

U.S. Nuclear Regulatory Commission
Surry Power Station

SR09301
Job Performance Measure 004A2.11

Applicant_____

Start Time_____

Examiner_____

Date _____

Stop Time_____

Title

INCREASE RCS BORON CONCENTRATION 500 PPM IN ACCORDANCE WITH AP-40.00.

K/A: 004A2.11 Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations; Loss of IAS.

Applicability

Estimated Time

Actual Time

RO/SRO(I)/SRO(U)

15 Minutes

Conditions

- Task is to be SIMULATED in the plant.
- A sustained loss of station instrument air is in progress and the team has reached step 17 of 0-AP-40.00, Non-Recoverable Loss of Instrument Air.
- It is desired to increase RCS boron concentration 500 ppm in accordance with step 17.

Standards

- Candidate correctly manipulates valves as required by 0-AP-40.00, step 17, to allow for boration of the RCS.

Initiating Cues

- This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.
- I am the Nuclear Shift Manager. Both units are currently experiencing a complete loss of instrument air.
- The team has reached step 17 of 0-AP-40.00, Non-Recoverable Loss of Instrument Air.
- You are to perform steps 17a sub steps 1 and 2.
- It is desired to throttle 1-CH-305 a half turn open. (1/2 turn open from full closed)
- When you complete these actions, inform the 3rd license operator to perform subsequent actions.
- When you finish the actions necessary to accomplish this, please inform me.

Terminating Cues

- Completion of 0-AP-40.00, Non-Recoverable Loss of Instrument Air, step 17.

Procedures

- 0-AP-40.00, Non-Recoverable Loss of Instrument Air (Revision 26).

Tools and Equipment

- None

Safety Considerations

- Standard Personal Safety Equipment

Initiating Cues

- A simulated loss of instrument air has occurred and it is desired to increase RCS boron concentration 500 ppm.

Notes to the Evaluator.

- **Task briefing should occur in the pre-determined location.**
- This task is to be SIMULATED. Do NOT allow the operator to manipulate controls, operate switches or reposition valves.
- Task critical elements are bolded and noted by the words "Critical Step' at the end of the step.

Initiating Cues

- This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.
- I am the Nuclear Shift Manager. Both units are currently experiencing a complete loss of instrument air.
- The team has reached step 17 of 0-AP-40.00, Non-Recoverable Loss of Instrument Air.
- You are to perform steps 17a sub steps 1 and 2.
- It is desired to throttle 1-CH-305 a half turn open. (1/2 turn open from full closed)
- When you complete these actions, inform the 3rd license operator to perform subsequent actions.
- When you finish the actions necessary to accomplish this, please inform me.

Notes

Expected RWP to be used for 08.1 SROU Class is –

- RWP - 09-0-0001
- Dose ALARM – 5 mr
- Dose RATE ALARM- 20 mr/hr

PERFORMANCE CHECKLIST

Notes to the Evaluator

- Task critical elements are bolded and noted by the words “Critical Step’ at the end of the step.
- **START TIME:**

<p>STEP 1:</p> <p><i>CAUTIONS AND NOTE PRIOR TO STEP 17.</i></p> <p>STANDARD:</p> <ul style="list-style-type: none">• Reads caution regarding RWST overflow.• Reads caution regarding minimum charging flow.• Reads note regarding pressurizer level control <p>EVALUATOR’S NOTE:</p> <ul style="list-style-type: none">• If asked: No personnel are working in the safeguards valve pit area. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
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<p>STEP 2:</p> <p>STEP 17a- INCREASE INITIAL RCS BORON 500 PPM:</p> <p>a) Align Charging Line Isolation valves:</p> <ol style="list-style-type: none"> 1) Verify closed or close ()-CH-304, Chg Hdr FCV-1122 Outlet Isol 2) Throttle ()-CH-305, Chg Hdr FCV-1122 Byp, to limit charging flow <p>STANDARD:</p> <ul style="list-style-type: none"> • Proceeds to aux building basement, unit one side, locates and CLOSES 1-CH-304. This is a critical step. • Locates 1-CH-305 and throttles valve ½ turn open. • Directs the 3rd RO to perform substep 3. <p>EVALUATOR’S NOTE:</p> <ul style="list-style-type: none"> • 1-CH-304 will be found open- report initial valve position ‘as it appears’ • Candidate will open 1-CH-305 only ½ turn. When valve is being opened, cue operator that flow noise can be heard. <p>EVALUATOR’S <u>CUES</u>:</p> <p>When candidate reports to 3rd license of step completion, report that while attempting to open 1-CH-MOV-1350 in accordance with step 17b, the valve failed to respond and you are to locally open 1-CH-228.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 3:</p> <p>Step 17b RNO- Locally open: 1-CH-228</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Candidate proceeds to unit one side of the boric acid flats (13’ elevation of Aux Building) and locates 1-CH-228. • Locally opens 1-CH-228. This is a critical step. <p>EVALUATOR’S NOTE: N/A</p> <p>EVALUATOR’S <u>CUES</u>:</p> <p>When 1-CH-228 is simulated open, report that task is complete and leave the boric acid flats (ALARA).</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

STOP TIME:

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be SIMULATED in the plant.
- Increase RCS boron concentration 500 ppm in accordance with 0-AP-40.00, Non-Recoverable Loss of Instrument Air.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- A simulated loss of instrument air has occurred and it is desired to increase RCS boron concentration 500 ppm.

Initiating Cues

- This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.
- I am the Nuclear Shift Manager. Both units are currently experiencing a complete loss of instrument air.
- The team has reached step 17 of 0-AP-40.00, Non-Recoverable Loss of Instrument Air.
- You are to perform steps 17a sub steps 1 and 2.
- It is desired to throttle 1-CH-305 a half turn open. (1/2 turn open from full closed)
- When you complete these actions, inform the 3rd license operator to perform subsequent actions.
- When you finish the actions necessary to accomplish this, please inform me.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Initial Conditions

- A simulated loss of instrument air has occurred and it is desired to increase RCS boron concentration 500 ppm.

Initiating Cues

- This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.
- I am the Nuclear Shift Manager. Both units are currently experiencing a complete loss of instrument air.
- The team has reached step 17 of 0-AP-40.00, Non-Recoverable Loss of Instrument Air.
- You are to perform steps 17a sub steps 1 and 2.
- It is desired to throttle 1-CH-305 a half turn open. (1/2 turn open from full closed)
- When you complete these actions, inform the 3rd license operator to perform subsequent actions.
- When you finish the actions necessary to accomplish this, please inform me.

NUMBER 0-AP-40.00	PROCEDURE TITLE NON-RECOVERABLE LOSS OF INSTRUMENT AIR	REVISION 26 PAGE 11 of 25
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
* * * * *		
CAUTION: • Keep personnel clear of safeguards valve pit. The RWST may overflow during increase of boron flow, if letdown is aligned to RWST.		
• To obtain proper CSD Boron concentration in two hours, a minimum flow of 22 GPM is required.		
* * * * *		
NOTE: Cooldown of RCS may be necessary to control pressurizer level increase until a letdown flow path is established.		
17. ___ INCREASE INITIAL RCS BORON 500 PPM:		
a) Align Charging Line Isolation valves:		
<input type="checkbox"/> 1) Verify closed or close ()-CH-304, Chg Hdr FCV-1122 Outlet Isol		
<input type="checkbox"/> 2) Throttle ()-CH-305, Chg Hdr FCV-1122 Byp, to limit charging flow		
<input type="checkbox"/> 3) Verify open or open ()-CH-MOV-()289A and B		
b) Open EMERGENCY BORATE valve	a) Locally open:	
<input type="checkbox"/> • ()-CH-MOV-()350	<input type="checkbox"/> • ()-CH-MOV-()350	
	<u>OR</u>	
	<input type="checkbox"/> • ()-CH-228	
<input type="checkbox"/> c) Verify boric acid transfer pump running in slow speed	<input type="checkbox"/> b) Manually start boric acid transfer pump in slow speed.	
<input type="checkbox"/> d) Adjust charging flow to match boric acid flow		
<input type="checkbox"/> e) Continue boration for minimum of two hours		

U.S. Nuclear Regulatory Commission
Surry Power Station

SR09301
Job Performance Measure 076A2.01 (3.5/3.7)

Applicant_____

Start Time_____

Examiner_____

Date _____

Stop Time_____

Title

ISOLATE SERVICE WATER TO #3 MER DURING FLOODING

K/A: 076A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations; Loss of SWS. (3.5/3.7)

Applicability

Estimated Time

Actual Time

RO/SRO(I)/SRO(U)

15 Minutes

Conditions

- Task is to be SIMULATED in the plant.
- Any plant mode/condition where a large SW leak in #3 MER has occurred.

Standards

- Flooding isolated to #3 MER as indicated by decreasing water level in accordance with 0-AP-13.00 steps 36 and 37.

Initiating Cues

- 0-AP-13.00, Turbine Building or #3 MER Flooding, Step 36.
- Shift Manager direction.

Terminating Cues

- 0-AP-13.00, Turbine Building or #3 MER Flooding, Step 37 completed.

Procedures

- 0-AP-13.00, Turbine Building or #3 MER Flooding.

Tools and Equipment

- None

Safety Considerations

- Standard Personal Safety Equipment
- Confined Space Entry Requirements

Notes to the Evaluator.

- **Task briefing should occur in the pre-determined location.**
- This task is to be SIMULATED. Do NOT allow the operator to manipulate controls, operate switches or reposition valves.
- Task critical elements are bolded and noted by the words "Critical Step" at the end of the step.

Initiating Cues

- This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.
- I am the Shift Manager. There is a major Service Water leak in #3 MER.
- Here is a copy of 0-AP-13.00, Turbine Building or #3 MER Flooding, Steps 36 and 37. I need you to isolate Service Water to #3 MER in accordance with Steps 36 and 37.
- 1-SW-P-10B and 2-SW-P-10B have been secured.
- 1-VS-E-4A, 4B, and 4C have been secured.
- When you finish the actions necessary to accomplish this, please inform me.

Notes

PERFORMANCE CHECKLIST

Notes to the Evaluator

- Task critical elements are bolded and noted by the words “Critical Step’ at the end of the step.
- **START TIME:**

<p>STEP 1:</p> <p>Step 36a- ISOLATE SW TO MER 3:</p> <p style="padding-left: 40px;">a) Fail 1-SW-263 closed by opening Circuit 8 on Lighting Panel 2T3 (located north of 2-FW-E-2A)</p> <p>STANDARD:</p> <p style="padding-left: 40px;">(a) Locates lighting panel 2T3 (located north of 2-FW-E-2A). (b) Opens circuit 8 on lighting panel 2-EP-LP-2T3- this is a critical step.</p> <p>EVALUATOR’S NOTE:</p> <ul style="list-style-type: none">• If asked: No personnel are working in the safeguards valve pit area. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2:</p> <p>STEP 36b- Verify open or open 1-SW-500, SW Header Crosstie (MER 4)</p> <p>STANDARD:</p> <p style="padding-left: 40px;">(a) Proceeds to #4 MER. (b) Locates manual valve 1-SW-500 (halfway across room under smoke detector). (c) Pulls pin from handwheel actuator. (d) Opens or verifies open 1-SW-500 by rotating valve handwheel in the counter clockwise direction- This is a critical step.</p> <p>Evaluator’s Cues Tell operator: Actual valve position in plant may be open or closed. Provide appropriate cue based on initial valve position.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 3:</p> <p>Step 36c- Close 2-SW-476, Water Box 2C Isol (MER 4)</p> <p>STANDARD:</p> <ul style="list-style-type: none"> (a) Locates 2-SW-476 (in #4 MER 2/3 of the way across the room on the right hand side. (b) Attempts to close 2-SW-476 by removing the locking pin and rotating the handwheel clockwise. (c) Recognizes that 2-SW-476 will not close and transitions to step 35b RNO column. <p><u>Evaluator's Cues</u></p> <p>Tell operator: <i>As operator attempts to close valve, the handwheel will not move.</i></p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
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STEP 4:

Step 36c RNO-

Do the following:

- 1) Verify open or open 2-SW-533.
- 2) Close 2-SW-474, located in Unit 2 BC HX SW MOV pit.

STANDARD:

- (a) **Verifies or opens 2-SW-533 (MER-5) - by rotating valve handwheel in the counter-clockwise direction- this is a critical step.**
- (b) Proceeds to Unit 2 BC HX SW MOV pit.
- (c) Locates manual valve 2-SW-474.
- (d) **Closes 2-SW-474 by removing the locking pin and rotating valve handwheel in the clockwise direction- this is a critical step.**

Evaluator's Cues

- For 2-SW-533, provide appropriate cue based on actual initial valve position in plant.
- **If asked:** After trainee identifies 2-SW-474, if expected mark number not verbalized, ask the trainee what they expect the label to read, then tell trainee the label reads 2-SW-474. If wrong valve identified, tell trainee that what they expected is not what it reads.
- **If asked:** Confined Space meter obtained and Security notified for entry.

Evaluator's Note

Safety concern: Trainee does not have to travel down into the valve pits. He can identify which label he is looking at, tell the evaluator what he expects the label to read, and if correct (**at the BC HX SW MOV PIT**), the evaluator can then state the label reads 2-SW-474. The trainee can describe actions to complete valve manipulation from above.

Safety concern: The valve pits have been classified as confined spaces. Do not allow the trainee to enter the valve pits. The trainee should mention that the valve pits are confined spaces and indicate that additional actions are required to enter this space. If the trainee does not mention the confined space aspect, a follow-up question should be asked.

Confined space gas sampler is maintained in the unit two PCS room on a shelf above the I&C workstation or they can be obtained from the tool room.

Security concern: Certain valve pits are now covered by grates. If the enclosure is to be opened, security must be contacted. It is acceptable for the trainee to describe the actions required to raise the grate(s) – utilize hand crank to raise grating access door.

COMMENTS:

_____ SAT

_____ UNSAT

<p>STEP 5:</p> <p>Step 36d- Close 2-SW-478, SW Header Crosstie. (MER 4)</p> <p>STANDARD:</p> <p>(a) Locates 2-SW-478 (in #4 MER 2/3 of the way across the room on the right hand side).</p> <p>(b) Pulls pin from handwheel actuator.</p> <p>(c) Closes or verifies closed 1-SW-478 by rotating valve handwheel in the clockwise direction- This is a critical step.</p> <p><u>Evaluator's Cues</u></p> <ul style="list-style-type: none"> • Tell operator: Provide appropriate cue for valve operation based on actual in plant valve position. <p>Safety concern: Trainee does not have to crawl across pipes to check the valve labels at the east end of the #4 MER. He can identify which valve label he is looking at, and the evaluator can state the label reads "2-SW-478" if the correct label is identified. The trainee can then describe the required actions to complete valve manipulation from the west end of #4 MER.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 6:</p> <p>Step 37- CHECK WATER LEVEL IN MER 3 ON MER 4 GAUGE 2-PL-LI-201 - DECREASING</p> <p>STANDARD:</p> <p>(a) Locates MER 3 level gauge 2-PL-LI-201 in MER 4.</p> <p>(b) Checks that level in MER 3 is decreasing.</p> <p><u>Evaluator's Cues</u></p> <ul style="list-style-type: none"> • Tell operator: After the operator locates MER 3 level gauge, tell him the level is 50" H₂O and slowly decreasing. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 7: REPORT TO SHIFT SUPERVISOR (EVALUATOR).</p> <p>STANDARD: Verbal status report that steps 36 and 37 of 1-AP-13.00 are complete.</p> <p>EVALUATOR'S NOTE: N/A</p> <p>STOP TIME:</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
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STOP TIME:

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be SIMULATED in the plant.
- Any plant mode/condition where a large SW leak in #3 MER has occurred.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- Flooding is ongoing in #3 MER and the team has reached step 36 of 0-AP-13.00, Turbine Building or #3 MER Flooding.

Initiating Cues

- This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.
- I am the Shift Manager. There is a major Service Water leak in #3 MER.
- Here is a copy of 0-AP-13.00, Turbine Building or #3 MER Flooding, steps 36 and 37. I need you to isolate Service Water to #3 MER in accordance with Steps 36 and 37.
- 1-SW-P-10B and 2-SW-P-10B have been secured.
- 1-VS-E-4A, 4B, and 4C have been secured.
- When you finish the actions necessary to accomplish this, please inform me.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Initial Conditions

- Flooding is ongoing in #3 MER and the team has reached step 36 of 0-AP-13.00, Turbine Building or #3 MER Flooding.

Initiating Cues

- This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.
- I am the Shift Manager. There is a major Service Water leak in #3 MER.
- Here is a copy of 0-AP-13.00, Turbine Building or #3 MER Flooding, steps 36 and 37. I need you to isolate Service Water to #3 MER in accordance with Steps 36 and 37.
- 1-SW-P-10B and 2-SW-P-10B have been secured.
- 1-VS-E-4A, 4B, and 4C have been secured.
- When you finish the actions necessary to accomplish this, please inform me.

NUMBER 0-AP-13.00	PROCEDURE TITLE TURBINE BUILDING OR MER 3 FLOODING	REVISION 20
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
36. ___	<p>ISOLATE SW TO MER 3:</p> <ul style="list-style-type: none"> <input type="checkbox"/> a) Fail 1-SW-263 closed by opening Circuit 8 on Lighting Panel 2T3 (located north of 2-FW-E-2A) <input type="checkbox"/> b) Verify open or open 1-SW-500, SW Header Crosstie (MER 4) <input type="checkbox"/> c) Close 2-SW-476, Water Box 2C Isol (MER 4) <input type="checkbox"/> d) Close 2-SW-478, SW Header Crosstie. (MER 4) 	<p>c) Do the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1) Verify open or open 2-SW-533. <input type="checkbox"/> 2) Close 2-SW-474, located in Unit 2 BC HX SW MOV pit.
37. ___	<p>CHECK WATER LEVEL IN MER 3 ON MER 4 GAUGE 2-PL-LI-201 - DECREASING</p>	<p>Do the following:</p> <ul style="list-style-type: none"> a) Secure CHG Pump SW Pumps: <ul style="list-style-type: none"> <input type="checkbox"/> • 1-SW-P-10A <input type="checkbox"/> • 2-SW-P-10A <input type="checkbox"/> b) Close 1-SW-499, Water Box 1D Isol. <input type="checkbox"/> c) Close 1-SW-500, SW Header Crosstie.
38. ___	<p>VERIFY RUNNING AN MCR CHILLER IN MER 5 IAW 0-OP-VS-006, CONTROL ROOM AND RELAY ROOM VENTILATION SYSTEM:</p> <ul style="list-style-type: none"> <input type="checkbox"/> • 1-VS-E-4D <input type="checkbox"/> • 1-VS-E-4E 	<p>Do the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> a) Start 1-VS-E-4D or 1-VS-E-4E. <input type="checkbox"/> b) <u>IF</u> an MCR Chiller can <u>NOT</u> be started, <u>THEN</u> initiate 0-AP-13.02, LOSS OF ESGR COOLING.

U.S. Nuclear Regulatory Commission
Surry Power Station

SR09301
Simulator Job Performance Measure EPE055A1.06

Applicant_____

Start Time_____

Examiner_____

Date _____

Stop Time_____

Title

RESPOND TO #3 EDG FAILURE TO LOAD IAW AP-17.05

K/A: EPE055EA1.06 Restoration of power with on ED/G (4.1/4.5)

Applicability

Estimated Time

Actual Time

RO/SRO(I)/SRO(U)

10 Minutes

Conditions

- Task is to be PERFORMED in the simulator.
- A loss of "A" RSST has occurred and #3 EDG failed to load.

Standards

- #3 EDG loaded onto the 1J bus in accordance with 0-AP-17.05, EDG 3 – Emergency Operations.

Initiating Cues

- 0-AP-10.07, Loss of Unit One Power, attachment 1.
- Nuclear Shift Manager direction.

Terminating Cues

- 1J bus re-energized from #3 EDG. (Step 4 of attachment 2 will re-energize the bus).

Procedures

- 0-AP-17.05, EDG 3 – Emergency Operations

Tools and Equipment

- None

Safety Considerations

- None

Simulator Setup

- Recall IC-1 and initialize (or IC-317).
- Enter the following malfunctions and place on Trigger 1
 - EL0501 (Loss of "A" RSST)
 - EL1102 (Failure to start #3 EDG)
- Initiate Trigger 1. Place the #3 EDG in EXERCISE.
- Delete malfunction EL1102.
- Using XtremeView EDG 3 ECC, silence and reset local alarms.
- Place Simulator in FREEZE.
- Unit 2 manipulations may be controlled from a MONITOR screen (lcjpm5506.mon)

Initiating Cues

- 0-AP-10.07, Loss of Unit One Power, attachment 1.
- Nuclear Shift Manager direction.

Directions to the Applicant

- I am the Shift Manager and you are the 3RD licensee. A loss of the "A" RSST has occurred and the 1J bus is de-energized because #3 EDG failed to load. The #3 EDG has been stopped in accordance with AP-10.07.
- Maintenance has identified and corrected the problem.
- Here is a copy of AP-17.05. I need you to load #3 EDG onto the 1J bus in accordance with AP-17.05.
- Maintenance personnel are standing by to assist as required.
- When you finish the actions necessary to accomplish this, please inform me.

Notes

PERFORMANCE CHECKLIST

Notes to the Evaluator

- Task critical elements are bolded and noted at the end of the step as CRITICAL STEP.
- *An additional instructor may be needed to silence and acknowledge alarms for the examinee.*
- **START TIME:**

<p>STEP 1:</p> <p>CAUTIONS PRIOR TO STEP 1</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Reads caution that EDG should not run unloaded for >10 minutes if the associated emergency bus is deenergized. b) Reads caution that the cooldown cycle should complete before initiating a start sequence on the EDG. c) Reads caution that the shift supervisor should determine bus priority for #3 EDG. d) Reads caution regarding #3 EDG output breaker permissive. <p>UNIT TWO CUE: If asked, 2J bus is energized by offsite power.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2:</p> <p>STEP 1 - ASK ELECTRICAL AND MECHANICAL DEPARTMENTS TO PROVIDE ASSISTANCE.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Asks Shift Manager for Maintenance support. <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 3:</p> <p>Step 2 - CHECK EDG 3 - WILL BE ALIGNED TO UNIT 1</p> <p>STANDARD:</p> <ul style="list-style-type: none"> Recalls from initial direction that #3 EDG desired to be loaded on Unit 1 <p>EVALUATOR'S NOTE:</p> <p>If asked: It is desired to load #3 EDG on 1J bus.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 4:</p> <p>Step 3 - COMMIT EDG 3 TO UNIT 1:</p> <ul style="list-style-type: none"> a) Place the UNIT 2 PNL 3-2 SWITCH 43-15J3 IN BYP COMMITS NO. 3 EDG TO UNIT 1 in BYP- this is a critical step. b) Place Emergency Supply Breaker 25J3 in PTL – this is critical step. <p>STANDARD:</p> <ul style="list-style-type: none"> Directs Unit Two to perform the two actions. <p>EVALUATOR'S NOTE: N/A</p> <p>BOOTH NOTE:</p> <ul style="list-style-type: none"> When the operator requests the bypass switch: <ul style="list-style-type: none"> <input type="checkbox"/> set u2_eg3_bypass = TRUE <input type="checkbox"/> Report it is in bypass When the operator requests 25J3 in PTL: <ul style="list-style-type: none"> <input type="checkbox"/> Set ed25j3_lock = TRUE. <input type="checkbox"/> Report 25J3 is in PTL. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 5:</p> <p>NOTE PRIOR TO STEP 4</p> <p>STANDARD:</p> <p>Reads note regarding effects of a START FAILURE on EDG operation.</p> <p>EVALUATOR’S CUE: If asked, a start failure did not previously occur.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 6:</p> <p>Step 4 – CHECK ANNUNCIATOR VSP-B5, EMERG GEN 3 TRBL - NOT LIT</p> <p>STANDARD:</p> <ul style="list-style-type: none"> Verifies annunciator VSP-B5 NOT LIT. <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 7:</p> <p>Step 5 – VERIFY AUXILIARY TRIP RELAY - RESET:</p> <ul style="list-style-type: none"> Amber light on Unit 1 EDG 3 Control Panel - NOT LIT <p>STANDARD:</p> <ul style="list-style-type: none"> Verifies amber light on Unit One EDG 3 control panel NOT LIT. <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 8:</p> <p>Step 6 – CHECK EDG - RUNNING</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Verifies EDG NOT running by observing engine speed indicator at 0 (zero) rpm. • Performs RNO action and GOES TO ATTACHMENT 2 <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 9:</p> <p>Attachment 2 - Step 1 – Place AUTO-EXERCISE EMERG GEN 3 switch to EXERCISE.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Identifies AUTO/EXERCISE switch and verifies position to be in EXERCISE <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 10:</p> <p>Attachment 2 - Step 2– IF ()J Bus de-energized, THEN strip loads IAW Attachment 3 (1J Bus) or Attachment 4 (2J Bus).</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Verifies 1J bus deenergized by observing bus 1J voltmeter at 0 (zero) volts. • GOES TO ATTACHMENT 3 <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 11:</p> <p>Attachment 3 - Step 1- To strip the 1J Bus, place the following control switches in PULL-TO-LOCK.</p> <ul style="list-style-type: none">• 1-SI-P-1B (14J3)• 1-CS-P-1B (14J5)• 1-RS-P-1B (14J4)• 1-RS-P-2B (14J8)• 1-VS-F-1B (14J7)• PRZR Heater Group A (14J9)• 1-VS-F-58B, if powered from ALTERNATE source, 14J1-3• 1-CH-P-1B (15J5)• 1-CH-P-1C (15J2, ALT)• 1-FW-P-3B (15J4) <p>STANDARD:</p> <ul style="list-style-type: none">• Places the following components in PTL (the following are critical steps):<ul style="list-style-type: none">• 1-SI-P-1B (14J3)• 1-CS-P-1B (14J5)• 1-RS-P-1B (14J4)• 1-RS-P-2B (14J8)• 1-VS-F-1B (14J7)• PRZR Heater Group A (14J9)• 1-CH-P-1B (15J5)• 1-FW-P-3B (15J4) <p>EVALUATOR'S NOTE:</p> <ul style="list-style-type: none">• 1-VS-F-58B will be powered from the normal source and therefore should NOT be placed in PTL• 1-CH-P-1C (15J2- ALT) is maintained in PTL – no action will be required. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
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<p>STEP 12:</p> <p>Attachment 3 - Step 2- Verify breakers open by checking breaker position indicating lights - RED LIGHTS NOT LIT</p> <ul style="list-style-type: none"> • 1-CS-P-1B (14J5) • 1-RS-P-1B (14J4) <p>STANDARD:</p> <ul style="list-style-type: none"> • Verifies the red lights are extinguished for both components. <p>EVALUATOR'S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 13:</p> <p>Attachment 3 - Step 3- Verify breaker open by checking breaker position indicating light - RED LIGHT NOT LIT</p> <ul style="list-style-type: none"> • 1-FW-P-3B (15J4) <p>STANDARD:</p> <ul style="list-style-type: none"> • Verifies the red lights are extinguished for 1-FW-P-3B. <p>EVALUATOR'S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 14:</p> <p>Attachment 3 - Step 4- Verify open or open 15J8, 1J Bus Normal Supply Breaker.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Verifies breaker 15J8 open by observing Green and Amber lights lit <p>EVALUATOR'S NOTE:</p> <ul style="list-style-type: none"> • Candidate may elect to green flag control switch <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 15:</p> <p>Attachment 3 - Step 4- Verify open or locally open 15J9, 1J Stub Bus Supply Breaker.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Checks breaker 15J9 open by any of the following means: <ul style="list-style-type: none"> ○ Checks breaker position on PCS ○ Dispatches operator to locally verify breaker position • Returns to ATTACHMENT 2 step 3. <p>EVALUATOR’S NOTE: N/A</p> <p>BOOTH OPERATOR:</p> <ul style="list-style-type: none"> • If dispatched to locally verify 15J9 open, report time compression has occurred and that breaker 15J9 is OPEN. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 16:</p> <p>Attachment 2 - Step 3- Verify the Load Limit Control on the UG-8 Governor is at the maximum clockwise position, which is past the 10 mark.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Dispatches operator to locally verify position of the Load Limit Control Knob <p>EVALUATOR’S NOTE: N/A</p> <p>BOOTH OPERATOR:</p> <ul style="list-style-type: none"> • If dispatched to locally verify load limit control knob position, report that time compression has occurred and that the load limit control knob is in the fully clockwise position, which is past the 10 mark. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 17:</p> <p><i>Attachment 2 - Step 4-</i> Press EMERG GEN NO. 3 ENGINE START pushbutton.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> Depresses the #3 EDG engine start button (critical step) <p>EVALUATOR'S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 18:</p> <p><i>Attachment 2 - Step 5-</i></p> <p>IF engine has NOT started, THEN GO TO Step 6 of this Attachment.</p> <p>IF engine has started, THEN do the following:</p> <ol style="list-style-type: none"> Verify speed at approximately 900 RPM. IF NOT at 900 RPM, THEN adjust speed using EMERG GEN NO 3 SPEED ADJ control switch. Place AUTO-EXERCISE EMERG GEN 3 switch to AUTO. RETURN TO procedure Step 8. <p>STANDARD:</p> <ul style="list-style-type: none"> Verifies engine started by observing engine speed at approximately 900 rpm. Places AUTO-EXERCISE switch to AUTO (Critical Step) Returns to procedure step 8. <p>EVALUATOR'S NOTE:</p> <ul style="list-style-type: none"> Candidate may fine tune engine RPM depending on individual's interpretation of "approximately". When placed in AUTO, the EDG will assume 1J bus loads. Candidate could report JPM complete at this point. This is acceptable. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 19:</p> <p><i>Note – the candidate should now be in the body of the procedure at step 8</i></p> <p>Step 8- CHECK BOTH J BUSES - ENERGIZED BY OFFSITE POWER</p> <p>STANDARD:</p> <ul style="list-style-type: none"> Identifies that both “J” busses are NOT supplied by offsite power by noting breaker 15J3 closed. Goes to RNO and then to step 10. <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 20:</p> <p>NOTES PRIOR TO STEP 10</p> <p>STANDARD:</p> <ul style="list-style-type: none"> Reads note regarding consequence of 1B DC bus loss on EDG loading. Reads note regarding closing permissives on EDG output breaker. <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 21:</p> <p>Step 10- CHECK EDG 3 - SUPPLYING J BUS</p> <ul style="list-style-type: none"> • 15J3 - CLOSED <li style="padding-left: 20px;">OR • 25J3 - CLOSED <p>STANDARD:</p> <ul style="list-style-type: none"> • Verifies EDG supplying 1J bus by verifying breaker 15J3 closed. <p>EVALUATOR'S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 22:</p> <p>NOTES PRIOR TO STEP 11</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Reads note regarding approximate power consumed by various emergency bus loads. • Reads note regarding power supply to the RSST. • Reads note regarding EDG MCC power verification. <p>EVALUATOR'S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 23:</p> <p>Step 11- LOAD () J BUS IAW SHIFT SUPERVISION DIRECTION</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Reports to shift supervisor that EDG is ready for loading. <p>EVALUATOR'S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be performed in the simulator.
- Perform Steps of 0-AP-17.05, EDG #3 – Emergency Operations, to energize 1J emergency bus.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- “A” RSST has been lost and #3 EDG failed to assume associated loads.

Initiating Cues

- I am the Shift Manager and you are the 3RD license. A loss of the “A” RSST has occurred and the 1J bus is de-energized because #3 EDG failed to load. The #3 EDG has been stopped in accordance with AP-10.07.
- Maintenance has identified and corrected the problem.
- Here is a copy of AP-17.05. I need you to load #3 EDG onto the 1J bus in accordance with AP-17.05.
- Maintenance personnel are standing by to assist as required.
- When you finish the actions necessary to accomplish this, please inform me.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Initial Conditions

- “A” RSST has been lost and #3 EDG failed to assume associated loads.

Initiating Cues

- I am the Shift Manager and you are the 3RD license. A loss of the “A” RSST has occurred and the 1J bus is de-energized because #3 EDG failed to load. The #3 EDG has been stopped in accordance with AP-10.07.
- Maintenance has identified and corrected the problem.
- Here is a copy of AP-17.05. I need you to load #3 EDG onto the 1J bus in accordance with AP-17.05.
- Maintenance personnel are standing by to assist as required.
- When you finish the actions necessary to accomplish this, please inform me.

U.S. Nuclear Regulatory Commission
Surry Power Station

SR09301

Simulator Job Performance Measure 006A4.07 (4.4/4.4)

Applicant_____

Start Time_____

Examiner_____

Date _____

Stop Time_____

Title

ESTABLISH CHG PUMP REDUNDANT FLOW PATHS

K/A: 006A4.07 Ability to manually operate and/or monitor in the control room: ECCS pumps and valves (4.4/4.4)

Applicability

Estimated Time

Actual Time

RO/SRO(I)/SRO(U)

10 Minutes

Conditions

- Task is to be PERFORMED in the simulator.
- A SBLOCA has occurred. 1-E-1 has been performed up to the point where redundant Chg/SI flow-paths are being established.

Standards

- 1-E-1, Loss of Reactor or Secondary Coolant, step 19 complete with one charging pump flowing on the normal SI header, one charging pump flowing on the alternate header, and the remaining charging pump secured with one discharge valve closed.

Initiating Cues

- 1-E-1, Loss of Reactor or Secondary Coolant, step 19.
- Shift Manager direction

Terminating Cues

1-E-1, step 19 completed

Procedures

- 0-AP-17.05, EDG 3 – Emergency Operations

Tools and Equipment

Safety Considerations

Surry

2009-301

Establish Redundant Flowpaths

- None

- None

Simulator Setup

- Call up 100% power IC and initialize- or IC-315.
- Enter malfunction for RCS non-isolable break (RC04 to 90% degradation).
 - Perform 1-AP-16.00, 1-E-0 (**do not stop 3rd charging pump**), and 1-E-1 up to step 19. Secure RCPs at 30 degrees subcooling and close mini-flow recircs.

Initiating Cues

- 1-E-1, Loss of Reactor or Secondary Coolant, step 19.
- Shift Manager direction

Directions to the Applicant

- I am the Shift Manager. A LOCA has occurred on Unit 1. We are in procedure 1-E-1 for a loss of Reactor coolant.
- Here's a copy of 1-E-1, step 19. I need you to establish Charging pump redundant flow paths in accordance with step 19.
- When you finish the actions necessary to accomplish this, please inform me.

Notes

PERFORMANCE CHECKLIST

Notes to the Evaluator

- Task critical elements are bolded and noted at the end of the step as CRITICAL STEP.
- *An additional instructor may be needed to silence and acknowledge alarms for the examinee.*
- **START TIME:**

<p><i>Evaluator's note- this document represents the optimal charging pump configuration. Critical actions are considered SAT if, at task completion: one charging pump is aligned to the normal header, one pump aligned to the alternate header, and the 3rd charging pump is secured with one discharge valve closed.</i></p> <p>STEP 1:</p> <p>NOTES PRIOR TO STEP 1</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Reads note regarding charging pump priority. b) Reads note that the highest priority charging pump should be aligned to the normal header. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2:</p> <p>STEP 19a - Check CHG pumps - THREE RUNNING</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Examines charging pump configuration and determines that three charging pumps are in service. • Goes to step 19b <p>EVALUATOR'S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 3:</p> <p>STEP 19b- Stop one CHG pump and put in PTL</p> <p>STANDARD:</p> <ul style="list-style-type: none"> In accordance with note prior to step 19, determines that 1-CH-P-1A is lowest priority charging pump Secures 1-CH-P-1A and places in PTL- This is a critical step. <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 4:</p> <p>Step 19c - Open alternate HHSI to cold legs:</p> <ul style="list-style-type: none"> 1-SI-MOV-1842- this is a critical step <p>STANDARD:</p> <ul style="list-style-type: none"> Opens 1-SI-MOV-1842 <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 5:</p> <p>Step 19d - Align one CHG pump to flow through the normal SI HDR by closing the associated alternate discharge MOV:</p> <ul style="list-style-type: none"> 1-CH-P-1A 1-CH-MOV-1287A 1-CH-P-1B 1-CH-MOV-1287B 1-CH-P-1C 1-CH-MOV-1287C <p>STANDARD:</p> <ul style="list-style-type: none"> Recalls from note prior to step that “C” charging pump should be aligned to the normal header and therefore closes 1-CH-MOV-1287C (1-CH-P-1C alternate discharge valve) – This is a critical step. <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 6:</p> <p>Step 19e – Align the other running CHG pump to flow through the alternate SI HDR by closing the associated normal discharge MOV:</p> <ul style="list-style-type: none"> • 1-CH-P-1A 1-CH-MOV-1286A • 1-CH-P-1B 1-CH-MOV-1286B • 1-CH-P-1C 1-CH-MOV-1286C <p>STANDARD:</p> <ul style="list-style-type: none"> • Determines that 1-CH-P-1B is the other running charging pump and closes 1-CH-MOV-1286B (1-CH-P-1B normal discharge valve) – This is a critical step. <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 7:</p> <p>Step 19f – Close the normal discharge MOV on the NON-RUNNING CHG pump:</p> <ul style="list-style-type: none"> • 1-CH-P-1A 1-CH-MOV-1286A • 1-CH-P-1B 1-CH-MOV-1286B • 1-CH-P-1C 1-CH-MOV-1286C <p>STANDARD:</p> <ul style="list-style-type: none"> • Determines that 1-CH-P-1A is secured (in PTL) and closes 1-CH-MOV-1286A (1-CH-P-1A normal discharge valve). This is a critical step. <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 8:</p> <p>Step 19g – Verify HHSI flow through BOTH headers</p> <ul style="list-style-type: none">▪ 1-SI-FI-1940▪ 1-SI-FI-1940A▪ 1-SI-FI-1943▪ 1-SI-FI-1943A <p>STANDARD:</p> <ul style="list-style-type: none">• Verifies flow indication on all the above listed flowmeters. <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 9:</p> <p>REPORT TO SHIFT SUPERVISOR (EVALUATOR).</p> <p>STANDARD:</p> <p>Verbal status report that redundant flowpath have been aligned in accordance with step 19.</p> <p>EVALUATOR’S NOTE: N/A</p> <p>STOP TIME:</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

STOP TIME:

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be performed in the simulator.
- Perform Step 19 of 1-E-1, Loss of Reactor or Secondary Coolant, to establish redundant charging flowpaths.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task

Initial Conditions

- A Large Break LOCA has occurred on Unit 1.

Initiating Cues

- I am the Shift Manager. A LOCA has occurred on Unit 1. We are in procedure 1-E-1 for a loss of Reactor coolant.
- Here's a copy of 1-E-1, step 19. I need you to establish Charging pump redundant flow paths in accordance with step 19.
- When you finish the actions necessary to accomplish this, please inform me.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Initial Conditions

- A Large Break LOCA has occurred on Unit 1.

Initiating Cues

- I am the Shift Manager. A LOCA has occurred on Unit 1. We are in procedure 1-E-1 for a loss of Reactor coolant.
- Here's a copy of 1-E-1, step 19. I need you to establish Charging pump redundant flow paths in accordance with step 19.
- When you finish the actions necessary to accomplish this, please inform me.

NUMBER 1-E-1	PROCEDURE TITLE LOSS OF REACTOR OR SECONDARY COOLANT	REVISION 31
		PAGE 20 of 28

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p>NOTE:</p> <ul style="list-style-type: none"> • CHG pumps should be run in the following order of priority: C, B, A. • The highest priority CHG pump should be aligned to the normal header. 	
19. ___	ESTABLISH CHG PUMP REDUNDANT FLOW PATHS:	
	<input type="checkbox"/> a) Check CHG pumps - THREE RUNNING	<input type="checkbox"/> a) <u>IF</u> one CHG pump running, <u>THEN</u> GO TO Step 20. <u>IF</u> two CHG pumps running, <u>THEN</u> do the following:
		<input type="checkbox"/> 1) Verify or place the non-running CHG pump in PTL.
		<input type="checkbox"/> 2) GO TO Step 19c.
	<input type="checkbox"/> b) Stop one CHG pump and put in PTL	
	<input type="checkbox"/> c) Open alternate HHSI to cold legs:	
	<input type="checkbox"/> • 1-SI-MOV-1842	
	<input type="checkbox"/> d) Align one CHG pump to flow through the normal SI HDR by closing the associated alternate discharge MOV:	
	<input type="checkbox"/> • 1-CH-P-1A 1-CH-MOV-1287A	
	<input type="checkbox"/> • 1-CH-P-1B 1-CH-MOV-1287B	
	<input type="checkbox"/> • 1-CH-P-1C 1-CH-MOV-1287C	
(STEP 19 CONTINUED ON NEXT PAGE)		

U.S. Nuclear Regulatory Commission
Surry Power Station

SR09301
Simulator Job Performance Measure 026A2.03 (4.1/4.4)
Alternate Path

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

CONFIGURE SPRAY SYSTEMS IN ACCORDANCE WITH ECA-1.1 (LOSS OF EMERGENCY RECIRCULATION).

K/A: 026A2.03 Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predications, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations; Failure of ESF

Applicability

Estimated Time

Actual Time

RO/SRO(I)/SRO(U)

10 Minutes

Conditions

- Task is to be PERFORMED in the simulator.
- A LBLOCA has occurred and both LHSI pumps are inoperable. 1-ECA-1.1, Loss of Emergency Coolant Recirculation, has been performed up to step 8.

Standards

- 1-ECA-1.1, Loss of Emergency Coolant Recirculation, steps 8 and 9 are complete which result in 1-RS-P-2B in service to 1-RS-E-1D (with service water aligned) and 1-CS-P-1A and 1B in service.

Initiating Cues

- 1-ECA-1.1 step 8.
- Shift Manager direction

Terminating Cues

1-ECA-1.1 steps 8 and 9 complete.

Procedures

- 1-ECA-1.1, Loss of Emergency Coolant Recirculation.

Tools and Equipment

- None

Safety Considerations

- None

Simulator Setup

- Call up 100% power IC and initialize (or IC-316).
- Enter the following malfunctions:
 - RS1001- TRN A HI HI CLS FAILS TO ACTIVATE- INSERT
 - RS1002- TRN B HI HI CLS FAILS TO ACTIVATE- INSERT
 - RC0102- RCS COLD LEG B PIPE RUPTURE- INSERT
 - RS0702- LOSS OF INSIDE RECIRC SPR PP 1B – Trigger 4
 - SI0901- LHSI PUMP SI-P-1A OVERCURRENT TRIP- Trigger 1
 - SI0902- LHSI PUMP SI-P-1B OVERCURRENT TRIP- Trigger 1
- Setup the following event trigger- Event action- rsp1b_amp>0.1 – Event 4
- Set up the following switch override- MOVSW104A_OPEN- OFF – INSERT
- Set up the following MOV override – SWMOV105C_RACKIN – set to RACKOUT and INSERT.
- Place the simulator in RUN and perform 1-E-0 steps, then transition to 1-E-1 and perform steps 1-18- on step 18 insert trigger 1 and transition to 1-ECA-1.1. Do not worry about stopping unloaded EDGs in E-1.
- Start 1-CS-P-1A and open 1-CS-MOV-101A/B and 1-CS-MOV-102A
- Ensure containment sump level is >4'.

Initiating Cues

- 1-ECA-1.1, Loss of Emergency Coolant Recirculation, step 8.
- Shift Manager direction

Directions to the Applicant

- I am the Shift Manager. A LOCA has occurred on Unit 1. Hi-Hi CLS failed to activate and both LHSI pumps have tripped. The team is performing 1-ECA-1.1, Loss of Emergency Coolant Recirculation, and is currently at step 8.
- Here's a copy of 1-ECA-1.1, steps 8 and 9. I need you to align Recirc Spray and Containment Spray in accordance with 1-ECA-1.1, steps 8 and 9.
- When you finish the actions necessary to accomplish this, please inform me.

Notes

PERFORMANCE CHECKLIST

Notes to the Evaluator

- Task critical elements are bolded and noted at the end of the step as CRITICAL STEP.
- *An additional instructor may be needed to silence and acknowledge alarms for the examinee.*
- **START TIME:**

<p>STEP 1:</p> <p>CAUTION AND NOTE PRIOR TO STEP 8</p> <p>CAUTION: Operation of an OSRS pump without the associated CS pump could cause cavitation as indicated by fluctuating amperage.</p> <p>NOTE: If CLS can NOT be reset, local breaker operation will be required to stop CS and ISRS pumps.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Acknowledges caution and note. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2:</p> <p>STEP 8a - Check for EITHER of the following:</p> <ul style="list-style-type: none"> • Any CS pump - RUNNING OR REQUIRED OR • RWST level - LESS THAN 20% <p>STANDARD:</p> <ul style="list-style-type: none"> • Observes 1-CS-P-1A running and continues to substep b. <p>EVALUATOR'S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 3:</p> <p>Step 8b – Verify CTMT sump level – GREATER THAN 4.0 ft.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Verifies containment sump level >4'. <p>EVALUATOR'S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 4:</p> <p>Step 8c - Verify SW aligned to at least two RS HXs</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Observes that service water is not aligned to ANY RS HXs and goes to step 8c RNO. <p>EVALUATOR'S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 5:</p> <p>Step 8c RNO - Align SW to at least two RS HXs.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Opens 1-SW-MOV-103A– either this valve or 103B must be opened- one valve must be open as a critical step. • Opens 1-SW-MOV-103B- either this valve or 103A must be opened- one valve must be open as a critical step. • Opens 1-SW-MOV-103C. • Opens 1-SW-MOV-103D. • Opens 1-SW-MOV-104A – Determines that valve will not open • Opens 1-SW-MOV-104B. • Opens 1-SW-MOV-104C. • Opens 1-SW-MOV-104D – This is a critical step. • Opens 1-SW-MOV-105A. • Opens 1-SW-MOV-105B. • Opens 1-SW-MOV-105C – Determines that valve will not open • Opens 1-SW-MOV-105D – This is a critical step. <p>EVALUATOR’S NOTE: N/A</p> <p>BOOTH NOTE:</p> <ul style="list-style-type: none"> • If asked: Trainee may dispatch operator to investigate supply breaker to 1-SW-MOV-104A Report time compression has occurred and there are no abnormal indication on 1-SW-MOV-104A (1H1-2N-7B) supply breaker. • If asked: Trainee may dispatch operator to investigate supply breaker for 1-SW-MOV-105C Report time compression has occurred and that the supply breaker (1H1-2N-8C) has tripped. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
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<p>STEP 6:</p> <p>Step 8d – Start RS pumps associated with aligned RS HXs</p> <p>STANDARD:</p> <ul style="list-style-type: none"> • Trainee starts 1-RS-P-1B (“B” RS HX) • Trainee observes that 1-RS-P-1B tripped and continues. • Trainee starts 1-RS-P-2B (“D” RS HX) - This is a critical step. <p>EVALUATOR’S NOTE: N/A</p> <p>BOOTH NOTE: If directed to investigate breaker for 1-RS-P-1B (14J4), report that breaker is tripped as indicated by a ‘Bell Lockout’.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 7:</p> <p>CAUTIONS PRIOR TO STEP 9</p> <p>CAUTION:</p> <ul style="list-style-type: none"> • CHG and LHSI pumps taking suction from the RWST must be stopped when level decreases to 6%. • CS pumps taking suction from the RWST must be stopped when level decreases to 3%. <p>STANDARD:</p> <ul style="list-style-type: none"> • Acknowledges cautions <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 8:</p> <p>Step 9a – Determine number of CS pumps required:</p> <table border="1" data-bbox="293 394 1032 726"> <thead> <tr> <th>CONTAINMENT PRESSURE</th> <th>RS PUMPS RUNNING</th> <th>CS PUMPS REQUIRED</th> </tr> </thead> <tbody> <tr> <td>GREATER THAN 60 PSIA</td> <td>-----</td> <td>2</td> </tr> <tr> <td rowspan="2">BETWEEN 14 PSIA AND 60 PSIA</td> <td>FEWER THAN 2</td> <td>2</td> </tr> <tr> <td>2 OR MORE</td> <td>1</td> </tr> <tr> <td>LESS THAN 14 PSIA</td> <td>-----</td> <td>0</td> </tr> </tbody> </table> <p>STANDARD:</p> <ul style="list-style-type: none"> Determines that containment pressure is between 14 psia and 60 psia, fewer than two RS pumps are running, and determines that 2 CS pumps are required. <p>EVALUATOR’S CUE: If asked, there are no abnormalities noted on either containment spray pump.</p> <p>COMMENTS:</p>	CONTAINMENT PRESSURE	RS PUMPS RUNNING	CS PUMPS REQUIRED	GREATER THAN 60 PSIA	-----	2	BETWEEN 14 PSIA AND 60 PSIA	FEWER THAN 2	2	2 OR MORE	1	LESS THAN 14 PSIA	-----	0	<p>_____ SAT</p> <p>_____ UNSAT</p>
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<p>STEP 9:</p> <p>Step 9b – CS pumps running - EQUAL TO NUMBER REQUIRED</p> <p>STANDARD:</p> <ul style="list-style-type: none"> Determines that 2 CS pumps are required, but only 1 currently in service. Goes to step 9 RNO. <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>														

<p>STEP 10:</p> <p>Step 9b RNO– Do the following:</p> <ol style="list-style-type: none"> 1) Manually operate CS pump(s). 2) Close associated CS pump discharge MOVs for stopped pump(s): <ul style="list-style-type: none"> • 1-CS-P-1A, 1-CS-MOV-101A and 1-CS-MOV-101B • 1-CS-P-1B, 1-CS-MOV-101C and 1-CS-MOV-101D <p>STANDARD:</p> <ul style="list-style-type: none"> • Trainee starts 1-CS-P-1B and opens 1-CS-MOV-101C and/or 1-CS-MOV-101D- this is a critical step. <p>EVALUATOR’S NOTE: N/A</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 11:</p> <p>REPORT TO SHIFT SUPERVISOR (EVALUATOR).</p> <p>STANDARD:</p> <p>Verbal status report that CS and RS have been aligned in accordance with ECA-1.1 steps 8 & 9.</p> <p>EVALUATOR’S NOTE: N/A</p> <p>STOP TIME:</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

STOP TIME:

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be performed in the simulator.
- Perform Steps 8 and 9 of 1-ECA-1.1, Loss of Emergency Coolant Recirculation, to align Recirc Spray and Containment Spray systems.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task

Initial Conditions

- A LBLOCA has occurred with the failure of Hi-Hi CLS to function and failure of both LHSI pumps. 1-ECA-1.1, Loss of Emergency Coolant Recirculation, has been performed up to step 8.

Initiating Cues

- I am the Shift Manager. A LOCA has occurred on Unit 1. Hi-Hi CLS failed to activate and both LHSI pumps have tripped. The team is performing 1-ECA-1.1, Loss of Emergency Coolant Recirculation, and is currently at step 8.
- Here's a copy of 1-ECA-1.1, steps 8 and 9. I need you to align Recirc Spray and Containment Spray in accordance with 1-ECA-1.1, steps 8 and 9.
- When you finish the actions necessary to accomplish this, please inform me.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Initial Conditions

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NUMBER 1-ECA-1.1	PROCEDURE TITLE LOSS OF EMERGENCY COOLANT RECIRCULATION	REVISION 29 PAGE 7 of 31
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p>CAUTION: Operation of an OSRS pump without the associated CS pump could cause cavitation as indicated by fluctuating amperage.</p> <p>*****</p>		
<p>NOTE: If CLS can NOT be reset, local breaker operation will be required to stop CS and ISRS pumps.</p>		
<p>8. ___ CHECK RECIRCULATION SPRAY SYSTEM:</p>	<p>a) Check for EITHER of the following:</p> <p><input type="checkbox"/> • Any CS pump - RUNNING OR REQUIRED</p> <p style="text-align: center;"><u>OR</u></p> <p><input type="checkbox"/> • RWST level - LESS THAN 20%</p> <p><input type="checkbox"/> b) Verify CTMT sump level - GREATER THAN 4.0 ft</p> <p><input type="checkbox"/> c) Verify SW aligned to at least two RS HXs</p> <p><input type="checkbox"/> d) Start RS pumps associated with aligned RS HXs</p>	<p><input type="checkbox"/> a) GO TO Step 10.</p> <p>b) Do the following:</p> <p><input type="checkbox"/> 1) Verify CLS reset. <u>IF NOT, THEN</u> reset both trains of CLS.</p> <p><input type="checkbox"/> 2) Stop RS pumps.</p> <p><input type="checkbox"/> 3) <u>WHEN</u> sump level greater than 4.0 ft, <u>THEN</u> do Steps 8c and 8d.</p> <p><input type="checkbox"/> 4) GO TO Step 9.</p> <p><input type="checkbox"/> c) Align SW to at least two RS HXs.</p>

NUMBER 1-ECA-1.1	PROCEDURE TITLE LOSS OF EMERGENCY COOLANT RECIRCULATION	REVISION 29
		PAGE 8 of 31

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