FO-236, AFOST SUPPLY TO FUEL OIL DAY TANK "B" <p><u>STANDARD:</u> Candidate Simulates monitoring the Day Tank Level and then closing FO-236 by rotating the valve handle until it is perpendicular with the pipe.</p> <p>AS FOUND: Open</p> <p>EXAMINER'S CUE: Inform Candidate that time compression has occurred. Inform Candidate the Day Tank level is now ¾ full FO-236 handle has been rotated perpendicular to the pipe and is closed.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>Critical Step</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 7:</u> Inform the Control Room the EDG(s) is being filled from Alternate Fuel. (Step 6)</p> <p><u>STANDARD:</u> Candidate Simulates contacting the Control Room to report EDG Day Tank refilled</p> <p>AS FOUND: N/A</p> <p>EXAMINER'S CUE: When CRS or SM notified, respond as the CRS or SM and acknowledge the report</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;"><u>END OF TASK</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>Terminating Cue: When CRS or SM notified that the EDG Day Tank has been refilled.</p>	

TIME STOP: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

CANDIDATE INFORMATION:

Inform the candidate there are NO time critical steps in this JPM.

INITIAL CONDITIONS:

1. You are the Inside Auxiliary Operator.
2. A hostile action has resulted in a loss of off-site power and severely damaged the intake, with a subsequent loss of the ability to move water from the lake to cool plant equipment.
3. The Security Event has been terminated.
4. EPP-28 (Loss of Ultimate Heat Sink) has been implemented.
5. The "B" EDG is running and "A" EDG is secured.

INITIATING CUES:

The CRS has directed you to perform EPP-28 Attachment 5

C

C

C

ATTACHMENT 5Backup Fuel Oil Alignment

(Page 1 of 2)

NOTE

- The Alternate Fuel Oil Storage Tanks (AFOSTs) should only be used to supply the EDG Day Tanks during a design basis threat. The use of the AFOSTs for any other reason may constitute a violation of the renewed operating license. Reference RNP-L/LR-0009 Section 3.4.3.1.
- Operators are NOT required for performance of this attachment.
- A fill rate from the Alternate Fuel Oil Tanks of 30 gpm is expected.
- The intent of the two C/A steps is to open and close the fill valve to maintain level between 1/4 and 3/4 full.

1. Close the normal EDG Day Tank header isolation valve for the running EDG(s):
 - "A" EDG - FO-25A, DIESEL OIL DAY TANK "A" HEADER ISOLATION
 - "B" EDG - FO-25B, DIESEL OIL DAY TANK "B" HEADER ISOLATION
2. Open the EDG Day Tank Fill valve for the running EDG(s):
 - "A" EDG - FO-26A, ALT / EMERG SUPPLY TO FUEL OIL DAY TANK "A"
 - "B" EDG - FO-26B, ALT / EMERG SUPPLY TO FUEL OIL DAY TANK "B"
3. Open the EDG Day Tank Solenoid Bypass valve for the tank(s) being filled:
 - "A" EDG - FO-28A, DIESEL OIL DAY TANK "A" SOLENOID BYPASS
 - "B" EDG - FO-28B, DIESEL OIL DAY TANK "B" SOLENOID BYPASS

ATTACHMENT 5Backup Fuel Oil Alignment

(Page 2 of 2)

NOTE

Only one tank should be filled at a time.

- * 4. WHEN day tank level reaches 1/4 full, THEN open the AFOST SUPPLY TO FUEL OIL DAY TANK for the day tank to be filled:

- o FO-231, AFOST SUPPLY TO FUEL OIL DAY TANK "A"

OR

- o FO-236, AFOST SUPPLY TO FUEL OIL DAY TANK "B"

- * 5. WHEN the day tank reaches 3/4 full, THEN close the AFOST SUPPLY TO FUEL OIL DAY TANK for the day tank filled:

- o FO-231, AFOST SUPPLY TO FUEL OIL DAY TANK "A"

OR

- o FO-236, AFOST SUPPLY TO FUEL OIL DAY TANK "B"

6. Inform the Control Room the EDG(s) is being filled from Alternate Fuel.

- END -