


| United States Nuclear Regulatory Commission Official Hearing Exhibit             |  |
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| In the Matter of:  | Charlissa C. Smith<br>(Denial of Senior Reactor Operator License)  |
|  | <b>ASLBP #:</b> 13-925-01-SP-BD01<br><b>Docket #:</b> 05523694<br><b>Exhibit #:</b> NRC-024-00-BD01<br><b>Admitted:</b> 7/17/2013<br><b>Rejected:</b><br><b>Other:</b> |
|  | <b>Identified:</b> 7/17/2013<br><b>Withdrawn:</b><br><b>Stricken:</b>  |

# HLP NRC EXAM SCENARIO # 1

| Facility:  | Catawba NRC Exam 2012 | Scenario No.:          | 1  | Op Test No.: | 1 |
|--|-----------------------|------------------------|--|--------------|---|
| Examiners:   | _____                 | Operators:             | SRO  | _____        |   |
|  | _____                 |                        | RO   | _____        |   |
|  | _____                 |                        | BOP  | _____        |   |
| Initial Conditions: IC# 176; Unit 1 is at 100% power, EOL. 1D RC pump is tagged out for a motor replacement.   |                       |                        |  |              |   |
| Turnover: Unit 1 is at 100% power, EOL. 1D RC pump is tagged out for a motor replacement. Decrease power per the reactivity management plan and reduce turbine load to ~85% in preparation for Turbine Control Valve movement testing. |                       |                        |  |              |   |
| Event No.  | Malf. No.             | Event Type*            | Event Description  |              |   |
| 1  | ---                   | R-RO<br>N-SRO<br>N-BOP | Power reduction to 85% for Turbine Control Valve movement testing. |              |   |
| 2  | IRX003A               | C-RO<br>C-SRO          | Continuous rod motion (insertion). AP/15                           |              |   |
| 3  | RN024                 | C-BOP<br>TS-SRO        | Loss of 2A RN pump (Nuclear Service Water). AP/20                  |              |   |
| 4  | NC007F                | C-BOP<br>TS-SRO        | Pressurizer PORV 1NC-34A fails open. AP/11                         |              |   |
| 5  | SGL007B               | C-RO<br>C-SRO          | 1CF-37 (1B S/G Feed Reg Vlv) fails closed (ramps in). AP/06        |              |   |
| 6  | CF005D                | C-ALL                  | Feedline leak on 1D S/G (ramp). AP/28                              |              |   |
| 7  | CF005D                | M-ALL                  | Feedline break inside containment on 1D S/G. (Full severity)       |              |   |
| 8  | NV-047A               | C-BOP<br>C-SRO         | 1NV-253B (NV Pump suction from FWST) fails to auto open.           |              |   |
| 9  | IRX015                | C-RO<br>C-SRO          | Rod L13 does not fully insert upon reactor trip.                   |              |   |
|  |                       |                        |  |              |   |
|  |                       |                        |  |              |   |
|  |                       |                        |  |              |   |
| * (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor   |                       |                        |  |              |   |

### **Scenario 1 – Summary**

Initial Condition Unit 1 is at 100% power. 1D RC Pump (Circulating Water Pump) is tagged out for a motor replacement.

Turnover:

Unit 1 is at 100% power. 1D RC Pump (Circulating Water Pump) is tagged out for a motor replacement. Decrease power per the reactivity management plan and reduce turbine load to ~85% in preparation for Turbine Control Valve movement testing.

Event 1

BOP will initiate a boration; the RO will setup the turbine controls and begin a turbine load reduction to ~85%.

Event 2

Control rods will begin inserting continuously. The RO is required to take rod control to Manual. This action will successfully terminate the rod insertion. AP/15 (Rod Control Malfunction) will be entered.

Event 3

(Nuclear Service Water) 2A RN Pump trips. AP/20 (Loss of Nuclear Service Water) will be entered. The BOP will manually start another RN pump (there is no auto start feature of the RN pumps for these conditions). TS evaluation by the SRO is required.

Event 4

Pressurizer PORV 1NC-34A fails open. The BOP will manually close the block valve to isolate the leak. TS evaluation by the SRO is required. AP/11 (Pressurizer Pressure Anomalies) will be entered.

Event 5

1CF-37 (1B S/G Feed Reg Vlv) fails closed (ramps closed). This condition requires the RO to take manual control of the feed reg valve to maintain 1B S/G level. AP/06 (Loss of SG Feedwater) will be entered.

Event 6

A feedwater line break inside containment on 1D S/G ramps in to allow the applicants time to discuss containment pressure increasing, and other plant conditions. AP/28 (Secondary Steam Leak) will initially be entered, but the crew will soon recognize the need to manually trip the reactor.

Event 7

The feedwater line break inside containment on 1D S/G increases to full severity.

Event 8

1NV-253B (Charging Pump suction from FWST) fails to auto open on the SI signal. The BOP will manually open this valve due to failed automatic action.

Event 9

Control rod L13 does not fully insert upon the reactor trip. The RO is required to open the reactor trip breakers.

**Critical Task 1 – Close the block valve upstream of the stuck open PZR PORV.**

**Critical Task 2 - Isolate the faulted SG before transition out of E-2.**

## EXERCISE GUIDE WORKSHEET

### 1. INITIAL CONDITIONS:

1.1 Reset to IC 176

**START TIME:** \_\_\_\_\_

| ✓ | ✓ | Trigger | Instructor Action   | Final    | Delay | Ramp  | Delete In | Event |  |
|---|---|---------|---|----------|-------|-------|-----------|-------|--|
|   |   | n/a     | MAL-IRX003A (UNCONTROLLED ROD INSERTION)                      | AUTO     |       |       |           | 2     |  |
|   |   | 1       | MAL-OV0797B (1REDJ5040 RODS IN DEMAND fail to FALSE/TRUE)     | TRUE     |       |       |           | 2     |  |
|   |   | 3       | LOA-RN024 (U2 RN PMP 2A OVER-CURRENT)                         | TRIP     |       |       |           | 3     |  |
|   |   | 5       | VLV-NC007F (NC34A PZR PORV FAIL TO POSITION)                  | 1        |       |       |           | 4     |  |
|   |   | 7       | MAL-SGL005B (S/G B HI PWR LVL CONTROLLER FAILURE)             | 100      |       | 2 MIN |           | 5     |  |
|   |   | 11      | MAL-CF005D (CF LINE BRK INSIDE CONTAINMENT S/G D)             | 7.5e+5   |       | 2 MIN |           | 6     |  |
|   |   | 12      | MAL-CF005D (CF LINE BRK INSIDE CONTAINMENT S/G D)             | 22e+6    |       |       |           | 7     |  |
|   |   | n/a     | VLV-NV047A (NV253B NV PUMPS SUCT FROM FWST FAIL AUTO ACTIONS) |          |       |       |           | 8     |  |
|   |   | n/a     | MAL-IRX015L13 (STUCK ROD L13 ON RX TRIP)                      | 7        |       |       |           | 9     |  |
|   |   | n/a     | LOA-RC068 (RACKOUT RC PMP1D)                                  | RACK OUT |       |       |           |       |  |
|   |   |         | Ensure TRIGGER 12 = x01o063g                                  |          |       |       |           |       |  |
|   |   |         |   |          |       |       |           |       |  |
|   |   |         |   |          |       |       |           |       |  |
|   |   |         |   |          |       |       |           |       |  |

2. SIMULATOR BRIEFING

2.1 Control Room Assignments:

| Position | Name |
|----------|------|
| CRS      |      |
| RO       |      |
| BOP      |      |

2.2 Give a copy of Attachment 2 (Shift Turnover Information) to the CRS.

3. EXERCISE PRESENTATION

3.1 Familiarization Period

A. Allow examinees time to familiarize themselves with Control Board alignments.

3.2 **Scenario EVENT 1**, decrease reactor power to 85%

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>IF</b> the SOC is called to be informed of the power decrease, <b>REPEAT</b> the information. |

3.3 **Scenario EVENT 2**, Continuous rod motion

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>WHEN directed by the lead examiner, THEN INSERT SIMULATOR Trigger 1</b> to give the control rods a signal to start stepping in. |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> SWM is called to investigate the problem with the control rods, <b>REPEAT</b> back the information. |

3.4 **Scenario EVENT 3**, 2A RN Pump trip on overcurrent

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>WHEN directed by the lead examiner, THEN INSERT SIMULATOR Trigger 3</b> to trip the 2A RN Pump, on overcurrent. |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> SWM is called to investigate the problem with the 2A RN Pump, <b>REPEAT</b> back the information. |

|   |  |
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| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>IF</b> Environmental Chemistry is called, <b>REPEAT</b> back the information. |

3.5 Scenario EVENT 4, 1N-34A (PZR PORV) fails open

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>WHEN</b> directed by the lead examiner, <b>THEN INSERT SIMULATOR Trigger 5</b> to fail open 1N-34A (PZR PORV). |

3.6 Scenario EVENT 5, 1CF-37 (1B S/G Feed Reg Vlv) fails closed

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| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>WHEN</b> directed by the lead examiner, <b>THEN INSERT SIMULATOR Trigger 7</b> to fail 1CF-37 (S/G B Feed Reg Vlv) closed. |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> SWM is called to investigate the problem with 1CF-37, <b>REPEAT</b> back the information. |

3.7 Scenario EVENT 6, Feed line leak inside containment on 1D S/G.

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|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>WHEN</b> directed by the lead examiner, <b>THEN INSERT SIMULATOR Trigger 11</b> to initiate a feed line leak on the 1D S/G. |

3.8 Scenario EVENTS 7, 8, and 9, Feed line break inside containment on 1D S/G.

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|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> operator is dispatched to secure all ice condenser air handling units, <b>REPEAT</b> back the information |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> operator is dispatched to place containment hydrogen analyzers in service, <b>REPEAT</b> back the information |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> Secondary Chemistry is notified to sample all S/Gs for activity, <b>REPEAT</b> the order. |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> RP is contacted to frisk the cation columns for activity, <b>REPEAT</b> back the order. |

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| <p><b>NOTE TO EVALUATOR: Crew will begin with a power decrease. BOP will perform a boration per OP/1/6150/009, Enclosure 4.2. Amount of dilution will be determined by the power decrease plan. The RO will input turbine target data. These two evolutions may be performed concurrently. Initial conditions are complete. A reactivity management brief will be performed during turnover. Step 3.1 is complete.</b></p> |     |  |
|  | BOP | Perform a boration.  |
|  | RO  | Input target into the main turbine control panel.  |
| <p><b>NOTE TO EVALUATOR: The following actions are taken from OP/1/6150/009, Boron Concentration Control, Enclosure 4.2 (Boration).</b></p>  |     |  |
|  | BOP | 3.2 Ensure the following valve control switches in "AUTO": <ul style="list-style-type: none"> <li>• 1NV-238A (B/A To Blender Ctrl Vlv)</li> <li>• 1NV-186A (B/A Blender Otlt To VCT Otlt)</li> </ul> |
|  | BOP | 3.3 Ensure 1NV-238A (B/A Xfer Pmp To Blender Ctrl) controller in auto.   |
|  | BOP | 3.4 Ensure at least one boric acid transfer pump is in "AUTO" or "ON".   |
|  | BOP | 3.5 Record the desired volume of boric acid to be added.<br>_____ gallons  |
|  | BOP | 3.6 Adjust the boric acid counter to the desired volume of boric acid to be added. (R.M.)  |
|  | BOP | 3.7 IF the blender is set up for automatic makeup per Enclosure 4.1 (Automatic Makeup), record the setpoint of the controller for 1NV-238A (B/A Xfer Pmp To Blender Ctrl). _____ gpm                 |
|  | BOP | 3.8 Place the "NC MAKEUP MODE SELECT" switch in "BORATE".  |
| <p><b>NOTE: Boric Acid flow rates &gt; 32 gpm may result in a boric acid flow deviation annunciator.</b></p>   |     |  |
|  | BOP | 3.9 Adjust the controller for 1NV-238A (B/A Xfer Pmp To Blender Ctrl) to the desired flow.   |
| <p><b>NOTE TO EVALUATOR: Step 3.10 will be N/A'd</b></p>   |     |  |
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|  | BOP | <p>3.11 <b>IF AT ANY TIME</b> it is desired to divert letdown to the RHT manually operate 1NV-172A (3-Way Divert To VCT-RHT) as follows:</p> <p>3.11.1 Place the control switch for 1NV-172A (3-Way Divert To VCT-RHT) to the "RHT" position.</p> <p>3.11.2 Ensure VCT level is monitored continuously while diverting to the RHT.</p> <p><b>NOTE:</b> Procedure may continue while performing the following step.</p> <p>3.11.3 <b>WHEN</b> desired VCT level is reached return 1NV-172A (3-Way Divert To VCTRHT) to auto as follows:</p> <p>3.11.3.1 Place the control switch for 1NV-172A (3-Way Divert To VCTRHT) in the "VCT" position.</p> <p>3.11.3.2 Place the control switch for 1NV-172A (3-Way Divert To VCTRHT) in the "AUTO" position.</p> |
|  | BOP | <p>3.12 <b>IF AT ANY TIME</b> during the makeup it becomes necessary to change the makeup flow rate, adjust the setpoint for 1NV-238A (B/A Xfer Pmp To Blender Ctrl) as necessary to achieve the desired flow.</p>  |
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|  | BOP | <p>3.13 <b>IF AT ANY TIME</b> while boration is in progress it becomes necessary to stop the boration, perform the following:</p> <p>3.13.1 Place the "NC MAKEUP CONTROL" switch to the "STOP" position.</p> <p>3.13.2 Ensure the following valves close: (R.M.)</p> <ul style="list-style-type: none"> <li>• 1NV-238A (B/A To Blender Ctrl Vlv)</li> <li>• 1NV-186A (B/A Blender Otlt To VCT Otlt)</li> </ul> <p>3.13.3 Record boric acid volume added as indicated on the Boric Acid counter. _____ gallons</p> <p>3.13.4 <b>WHEN</b> conditions allow resuming the boration, perform the following:</p> <p>3.13.4.1 Determine remaining volume to be added by subtracting the amount previously added (Step 3.13.3) from the desired volume to be added (Step 3.5).</p> $\frac{\text{_____}}{\text{(Step 3.5)}} - \frac{\text{_____}}{\text{(Step 3.13.3)}} = \text{_____} \text{ gallons}$ <p>3.13.4.2 Adjust boric acid counter to the volume of boric acid determined in Step 3.13.4.1. (R.M.)</p> <p>3.13.4.3 Place the "NC MAKEUP CONTROL" switch in the "START" position. (R.M.)</p> <p>3.13.4.4 Verify the following:</p> <ul style="list-style-type: none"> <li>• 1NV-238A (B/A To Blender Ctrl Vlv) modulates to establish desired flow</li> <li>• 1NV-186A (B/A Blender Otlt To VCT Otlt) opens</li> </ul> <p>3.13.4.5 <b>IF</b> in "AUTO", verify the boric acid pump starts.</p> |
|  | BOP | <p>3.14 <b>WHILE</b> makeup is in progress, monitor the following for expected results:</p> <ul style="list-style-type: none"> <li>• Control rod motion</li> <li>• NC System Tavg</li> <li>• Reactor Power</li> </ul>   |
|  | BOP | <p>3.15 Place the "NC MAKEUP CONTROL" switch to the "START" position. (R.M.)</p>  |
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|   | BOP | 3.16 Verify the following: <ul style="list-style-type: none"> <li>• 1NV-238A (B/A To Blender Ctrl Vlv) modulates to establish desired flow</li> <li>• 1NV-186A (B/A Blender Otlt To VCT Otlt) opens</li> </ul>  |
|   | BOP | 3.17 <b>IF</b> in "AUTO", verify the boric acid transfer pump starts.   |
|   | BOP | 3.18 Verify proper flow by observing the Boric Acid Counter. {PIP 96-0137}  |
| <b>NOTE: The boric acid counter may count up 1 - 5 gallons after termination.</b> |     |   |
|   | BOP | 3.19 <b>WHEN</b> the desired volume of boric acid is reached on the boric acid counter, ensure the following valves close: (R.M.) <ul style="list-style-type: none"> <li>• 1NV-238A (B/A To Blender Ctrl Vlv)</li> <li>• 1NV-186A (B/A Blender Otlt To VCT Otlt)</li> </ul>   |
| <b>NOTE TO EVALUATOR: Step 3.20 will be N/A'd</b>                                 |     |   |
|   | BOP | 3.21 <b>IF</b> automatic makeup is desired, perform one of the following: <p>3.21.1 <b>IF</b> it is desired to change the blender outlet boron concentration, refer to Enclosure 4.1 (Automatic Makeup).</p> <p>OR</p> <p>3.21.2 <b>IF</b> makeup at the previous concentration is acceptable <b>AND</b> the system was previously aligned per Enclosure 4.1 (Automatic Makeup), perform the following:</p> <p>3.21.2.1 Ensure the controller for 1NV-238A (B/A Xfer Pmp To Blender Ctrl) is set to the value recorded in Step 3.7. (R.M.)</p> <p>3.21.2.2 Place the "NC MAKEUP MODE SELECT" switch in "AUTO".</p> <p>3.21.2.3 Place the "NC MAKEUP CONTROL" switch to the "START" position. (R.M.)</p> |
| <b>NOTE TO EVALUATOR: Step 3.22 will be N/A'd</b>                                 |     |   |
| <b>END OF BORATION</b>  |     |   |
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| NOTE TO EVALUATOR: The following steps are from OP/1/B/6300/001, Turbine Generator, Enclosure 4.2 (Load Changing) starting at step 3.2.2. |    |   |
|---|----|---|
|   | RO | 3.2.2 Decrease turbine generator load by performing the following:<br>3.2.2.1 Select "LOAD RATE" and verify it illuminates.<br>3.2.2.2 Input the desired load rate.<br>3.2.2.3 Select "ENTER" and verify "LOAD RATE" goes dark<br>3.2.2.4 Select "TARGET" and verify it illuminates.<br>3.2.2.5 Input the desired load target.<br>3.2.2.6 Select "ENTER" and verify "TARGET" goes dark.<br>3.2.2.7 Verify new load target appears on Target Display.<br>3.2.2.8 Select "GO" and verify it illuminates to start load decrease.<br>3.2.2.9 Coordinate with Secondary Chemistry to adjust S/G blowdown flowrates to obtain maximum blowdown for the appropriate load |
| <b>END OF PREPARATION FOR POWER DECREASE ON THE TURBINE PANEL.</b>  |    |   |
| <b>Booth Operator will insert Trigger 1 for EVENT 2 at discretion of lead examiner.</b>   |    |   |
| <b>END OF EVENT 1</b>   |    |   |
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| <b>EVENT 2</b>   |           |  |
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| Indications: An audible clicking noise will be heard as the control rods begin to insert without a demand signal present.            |           |  |
|  | RO        | Recognize rod motion without demand and place the "CRD BANK SELECT" switch in MAN.   |
| <b>NOTE TO EVALUATOR: The following steps are from AP/1/A/5500/015, Rod Control Malfunctions, Case II (Continuous Rod Movement).</b> |           |  |
|  | RO        | <b>1. Ensure "CRD BANK SELECT" switch - IN MANUAL.</b>   |
|  | RO        | <b>2. Verify all rod motion - STOPS.</b>   |
| <b>NOTE For T-Ref failures, T-Ref will need to be determined for current power level.</b>  |           |  |
|  | RO        | <b>3. Manually adjust control rods as necessary to maintain T-Avg within 1°F of T-Ref</b>  |
|  | BOP or RO | <b>4. Verify the following channels - NORMAL FOR EXISTING PLANT CONDITIONS:</b> <ul style="list-style-type: none"> <li>• NC Loop A T-Avg</li> <li>• NC Loop B T-Avg</li> <li>• NC Loop C T-Avg</li> <li>• NC Loop D T-Avg</li> </ul>   |
|  | BOP or RO | <b>5. Determine and correct cause of continuous rod movement.</b>  |
|  | SRO       | <b>6. Ensure compliance with appropriate Tech Specs:</b> <ul style="list-style-type: none"> <li>• 3.1.1 (Shutdown Margin (SDM))</li> <li>• 3.1.4 (Rod Group Alignment Limits)</li> <li>• 3.1.5 (Shutdown Bank Insertion Limits)</li> <li>• 3.1.6 (Control Bank Insertion Limits)</li> <li>• 3.3.1 (Reactor Trip Instrumentation)</li> <li>• 3.3.2 (ESFAS Instrumentation)</li> <li>• 3.4.2 (RCS Minimum Temperature for Criticality).</li> </ul> |
| <b>NOTE TO EVALUATOR: The SRO will determine that no Tech Spec entries are required.</b>   |           |  |
| <b>Booth Operator will insert Trigger 3 for EVENT 3 at discretion of lead examiner.</b>  |           |  |
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|                       | SRO | <b>7. Determine required notifications:</b> <ul style="list-style-type: none"> <li>• <b>REFER TO</b> RP/0/A/5000/001 (Classification Of Emergency)</li> <li>• <b>REFER TO</b> RP/0/B/5000/013 (NRC Notification Requirements).</li> </ul>   |
|                       |     | <b>8. WHEN rod control problem is repaired, THEN perform the following:</b> <ol style="list-style-type: none"> <li>a. Ensure T-Avg - WITHIN 1°F OF T-REF.</li> <li>b. <b>WHEN</b> desired, <b>THEN</b> place control rods in "AUTO".</li> <li>c. Ensure steam dumps - IN DESIRED MODE FOR EXISTING PLANT CONDITIONS.</li> </ol> |
|                       | SRO | <b>9. Determine long term plant status. RETURN TO procedure in effect.</b>  |
| <b>END OF EVENT 2</b> |     |   |
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| <b>EVENT 3</b>  |            |  |
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| Indications: 1AD-12, A/2 'RN ESSENTIAL HDR A PRESSURE LO'<br>1AD-12, A/5 'RN ESSENTIAL HDR B PRESSURE LO'                         |            |  |
| <b>NOTE TO EVALUATOR: The following steps are from AP/0/A/5500/020, Loss of Nuclear Service Water, Case I (Loss of RN Train).</b> |            |  |
|   | BOP        | <b>1. Start idle RN pump(s) as required.</b>   |
|   | SRO        | <b>2. Ensure Unit 1 and Unit 2 OATC monitors Enclosure 1 (Foldout Page).</b>   |
|   | BOP or SRO | <b>3. Verify RN System - IN NORMAL DUAL SUPPLY HEADER ALIGNMENT.</b>   |
|   | BOP        | <b>4. Verify each operating RN pump discharge flow - GREATER THAN 8,600 GPM.</b>   |
|   | BOP        | <b>5. Verify each operating RN pump discharge flow - LESS THAN 23,000 GPM.</b>   |
|   | BOP        | <b>6. Ensure RN pumps - IN OPERATION AS NEEDED.</b>  |
|   | BOP        | <b>7. Ensure proper alignment of RN to KC Hxs as follows:</b><br>a. Verify RN - ALIGNED TO IN SERVICE KC HX(S).<br>b. Ensure KC Hx Oflt Mode switches -PROPERLY ALIGNED.                   |
|   | BOP        | <b>8. Verify each operating RN pump discharge flow - GREATER THAN 8,600 GPM.</b>   |
|   | BOP        | <b>9. Verify RN - AVAILABLE TO ALL UNIT 1 AND UNIT 2 D/G(S).</b>   |
|   | BOP        | <b>10. Determine VC/YC status as follows:</b><br><ul style="list-style-type: none"> <li>• Verify VC/YC - ALIGNED TO OPERATING RN TRAIN.</li> <li>• Verify YC Chiller - RUNNING.</li> </ul> |
|   | CREW       | <b>11. Determine and correct cause of loss of RN train.</b>  |
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|   | SRO | <p>12. <b>Ensure compliance with appropriate Tech Specs and Selected Licensee Commitments Manual:</b></p> <ul style="list-style-type: none"> <li>• SLC 16.7-6 (RN Discharge Instrumentation)</li> <li>• 3.6.5 (Containment Air Temperature)</li> <li>• 3.6.6 (Containment Spray System)</li> <li>• 3.6.17 (Containment Valve Injection Water System (CVIWS))</li> <li>• 3.7.5 (Auxiliary Feedwater (AFW) System)</li> <li>• 3.7.7 (Component Cooling Water (CCW) System)</li> <li>• 3.7.8 (Nuclear Service Water System (NSWS))</li> <li>• 3.7.10 (Control Room Area Ventilation System (CRAVS))</li> <li>• 3.7.11 (Control Room Area Chilled Water System (CRACWS))</li> <li>• 3.8.1 (A.C. Sources - Operating)</li> <li>• 3.8.2 (A.C. Sources - Shutdown).</li> </ul> |
| <p><b>NOTE TO EVALUATOR: The SRO should determine T.S. 3.7.8 Condition A should be entered.</b></p> |     |   |
| <p><b>Booth Operator will insert Trigger 5 for EVENT 4 at discretion of lead examiner.</b></p>      |     |   |
|   | SRO | <p>13. <b>Determine required notifications:</b></p> <ul style="list-style-type: none"> <li>• <b>REFER TO RP/0/A/5000/001</b>(Classification Of Emergency)</li> <li>• <b>REFER TO RP/0/B/5000/013</b> (NRC Notification Requirements)</li> </ul>   |
|   | BOP | <p>14. <b>Notify Environmental Chemistry of any RN pump shifts that have occurred.</b></p>  |
|   | SRO | <p>15. <b>Determine long term plant status. RETURN TO procedure in effect.</b></p>  |
| <p><b>END OF EVENT 3</b></p>  |     |   |
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| EVENT 4   |      |  |
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| Indications: 1AD-6, E/10 'PZR PORV DISCH HI TEMP'<br>1AD-6, F/8 'PZR LO PRESS CONTROL'<br>OAC pt C1Q0318 'VLV NC34A PZR POWER OPERATED RELIEF' - OPEN |      |  |
|   | BOP  | Attempt to close 1NC-34A (PZR PORV)  |
| <b>CRITICAL STEP</b>  | BOP  | Close 1NC-33A (PZR PORV ISOL)  |
| <b>NOTE TO EVALUATOR:</b> The following steps are from AP/1/A/5500/011, Pressurizer Pressure Anomalies, Case I (Pressurizer Pressure Decreasing).     |      |  |
|   | BOP  | 1. Verify all Pzr PORVs - CLOSED.  |
|   | BOP  | 1. RNO Perform the following:<br>a. Manually close Pzr PORV(s).  |
| <b>CRITICAL STEP</b>  | BOP  | b. IF any Pzr PORV cannot be closed, THEN:<br>1) Close the affected PORV(s) isolation valve.   |
| <b>NOTE TO EVALUATOR:</b> Step 2) of RNO does not apply.  |      |  |
| <b>NOTE</b> Control rods may withdraw on decreasing NC pressure.  |      |  |
|   | BOP  | 2. Verify Pzr spray valve(s) - CLOSED.   |
|   | BOP  | 3. Verify all Pzr heaters - ENERGIZED.   |
|   | BOP  | 4. Ensure 1NV-37A (NV Supply To Pzr Aux Spray) - CLOSED.   |
| <b>NOTE</b> Positive reactivity is inserted during an increase in NC pressure which may cause auto rod insertion.                                     |      |  |
|   | BOP  | 5. Verify NC pressure - STABLE OR INCREASING.  |
|   | CREW | 6. WHEN NC pressure is stable, THEN: <ul style="list-style-type: none"> <li>• Stabilize unit at appropriate power level.</li> <li>• Adjust the following as required to maintain T-Avg within 1°F of T-Ref:               <ul style="list-style-type: none"> <li>• Turbine load</li> <li>• Control rods</li> <li>• Boron concentration.</li> </ul> </li> </ul> |
| <b>NOTE TO EVALUATOR:</b> Step 7 does not apply.  |      |  |
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|   | SRO | <p><b>8. Ensure compliance with appropriate Tech Specs:</b></p> <ul style="list-style-type: none"> <li>• 3.3.1 (Reactor Trip System (RTS) Instrumentation)</li> <li>• 3.3.2 (Engineered Safety Features Actuation System (ESFAS) Instrumentation)</li> <li>• 3.3.3 (Post Accident Monitoring (PAM) Instrumentation)</li> <li>• 3.3.4 (Remote Shutdown System)</li> <li>• 3.4.1 (RCS Pressure, Temperature, and Flow Departure From Nucleate Boiling (DNB) Limits)</li> <li>• 3.4.4 (RCS Loops - MODES 1 and 2)</li> <li>• 3.4.5 (RCS Loops - MODE 3)</li> <li>• 3.4.6 (RCS Loops - MODE 4)</li> <li>• 3.4.9 (Pressurizer)</li> <li>• 3.4.10 (Pressurizer Safety Valves)</li> <li>• 3.4.11 (Pressurizer Power Operated Relief Valves)</li> <li>• 3.4.13 (RCS Operational Leakage).</li> </ul> |
| <p><b>NOTE TO EVALUATOR: The SRO should determine T.S. 3.4.1 (RCS Pressure, Temperature, and Flow Departure From Nucleate Boiling (DNB) Limits) Condition A, and 3.4.11 (Pressurizer Power Operated Relief Valves (PORVs)) Condition B should be entered.</b></p> |     |  |
|   | SRO | <p><b>9. Determine long term plant status. RETURN TO procedure in effect.</b></p>  |
| <p><b>END OF EVENT 4</b></p>  |     |  |
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|   | RO or BOP | <p>5. RNO <b>Perform the following for the affected S/G(s):</b></p> <ol style="list-style-type: none"> <li>a. <b>Ensure affected controller(s) – IN MANUAL.</b></li> <li>b. <b>IF AT ANY TIME</b> S/G level not on program, <b>THEN</b> adjust CF flow to obtain a slight trend in the appropriate direction.</li> <li>c. <b>IF AT ANY TIME</b> control valve adjustment is required, <b>THEN</b> attempt to maintain CF/SM D/P constant during CF control valve adjustments</li> </ol>   |
|   | RO or BOP | <p>6. <b>Verify the following:</b></p> <ul style="list-style-type: none"> <li>• S/G level(s) - STABLE</li> <li>• S/G level(s) - APPROXIMATELY AT PROGRAM</li> <li>• Malfunction - CORRECTED.</li> </ul>   |
|   | CREW      | <p>6. RNO <b>Perform the following:</b></p> <ol style="list-style-type: none"> <li>a. <b>Continue to control CF/SM D/P and S/G CF Flow rates to stabilize level in affected S/G(s) approximately at program level.</b></li> <li>b. <b>WHEN</b> all the following conditions met:           <ul style="list-style-type: none"> <li>• S/G level(s) - STABLE</li> <li>• S/G level(s) - APPROXIMATELY AT PROGRAM</li> <li>• Malfunction - CORRECTED.</li> </ul> <b>THEN GO TO</b> Step 7.         </li> <li>c. Do not continue in this procedure until all conditions met.</li> </ol> |
| <p><b>NOTE TO EVALUATOR: RNO Step 6.b will not be met during this scenario.</b></p> |           |   |
| <p><b>END OF EVENT 5</b></p>  |           |   |
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| <b>EVENT 6</b>  |            |  |
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| <b>Indications:</b> 1AD-13, F/5 'HVAC PANEL TROUBLE'<br>1AD-19, C/9 'VQ CONTAINMENT PRESSURE ALERT'<br>1AD-13, A/7 'ICE COND LOWER INLET DOORS OPEN,<br>1AD-13, A/8 'ICE BED RTT LO/HI/HI-HI TEMP'                                    |            |  |
| <b>NOTE TO EVALUATOR:</b> It is intended that the crew will make the decision to manually trip the reactor and then manually initiate safety injection based on containment pressure. When the reactor is tripped, proceed to EVENT 7 |            |  |
| <b>NOTE TO EVALUATOR:</b> The following steps are from AP/1/A/5500/028, Secondary Steam Leak  |            |  |
|   | RO and BOP | 1. <b>Monitor Enclosure 1 (Foldout Page).</b>  |
|   | RO         | 2. <b>Verify turbine - ONLINE.</b>   |
|   | RO         | 3. <b>Verify the following:</b> <ul style="list-style-type: none"> <li>• Reactor power - LESS THAN OR EQUAL TO 100% POWER</li> <li>• T-Avg - WITHIN 1.5°F OF T-Ref.</li> </ul>           |
|   | RO         | 4. <b>Verify proper reactor response as follows:</b> <ul style="list-style-type: none"> <li>• Control rods - IN AUTO AND STEPPING IN</li> <li>• P/R neutron flux - DECREASING</li> </ul> |
|   | RO         | 4. <b>RNO IF T-Avg is greater than 1.5°F higher than T-Ref, THEN insert control rods as required to maintain T-Avg within 1°F of T-Ref.</b>  |
|   | RO         | 5. <b>IF AT ANY TIME reactor power is greater than 100%, THEN perform Step 3 RNO.</b>  |
|   | BOP        | 6. <b>Verify Pzr level - STABLE OR INCREASING.</b>   |
| <b>NOTE TO EVALUATOR:</b> Depending on the speed of the crew, Pzr level may be stable.  |            |  |
|   | BOP        | 6. <b>RNO Perform the following:</b> <ol style="list-style-type: none"> <li>a. Maintain charging flow less than 180 GPM.</li> </ol>  |
|   | BOP        | 6. <b>RNO b. THROTTLE 1NV-294 (NV Pmps A&amp;B Disch Flow Ctrl) to stabilize Pzr level.</b>  |
|   | SRO        | 6. <b>RNO c. IF Pzr level is stable OR increasing, THEN GO TO Step 7.</b>  |
|   | SRO        | 7. <b>IF AT ANY TIME while in this procedure Pzr level is decreasing in an uncontrolled manner, THEN RETURN TO Step 6.</b>   |
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|   | BOP       | <p>8. <b>IF AT ANY TIME VCT level goes below 23%, THEN align NV pump suction to FWST as follows:</b></p> <p>a. OPEN the following valves:</p> <ul style="list-style-type: none"> <li>• 1NV-252A (NV Pumps Suct From FWST)</li> <li>• 1NV-253B (NV Pumps Suct From FWST).</li> </ul> <p>b. CLOSE the following valves:</p> <ul style="list-style-type: none"> <li>• 1NV-188A (VCT Otft Isol)</li> <li>• 1NV-189B (VCT Otft Isol).</li> </ul> |
|   | RO/BOP    | <p>9. <b>Attempt to identify and isolate leak as follows:</b></p> <p>a. Verify the following conditions - a. Perform the following:<br/>NORMAL:</p> <ul style="list-style-type: none"> <li>• Containment temperature</li> <li>• Containment pressure</li> <li>• Containment humidity ventilation units in low speed.</li> <li>• Containment floor &amp; equipment sump</li> </ul>   |
|   | RO        | <p>9. RNO 2. a. Perform the following:<br/>1) <b>Evacuate containment.</b></p>  |
|   | BOP       | <p>9. RNO a. 2) Perform the following:<br/>a) <b>Start all lower containment ventilation unit in low speed.</b></p>   |
|   | BOP       | <p>9. RNO a.2) b) <b>Start all upper containment ventilation units.</b></p>   |
|   | BOP       | <p>9. RNO a.2) c) <b>Place all upper and lower containment ventilation units in "MAX" cooling.</b></p>  |
|   | RO        | <p>9. RNO a. 3) <b>IF AT ANY TIME</b> containment pressure reaches 1.2 PSIG, <b>THEN</b> perform the following:<br/>a) <b>Ensure reactor tripped.</b></p>   |
|   | BOP       | <p>9. RNO a.3) b) <b>Ensure S/I initiated.</b></p>  |
|   | RO or BOP | <p>9. RNO a.3) c) <b>CLOSE the following valves:</b></p> <ul style="list-style-type: none"> <li>• <b>All MSIVs</b></li> <li>• <b>All MSIV bypass valves.</b></li> </ul>   |
|   | CREW      | <p>9. RNO a.3) d) <b>GO TO EP/1/A/5000/E-0 (Reactor Trip Or Safety Injection).</b></p>  |
| <b>TRANSITION TO EP/1/A/5000/E-0 (Reactor Trip Or Safety Injection)</b> |           |   |
| <b>END OF EVENT 6</b>   |           |   |
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|   | BOP       | 10. <b>Verify proper Phase B actuation as follows:</b><br>a. Verify Containment pressure - HAS REMAINED LESS THAN 3 PSIG   |
|   | BOP       | 10. RNO a. Perform the following:<br>1) Verify Phase B Isolation has actuated as follows:<br>a) Phase B Isolation "RESET" lights - DARK.   |
| <b>NOTE TO EVALUATOR: Step 10 RNO a.1) b) will not apply.</b> |           |  |
|   |           | c) Verify following monitor light panel lights - LIT: <ul style="list-style-type: none"> <li>• Group 1 Sp lights</li> <li>• Group 5 Sp lights</li> <li>• Group 5 St light L/11.</li> </ul>   |
| <b>NOTE TO EVALUATOR: Step 10 RNO a.1) d) will not apply.</b> |           |  |
|   | RO or BOP | 10. RNO a. 2) <b>Stop all NC pumps.</b>  |
|   | BOP       | 10. RNO a. 3) Maintain seal injection flow.  |
|   | BOP       | 10. RNO a. 4) <b>Energize H2 igniters.</b>   |
|   | RO or BOP | 10. RNO a. 5) Dispatch operator to perform the following:<br>a) Secure all ice condenser air handling units. <b>REFER TO EP/1/A/5000/G-1</b> (Generic Enclosures), Enclosure 11 (Securing All Ice Condenser Units).<br>b) Place containment H2 analyzers in service. <b>REFER TO OP/1/A/6450/010</b> (Containment Hydrogen Control Systems). |
|   | BOP       | 10. RNO a. 6) <b>WHEN</b> 9 minutes has elapsed, <b>THEN</b> verify proper VX system operation. <b>REFER TO</b> Enclosure 5 (VX System Operation).   |
|   | SRO       | 10. RNO a. 7) <b>GO TO</b> Step 11.  |
|   | RO        | 11. <b>Verify proper CA pump status as follows:</b><br>a. Motor driven CA pumps - ON.<br>b. 3 S/G N/R levels - GREATER THAN 11%.   |
|   | BOP       | 12. <b>Verify all of the following S/I pumps - ON: Perform the following for affected train(s):</b> <ul style="list-style-type: none"> <li>• NV pumps</li> <li>• ND pumps</li> <li>• NI pumps.</li> </ul>  |
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|   | BOP       | 13. <b>Verify all KC pumps - ON.</b>   |
|   | BOP       | 14. <b>Verify all Unit 1 and Unit 2 RN pumps - ON.</b>   |
|   | BOP       | 14. RNO <b>Perform the following:</b><br>a. <b>IF any Unit 2 RN pump is off, THEN start affected pump(s).</b>  |
| <b>NOTE TO EVALUATOR: The BOP will make an attempt to start the 2A RN pump, but it will not start.</b>                            |           |  |
| <b>NOTE TO EVALUATOR: Step 14 RNO b. will not apply</b>   |           |  |
|   | BOP       | 15. <b>Verify proper ventilation systems operation as follows:</b> <ul style="list-style-type: none"> <li>• <b>REFER TO</b> Enclosure 2 (Ventilation System Verification).</li> <li>• Notify Unit 2 operator to perform Enclosure 3 (Opposite Unit Ventilation Verification).</li> </ul> |
| <b>NOTE TO EVALUATOR: SRO will state that they will hand Enclosure 3 to a Unit 2 operator and set Enclosure 3 off to the side</b> |           |  |
|   | RO        | 16. <b>Verify all S/G pressures - GREATER THAN 775 PSIG.</b>   |
|   | RO        | 16. RNO <b>Perform the following:</b> <ul style="list-style-type: none"> <li>a. Verify Main Steam Isolation as follows: <ul style="list-style-type: none"> <li>• All MSIVs - CLOSED</li> <li>• All MSIV bypass valves - CLOSED</li> <li>• All S/G PORVs - CLOSED.</li> </ul> </li> </ul> |
| <b>NOTE TO EVALUATOR: Step 16 RNO b. will not apply</b>   |           |  |
|   | RO        | 17. <b>Verify proper S/I flow as follows:</b> <ul style="list-style-type: none"> <li>a. "NV S/I FLOW" - INDICATING FLOW.</li> </ul>  |
|   | RO        | b. NC pressure - LESS THAN 1620 PSIG.  |
|   | RO        | 17.b. RNO b. Perform the following: <ul style="list-style-type: none"> <li>1) Ensure ND pump miniflow valve on operating ND pump(s) - OPEN.</li> </ul>   |
| <b>NOTE TO EVALUATOR: Step 17 RNO b. 2) will not apply</b>  |           |  |
|   | SRO       | 3) <b>GO TO</b> Step 18.   |
| <b>NOTE Spent Fuel Pool parameters should be monitored within 2 hours of event.</b>   |           |  |
|   | RO or BOP | 18. <b>WHEN time and manpower permit, THEN monitor Spent Fuel Pool level and temperature. REFER TO EP/1/A/5000/G-1 (Generic Enclosures), Enclosure 1 (Unit 1 Spent Fuel Pool Monitoring).</b>  |
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|  | RO        | 19. <b>Control S/G levels as follows:</b><br>a. Verify total CA flow - GREATER THAN 450 GPM.  |
|  | RO        | b. <b>WHEN</b> at least one S/G N/R level is greater than 11% (29% ACC), <b>THEN THROTTLE</b> feed flow to maintain all S/G N/R levels between 11% (29% ACC) and 50%. |
| <b>NOTE TO EVALUATOR: ACC values will be used for the remainder of the scenario.</b>   |           |   |
|  | RO        | 20. <b>Verify all CA isolation valves - OPEN.</b>   |
|  | BOP       | 21. <b>Verify S/I equipment status based on monitor light panel - IN PROPER ALIGNMENT.</b>  |
| <b>NOTE TO EVALUATOR: If the BOP has not identified and corrected 1NV-253B (NV PUMPS SUCT FROM FWST) failure to open until this step, they will transition to the RNO and open 1NV-253B.</b> |           |   |
| <b>END OF EVENT 8</b>  |           |   |
| <b>NOTE Enclosure 4 (NC Temperature Control) shall remain in effect until subsequent procedures provide alternative NC temperature control guidance.</b>                                     |           |   |
|  | RO        | 22. <b>Control NC temperature. REFER TO Enclosure 4 (NC Temperature Control).</b>   |
|  | BOP       | 23. <b>Verify Pzr PORV and Pzr Spray Valve status as follows:</b><br>a. All Pzr PORVs - CLOSED.   |
|  | BOP       | 23. RNO a. <b>IF</b> Pzr pressure is less than 2315 PSIG, <b>THEN</b> perform the following:<br>1) CLOSE Pzr PORV(s).   |
|  | BOP       | 23 RNO a. 2) <b>IF</b> any Pzr PORV cannot be closed, <b>THEN</b> CLOSE its isolation valve.  |
| <b>NOTE TO EVALUATOR: Step 23 RNO.a.3) will not apply</b>  |           |   |
|  | BOP       | 23. b. Normal Pzr spray valves - CLOSED.  |
|  | BOP       | 23. c. At least one Pzr PORV isolation valve - OPEN.  |
|  | RO or BOP | 24. <b>Verify NC subcooling based on core exit T/Cs - GREATER THAN 0°F.</b>   |
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|  | RO or BOP | 25. <b>Verify main steamlines intact:</b> <ul style="list-style-type: none"> <li>• All S/G pressures - STABLE OR INCREASING</li> <li>• ALL S/Gs - PRESSURIZED.</li> </ul>  |
|  | CREW      | 25. RNO <b>IF pressure in any S/G is decreasing in an uncontrolled manner OR any S/G is depressurized, THEN perform the following:</b> <ol style="list-style-type: none"> <li>a. Implement EP/1/A/5000/F-0 (Critical Safety Function Status Trees).</li> <li>b. <b>GO TO</b> EP/1/A/5000/E-2 (Faulted Steam Generator Isolation).</li> </ol> |
| <b>TRANSITION TO EP/1/A/5000/E-2 (Faulted Steam Generator Isolation)</b> |           |  |
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| EP/1/A/5000/E-2 (Faulted Steam Generator Isolation) |           |   |
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|   | RO or BOP | 1. <b>Monitor Enclosure 1 (Foldout Page).</b>   |
|   | RO or BOP | 2. <b>Maintain any faulted S/G or secondary break isolated during subsequent recovery actions unless needed for NC System cooldown.</b>   |
|   | RO or BOP | 3. <b>Verify the following valves - CLOSED:</b> <ul style="list-style-type: none"> <li>• All MSIVs</li> <li>• All MSIV bypass valves.</li> </ul>  |
|   | RO or BOP | 4. <b>Verify at least one S/G pressure - STABLE OR INCREASING.</b>  |
|   | RO or BOP | 5. <b>Identify faulted S/G(s) as follows:</b> <ul style="list-style-type: none"> <li>• Verify any S/G pressure - DECREASING IN AN UNCONTROLLED MANNER</li> </ul> OR <ul style="list-style-type: none"> <li>• Verify any S/G - DEPRESSURIZED.</li> </ul>   |
|   | RO or BOP | 6. <b>Verify at least one intact S/G - AVAILABLE FOR NC SYSTEM COOLDOWN.</b>  |
| <b>CRITICAL STEP</b>                                | RO or BOP | 7. <b>Isolate all faulted S/G(s) as follows:</b> <ul style="list-style-type: none"> <li>• S/G 1D:               <ol style="list-style-type: none"> <li>a. Verify S/G 1D Feedwater Isolation status light (1SI-5) – LIT</li> <li>b. Verify S/G 1D PORV - CLOSED.</li> <li>c. <b>CLOSE the following valves:</b> <ol style="list-style-type: none"> <li>1) 1SM-74B (S/G 1D Otlt Hdr Bldwn C/V).</li> <li>2) 1CA-42B (CA Pmp B Disch To S/G 1D Isol).</li> <li>3) 1CA-38A (CA Pmp 1 Disch To S/G 1D Isol).</li> </ol> </li> <li>d. Verify the following blowdown isolation valves - CLOSED:               <ol style="list-style-type: none"> <li>1) 1BB-8A (S/G 1D Bldwn Cont Isol Insd).</li> <li>2) 1BB-147B (S/G 1D Bldwn Cont Isol Byp).</li> <li>3) 1BB-10B (S/G 1D Bldwn Cont Isol Otsd).</li> </ol> </li> </ol> </li> </ul> |
|   | RO        | 8. <b>WHEN NC T-Hots start to increase, THEN dump steam from intact S/G PORVs to stabilize NC T-Hots.</b>   |
|   | RO or BOP | 9. <b>Verify the following annunciators - DARK.</b> <ul style="list-style-type: none"> <li>• 1AD-5, H/4 "CACST LO LEVEL"</li> <li>• 1AD-8, B/1 "UST LO LEVEL".</li> </ul>   |
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|   | BOP       | <p>10. <b>Verify secondary radiation normal as follows:</b></p> <p>a. Ensure the following signals - <b>RESET:</b></p> <p>1) Phase A Containment Isolations.</p> <p>2) CA System valve control</p> <p>3) KC NC NI NM St signals.</p>  |
| <p><b>NOTE TO EVALUATOR: CA System valve control will have been previously reset by the RO in order to throttle S/G N/R levels as directed by E-0</b></p> |           |   |
|   | BOP       | <p>b. Align all S/Gs for Chemistry sampling.</p>  |
|   | RO or BOP | <p>c. Perform at least one of the following:</p> <ul style="list-style-type: none"> <li>• Notify Chemistry to sample all S/Gs for activity.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Notify RP to frisk all cation columns for activity.</li> </ul>                      |
|   | BOP       | <p>d. Verify the following EMF trip 1 lights - DARK:</p> <ul style="list-style-type: none"> <li>• 1EMF-33 (Condenser Air Ejector Exhaust)</li> <li>• 1EMF-26 (Steamline 1A)</li> <li>• 1EMF-27 (Steamline 1B)</li> <li>• 1EMF-28 (Steamline 1C)</li> <li>• 1EMF-29 (Steamline 1D).</li> </ul> |
|   | BOP       | <p>e. Verify S/G(s) fault - INSIDE CONTAINMENT.</p>   |
|   | RO or BOP | <p>f. <b>WHEN</b> activity results are reported, <b>THEN</b> verify all S/Gs indicate no activity.</p>  |
|   | RO        | <p>11. <b>Verify S/I termination criteria:</b></p> <p>a. NC subcooling based on core exit T/Cs - GREATER THAN 0°F.</p>  |
|   | RO        | <p>b. Verify secondary heat sink as follows:</p> <ul style="list-style-type: none"> <li>• Any intact S/G N/R level – GREATER THAN 11% (29% ACC)</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Total feed flow to intact S/Gs - GREATER THAN 450 GPM.</li> </ul>               |
|   | RO        | <p>c. NC pressure - STABLE OR INCREASING.</p>   |
|   | BOP       | <p>d. Pzr level - GREATER THAN 11% (30% ACC).</p>   |
|   | CREW      | <p>e. <b>GO TO</b> EP/1/A/5000/ES-1.1 (Safety Injection Termination).</p>   |
| <p><b>TRANSITION TO EP/1/A/5000/ES-1.1 (Safety Injection Termination)</b></p>   |           |   |
|   |           |   |
|   |           |   |
|   |           |   |
|   |           |   |

| <b>EP/1/A/5000/ES-1.1 (Safety Injection Termination)</b>   |            |  |
|--|------------|--|
| <b>NOTE TO EVALUATOR: The following steps are from EP/1/A/5000/ES-1.1 (Safety Injection Termination)</b> |            |  |
|  | RO and BOP | 1. <b>Monitor Enclosure 1 (Foldout Page).</b>  |
|  | BOP        | 2. <b>Reset the following:</b><br>a. ECCS.<br>b. D/G load sequencers.<br>c. Phase A.<br>d. Phase B.<br>e. <b>IF AT ANY TIME B/O occurs, THEN</b> restart S/I equipment previously on.  |
| <b>NOTE TO EVALUATOR: Phase A will have been previously reset by the BOP as directed by E-2</b>          |            |  |
|  | BOP        | 3. <b>Establish VI to Containment as follows:</b><br><ul style="list-style-type: none"> <li>• <b>Ensure 1VI-77B (VI Cont Isol) - OPEN.</b></li> <li>• Verify VI pressure - GREATER THAN 85 PSIG.</li> </ul>                      |
|  | BOP        | 4. <b>Ensure only one NV pump - ON.</b>  |
|  | RO or BOP  | 5. <b>Verify NC pressure - STABLE OR INCREASING.</b>   |
|  | BOP        | 6. <b>Verify VI pressure - GREATER THAN 50 PSIG.</b>   |
|  | BOP        | 7. <b>Isolate NV S/I flowpath as follows:</b><br>a. Verify the following valves - OPEN:<br><ul style="list-style-type: none"> <li>• 1NV-252A (NV Pumps Suct From FWST)</li> <li>• 1NV-253B (NV Pumps Suct From FWST).</li> </ul> |
|  | BOP        | b. Verify the following valves - OPEN:<br><ul style="list-style-type: none"> <li>• 1NV-203A (NV Pumps A&amp;B Recirc Isol)</li> <li>• 1NV-202B (NV Pumps A&amp;B Recirc Isol)</li> </ul>   |
|  | BOP        | c. <b>CLOSE the following valves:</b><br><ul style="list-style-type: none"> <li>• <b>1NI-9A (NV Pmp C/L Inj Isol)</b></li> <li>• <b>1NI-10B (NV Pmp C/L Inj Isol)</b></li> </ul>   |
| <b>END OF EVENT 7</b>  |            |  |
| <b>END OF SCENARIO</b>   |            |  |
|  |            |  |
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## Attachment List

|   |
|---|
| <b>ATTACHMENT 1</b> - Crew Critical Task Summary  |
| <b>ATTACHMENT 2</b> - Shift Turnover Information  |
| <b>ATTACHMENT 3</b> – OP/1/A/6150/009 Enclosure 5 (Manual Operation of the Makeup Controls) |
| <b>ATTACHMENT 4</b> – AP/1/A/5500/020 Enclosure 1 (Foldout Page)                            |
| <b>ATTACHMENT 5</b> – AP/1/A/5500/028 Enclosure 1 (Foldout Page)                            |
| <b>ATTACHMENT 6</b> – EP/1/A/5000/E-0 Enclosure 1 (Foldout Page)                            |
| <b>ATTACHMENT 7</b> – EP/1/A/5000/E-0 Enclosure 2 (Ventilation System Verification)         |
| <b>ATTACHMENT 8</b> – EP/1/A/5000/E-0 Enclosure 4 (NC Temperature Control)                  |
| <b>ATTACHMENT 9</b> – EP/1/A/5000/E-0 Enclosure 5 (VX System Operation)                     |
| <b>ATTACHMENT 10</b> – EP/1/A/5000/E-2 Enclosure 1 (Foldout Page)                           |
| <b>ATTACHMENT 11</b> – EP/1/A/5000/ES-1.1 Enclosure 1 (Foldout Page)                        |
|   |
|   |
|   |
|   |

ATTACHMENT 1

| <b>CREW CRITICAL TASK SUMMARY</b> |              |             |   |
|-----------------------------------|--------------|-------------|---|
| <b>SAT</b>                        | <b>UNSAT</b> | <b>CT #</b> | <b>CRITICAL TASK</b>                                      |
|                                   |              | C-1         | Close the block valve upstream of the stuck open PZR PORV |
|                                   |              | C-2         | Isolate the faulted SG before transition out of E-2.      |

Comments:

ATTACHMENT 2

| <b>SHIFT TURNOVER INFORMATION</b>   |                      |                  |              |
|---|----------------------|------------------|--------------|
| <b>Unit 1 Status</b>  |                      |                  |              |
| <b>Power Level</b>  | <b>Power History</b> | <b>NCS Boron</b> | <b>Xenon</b> |
| 100%  | EOL                  | 80 PPM           | per OAC      |
| <b>Controlling Procedure</b>  |                      |                  |              |
| <ul style="list-style-type: none"> <li>OP/1/A/6100/003 (Controlling Procedure for Unit Operation), Enclosure 4.3 (Unit Operation Between 85% and 100% Power). The steps through 3.15 are complete.</li> </ul>                         |                      |                  |              |
| <b>Other Information Needed to Assume the Shift</b>   |                      |                  |              |
| <ul style="list-style-type: none"> <li>1D RC Pump (Circulating Water Pump) is tagged out for a motor replacement.</li> <li>Direction for the crew is to decrease power to approx. 85 % for the Control Valve Movement Test</li> </ul> |                      |                  |              |
| <b>NEOs Available</b>   |                      |                  |              |
| Six NEOs are available as listed on the status board  |                      |                  |              |
| <b>METEOROLOGICAL CONDITIONS</b>  |                      |                  |              |
| <ul style="list-style-type: none"> <li>Upper wind direction = 315 degrees, speed = 10 mph</li> <li>Lower wind direction = 315 degrees, speed = 10.5 mph</li> <li>Forecast calls for clear skies over the next 24 hours.</li> </ul>    |                      |                  |              |



**HLP NRC EXAM  
SCENARIO # 3**

| Facility:  | Catawba NRC Exam 2012                            | Scenario No.:          | 3   | Op Test No.: | 1 |
|--|--|------------------------|---|--------------|---|
| Examiners:   | _____  | Operators:             | SRO   | _____        |   |
|  | _____  |                        | RO  | _____        |   |
|  | _____  |                        | BOP   | _____        |   |
| Initial Conditions: IC#178; Unit 1 is at 75% power, MOL. 1B LH Pump is tagged out.   |  |                        |   |              |   |
| Turnover: Unit 1 is at 75% power, MOL. 1B LH Pump is tagged out for a bearing replacement and is expected to be returned to service in approximately one hour. Direction for the crew is to increase power to 100% per the reactivity management plan. |  |                        |   |              |   |
| Event No.  | Malf. No.  | Event Type*            | Event Description   |              |   |
| 1  |  | N-BOP<br>R-RO<br>N-SRO | Begin increasing power to 100%.   |              |   |
| 2  | SM002D   | C-RO<br>TS-SRO         | 1D S/G PORV fails open. AP/28   |              |   |
| 3  | KC027F   | C-BOP<br>C-SRO         | 1KC-C37A (KC pump miniflow) valve fails open.   |              |   |
| 4  | ENB013C  | TS-SRO                 | N43 fails. AP/16  |              |   |
| 5  | IPE003A  | C-RO<br>TS-SRO         | 1NC-27 (PZR spray) fails open. AP/11  |              |   |
| 6  | SG001A   | C-ALL                  | 1A S/G tube leak. (15-300 gpm ramp) AP/10   |              |   |
| 7  | VLV-BB001<br>VLV-BB002<br>VLV-BB003<br>VLV-BB004 | C-BOP                  | S/G blowdown flow control valves fail to auto close on hi rad.  |              |   |
| 8  | SG001A   | M-ALL                  | 1A S/G tube rupture.  |              |   |
| 9  | NI004B   | C-BOP                  | NI-10B (NV Cold Leg Injection Vlv) fails to auto open.  |              |   |
| 10   | CA007C   | C-RO                   | 1CA-187 (S/G 1C CA NOZZ TEMPERING ISOL) doesn't close on feedwater isolation, but can be manually closed. |              |   |
| * (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor   |  |                        |   |              |   |

### **Scenario 3 – Summary**

#### Initial Condition

Unit 1 is at 75% power, MOL. 1B LH Pump is tagged out.

#### Turnover:

Initial Condition IC 178, Unit 1 is at 75% power, MOL. 1B LH Pump is tagged out for a bearing replacement. It is expected to be returned to service in approximately one to two hours. Direction for the crew is to begin increasing power to 100%.

#### Event 1

The BOP will setup for and begin a dilution to raise temperature. The RO will setup the turbine controls for the turbine load increase.

#### Event 2

1D S/G PORV fails open. The RO will manually close the block valve (it takes 60 seconds for this valve to close) to isolate the steam leak. AP/28 (Secondary Steam Leak) will be entered. A TS evaluation by the SRO is required.

#### Event 3

1KC-C37A (KC pump miniflow) valve fails open (Component Cooling Water system). The BOP will take manual action to close the miniflow to prevent runout damage to the operating KC pump, or start additional KC pumps.

#### Event 4

Power Range NI N43 fails. This failure requires the BOP to move to an area of the Control Room to investigate the failure. No credit is being taken for a BOP malfunction. The purpose is to ensure that the BOP is removed from the vicinity of the control board for the PZR spray valve failure (Event 6), and ensure that the RO will be required to address the spray valve failure. AP/16 (Malfunction of Nuclear Instrumentation) will be entered. A TS evaluation by the SRO is required.

#### Event 5

1NC-27 (PZR Spray Valve) fails open. Manual action by the RO is required to close the spray valve. AP/11 (Pressurizer Pressure Anomalies) will be entered. A TS evaluation by the SRO is required.

#### Event 6

A tube leak on 1A S/G begins ramping in at 0 gpm. AP/10 (Reactor Coolant Leak) will be entered.

#### Event 7

Radiation Monitor 1EMF-33 (Condenser Air Ejector Monitor) will fail to auto isolate the S/G blowdown flow control valves. The BOP is required to manually close these valves. The crew will determine that a manual reactor trip is required due to the severity level (increasing) of the tube leak.

#### Event 8

When the reactor is manually tripped, the severity of the leak will increase to a tube rupture.

#### Event 9

1NI-10B (NV Cold Leg Injection Valve) fails to auto open on the SI. The BOP will take manual action to open the valve for full injection.

Event 10

1CA-187 (S/G 1C CA NOZZ TEMPERING ISOL) doesn't close on feedwater isolation requiring operator action to manually close the valve.

**Critical task 1** – *Isolate feed/steam from ruptured S/G before a transition to ECA-3.1.*

**Critical task 2** - *Terminate S/I before water release occurs from the ruptured S/G PORV or safety.*

## EXERCISE GUIDE WORKSHEET

### 1. INITIAL CONDITIONS:

#### 1.1 Reset to IC 178

#### START TIME:

| ✓ | ✓ | Trigger | Instructor Action   | Final | Delay | Ramp  | Delete In | Event |  |
|---|---|---------|---|-------|-------|-------|-----------|-------|--|
|   |   | 1       | MAL-SM002D (S/G PORV SV1 FAILURE)                                   | 100   |       |       |           | 2     |  |
|   |   | 3       | VLV-KC027F (1KC-C37A TRAIN A RECIRC LINE ISOL VLV FAIL TO POSITION) | 1     |       |       |           | 3     |  |
|   |   | 4       | VLV-KC027F (1KC-C37A TRAIN A RECIRC LINE ISOL VLV FAIL TO POSITION) | 1     |       |       | 1 SEC     | 3     |  |
|   |   | 7       | MAL-ENB013C (P/R 43 BLOWN FUSE)                                     | INST  |       |       |           | 4     |  |
|   |   | 9       | MAL-IPE003A (PZR SPRAY VLV NC-27 FAIL, MAN CTRL)                    | 100   |       |       |           | 5     |  |
|   |   | 11      | MAL-SG001A (S/G A TUBE LEAK)  | 300   |       | 5 MIN |           | 6     |  |
|   |   | n/a     | VLV-BB001 (BB69 - S/G A BLOWDOWN CTRL VLV FAIL AUTO ACTIONS)        |       |       |       |           | 7     |  |
|   |   | n/a     | VLV-BB002 (BB73 - S/G B BLOWDOWN CTRL VLV FAIL AUTO ACTIONS)        |       |       |       |           | 7     |  |
|   |   | n/a     | VLV-BB003 (BB24 - S/G C BLOWDOWN CTRL VLV FAIL AUTO ACTIONS)        |       |       |       |           | 7     |  |
|   |   | n/a     | VLV-BB004 (BB65 - S/G BLOWDOWN CTRL VLV FAIL AUTO ACTIONS)          |       |       |       |           | 7     |  |
|   |   | n/a     | MAL-NI004B (ESS HDR ISOL VLV NI10 FAILS TO OPEN)                    |       |       |       |           | 9     |  |
|   |   | n/a     | MAL-CA007C (S/G TEMPERING VLV CA187 FAILURE)                        | OPEN  |       |       |           | 10    |  |
|   |   | 14      | MAL-CA007C (S/G TEMPERING VLV CA187 FAILURE)                        | OPEN  |       |       | 1 SEC     | 10    |  |
|   |   |         | Ensure TRIGGER 4 = x11i120c   |       |       |       |           |       |  |
|   |   |         | Ensure TRIGGER 14 = x02i122c  |       |       |       |           |       |  |
|   |   |         | Ensure TRIGGER 9 = xnpo001b   |       |       |       |           |       |  |
|   |   |         |   |       |       |       |           |       |  |

2. SIMULATOR BRIEFING

2.1 Control Room Assignments:

| Position | Name |
|----------|------|
| CRS      |      |
| RO       |      |
| BOP      |      |

2.2 Give a copy of Attachment 2 (Shift Turnover Information) to the CRS.

3. EXERCISE PRESENTATION

3.1 Familiarization Period

A. Allow examinees time to familiarize themselves with Control Board alignments.

3.2 **Scenario EVENT 1**, increase reactor power to 100%.

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>IF</b> the SOC is called to be informed of the power increase, <b>REPEAT</b> the information. |

3.3 **Scenario EVENT 2**, 1D S/G PORV fails open

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>WHEN</b> directed by the lead examiner, <b>THEN INSERT SIMULATOR Trigger 1</b> to cause 1SV-1 to fail open. |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>IF</b> SWM is called to investigate the problem with 1SV-1, <b>REPEAT</b> back the information. |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> RP is notified of the leak, <b>REPEAT</b> back the information. |

3.4 **Scenario EVENT 3**, 1KC-C37A opens

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>WHEN</b> directed by the lead examiner, <b>THEN INSERT SIMULATOR Trigger 3</b> to cause 1KC-C37A to fail open |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>IF</b> the SWM is contacted to investigate the problem with 1KC-C37A, <b>REPEAT</b> back the information. |

3.5 **Scenario EVENT 4**, N-43 blown instrument fuse.

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>WHEN</b> directed by the lead examiner, <b>THEN INSERT SIMULATOR Trigger 7</b> to cause the instrument fuse for N-43 to blow. |

3.6 **Scenario EVENT 5**, 1NC-27 fails open

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> IAE is contacted to fail bistables per model W/O #00874531, <b>REPEAT</b> back the order. |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> the SWM is contacted to investigate the problem with 1NC-27, <b>REPEAT</b> the order. |

3.7 **Scenario EVENT 6**, S/G 1A Tube Leak

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>WHEN</b> directed by the lead examiner, <b>THEN INSERT SIMULATOR Trigger 11</b> to cause a tube leak on the 1A S/G. |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> RP is notified to frisk all cation columns for activity, <b>REPEAT</b> the information and order. |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>If</b> Chemistry is notified to sample all S/Gs for activity, <b>REPEAT</b> back the information. |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>IF</b> Secondary Chemistry is notified to determine affected S/G by sampling <b>REPEAT</b> the order. |

|   |     |   |
|---|-----|---|
| <b>NOTE TO EVALUATOR:</b> Crew will begin with a power increase. BOP will perform a dilution per OP/1/6150/009, Enclosure 4.3. Amount of dilution will be determined by the power increase plan. The RO will input turbine target data. These two evolutions may be performed concurrently. Initial conditions are complete. A reactivity management brief will be performed during turnover. Step 3.1 is complete. |     |   |
|   | BOP | Perform a dilution.   |
|   | RO  | Input targets into the main turbine control panel.  |
| <b>NOTE TO EVALUATOR:</b> The CREW may decide to input targets to the main turbine prior to performing a dilution.  |     |   |
| <b>NOTE TO EVALUATOR:</b> The following actions are taken from OP/1/6150/009, Boron Concentration Control, Enclosure 4.3 (Dilution).  |     |   |
|   | BOP | 3.2 IF the blender is set for automatic makeup per Enclosure 4.1 (Automatic Makeup), record the setpoint on 1NV-242A (RMWST To B/A Blender Ctrl): _____ gpm   |
|   | BOP | 3.3 Ensure the following valve control switches in "AUTO":<br><ul style="list-style-type: none"> <li>• 1NV-242A (RMWST To B/A Blender Ctrl)</li> <li>• 1NV-181A (B/A Blender Otlft To VCT)</li> </ul> |
|   | BOP | 3.4 Ensure 1NV-242A (RMWST To B/A Blender Ctrl) controller in auto.   |
|   | BOP | 3.5 Ensure at least one reactor makeup water pump is in "AUTO" or "ON".   |
|   | BOP | 3.6 Record the desired volume of reactor makeup water to be added. _____ gallons  |
|   | BOP | 3.7 Adjust the total makeup counter to the desired volume of reactor makeup water to be added. (R.M.)   |
|   | BOP | 3.8 Place the "NC MAKEUP MODE SELECT" switch to the "DILUTE" position.  |
| <b>NOTE:</b> High letdown flow rates result in increased backpressure on the letdown line. If letdown flow is $\geq 90$ gpm, it may be desirable to reduce flow rate to 80 gpm to avoid the Rx Make-up Flow Deviation alarm and associated automatic actions.   |     |   |
|   | BOP | 3.9 Adjust the setpoint for 1NV-242A (RMWST To B/A Blender Ctrl) to the desired flow.   |
| <b>NOTE TO EVALUATOR:</b> Step 3.10 will not apply.   |     |   |
|   |     |   |
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|   |     |   |



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|--|-----|---|
|  | BOP | <p>3.11 <b>IF AT ANY TIME</b> it is desired to divert letdown to the RHT manually operate 1NV-172A (3-Way Divert To VCT-RHT) as follows:</p> <p>3.11.1 Place the control switch for 1NV-172A (3-Way Divert To VCT-RHT) to the "RHT" position.</p> <p>3.11.2 Ensure VCT level is monitored continuously while diverting to the RHT.</p> <p><b>NOTE:</b> Procedure may continue while performing the following step.</p> <p>3.11.3 <b>WHEN</b> desired VCT level is reached return 1NV-172A (3-Way Divert To VCTRHT) to auto as follows:</p> <p>3.11.3.1 Place the control switch for 1NV-172A (3-Way Divert To VCTRHT) in the "VCT" position.</p> <p>3.11.3.2 Place the control switch for 1NV-172A (3-Way Divert To VCTRHT) in the "AUTO" position.</p> |
|  | BOP | <p>3.12 <b>IF AT ANY TIME</b> during the makeup it becomes necessary to change the makeup flow rate, adjust the setpoint for 1NV-242A (RMWST To B/A Blender Ctrl) as necessary to achieve the desired flow.</p>   |
|  |     |   |
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|--|-----|---|
|  | BOP | <p>3.13 <b>IF AT ANY TIME</b> while dilution is in progress it becomes necessary to stop the dilution, perform the following:</p> <p>3.13.1 Place the "NC MAKEUP CONTROL" switch to the "STOP" position.</p> <p>3.13.2 Ensure the following valves close:</p> <ul style="list-style-type: none"> <li>• 1NV-242A (RMWST To B/A Blender Ctrl)</li> <li>• 1NV-181A (B/A Blender Otlt To VCT)</li> </ul> <p>3.13.3 <b>IF</b> in "AUTO", verify the reactor makeup water pump stops.</p> <p>3.13.4 Record reactor makeup water volume added as indicated on the total makeup counter.<br/>       _____ gallons</p> <p>3.13.5 <b>WHEN</b> conditions allow resuming the dilution, perform the following:</p> <p>3.13.5.1 Determine remaining volume to be added by subtracting the amount previously added (Step 3.13.4) from the desired volume to be added (Step 3.6).<br/>       _____ - _____ = _____ gallons<br/>       (Step 3.6) (Step 3.13.4)</p> <p>3.13.5.2 Adjust total makeup counter to the volume of reactor makeup water determined in Step 3.13.5.1. (R.M.)</p> <p>3.13.5.3 Place the "NC MAKEUP CONTROL" switch in the "START" position. (R.M.)</p> <p>3.13.5.4 Verify the following:</p> <ul style="list-style-type: none"> <li>• 1NV-242A (RMWST To B/A Blender Ctrl) modulates to establish desired flow</li> <li>• 1NV-181A (B/A Blender Otlt To VCT) opens</li> </ul> <p>3.13.5.5 <b>IF</b> in "AUTO", verify the reactor makeup water pump starts.</p> |
|  | BOP | <p>3.14 <b>WHILE</b> makeup is in progress, monitor the following for expected results:</p> <ul style="list-style-type: none"> <li>• Control rod motion</li> <li>• NC System Tavg</li> <li>• Reactor Power</li> </ul>   |
|  | BOP | <p>3.15 Place the "NC MAKEUP CONTROL" switch in the "START" position. (R.M.)</p>  |
|  |     |   |
|  |     |   |
|  |     |   |
|  |     |   |
|  |     |   |

|   |     |  |
|---|-----|--|
|   | BOP | 3.16 Verify the following: <ul style="list-style-type: none"> <li>• 1NV-242A (RMWST To B/A Blender Ctrl) modulates to establish desired flow</li> <li>• 1NV-181A (B/A Blender Otlt To VCT) opens</li> </ul>  |
|   | BOP | 3.17 <b>IF</b> in "AUTO", verify the reactor makeup water pump starts.   |
| <b>NOTE: The total makeup counter may count up 1 – 5 gallons after termination.</b> |     |  |
|   | BOP | 3.18 <b>WHEN</b> the desired volume of reactor makeup water is reached on the total makeup counter, ensure the following valves close. (R.M.) <ul style="list-style-type: none"> <li>• 1NV-242A (RMWST To B/A Blender Ctrl)</li> <li>• 1NV-181A (B/A Blender Otlt To VCT)</li> </ul>   |
|   | BOP | 3.19 <b>IF</b> automatic makeup is desired, perform one of the following: <p>3.19.1 <b>IF</b> it is desired to change the blender outlet boron concentration, refer to Enclosure 4.1 (Automatic Makeup).</p> <p>OR</p> <p>3.19.2 <b>IF</b> makeup at the previous concentration is acceptable <b>AND</b> the system was previously aligned per Enclosure 4.1 (Automatic Makeup), perform the following:</p> <p>3.19.2.1 Ensure the controller for 1NV-242A (RMWST To B/A Blender Ctrl) is set to the value recorded in Step 3.2. (R.M.)</p> <p>3.19.2.2 Place the "NC MAKEUP MODE SELECT" switch in "AUTO".</p> <p>3.19.2.3 Place the "NC MAKEUP CONTROL" switch to the "START" position. (R.M.)</p> |
| <b>NOTE TO EVALUATOR: Step 3.20 will be N/A'd</b>                                   |     |  |
| <b>END OF DILUTION</b>  |     |  |
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| <b>NOTE TO EVALUATOR: The following steps are from OP/1/B/6300/001, Turbine Generator, Enclosure 4.2 (Load Changing) starting at step 3.1.2.</b> |    |   |
|  | RO | 3.1.2 Increase turbine generator load by performing the following:<br>3.1.2.1 Select "LOAD RATE" and verify it illuminates.<br>3.1.2.2 Input the desired load rate.<br>3.1.2.3 Select "ENTER" or "OK" and verify "LOAD RATE" goes dark.<br>3.1.2.4 Select "TARGET" and verify it illuminates.<br>3.1.2.5 Input the desired load target.<br>3.1.2.6 Select "ENTER" and verify "TARGET" light goes dark.<br>3.1.2.7 Verify new load target appears on Target Display.<br>3.1.2.8 Select "GO" and verify it illuminates to start load increase.<br>3.1.2.9 Coordinate with Secondary Chemistry to adjust S/G blowdown flowrates to obtain maximum blowdown for the appropriate load. |
| <b>END OF PREPARTION FOR POWER INCREASE ON THE TURBINE PANEL.</b>  |    |   |
| <b>Booth Operator will insert Trigger 1 for EVENT 2 at discretion of lead examiner.</b>  |    |   |
| <b>END OF EVENT 1</b>  |    |   |
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| <b>EVENT 2</b>  |      |   |
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| Indications: OAC PT C1Q1524 'VLV SV1 S/G D POWER OPERATED RELIEF' – OPEN                                |      |   |
| <b>NOTE TO EVALUATOR: The CREW may choose to address the PORV per the OAC alarm response procedure.</b> |      |   |
| <b>NOTE TO EVALUATOR: The following steps are from AP/1/A/5500/028, Secondary Steam Leak</b>            |      |   |
|   | CREW | <b>1. Monitor Enclosure 1 (Foldout Page).</b>   |
|   | RO   | <b>2. Verify turbine – ONLINE.</b>  |
|   | RO   | <b>3. Verify the following:</b> <ul style="list-style-type: none"> <li>• Reactor power – LESS THAN OR EQUAL TO 100% POWER</li> <li>• T-Avg – WITHIN 1.5°F OF T-Ref.</li> </ul>  |
|   | RO   | <b>4. Verify proper reactor response as follows:</b> <ul style="list-style-type: none"> <li>• Control rods – IN AUTO AND STEPPING IN</li> <li>• P/R neutron flux – DECREASING.</li> </ul>   |
|   | RO   | <b>4. RNO IF T-Avg is greater than 1.5°F higher follows: than T-Ref, THEN insert control rods as required to maintain T-Avg within 1°F of T-Ref.</b>  |
|   | CREW | <b>5. IF AT ANY TIME reactor power is greater than 100%, THEN perform Step 3 RNO.</b>   |
|   | BOP  | <b>6. Verify Pzr level – STABLE OR INCREASING.</b>  |
|   | CREW | <b>7. IF AT ANY TIME while in this procedure Pzr level is decreasing in an uncontrolled manner, THEN RETURN TO Step 6.</b>  |
|   | BOP  | <b>8. IF AT ANY TIME VCT level goes below 23%, THEN align NV pump suction to FWST as follows:</b> <ol style="list-style-type: none"> <li>a. OPEN the following valves:           <ul style="list-style-type: none"> <li>• 1NV-252A (NV Pumps Suct From FWST)</li> <li>• 1NV-253B (NV Pumps Suct From FWST).</li> </ul> </li> <li>b. CLOSE the following valves:           <ul style="list-style-type: none"> <li>• 1NV-188A (VCT OtIt Isol)</li> <li>• 1NV-189B (VCT OtIt Isol).</li> </ul> </li> </ol> |
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|  | CREW      | <b>9. Attempt to identify and isolate leak as follows:</b><br>a. Verify the following conditions – NORMAL: <ul style="list-style-type: none"> <li>• Containment temperature</li> <li>• Containment pressure</li> <li>• Containment floor &amp; equipment sump level</li> </ul> b. Dispatch operators to locate and identify source of steam leak.   |
|  | RO        | c. Verify S/G PORVs – CLOSED.   |
|  | RO        | 9.c. RNO c. <b>IF</b> S/G pressure is less than 1090 PSIG, <b>THEN</b> perform the following:<br><b>1) CLOSE affected S/G PORV.</b><br>2) <b>IF</b> S/G PORV is still open, <b>THEN</b> perform the following:<br><b>a) CLOSE affected S/G PORV isolation valve.</b>  |
| <b>Booth Operator will insert Trigger 3 for Event 3 at discretion of lead examiner.</b>                              |           |   |
| <b>NOTE TO EVALUATOR: Step 9.c RNO c.2)b) will not apply.</b>  |           |   |
|  | RO or BOP | d. Verify condenser dump valves – CLOSED.<br>e. Verify atmospheric dump valves – CLOSED.<br>f. Verify CA PMP #1 – OFF.  |
| <b>NOTE TO EVALUATOR: The CREW should determine that the leak is isolated and that the next step does not apply.</b> |           |   |
|  | RO or BOP | g. <b>IF</b> leak is suspected to be in a doghouse, <b>THEN</b> CLOSE the following valves: <ul style="list-style-type: none"> <li>• Outside DH:             <ul style="list-style-type: none"> <li>• 1SM-77A (S/G 1A Otlt Hdr Bldwn C/V)</li> <li>• 1SM-74B (S/G 1D Otlt Hdr Bldwn C/V).</li> </ul> </li> <li>OR</li> <li>• Inside DH:             <ul style="list-style-type: none"> <li>• 1SM-76B (S/G 1B Otlt Hdr Bldwn C/V)</li> <li>• 1SM-75A (S/G 1C Otlt Hdr Bldwn C/V).</li> </ul> </li> </ul> |
|  | SRO       | <b>10. Determine required notifications:</b> <ul style="list-style-type: none"> <li>• <b>REFER TO</b> RP/0/A/5000/001 (Classification Of Emergency)</li> <li>• <b>REFER TO</b> RP/0/B/5000/013 (NRC Notification Requirements).</li> </ul>  |
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|                       | RO or<br>BOP | 11. <b>Notify RP of leak.</b>  |
|                       | CREW         | 12. <b>Verify – LEAK ISOLATED.</b>   |
|                       | SRO          | 13. <b>Determine long term plant status. RETURN TO procedure<br/>and step in effect.</b> |
| <b>END OF EVENT 2</b> |              |  |
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| <b>EVENT 3</b>   |  |  |
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| Indications:   | 1AD-9, F/5 'KC TRAIN SINGLE PUMP RUNOUT'<br>1AD-6, D/1,2,3,4 'NCP A,B,C,D MTR LOWER BRG KC OUTLET LO FLOW'<br>1AD-6, E/1,2,3,4 'NCPA,B,C,D THERMAL BARRIER KC OUTLET HI/LOW'<br>1AD-7, D/1 'SEAL WATER HX KC HI/LO/FLOW' |  |
|  | BOP  | Recognize 1KC-C37A is open.                      |
|  | BOP  | <b>CLOSE 1KC-C37A.</b>                           |
| <b>NOTE TO EVALUATOR:</b> The following step is taken from the Immediate Actions of OP/1/A/100/010 J, Annunciator Response for Panel 1AD-9, F/5 (KC TRAIN A SINGLE PUMP RUNOUT). |  |  |
|  | BOP  | 1. <b>Close 1KC-C37A (Trn 1A Miniflow Isol).</b> |
| <b>Booth Operator will insert Trigger 7 for Event 4 at discretion of lead examiner.</b>  |  |  |
| <b>END OF EVENT 3</b>  |  |  |
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| <b>EVENT 4</b>  |   |   |
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| Indications:  | 1AD-2, A/1 'P/R HI NEUTRON FLUX RATE ALERT'<br>1AD-2, A/3 'P/R HI NEUTRON FLUX HI SET POINT ALERT'<br>1AD-2, B/1 'P/R LOWER DET HI FLUX DEV OR AUTO DEFEAT'<br>1AD-2, B/2 'P/R UPPER DET HI FLUX DEV OR AUTO DEFEAT'<br>1AD-2, B/3 'COMPARATOR P/R CHANNEL DEVIATION'<br>1AD-2, B/5 'P/R HI VOLTAGE FAILURE'<br>1AD-2, E/8 ' OVER POWER ROD STOP' |   |
| <b>NOTE TO EVALUATOR: The following steps are from AP/1/A/5500/016 Malfunction of Nuclear Instrumentation System, Case IV (Power Range Malfunction)</b> |   |   |
|   | RO  | 1. <b>Verify all rod motion – STOPPED.</b>  |
|   | RO  | 2. <b>Verify 1AD-2, E/8 “OVER POWER ROD STOP” – DARK.</b>   |
|   |   | 2. <b>RNO Adjust Turbine load to maintain T-Avg at T-Ref.</b>   |
|   | RO  | 3. <b>Identify failed P/R channel:</b><br><ul style="list-style-type: none"> <li>• N-41</li> <li>OR</li> <li>• N-42</li> <li>OR</li> <li>• N-43</li> <li>OR</li> <li>• N-44.</li> </ul>   |
|   | RO  | 4. <b>Ensure unaffected channels – OPERABLE.</b>  |
|   | BOP   | 5. <b>Request IAE to place the following bistables in the tripped condition. REFER TO Model W/O #00874531:</b><br><ul style="list-style-type: none"> <li>• OT DELTA T</li> <li>• OP DELTA T.</li> </ul>   |
|   | BOP   | 6. <b>Perform the following actions at the Miscellaneous Control And Indication Panel:</b><br>a. <b>Place the appropriate “ROD STOP BYPASS” switch to the affected channel position.</b><br>b. Verify the affected nuclear overpower rod stop channel bypassed status light (1SI-19) – LIT.<br>c. <b>Place “POWER MISMATCH BYPASS” switch to the affected channel position.</b> |
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| <b>NOTE TO EVALUATOR: EVENT 5 will be initiated in the following step.</b>  |      |   |
|   | BOP  | <p>7. <b>Perform the following actions at the Detector Current Comparator panel:</b></p> <ul style="list-style-type: none"> <li>a. Place "UPPER SECTION" channel defeat switch to the affected channel.</li> <li>b. Verify the "CHANNEL DEFEAT" light for the upper section – LIT.</li> <li>c. Place "LOWER SECTION" channel defeat switch to the affected channel.</li> <li>d. Verify the "CHANNEL DEFEAT" light for the lower section – LIT.</li> </ul> |
|   | BOP  | <p>8. <b>At the Comparator And Rate panel, place the "COMPARATOR CHANNEL DEFEAT" switch to the affected channel position.</b></p>   |
|   | BOP  | <p>9. <b>De-energize the affected channel as follows:</b></p> <ul style="list-style-type: none"> <li>a. Remove the control power fuses at Power Range A drawer.</li> <li>b. Request the OSM to maintain the control power fuses under his control.</li> <li>c. Verify the affected Power Range cabinet shows no physical signs of damage.</li> </ul>  |
| <b>NOTE TO EVALUATOR: It is anticipated that the CREW will proceed to the next event, but may return to this procedure following completion of AP/1/A/5500/011.</b> |      |   |
|   | CREW | <p>10. <b>Ensure affected channel bistables are in the required state. REFER TO Enclosure 1 (P/R Bistables That Must Be Tripped).</b></p>   |
|   | RO   | <p>11. <b>Ensure operable P/R channel selected to record on NIS RECORDER.</b></p>   |
|   | RO   | <p>12. <b>Adjust control rods to maintain T-Ave at T-Ref.</b></p>   |
|   | RO   | <p>13. <b>WHEN T-avg within 1°F of T-Ref, AND auto rod control desired, THEN return control rods to auto.</b></p>   |
|   | CREW | <p>14. <b>Determine and correct cause of P/R malfunction.</b></p>   |
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|   | SRO | <p>15. <b>Ensure compliance with appropriate Tech Specs:</b></p> <ul style="list-style-type: none"> <li>• 3.2.4 (Quadrant Power Tilt Ratio (QPTR))</li> <li>• 3.3.1 (Reactor Trip System (RTS) Instrumentation).</li> </ul>                       |
| <p><b>NOTE TO EVALUATOR:</b> The SRO should determine that the following Tech Spec 3.3.1 conditions for associated functions should be entered:</p> <p>2. Power Range Neutron Flux<br/>         a. High – condition D</p> <p>3. Power Range Neutron Flux High Positive Rate – condition D</p> <p>6. Overtemperature <math>\Delta T</math> – condition E</p> <p>7. Overpower <math>\Delta T</math> – condition E</p> <p>16. Reactor Trip System Interlocks<br/>         b. Low Power Reactor Trips Block, P-7, – condition S<br/>         c. Power Range Neutron Flux, P-8, - condition S<br/>         d. Power Range Neutron Flux, P-9, - condition S<br/>         e. Power Range Neutron Flux, P-10, - condition R</p> <p style="text-align: center;">These can be covered during a follow up.</p> |     |   |
|   | SRO | <p>16. <b>Determine required notifications:</b></p> <ul style="list-style-type: none"> <li>• <b>REFER TO</b> RP/0/A/5000/001 (Classification Of Emergency)</li> <li>• <b>REFER TO</b> RP/0/B/5000/013 (NRC Notification Requirements).</li> </ul> |
|   | BOP | 17. <b>Notify Reactor Group Engineer of occurrence.</b>   |
|   | SRO | 18. <b>WHEN the affected P/R channel is repaired, THEN ensure IAE returns the channel to service.</b>   |
|   | SRO | 19. <b>Determine long term plant status. RETURN TO procedure in effect.</b>   |
| <b>END OF EVENT 4</b>   |     |   |
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| <b>EVENT 5</b>   |  |   |
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| Indications:   | OAC point C1L4455 'NORMAL SPRAY FLOW ACTIVATED'<br>1AD-6, F/8 'PZR LO PRESS CONTROL' |   |
|  | RO   | Recognizes 1NC-27 (PZR SPRAY CTRL FRM LOOP A) is open   |
|  | RO   | Verifies Pressurizer pressure is normal   |
|  | RO   | Places controller for 1NC-27 in Manual and closes 1NC-27.   |
| <b>NOTE TO EVALUATOR: The following steps are from AP/1/A/5500/011, Pressurizer Pressure Anomalies, Case I (Pressurizer Pressure Decreasing)</b> |  |   |
|  | BOP  | 1. <b>Verify all Pzr PORVs – CLOSED.</b>  |
|  | BOP  | 2. <b>Verify Pzr spray valve(s) – CLOSED.</b>   |
|  | BOP  | 2.a. RNO <b>Perform the following:</b><br>a. Manually close affected spray valve(s).  |
| <b>NOTE TO EVALUATOR: Step 2 RNO b. will not apply</b>   |  |   |
|  | BOP  | 3. <b>Verify all Pzr heaters – ENERGIZED.</b>   |
|  | BOP  | 4. <b>Ensure 1NV-37A (NV Supply To Pzr Aux Spray) – CLOSED.</b>   |
|  | BOP  | 5. <b>Verify NC pressure – STABLE OR INCREASING.</b>  |
|  | RO and BOP   | 6. <b>WHEN NC pressure is stable, THEN:</b> <ul style="list-style-type: none"> <li>• Stabilize unit at appropriate power level.</li> <li>• Adjust the following as required to maintain T-Avg within 1°F of T-Ref:               <ul style="list-style-type: none"> <li>• Turbine load</li> <li>• Control rods</li> <li>• Boron concentration.</li> </ul> </li> </ul>   |
|  | RO or BOP  | 7. <b>IF a Pzr pressure channel failed, THEN perform following:</b> <ol style="list-style-type: none"> <li>a. Verify "P-11 PZR S/I BLOCK PERMISSIVE" status light (1SI-18) in required state for unit conditions.</li> <li>b. Notify IAE to fail following bistables for affected channel per Model W/O #00874531. Bistables shall be tripped within 72 hours:               <ul style="list-style-type: none"> <li>• Pzr low pressure S/I</li> <li>• OT Delta T</li> <li>• Pzr high pressure Reactor Trip</li> <li>• Pzr low pressure Reactor Trip.</li> </ul> </li> </ol> |
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|  | BOP | <p><b>8. Ensure compliance with appropriate Tech Specs:</b></p> <ul style="list-style-type: none"> <li>• 3.3.1 (Reactor Trip System (RTS) Instrumentation)</li> <li>• 3.3.2 (Engineered Safety Features Actuation System (ESFAS) Instrumentation)</li> <li>• 3.3.3 (Post Accident Monitoring (PAM) Instrumentation)</li> <li>• 3.3.4 (Remote Shutdown System)</li> <li>• 3.4.1 (RCS Pressure, Temperature, and Flow Departure From Nucleate Boiling (DNB) Limits)</li> <li>• 3.4.4 (RCS Loops – MODES 1 and 2)</li> <li>• 3.4.5 (RCS Loops – MODE 3)</li> <li>• 3.4.6 (RCS Loops – MODE 4)</li> <li>• 3.4.9 (Pressurizer)</li> <li>• 3.4.10 (Pressurizer Safety Valves)</li> <li>• 3.4.11 (Pressurizer Power Operated Relief Valves (PORVs))</li> <li>• 3.4.13 (RCS Operational Leakage).</li> </ul> |
| <p><b>NOTE TO EVALUATOR:</b> The SRO will determine that Tech Spec 3.4.1 Condition A should be entered</p> |     |  |
|  | SRO | <p><b>9. Determine long term plant status. RETURN TO procedure in effect.</b></p>  |
| <p><b>Booth Operator will insert Trigger 11 for Event 6 at discretion of lead examiner.</b></p>            |     |  |
| <p><b>END OF EVENT 5</b></p>   |     |  |
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| <b>EVENTS 6 AND 7</b>   |            |  |
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| Indications: 1RAD-1, B/1 '1EMF33 CSAE EXHAUST HI RAD'<br>1RAD-1, B/4 '1EMF-71 S/G A LEAKAGE HI RAD'<br>1RAD-1, E/7 '1EMF-74 S/G D LEAKAGE HI RAD' |            |  |
|   | CREW       | Recognizes symptoms of a S/G tube leak   |
|   | BOP        | Performs actions of the annunciator response for 1RAD-1, B/1(1EMF CSAE EXHAUST HI RAD) and closes the BB (S/G Blowdown) flow control valves.                       |
|   | CREW       | Enter AP/1/A/5500/010, Reactor Coolant Leak, Case I (Steam Generator Tube Leak)  |
| <b>NOTE TO EVALUATOR: EVENT 7 will end when the BOP closes the BB (S/G Blowdown Flow Control Valves on 1MC-4</b>                                  |            |  |
| <b>NOTE TO EVALUATOR: The following steps are from AP/1/A/5500/010, Reactor Coolant Leak, Case I (Steam Generator Tube Leak)</b>                  |            |  |
|   | RO and BOP | 1. <b>Monitor Enclosure 1 (Case I Steam Generator Tube Leak Foldout Page).</b>   |
|   | BOP        | 2. <b>Verify Pzr level - STABLE OR INCREASING.</b>   |
|   | BOP        | 2. RNO: <b>Perform the following:</b><br>a. Maintain charging flow less than 180 GPM.<br>b. THROTTLE 1NV-294 (NV Pmps A&B Disch Flow Ctrl) to stabilize Pzr level. |
| <b>NOTE TO EVALUATOR: Crew should determine that step 2 RNO c. does not apply</b>   |            |  |
|   | BOP        | c. IF Pzr level stable OR increasing, THEN GO TO Step 3.   |
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| <p><b>NOTE TO EVALUATOR: AT some time the CREW will determine that pressurizer level cannot be maintained and will make the decision to manually trip the reactor and manually initiate safety injection per Enclosure 1, at which point the CREW will transition to EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)</b></p> |      |   |
|   | BOP  | <p>d. IF Pzr level continues to decrease, THEN perform the following:<br/>         1) Reduce letdown flow to 45 GPM as follows:<br/>         a) IF 1NV-10A (Letdn Orif 1B Otlt Cont Isol) open, THEN perform the following:<br/>         (1) Control 1NV-148 (Letdn Press Control) to establish letdown pressure between 375 - 400 PSIG.<br/>         (2) THROTTLE 1NV-849 (Letdn Flow Var Orif Ctrl) for 45 GPM letdown flow.<br/>         (3) WHEN 45 GPM letdown flow established, THEN adjust 1NV-148 (Letdn Press Control) to maintain letdown pressure at 350 PSIG.<br/>         (4) WHEN letdown pressure is stable at 350 PSIG, THEN place 1NV-148 (Letdn Press Control) in auto.</p> |
|   | BOP  | <p>2) IF Pzr level continues to decrease, THEN ensure the following valves closed:<br/>         • 1NV-10A (Letdn Orif 1B Otlt Cont Isol)<br/>         • 1NV-11A (Letdn Orif 1C Otlt Cont Isol)<br/>         • 1NV-13A (Letdn Orif 1A Otlt Cont Isol).</p>   |
| <p><b>NOTE TO EVALUATOR: Crew should determine that step 2 RNO d.3) does not apply</b></p>  |      |   |
|   | CREW | <p>4) IF Pzr level continues to decrease OR Pzr level cannot be maintained greater than 4%, THEN perform the following:<br/>         a) Trip reactor.<br/>         b) WHEN reactor tripped verified, THEN initiate S/I.<br/>         c) GO TO EP/1/A/5000/E-0 (Reactor Trip Or Safety Injection).</p>   |
| <p><b>END EVENT 6</b></p>   |      |   |
| <p><b>TRANSITION TO EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)</b></p>  |      |   |
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| EVENTS 8, 9, AND 10   |            |   |
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| <b>NOTE TO EVALUATOR: The following steps are from EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)</b> |            |   |
|   | RO and BOP | 1. <b>Monitor Enclosure 1 (Foldout Page).</b>   |
|   | RO         | 2. <b>Verify Reactor Trip: (Immediate action step)</b> <ul style="list-style-type: none"> <li>• All rod bottom lights - LIT</li> <li>• All reactor trip and bypass breakers - OPEN</li> <li>• I/R power - DECREASING.</li> </ul>                  |
|   | RO         | 3. <b>Verify Turbine Trip: (Immediate action step)</b> <ul style="list-style-type: none"> <li>• All turbine stop valves - CLOSED</li> </ul>   |
|   | BOP        | 4. <b>Verify 1ETA and 1ETB - ENERGIZED. (Immediate action step)</b>   |
|   | RO         | 5. <b>Verify S/I is actuated: (Immediate action step)</b> <ol style="list-style-type: none"> <li>a. "SAFETY INJECTION ACTUATED" status light (1SI-13) – LIT</li> <li>b. Both E/S load sequencer actuated status lights (1SI-14) - LIT.</li> </ol> |
|   | RO         | 6. <b>Announce "Unit 1 Safety Injection".</b>   |
|   | SRO        | 7. <b>Determine required notifications:</b> <ul style="list-style-type: none"> <li>• <b>REFER TO</b> RP/0/A/5000/001(Classification Of Emergency)</li> <li>• <b>REFER TO</b> RP/0/B/5000/013 (NRC Notification Requirements).</li> </ul>          |
|   | RO or BOP  | 8. <b>Verify all Feedwater Isolation status lights (1SI-5) - LIT</b>  |
|   | RO         | 8. RNO Perform the following: <ol style="list-style-type: none"> <li>a. <b>Initiate Feedwater Isolation.</b></li> <li>b. <b>IF</b> proper status light indication is not obtained, <b>THEN CLOSE valves.</b></li> </ol>                           |
| END EVENT 10  |            |   |
|   | BOP        | 9. <b>Verify Phase A Containment Isolation status as follows:</b> <ol style="list-style-type: none"> <li>a. Phase A "RESET" lights - DARK.</li> <li>b. Monitor Light Panel Group 5 St lights on energized train(s) - LIT.</li> </ol>              |
|   | BOP        | 10. <b>Verify proper Phase B actuation as follows:</b> <ol style="list-style-type: none"> <li>a. Verify Containment pressure - HAS REMAINED LESS THAN 3PSIG</li> </ol>  |
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|   | RO or BOP | b. <b>IF AT ANY TIME</b> containment pressure exceeds 3 PSIG while in this procedure, <b>THEN</b> perform Step 10.a.  |
|   | RO        | 11. <b>Verify proper CA pump status as follows:</b><br>a. Motor driven CA pumps - ON.<br>b. 3 S/G N/R levels - GREATER THAN 11%.  |
|   | BOP       | 12. <b>Verify all of the following S/I pumps - ON: Perform the following for affected train(s):</b><br>• NV pumps<br>• ND pumps<br>• NI pumps.  |
|   | BOP       | 13. <b>Verify all KC pumps - ON.</b>  |
|   | BOP       | 14. <b>Verify all Unit 1 and Unit 2 RN pumps - ON.</b>  |
|   | BOP       | 15. <b>Verify proper ventilation systems operation as follows:</b><br>• <b>REFER TO</b> Enclosure 2 (Ventilation System Verification).<br>• Notify Unit 2 operator to perform Enclosure 3 (Opposite Unit Ventilation Verification).                                   |
| <b>NOTE TO EVALUATOR: SRO will state that they will hand Enclosure 3 to a Unit 2 operator and set Enclosure 3 off to the side</b> |           |   |
|   | RO        | 16. <b>Verify all S/G pressures - GREATER THAN 775 PSIG.</b>  |
|   | RO        | 17. <b>Verify proper S/I flow as follows:</b><br>a. "NV S/I FLOW" - INDICATING FLOW.  |
|   | RO        | b. NC pressure - LESS THAN 1620 PSIG.   |
|   | RO        | 17.b. RNO b. Perform the following:<br>1) Ensure ND pump miniflow valve on operating ND pump(s) - OPEN.   |
| <b>NOTE TO EVALUATOR: Step 17 RNO b. 2) will not apply</b>  |           |   |
|   | SRO       | 3) <b>GO TO</b> Step 18.  |
| <b>NOTE Spent Fuel Pool parameters should be monitored within 2 hours of event.</b>   |           |   |
|   | RO or BOP | 18. <b>WHEN</b> time and manpower permit, <b>THEN</b> monitor Spent Fuel Pool level and temperature. <b>REFER TO EP/1/A/5000/G-1 (Generic Enclosures), Enclosure 1 (Unit 1 Spent Fuel Pool Monitoring).</b>   |
|   | RO        | 19. <b>Control S/G levels as follows:</b><br>a. Verify total CA flow - GREATER THAN 450 GPM.<br>b. <b>WHEN</b> at least one S/G N/R level is greater than 11% (29% ACC), <b>THEN THROTTLE</b> feed flow to maintain all S/G N/R levels between 11% (29% ACC) and 50%. |
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|  | RO        | 20. <b>Verify all CA isolation valves - OPEN.</b>   |
|  | BOP       | 21. <b>Verify S/I equipment status based on monitor light panel - IN PROPER ALIGNMENT.</b>  |
|  | BOP       | 21. RNO <b>Align equipment.</b>   |
| <b>END OF EVENT 9</b>  |           |   |
| <b>NOTE Enclosure 4 (NC Temperature Control) shall remain in effect until subsequent procedures provide alternative NC temperature control guidance.</b> |           |   |
|  | RO        | 22. <b>Control NC temperature. REFER TO Enclosure 4 (NC Temperature Control).</b>   |
|  | BOP       | 23. <b>Verify Pzr PORV and Pzr Spray Valve status as follows:</b><br>a. All Pzr PORVs - CLOSED.   |
|  | BOP       | 23. b. Normal Pzr spray valves - CLOSED.  |
|  | BOP       | 23. c. At least one Pzr PORV isolation valve - OPEN.  |
|  | RO or BOP | 24. <b>Verify NC subcooling based on core exit T/Cs - GREATER THAN 0°F.</b>   |
|  | RO or BOP | 25. <b>Verify main steamlines intact:</b><br><ul style="list-style-type: none"> <li>• All S/G pressures - STABLE OR INCREASING</li> <li>• ALL S/Gs - PRESSURIZED.</li> </ul>  |
|  | BOP       | 26. <b>Verify S/G tubes are intact as follows:</b><br><ul style="list-style-type: none"> <li>• Verify the following EMF trip 1 lights - DARK: <ul style="list-style-type: none"> <li>• 1EMF-33 (Condenser Air Ejector Exhaust)</li> <li>• 1EMF-26 (Steamline 1A)</li> <li>• 1EMF-27 (Steamline 1B)</li> <li>• 1EMF-28 (Steamline 1C)</li> <li>• 1EMF-29 (Steamline 1D).</li> </ul> </li> <li>• All S/G levels - STABLE OR INCREASING IN A CONTROLLED MANNER.</li> </ul> |
|  | CREW      | 26. RNO <b>IF any EMF trip 1 light is lit OR any S/G level is increasing in an uncontrolled manner, THEN concurrently:</b><br><ul style="list-style-type: none"> <li>• Implement EP/1/A/5000/F-0 (Critical Safety Function Status Trees).</li> <li>• <b>GO TO</b> EP/1/A/5000/E-3 (Steam Generator Tube Rupture).</li> </ul>  |
| <b>TRANSITION TO EP/1/A/5000/E-3 (Steam Generator Tube Rupture)</b>  |           |   |
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| NOTE TO EVALUATOR: The following actions are from EP/1/A/5000/E-3 (Steam Generator Tube Rupture). |            |   |
|---|------------|---|
|   | RO and BOP | <p><b>1. Monitor Enclosure 1 (Foldout Page).</b></p>  |
|   | CREW       | <p><b>2. Identify ruptured S/G(s) as follows:</b></p> <ul style="list-style-type: none"> <li>• S/G level - INCREASING IN AN UNCONTROLLED MANNER.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• RP determines ruptured S/G by frisking the cation columns in the CT lab.</li> </ul> <p>OR</p> <p>The following EMF trip 1 lights - LIT:</p> <ul style="list-style-type: none"> <li>• 1EMF-26 (Steamline 1A)</li> <li>• 1EMF-27 (Steamline 1B)</li> <li>• 1EMF-28 (Steamline 1C)</li> <li>• 1EMF-29 (Steamline 1D).</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• IF S/G Sampling is required to identify ruptured S/G(s), THEN:           <ol style="list-style-type: none"> <li>a. Ensure the following signals - RESET:               <ol style="list-style-type: none"> <li>1) Phase A Containment Isolations.</li> <li>2) CA System valve control.</li> <li>3) KC NC NI NM St signals.</li> </ol> </li> <li>b. Align all S/Gs for Chemistry sampling.</li> <li>c. Notify Chemistry to sample all S/Gs for activity.</li> </ol> </li> </ul> |
|   | RO         | <p><b>3. Verify at least one intact S/G - AVAILABLE FOR NC SYSTEM COOLDOWN.</b></p>   |
| CRITICAL TASK   | RO         | <p><b>4. Isolate steam flow from ruptured S/G(s) as follows:</b></p> <ol style="list-style-type: none"> <li>a. Verify all ruptured S/G(s) PORV - CLOSED.</li> <li>b. Verify S/G(s) 1B and 1C - INTACT.</li> <li>c. Isolate blowdown and steam drain on all ruptured S/G(s) as follows:           <ul style="list-style-type: none"> <li>• S/G 1A               <ol style="list-style-type: none"> <li>1) Close 1SM-77A (S/G 1A Otlt Hdr Bldwn C/V).</li> <li>2) Verify the following blowdown isolation valves - CLOSED:                   <ol style="list-style-type: none"> <li>a) 1BB-56A (S/G 1A Bldwn Cont Isol Insd).</li> <li>b) 1BB-148B (S/G 1A Bldwn Cont Isol Byp).</li> <li>c) 1BB-57B (S/G 1A Bldwn Cont Isol Otsd).</li> </ol> </li> </ol> </li> </ul> </li> </ol>  |
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| CRITICAL TASK   | RO  | <b>5. Close the following valves on all ruptured S/G(s):</b> <ul style="list-style-type: none"> <li>• MSIV</li> <li>• MSIV bypass valve.</li> </ul>  |
| CRITICAL TASK   | RO  | <b>6. Control ruptured S/G(s) level as follows:</b> <ol style="list-style-type: none"> <li>a. Verify ruptured S/G(s) N/R level - GREATER THAN 11% (29% ACC).</li> <li>b. Isolate feed flow to all ruptured S/G(s) as follows: <ul style="list-style-type: none"> <li>• <b>S/G 1A:</b> <ol style="list-style-type: none"> <li>1) CLOSE 1CA-62A (CA Pmp A Disch To S/G 1A Isol).</li> <li>2) CLOSE 1CA-66B (CA Pmp 1 Disch To S/G 1A Isol).</li> </ol> </li> </ul> </li> <li>c. <b>IF AT ANY TIME</b> ruptured S/G(s) N/R level is less than 11% (29% ACC), <b>THEN</b> perform Step 6.</li> </ol> |
|   | BOP | <b>7. Verify any NC pump - ON.</b>   |
|   | BOP | <b>8. WHEN "P-11 PZR S/I BLOCK PERMISSIVE" status light (1SI-18) is lit, THEN:</b> <ol style="list-style-type: none"> <li>a. Depress ECCS steam pressure "BLOCK" pushbuttons.</li> <li>b. Verify main steam isolation blocked status lights (1SI-13) - LIT.</li> <li>c. Maintain NC pressure less than 1955 PSIG using one of the following: <ul style="list-style-type: none"> <li>• Pzr spray</li> </ul> OR <ul style="list-style-type: none"> <li>• Pzr PORV.</li> </ul> </li> </ol>  |
| <b>NOTE</b> <ul style="list-style-type: none"> <li>• NC pump trip criteria based on NC subcooling does not apply after starting a controlled cooldown.</li> <li>• After the low steamline pressure main steam isolation signal is blocked Main Steam Isolation will occur if the high steam pressure rate setpoint is exceeded.</li> <li>• OAC graphic SMRATES to monitor S/G pressure rates can be accessed via a hot button in the center of the SM graphic.</li> </ul> |     |  |
|   | RO  | <b>9. Initiate NC System cooldown as follows:</b> <ol style="list-style-type: none"> <li>a. Verify all ruptured S/G(s) pressure - GREATER THAN 320 PSIG.</li> <li>b. Determine required core exit temperature from the table below:</li> </ol>   |
| <b>NOTE TO EVALUATOR: The SRO and BOP will use the table in step 9 to determine target core exit temperature</b>  |     |  |
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|  | RO  | <p>c. Ensure ruptured S/G(s) isolated as follows:</p> <ol style="list-style-type: none"> <li>1) Verify the following valves on all ruptured S/G(s) - CLOSED:                     <ul style="list-style-type: none"> <li>• MSIV</li> <li>• MSIV bypass valves.</li> </ul> </li> <li>2) Verify S/G PORV on ruptured S/G(s) - CLOSED OR ISOLATED.</li> </ol>  |
| <b>NOTE TO EVALUATOR: Step 9.c.3) will be N/A'd.</b> |     |  |
|  | RO  | <p>d. Verify the condenser is available as follows:</p> <ul style="list-style-type: none"> <li>• "C-9 COND AVAILABLE FOR STM DUMP" status light (1SI-18) - LIT</li> <li>• MSIV on intact S/G(s) - OPEN.</li> </ul> <p>e. Verify steam dumps - IN PRESSURE MODE.</p>  |
|  | RO  | <p>9.e. RNO e. Place steam dumps in pressure mode as follows:</p> <ol style="list-style-type: none"> <li>1) Place "STM DUMP CTRL" M/A station in manual.</li> <li>2) Adjust "STM DUMP CTRL" M/A station output to match "% STM DUMP DEMAND" (1SMP5211).</li> <li>3) <b>WHEN</b> output on the "STM DUMP CTRL" M/A station is equal to the "% STM DUMP DEMAND" (1SMP5211), <b>THEN</b> place the steam dumps in pressure mode.</li> </ol>   |
|  | RO  | <p>f. <b>WHEN</b> "P-12 LO-LO TAVG" status light (1SI-18) is lit, <b>THEN</b> place the steam dump interlock bypass switches in "BYP INTLK."</p> <p>g. Dump steam to condenser from intact S/G(s) at maximum rate while attempting to avoid a Main Steam Isolation.</p>  |
|  | BOP | <p>h. Verify main steam isolation blocked status lights (1SI-13) - LIT.</p>  |
|  | BOP | <p>9.h. RNO h. Perform the following:</p> <ol style="list-style-type: none"> <li>1) Depressurize NC System to less than 1955 PSIG using one of the following:                     <ul style="list-style-type: none"> <li>• Pzr spray</li> </ul>                     OR                     <ul style="list-style-type: none"> <li>• Pzr PORV.</li> </ul> </li> <li>2) <b>WHEN</b> "P-11 PZR S/I BLOCK PERMISSIVE" status light (1SI-18) is lit, <b>THEN</b> perform the following:                     <ol style="list-style-type: none"> <li>a) Depress ECCS steam pressure "BLOCK" pushbuttons.</li> <li>b) Verify main steam isolation blocked status lights (1SI-13) - LIT.</li> </ol> </li> <li>3) Maintain NC pressure less than 1955 PSIG.</li> </ol> |
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|  | RO        | i. <b>WHEN</b> core exit T/Cs are less than required temperature, <b>THEN</b> stabilize core exit T/Cs less than required temperature.  |
|  | RO        | 10. <b>Control intact S/G levels as follows:</b><br>a. Verify N/R level in all intact S/Gs - GREATER THAN 11% (29% ACC).<br>b. Throttle feed flow to maintain all intact S/G N/R levels between 16% (29% ACC) and 50%.  |
|  | BOP       | 11. <b>Verify Pzr PORV and isolation valve status as follows:</b><br>a. Power to all Pzr PORV isolation valves - AVAILABLE.<br>b. All Pzr PORVs - CLOSED.<br>c. At least one Pzr PORV isolation valve - OPEN.   |
|  | RO or BOP | d. <b>IF AT ANY TIME</b> a Pzr PORV opens due to high pressure while in this procedure, <b>THEN</b> perform the following:<br>1) <b>WHEN</b> Pzr pressure decreases to less than 2315 PSIG, <b>THEN</b> ensure the valve closes or is isolated.<br>2) <b>IF</b> Pzr PORV cannot be closed <b>OR</b> isolated, <b>THEN GO TO</b> EP/1/A/5000/ECA-3.1 (SGTR With Loss Of Reactor Coolant - Subcooled Recovery Desired). |
|  | BOP       | 12. <b>Reset the following:</b><br>a. ECCS.<br>b. D/G load sequencers.  |
|  | RO or BOP | c. <b>IF AT ANY TIME</b> a B/O occurs, <b>THEN</b> restart S/I equipment previously on.   |
|  | BOP       | 13. <b>Ensure the following containment isolation signals - RESET:</b><br>• Phase A<br>• Phase B.   |
|  | BOP       | 14. <b>Establish VI to containment as follows:</b><br>• Ensure 1VI-77B (VI Cont Isol) - OPEN.<br>• Verify VI pressure - GREATER THAN 85 PSIG.   |
|  | BOP       | 15. <b>Determine if ND pumps should be stoppedas follows:</b><br>a. Any ND pump - ON.<br>b. Any running ND pump suction – ALIGNED TO FWST.<br>c. NC pressure - GREATER THAN 285 PSIG.<br>d. Stop all ND pump(s) with suction aligned to FWST.<br>e. <b>IF AT ANY TIME</b> NC pressure decreases to less than 285 PSIG in an uncontrolled manner, <b>THEN</b> restart ND pumps.  |
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|   | RO        | 16. <b>Verify ruptured S/G(s) - IDENTIFIED.</b>  |
|   | RO        | 17. <b>Verify if NC System cooldown should be stopped:</b><br>a. Verify core exit T/Cs - LESS THAN REQUIRED TEMPERATURE.   |
| <b>NOTE TO EVALUATOR: At this point the required temperature may not have been reached. The crew will hold per the RNO for step 17.a.</b> |           |  |
|   | SRO       | 17.a RNO Do not continue in this procedure until core exit T/Cs are less than required temperature.  |
|   | RO        | b. <b>Stabilize core exit T/Cs - LESS THAN REQUIRED TEMPERATURE.</b>   |
|   | RO        | 18. <b>Verify ruptured S/G(s) pressure is under operator control as follows:</b><br>a. All ruptured S/G(s) pressure - STABLE OR INCREASING.<br>b. <b>IF AT ANY TIME</b> ruptured S/G(s) pressure is decreasing while in this procedure, <b>THEN</b> perform Step 18. |
|   | RO or BOP | 19. <b>Verify NC subcooling based on core exit T/Cs - GREATER THAN 20°F.</b>   |
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|   | BOP       | <p>20. <b>Depressurize NC System using PZR Spray as follows:</b></p> <p>a. Verify normal Pzr spray flow - AVAILABLE.</p> <p>b. Verify Pzr level - LESS THAN 68% (50% ACC)</p> <p>c. Depressurize NC System with maximum available spray.</p> <p>d. <b>IF AT ANY TIME</b> during this step one of the following conditions exists:</p> <ul style="list-style-type: none"> <li>• Spray valves are not effective in reducing NC pressure</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Ruptured S/G(s) NR level is approaching 83% (75% ACC).</li> </ul> <p><b>THEN GO TO</b> Step 21.</p> <p>e. Do not continue until at least one of the following conditions satisfied:</p> <ul style="list-style-type: none"> <li>• NC subcooling based on core exit T/Cs - LESS THAN 0°F</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Pzr level - GREATER THAN 68% (50% ACC)</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Both of the following:           <ul style="list-style-type: none"> <li>• NC pressure - LESS THAN RUPTURED S/G(s) PRESSURE</li> </ul> </li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Pzr level - GREATER THAN 11% (30% ACC).</li> </ul> <p>f. CLOSE the following valve(s):</p> <ol style="list-style-type: none"> <li>1) Pzr spray valves.</li> <li>2) 1NV-37A (NV Supply To Pzr Aux Spray).</li> </ol> |
|   | SRO       | g. Observe Caution prior to Step 23 and <b>GO TO</b> Step 23.  |
| <b>CAUTION S/I must be terminated when termination criteria are satisfied to prevent overfilling the ruptured S/G(s).</b> |           |  |
|   | RO or BOP | <p>23. <b>Verify S/I termination criteria as follows:</b></p> <p>a. NC subcooling based on core exit T/Cs - GREATER THAN 0°F.</p> <p>b. Verify secondary heat sink as follows:</p> <ul style="list-style-type: none"> <li>• N/R level in at least one intact S/G - GREATER THAN 11% (29% ACC)</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Total feed flow available to S/G(s) - GREATER THAN 450 GPM.</li> </ul> <p>c. NC pressure - STABLE OR INCREASING.</p> <p>d. Pzr level - GREATER THAN 11% (30% ACC).</p>   |
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|                        | BOP | <p>24. <b>Stop S/I pumps as follows:</b></p> <p>a. Stop NI pumps.</p> <p>b. Ensure only one NV pump - ON.</p>   |
| <b>CRITICAL TASK</b>   | BOP | <p>25. <b>Isolate NV S/I flowpath as follows:</b></p> <p>a. Verify the following valves - OPEN:</p> <ul style="list-style-type: none"> <li>• 1NV-252A (NV Pumps Suct From FWST)</li> <li>• 1NV-253B (NV Pumps Suct From FWST).</li> </ul> <p>b. Ensure the following valves - OPEN:</p> <ul style="list-style-type: none"> <li>• 1NV-203A (NV Pumps A&amp;B Recirc Isol)</li> <li>• 1NV-202B (NV Pmps A&amp;B Recirc Isol).</li> </ul> <p>c. Close the following valves:</p> <ul style="list-style-type: none"> <li>• 1NI-9A (NV Pmp C/L Inj Isol)</li> <li>• 1NI-10B (NV Pmp C/L Inj Isol).</li> </ul> |
| <b>END OF EVENT 8</b>  |     |   |
| <b>END OF SCENARIO</b> |     |   |
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## Attachment List

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| <b>ATTACHMENT 1</b> - Crew Critical Task Summary  |
| <b>ATTACHMENT 2</b> - Shift Turnover Information  |
| <b>ATTACHMENT 3</b> – OP/1/A/6150/009 Enclosure 5 (Manual Operation of the Makeup Controls) |
| <b>ATTACHMENT 4</b> – AP/1/A/5500/028 Enclosure 1 (Foldout Page)                            |
| <b>ATTACHMENT 5</b> – AP/1/A/5500/010 Enclosure 1 (Foldout Page)                            |
| <b>ATTACHMENT 6</b> – EP/1/A/5000/E-0 Enclosure 1 (Foldout Page)                            |
| <b>ATTACHMENT 7</b> – EP/1/A/5000/E-0 Enclosure 2 (Ventilation System Verification)         |
| <b>ATTACHMENT 8</b> – EP/1/A/5000/E-0 Enclosure 4 (NC Temperature Control)                  |
| <b>ATTACHMENT 9</b> – EP/1/A/5000/E-3 Enclosure 1 (Foldout Page)                            |
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ATTACHMENT 1

| <b>CREW CRITICAL TASK SUMMARY</b> |              |             |   |
|-----------------------------------|--------------|-------------|---|
| <b>SAT</b>                        | <b>UNSAT</b> | <b>CT #</b> | <b>CRITICAL TASK</b>  |
|                                   |              | C-1         | Isolate feed/steam from ruptured S/G before a transition to ECA3.1              |
|                                   |              | C-2         | Terminate S/I before water release occurs from the ruptured S/G PORV or safety. |

Comments:

ATTACHMENT 2

| <b>SHIFT TURNOVER INFORMATION</b>   |                      |                  |              |
|---|----------------------|------------------|--------------|
| <b>Unit 1 Status</b>  |                      |                  |              |
| <b>Power Level</b>  | <b>Power History</b> | <b>NCS Boron</b> | <b>Xenon</b> |
| 75%   | MOL                  | Per OAC          | per OAC      |
| <b>Controlling Procedure</b>  |                      |                  |              |
| <ul style="list-style-type: none"> <li>OP/1/A/6100/003 (Controlling Procedure for Unit Operation), Enclosure 4.1 (Power Increase). The steps through step 3.54 are complete.</li> </ul>   |                      |                  |              |
| <b>Other Information Needed to Assume the Shift</b>   |                      |                  |              |
| <ul style="list-style-type: none"> <li>1B LH pump is tagged out to repair a leak on the motor cooler.</li> <li>Maintenance estimates that repairs will take 1 hour to complete.</li> <li>Direction for the crew is to increase reactor power to 100% per the reactivity management plan.</li> </ul> |                      |                  |              |
| <b>NEOs Available</b>   |                      |                  |              |
| Six NEOs are available as listed on the status board  |                      |                  |              |
| <b>METEOROLOGICAL CONDITIONS</b>  |                      |                  |              |
| <ul style="list-style-type: none"> <li>Upper wind direction = 315 degrees, speed = 10 mph</li> <li>Lower wind direction = 315 degrees, speed = 10.5 mph</li> <li>Forecast calls for clear skies over the next 24 hours.</li> </ul>  |                      |                  |              |

**HLP NRC EXAM  
SCENARIO # 5**

| Facility:   | Catawba NRC Exam 2012   | Scenario No.:          | 5   | Op Test No.: | 1 |
|---|-------------------------|------------------------|---|--------------|---|
| Examiners:  | _____                   | Operators:             | SRO   | _____        |   |
|   | _____                   |                        | RO  | _____        |   |
|   | _____                   |                        | BOP   | _____        |   |
| Initial Conditions: IC#180; Unit 1 is at 100% power, MOL. 1A KF pump is tagged out.   |                         |                        |   |              |   |
| Turnover: Unit 1 is at 100% power, MOL, with 1A KF pump tagged out for breaker refurbishment. The crew direction is to reduce power to less than 50% per the reactivity management plan for removing 1A CF pump from service for maintenance on valve 1CF-6 (Recirc. Valve). York County is under a severe thunderstorm watch for the next 6 hours. |                         |                        |   |              |   |
| Event No.   | Malf. No.               | Event Type*            | Event Description   |              |   |
| 1   | ---                     | N-BOP<br>R-RO<br>N-SRO | Begin power reduction to < 50%.   |              |   |
| 2   | LOA-NV067               | C-BOP<br>TS-SRO        | 1B NV pump trips. Requires manual start of 1A NV pump. AP/12                        |              |   |
| 3   | EP003B                  | C-BOP<br>TS-SRO        | Zone A lockout. Runback initiates. AP/03  |              |   |
| 4   | IRX009                  | C-RO<br>C-SRO          | Control rods fail to auto insert during runback                                     |              |   |
| 5   | MAL-IDE003H             | C-RO<br>C-SRO          | 1SB-24 (Condenser Dump valve) fails open. AP/28                                     |              |   |
| 6   | NCP003C                 | C-BOP<br>C-SRO         | 1NC Pump C Hi-Hi vibration (30 mils). Requires reactor trip.                        |              |   |
| 7   | MAL-SM009<br>MAL-SM006E | M-ALL                  | Ruptured steam equalization header, with all MSIVs fail to close (auto and manual). |              |   |
| 8   | ISE007A/B               | C-RO                   | Feedwater auto isolation fails (both trains).                                       |              |   |
| 9   | VE001A                  | C-BOP                  | 1A VE Fan fails to start. Manual start required.                                    |              |   |
|   |                         |                        |   |              |   |
|   |                         |                        |   |              |   |
| * (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor  |                         |                        |   |              |   |

## **Scenario 5 – Summary**

### Initial Condition

Unit 1 is at 100% power, MOL. 1A KF pump is tagged out.

### Turnover:

Unit 1 is at 100% power, MOL. 1A KF pump is tagged out for breaker refurbishment. It is expected to be returned to service in approximately 2 hours. Crew direction is to reduce power to less than 50% per the reactivity management plan for removing 1A CF pump from service for maintenance on 1CF-6 (Recirc Valve). York County is under a severe thunderstorm watch for the next 6 hours.

### Event 1

The crew begins the power reduction to less than 50%. The BOP will setup for and begin boration. The RO will setup and monitor the turbine during the power reduction.

### Event 2

1B NV Pump (Charging) trips. Manual action by the BOP to start the 1A NV pump will restore charging. AP/12 (Loss of Charging or Letdown) will be entered. A TS evaluation by the SRO is required.

### Event 3

A Zone A lockout occurs, causing a turbine runback. AP/03 (Load Rejection) will be entered. For offsite power sources, a TS evaluation by the SRO is required.

### Event 4

Due to the runback rods should auto insert, but this feature will be failed, requiring the RO to manually insert rods. The control rods should be inserting automatically during the runback. The RO will monitor Tavg/Tref mismatch and recognize that the rods are not inserting, and then take manual control of the rods and insert as necessary to maintain Tavg/Tref within 1°F.

### Event 5

1SB-24 (Condenser Dump Valve) fails open. The RO is required to take manual action to close this dump valve by selecting the Steam Dump Interlock Bypass Switch to the "OFF/RESET" position.

### Event 6

Following the runback a high-high vibration will begin on the 1C NC pump. The value is 30 mils, requiring that the reactor be tripped, and then the pump be tripped. This will be timed such that the crew will have opportunity to recognize and discuss this condition, and the need to trip the reactor and the pump.

### Event 7

When the unit is tripped, a rupture of the steam equalization header occurs, concurrent with the failure of all MSIVs to close. Manual action to close the MSIVs will NOT be successful.

### Event 8

Feedwater isolation fails to auto actuate (both trains). Manual actuation of at least one train by the RO is required.

### Event 9

1A VE (ANNULUS VENTILATION) Fan fails to start on Safety Injection signal. The BOP will manually start the fan.

**Critical task 1** – Control AFW flowrate to 75 gpm (lowest readable on indicator) per S/G to minimize cooldown rate before an ORANGE path challenge develops to the integrity Critical Safety Function.

**Critical task 2** - Manually initiate Main Feedwater Isolation.



## EXERCISE GUIDE WORKSHEET

### 1. INITIAL CONDITIONS:

1.1 Reset to IC 180

**START TIME:** \_\_\_\_\_

| ✓ | ✓ | Trigger | Instructor Action                                   | Final    | Delay | Ramp | Delete In | Event |
|---|---|---------|---|----------|-------|------|-----------|-------|
|   |   | n/a     | LOA-KF004 (RACKOUT KF PMP A)                        | RACK OUT |       |      |           |       |
|   |   | 1       | LOA-NV067 (RACKOUT NV PMP 1B)                       | RACK OUT |       |      |           | 2     |
|   |   | 3       | MAL-EP003C (ZONE 1A LOCKOUT)                        |          |       |      |           | 3     |
|   |   | n/a     | MAL-IRX009 (RODS FAIL TO MOVE)                      | AUTO     |       |      |           | 4     |
|   |   | 5       | MAL-IDE 003H (STEAM DUMP VLV SB24 FAIL TO POSITION) | 100      |       |      |           | 5     |
|   |   | 6       | MAL-IDE 003H (STEAM DUMP VLV SB24 FAIL TO POSITION) | 100      |       |      | 1 SEC     | 5     |
|   |   | 7       | MAL-NCP003C (NCP C VIBRATION)                       | 30       |       |      |           | 6     |
|   |   | 8       | MAL-SM009 (SM HEADER BREAK)                         | 3.855e+6 |       |      |           | 7     |
|   |   | n/a     | MAL-SM006E (ALL MSI (MSIV) VLV FAIL)                |          |       |      |           | 7     |
|   |   | 11      | LOA-NI007 (RACKOUT NI54A)                           | RACK IN  | 2 MIN |      |           | 7     |
|   |   | 11      | LOA-NI008 (RACKOUT NI65B)                           | RACK IN  | 2 MIN |      |           | 7     |
|   |   | 11      | LOA-NI009 (RACKOUT NI76A)                           | RACK IN  | 2 MIN |      |           | 7     |
|   |   | 11      | LOA-NI010 (RACKOUT NI88B)                           | RACK IN  | 2 MIN |      |           | 7     |
|   |   | 13      | VLV-SM004F (SM7 MSIV A FAIL TO POSITION)            | 0        |       |      |           | 7     |
|   |   | 14      | VLV-SM003F (SM5 MSIV B FAIL TO POSITION)            | 0        |       |      |           | 7     |
|   |   | 15      | VLV-SM002F (SM3 MSIV C FAIL TO POSITION)            | 0        |       |      |           | 7     |
|   |   | 16      | VLV-SM001F (SM1 MSIV D FAIL TO POSTION)             | 0        |       |      |           | 7     |

|  |  |     |  |       |  |  |  |   |
|--|--|-----|--|-------|--|--|--|---|
|  |  | n/a | MAL-ISE007A (AUTO CF ISOL SIGNAL TRN A)        | BLOCK |  |  |  | 8 |
|  |  | n/a | MAL-ISE007B(AUTO CF ISOL SIGNAL TRN B)         | BLOCK |  |  |  | 8 |
|  |  | n/a | MAL-VE001A (FAN VE-1A DISABLE AUTOSTART RELAY) |       |  |  |  | 9 |
|  |  |     |  |       |  |  |  |   |
|  |  |     |  |       |  |  |  |   |
|  |  |     | Ensure TRIGGER 4 = x02i184I                    |       |  |  |  |   |
|  |  |     | Ensure TRIGGER 8 = x01o063g                    |       |  |  |  |   |
|  |  |     | Ensure TRIGGER 6 = x02i184I   x02i186I         |       |  |  |  |   |
|  |  |     |  |       |  |  |  |   |

2. SIMULATOR BRIEFING

2.1 Control Room Assignments:

| Position | Name |
|----------|------|
| CRS      |      |
| RO       |      |
| BOP      |      |

2.2 Give a copy of Attachment 2 (Shift Turnover Information) to the CRS.

3. EXERCISE PRESENTATION

3.1 Familiarization Period

A. Allow examinees time to familiarize themselves with Control Board alignments.

3.2 **Scenario EVENT 1**, decrease reactor power to 50%.

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> the SOC is called to be informed of the power decrease, <b>REPEAT</b> the information |

3.3 **Scenario EVENT 2**, 1B NV Pump trips.

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | At the discretion of the lead examiner, <b>Insert Trigger 1</b> to trip off 1B NV pump. |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | IF Operator and/or Maintenance are dispatched to investigate the 1B NV Pump and/or breaker, <b>Repeat</b> back the information. |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>If</b> NEO dispatched to breaker and/or pump, after 10 minutes <b>REPORT</b> : No relays are present on the breaker and no abnormal conditions are noted at the pump. |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>If</b> NEO dispatched to check the 1A NV Pump, after 5 minutes <b>REPORT</b> : The 1A NV Pump is good for continuous run. |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> SWM is called to investigate the problem with 1B NV Pump, <b>REPEAT</b> back the information. |

**Scenario EVENTS 3 and 4, Zone A lockout, Control rods fail to auto insert.**

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | At the discretion of the lead examiner, <b>Insert Trigger 3</b> , to initiate a Zone A lockout. |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>When</b> called as transmission dept, <b>REPEAT</b> back information as required. |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>When</b> notified as SOC, <b>ASK</b> when the unit will return to 100% power. |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>IF</b> SWM is called to investigate the Zone a lockout, <b>REPEAT</b> back the information. |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> SWM is called to investigate the problem with the control rods, <b>REPEAT</b> back the information. |

**3.4 Scenario EVENT 5, 1SB-24 fails open**

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | At the discretion of the lead examiner, <b>Insert Trigger 5</b> to fail open 1SB-24. |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | If dispatched as NEO, <b>REPORT</b> back after 5 minutes, nothing seems to be wrong with the valve (1SB-24). |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | If requested, the Unit supervisor will proceed with creating an R&R to isolate 1SB-24. |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>IF</b> SWM is called to investigate 1SB-24, <b>REPEAT</b> back the information. |

3.5 Scenario EVENTS 6, 7, & 8.

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | At the discretion of the lead examiner, <b>Insert Trigger 7</b> , this will cause Hi-Hi vibrations on 1A NCP. |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>IF</b> Maintenance is dispatched to isolate air to S/G A,B,C,D, <b>REPEAT</b> back the information. |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>IF</b> station management is contacted to monitor shutdown margin, <b>REPEAT</b> back the information |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>IF</b> station management is contacted to monitor shutdown margin, <b>REPEAT</b> back the information |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> periodic boron samples are requested from Primary Chemistry, <b>REPEAT</b> back the information |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> RP is requested to monitor the area of the steam fault for radiation and notify the control room of any abnormal radiation conditions, <b>REPEAT</b> back the information |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> chemistry is notified to sample all S/Gs for activity, <b>REPEAT</b> back the information |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>IF</b> RP is contacted to frisk all cation columns for activity, <b>REPEAT</b> back the information |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>IF</b> operator is dispatched to restore power to all CLA discharge isolation valves, <b>Insert Trigger 11.</b> |

|   |   |
|---|---|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>  |
|   | <b>IF</b> operator is dispatched to remove power to all CLA discharge isolation valves, <b>Toggle Trigger 11.</b> |

|   |  |
|---|--|
| ✓ | <b>BOOTH INSTRUCTOR ACTION</b>   |
|   | <b>When</b> crew returns to step 5 of ECA 2.,1 <b>Insert Trigger 13,14,15 or 16.</b> |

|   |     |  |
|---|-----|--|
| <b>NOTE TO EVALUATOR:</b> Crew will begin with a power decrease. BOP will perform a boration per OP/1/6150/009, Enclosure 4.2. Amount of dilution will be determined by the power decrease plan. The RO will input turbine target data. These two evolutions may be performed concurrently. Initial conditions are complete. A reactivity management brief will be performed during turnover. Step 3.1 is complete. |     |  |
|   | BOP | Perform a boration.  |
|   | RO  | Input target into the main turbine control panel.  |
| <b>NOTE TO EVALUATOR:</b> The following actions are taken from OP/1/6150/009, Boron Concentration Control, Enclosure 4.2 (Boration).  |     |  |
|   | BOP | 3.2 Ensure the following valve control switches in "AUTO": <ul style="list-style-type: none"> <li>• 1NV-238A (B/A To Blender Ctrl Vlv)</li> <li>• 1NV-186A (B/A Blender Otlt To VCT Otlt)</li> </ul> |
|   | BOP | 3.3 Ensure 1NV-238A (B/A Xfer Pmp To Blender Ctrl) controller in auto.   |
|   | BOP | 3.4 Ensure at least one boric acid transfer pump is in "AUTO" or "ON".   |
|   | BOP | 3.5 Record the desired volume of boric acid to be added.<br>_____ gallons  |
|   | BOP | 3.6 Adjust the boric acid counter to the desired volume of boric acid to be added. (R.M.)  |
|   | BOP | 3.7 IF the blender is set up for automatic makeup per Enclosure 4.1 (Automatic Makeup), record the setpoint of the controller for 1NV-238A (B/A Xfer Pmp To Blender Ctrl). _____ gpm                 |
|   | BOP | 3.8 Place the "NC MAKEUP MODE SELECT" switch in "BORATE".  |
| <b>NOTE:</b> Boric Acid flow rates > 32 gpm may result in a boric acid flow deviation annunciator.  |     |  |
|   | BOP | 3.9 Adjust the controller for 1NV-238A (B/A Xfer Pmp To Blender Ctrl) to the desired flow.   |
| <b>NOTE TO EVALUATOR:</b> Step 3.10 will be N/A'd   |     |  |
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|--|-----|---|
|  | BOP | <p>3.11 <b>IF AT ANY TIME</b> it is desired to divert letdown to the RHT manually operate 1NV-172A (3-Way Divert To VCT-RHT) as follows:</p> <p>3.11.1 Place the control switch for 1NV-172A (3-Way Divert To VCT-RHT) to the "RHT" position.</p> <p>3.11.2 Ensure VCT level is monitored continuously while diverting to the RHT.</p> <p><b>NOTE:</b> Procedure may continue while performing the following step.</p> <p>3.11.3 <b>WHEN</b> desired VCT level is reached return 1NV-172A (3-Way Divert To VCTRHT) to auto as follows:</p> <p>3.11.3.1 Place the control switch for 1NV-172A (3-Way Divert To VCTRHT) in the "VCT" position.</p> <p>3.11.3.2 Place the control switch for 1NV-172A (3-Way Divert To VCTRHT) in the "AUTO" position.</p> |
|  | BOP | <p>3.12 <b>IF AT ANY TIME</b> during the makeup it becomes necessary to change the makeup flow rate, adjust the setpoint for 1NV-238A (B/A Xfer Pmp To Blender Ctrl) as necessary to achieve the desired flow.</p>  |
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|  |     |   |
|--|-----|---|
|  | BOP | <p>3.13 <b>IF AT ANY TIME</b> while boration is in progress it becomes necessary to stop the boration, perform the following:</p> <p>3.13.1 Place the "NC MAKEUP CONTROL" switch to the "STOP" position.</p> <p>3.13.2 Ensure the following valves close: (R.M.)</p> <ul style="list-style-type: none"> <li>• 1NV-238A (B/A To Blender Ctrl Vlv)</li> <li>• 1NV-186A (B/A Blender Otlt To VCT Otlt)</li> </ul> <p>3.13.3 Record boric acid volume added as indicated on the Boric Acid counter. _____ gallons</p> <p>3.13.4 <b>WHEN</b> conditions allow resuming the boration, perform the following:</p> <p>3.13.4.1 Determine remaining volume to be added by subtracting the amount previously added (Step 3.13.3) from the desired volume to be added (Step 3.5).</p> $\frac{\text{_____}}{\text{(Step 3.5)}} - \frac{\text{_____}}{\text{(Step 3.13.3)}} = \text{_____ gallons}$ <p>3.13.4.2 Adjust boric acid counter to the volume of boric acid determined in Step 3.13.4.1. (R.M.)</p> <p>3.13.4.3 Place the "NC MAKEUP CONTROL" switch in the "START" position. (R.M.)</p> <p>3.13.4.4 Verify the following:</p> <ul style="list-style-type: none"> <li>• 1NV-238A (B/A To Blender Ctrl Vlv) modulates to establish desired flow</li> <li>• 1NV-186A (B/A Blender Otlt To VCT Otlt) opens</li> </ul> <p>3.13.4.5 <b>IF</b> in "AUTO", verify the boric acid pump starts.</p> |
|  | BOP | <p>3.14 <b>WHILE</b> makeup is in progress, monitor the following for expected results:</p> <ul style="list-style-type: none"> <li>• Control rod motion</li> <li>• NC System Tavg</li> <li>• Reactor Power</li> </ul>   |
|  | BOP | <p>3.15 Place the "NC MAKEUP CONTROL" switch to the "START" position. (R.M.)</p>  |
|  |     |   |
|  |     |   |
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|   |     |   |
|---|-----|---|
|   | BOP | 3.16 Verify the following: <ul style="list-style-type: none"> <li>• 1NV-238A (B/A To Blender Ctrl Vlv) modulates to establish desired flow</li> <li>• 1NV-186A (B/A Blender Otlt To VCT Otlt) opens</li> </ul>  |
|   | BOP | 3.17 <b>IF</b> in "AUTO", verify the boric acid transfer pump starts.   |
|   | BOP | 3.18 Verify proper flow by observing the Boric Acid Counter. {PIP 96-0137}  |
| <b>NOTE: The boric acid counter may count up 1 - 5 gallons after termination.</b> |     |   |
|   | BOP | 3.19 <b>WHEN</b> the desired volume of boric acid is reached on the boric acid counter, ensure the following valves close: (R.M.) <ul style="list-style-type: none"> <li>• 1NV-238A (B/A To Blender Ctrl Vlv)</li> <li>• 1NV-186A (B/A Blender Otlt To VCT Otlt)</li> </ul>   |
| <b>NOTE TO EVALUATOR: Step 3.20 will be N/A'd</b>                                 |     |   |
|   | BOP | 3.21 <b>IF</b> automatic makeup is desired, perform one of the following: <p>3.21.1 <b>IF</b> it is desired to change the blender outlet boron concentration, refer to Enclosure 4.1 (Automatic Makeup).<br/>       OR</p> <p>3.21.2 <b>IF</b> makeup at the previous concentration is acceptable <b>AND</b> the system was previously aligned per Enclosure 4.1 (Automatic Makeup), perform the following:</p> <p>3.21.2.1 Ensure the controller for 1NV-238A (B/A Xfer Pmp To Blender Ctrl) is set to the value recorded in Step 3.7. (R.M.)</p> <p>3.21.2.2 Place the "NC MAKEUP MODE SELECT" switch in "AUTO".</p> <p>3.21.2.3 Place the "NC MAKEUP CONTROL" switch to the "START" position. (R.M.)</p> |
| <b>NOTE TO EVALUATOR: Step 3.22 will be N/A'd</b>                                 |     |   |
| <b>END OF BORATION</b>  |     |   |
|   |     |   |
|   |     |   |
|   |     |   |
|   |     |   |
|   |     |   |
|   |     |   |
|   |     |   |

| NOTE TO EVALUATOR: The following steps are from OP/1/B/6300/001, Turbine Generator, Enclosure 4.2 (Load Changing) starting at step 3.2.2. |    |   |
|---|----|---|
|   | RO | 3.2.2 Decrease turbine generator load by performing the following:<br>3.2.2.1 Select "LOAD RATE" and verify it illuminates.<br>3.2.2.2 Input the desired load rate.<br>3.2.2.3 Select "ENTER" and verify "LOAD RATE" goes dark<br>3.2.2.4 Select "TARGET" and verify it illuminates.<br>3.2.2.5 Input the desired load target.<br>3.2.2.6 Select "ENTER" and verify "TARGET" goes dark.<br>3.2.2.7 Verify new load target appears on Target Display.<br>3.2.2.8 Select "GO" and verify it illuminates to start load decrease.<br>3.2.2.9 Coordinate with Secondary Chemistry to adjust S/G blowdown flowrates to obtain maximum blowdown for the appropriate load |
| <b>END OF PREPARATION FOR POWER DECREASE ON THE TURBINE PANEL.</b>  |    |   |
| <b>Booth Operator will insert Trigger 1 for EVENT 2 at discretion of lead examiner.</b>   |    |   |
| <b>END OF EVENT 1</b>   |    |   |
|   |    |   |
|   |    |   |
|   |    |   |
|   |    |   |
|   |    |   |

| <b>EVENT 2</b>  |   |  |
|---|---|--|
| Indications:  | 1AD-11, D/1 '4KV ESS PWR TRAIN B TROUBLE'<br>1AD-7, C/4 'NCP SEAL WATER LO FLOW'<br>1AD-7, E/1 'CHARGING LINE HI/LO FLOW' |  |
|   | BOP   | Recognizes 1B NV pump tripped  |
|   | CREW  | Enters AP/1/A/5500/012, Loss of Charging or Letdown  |
| <b>NOTE TO EVALUATOR: The following steps are taken from AP/1/A/5500/012, Loss of Charging or Letdown, Case I (Loss of Charging).</b>   |   |  |
|   | RO  | <b>1. Stop any power changes.</b>  |
|   | BOP   | <b>2. Ensure the following letdown isolation valves - CLOSED:</b> <ul style="list-style-type: none"> <li>• 1NV-10A (Letdn Orif 1B Otlt Cont Isol)</li> <li>• 1NV-11A (Letdn Orif 1C Otlt Cont Isol)</li> <li>• 1NV-13A (Letdn Orif 1A Otlt Cont Isol).</li> </ul>  |
|   | BOP   | <b>3. Ensure any malfunctioning NV pump - SECURED.</b>   |
|   | BOP or RO   | <b>4. Monitor conditions for continued NC pump operation as follows:</b><br>NC pump #1 seal outlet temperature - LESS THAN 235°F<br>NC pump lower bearing temperature - LESS THAN 225°F.   |
|   | BOP   | <b>5. IF excess letdown in service, THEN ensure manual loader for 1NV-124B (Excess Letdn Press Ctrl) - ADJUSTED TO 0%.</b>   |
| <b>NOTE: Gas entrainment in the NV pump suction can produce pump failure or degradation. Gas entrainment can result in a complete loss of charging, or in a reduction of charging capacity, without indication of cavitation.</b> |   |  |
|   | BOP   | <b>6. Verify NV pump status as follows:</b> <ul style="list-style-type: none"> <li>• At least one NV pump - ON.</li> </ul>   |
|   | BOP   | <b>6. RNO Perform the following:</b> <ol style="list-style-type: none"> <li>a. Ensure any malfunctioning NV pump - SECURED.</li> <li>b. Ensure the following valves - OPEN:           <ul style="list-style-type: none"> <li>• 1NV-203A (NV Pumps A&amp;B Recirc Isol)</li> <li>• 1NV-202B (NV Pmps A&amp;B Recirc Isol).</li> </ul> </li> </ol> |
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|  | BOP | <p>c. Ensure only one suction source as follows:</p> <ul style="list-style-type: none"> <li>• VCT</li> <li>• 1NV-188A (VCT Otlt Isol) - OPEN</li> <li>• 1NV-189B (VCT Otlt Isol) - OPEN</li> <li>• VCT level - GREATER THAN 23%</li> <li>• 1NV-252A (NV Pumps Suct From FWST) - CLOSED</li> <li>• 1NV-253B (NV Pumps Suct From FWST) - CLOSED.</li> </ul>   |
| <p><b>NOTE TO EVALUATOR: The crew will determine that step 6 RNO d. does not apply</b></p>   |     |   |
|  | BOP | <p>e. Start the available NV pump as follows:</p> <ol style="list-style-type: none"> <li>1) OPEN 1NV-309 (Seal Water Injection Flow) to full open.</li> <li>2) CLOSE 1NV-294 (NV Pmps A&amp;B Disch Flow Ctrl).</li> <li>3) Start NV pump aux oil pump.</li> <li>4) Start available NV pump.</li> <li>5) Stop NV pump aux oil pump.</li> </ol>  |
| <p><b>NOTE TO EVALUATOR: The crew will determine that step 6 RNO e.6) does not apply</b></p> |     |   |
| <p><b>NOTE TO EVALUATOR: The crew will determine that step 6 RNO f. does not apply</b></p>   |     |   |
|  | BOP | <p>7. Verify charging header aligned to NC loop as follows:</p> <ol style="list-style-type: none"> <li>a. 1NV-312A (Chrg Line Cont Isol) - OPEN.</li> <li>b. 1NV-314B (Chrg Line Cont Isol) - OPEN.</li> <li>c. Verify one of the following valves - OPEN:           <ul style="list-style-type: none"> <li>• 1NV-32B (NV Supply To Loop A Isol)</li> </ul>           OR           <ul style="list-style-type: none"> <li>• 1NV-39A (NV Supply To Loop D Isol).</li> </ul> </li> <li>d. Verify 1NV-294 (NV Pmps A&amp;B Disch Flow Ctrl) - OPEN.</li> </ol> |
|  | BOP | <p>7.d. RNO d. Perform the following:</p> <ol style="list-style-type: none"> <li>1) OPEN 1NV-309 (Seal Water Injection Flow).</li> <li>2) THROTTLE 1NV-294 (NV Pmps A&amp;B Disch Flow Ctrl) to establish greater than 32 GPM "N/R CHRG LN FLOW"</li> </ol>   |
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|   | BOP | 8. <b>Verify the following:</b> <ul style="list-style-type: none"> <li>• "TOTAL SEAL WTR FLOW" - GREATER THAN 32 GPM</li> <li>• 1NV-309 (Seal Water Injection Flow) – IN AUTO.</li> </ul>  |
|   | BOP | 8. RNO <b>Perform the following:</b> <ol style="list-style-type: none"> <li>Slowly THROTTLE 1NV-309 (Seal Injection Flow) to establish 32 GPM "TOTAL SEAL WTR FLOW"</li> <li>Place 1NV-309 in auto.</li> </ol>   |
|   | BOP | 9. <b>Verify Pzr level - GREATER THAN 17%.</b>   |
|   | BOP | 10. <b>Control charging to stabilize Pzr level greater than 17%.</b>   |
|   | BOP | 11. <b>Ensure "PZR HTR GROUP 1C" - ON.</b>   |
|   | BOP | 12. <b>Control VCT level as follows:</b> <ol style="list-style-type: none"> <li>Verify NC system makeup - SET FOR DESIRED BORON CONCENTRATION.</li> <li>Verify "NC MAKEUP MODE SELECT" - IN AUTO.</li> </ol>   |
|   | BOP | 13. <b>Verify normal letdown - IN SERVICE.</b>   |
| <b>NOTE TO EVALUATOR: Step a. will not be performed and step b. will be applicable. The SRO may wait to evaluate Tech Specs until after the restoration of letdown.</b>                   |     |  |
|   | SRO | 13. RNO <b>Perform the following:</b> <ol style="list-style-type: none"> <li>Restore normal letdown. REFER TO Case II (Loss of Letdown).</li> </ol>  |
|   | SRO | 14. <b>Ensure compliance with appropriate Tech Specs:</b> <ul style="list-style-type: none"> <li>• 3.4.13 (RCS Operational Leakage)</li> <li>• 3.4.14 (RCS Pressure Isolation Valve (PIV) Leakage)</li> <li>• 3.5.2 (ECCS - Operating)</li> <li>• 3.5.3 (ECCS - Shutdown)</li> <li>• 3.5.5 (Seal Injection Flow)</li> <li>• 3.6.3 (Containment Isolation Valves)</li> <li>• SLC 16.9-9 (Boration Systems Charging Pump - Shutdown)</li> <li>• SLC 16.9-10 (Boration Systems Charging Pump - Operating).</li> </ul> |
| <b>NOTE TO EVALUATOR: SRO will determine that Tech Spec 3.5.2 (ECCS-Operating) condition A and SLC 16.9-10 (Boration Systems Charging Pump – Operating condition A should be entered.</b> |     |  |
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| <b>NOTE TO EVALUATOR: The following steps are taken from AP/1/A/5500/012, Loss of Charging or Letdown, Case II (Loss of Letdown).</b> |     |  |
|   | RO  | 1. <b>Stop any power changes.</b>  |
|   | BOP | 2. <b>Ensure the following letdown isolation valves - CLOSED:</b> <ul style="list-style-type: none"> <li>• 1NV-10A (Letdn Orif 1B Otlt Cont Isol)</li> <li>• 1NV-11A (Letdn Orif 1C Otlt Cont Isol)</li> <li>• 1NV-13A (Letdn Orif 1A Otlt Cont Isol).</li> </ul>  |
|   | BOP | 3. <b>Verify Pzr level - GREATER THAN 17%.</b>   |
|   | BOP | 4. <b>Control charging to stabilize Pzr level at program level while maintaining seal injection flow.</b>  |
|   | BOP | 5. <b>Ensure "PZR HTR GROUP 1C" - ON.</b>  |
|   | BOP | 6. <b>Control VCT level as follows:</b> <ul style="list-style-type: none"> <li>a. Verify NC system makeup - SET FOR DESIRED BORON CONCENTRATION.</li> <li>b. Verify "NC MAKEUP MODE SELECT" - IN AUTO.</li> </ul>  |
|   | BOP | 7. <b>Determine and correct cause of loss of letdown.</b>  |
|   | BOP | 8. <b>IF AT ANY TIME excess letdown required, THEN establish excess letdown. REFER TO OP/1/A/6200/001 (Chemical and Volume Control System).</b>  |
|   | BOP | 9. <b>Verify proper VC/YC system operation. REFER TO Enclosure 3 (Control Room Ventilation System Verification).</b>   |
| <b>NOTE TO EVALUATOR: The SRO may wait to evaluate Tech Specs until after the restoration of letdown.</b>                             |     |  |
|   | SRO | 10. <b>Ensure compliance with appropriate Tech Specs:</b> <ul style="list-style-type: none"> <li>• 3.3.1 (Reactor Trip System (RTS) Instrumentation)</li> <li>• 3.3.3 (Post Accident Monitoring (PAM) Instrumentation)</li> <li>• 3.3.4 (Remote Shutdown System)</li> <li>• 3.4.1(RCS Pressure, Temperature, and Flow Departure From Nucleate Boiling (DNB) Limits)</li> <li>• 3.4.12 (Low Temperature Overpressure Protection (LTOP) System)</li> <li>• 3.4.13 RCS (Operational Leakage).</li> <li>• 3.6.3 (Containment Isolation Valves).</li> </ul> |
| <b>NOTE TO EVALUATOR: The SRO will determine that no Tech Specs apply for the loss of letdown.</b>                                    |     |  |
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| <b>NOTE TO EVALUATOR: Time compression may be used in the following step at the discretion of the lead examiner.</b> |     |   |
|  | BOP | k. WHEN 5 minutes have elapsed, THEN perform the following:<br>1) IF AT ANY TIME letdown flow increased to greater than 80 GPM, THEN perform the following:<br>2) Adjust 1NV-849 (Letdn Flow Var Orif Ctrl) in 1% increments to desired letdown flow.<br>3) WHEN letdown at desired flow, THEN perform the following:<br>a) Adjust 1NV-148 (Letdn Press Control) to maintain letdown pressure at 350 PSIG.<br>b) Ensure 1NV-148 (Letdn PressControl) - IN AUTO. |
| <b>Booth Operator will insert Trigger 3 for EVENT 3 at discretion of lead examiner.</b>                              |     |   |
|  | BOP | 4) IF AT ANY TIME additional letdown flow desired, THEN establish letdown with the 45 or 75 GPM orifice. REFER TO OP/1/A/6200/001 (Chemical and Volume Control System).   |
|  | BOP | i. WHEN Pzr level restored to programmed level, THEN perform the following:<br>1) Ensure 1NV-294 (NV Pmps A&B Disch Flow Ctrl) - IN AUTO.<br>2) Ensure "PZR Level Master" – IN AUTO.  |
|  | SRO | 17. Determine required notifications:<br><ul style="list-style-type: none"> <li>• REFER TO RP/0/A/5000/001 (Classification Of Emergency)</li> <li>• REFER TO RP/0/B/5000/013 (NRC Notification Requirements).</li> </ul>  |
|  | BOP | 18. Verify excess letdown - ISOLATED.   |
|  | SRO | 19. Determine long term plant status. RETURN TO procedure in effect.  |
| <b>END OF EVENT 2</b>  |     |   |
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| <b>EVENTS 3 AND 4</b>   |  |   |
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| Indications:  | 1AD-11, C/6 'ZONE A LOCKOUT TRIP'<br>1AD-11, F/1 'GEN BKR B OVER CURRENT'<br>1AD-11 , I/5 '600V COOLING TWR AUX PWR TROUBLE'<br>1AD-11, J/4 '7KV NORM AUX PWR SYSTEM TROUBLE'<br>1AD-1, F/4 'TURB RUNBACK INITIATED' |   |
| <b>NOTE TO EVALUATOR:</b> Due to the runback rods should auto insert, but this feature will be failed, requiring the RO to manually insert rods. The RO will take manual control of the rods and insert as necessary to maintain Tavg/Tref within 1°F |  |   |
|   | RO   | Recognize Turbine runback   |
|   | RO   | Recognize Control Rods fail to insert   |
|   | RO   | Place 'CRD Bank Select' Switch to 'MAN'   |
|   | RO   | Insert Control Rods to maintain Tavg within 1 deg of Tref   |
|   | CREW   | Enter AP/1/A/5500/003, Load Rejection   |
| <b>NOTE TO EVALUATOR:</b> The following steps are from AP/1/A/5500/003, Load Rejection, Case 1 (Switchyard Available)   |  |   |
|   | RO   | 1. <b>Verify turbine load - DECREASING IN AUTOMATIC.</b>  |
|   | RO   | 2. <b>Verify proper reactor response:</b> <ul style="list-style-type: none"> <li>• Control rods - IN "AUTO" AND STEPPING IN T-Ref.</li> <li>• P/R neutron flux - DECREASING.</li> </ul> |
|   | RO   | 2. <b>RNO IF T-Avg is greater than 1.5°F higher than T-Ref, THEN insert control rods as required to maintain T-Avg within 1°F of T-Ref.</b>   |
| <b>END EVENT 4</b>  |  |   |
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|   | RO  | <p><b>3. Verify proper steam dump operation as follows:</b></p> <p>a. Verify T-Ref instrumentation - AVAILABLE.</p> <p>b. "C-9 COND AVAILABLE FOR STM DUMP" status light (1SI-18) - LIT.</p> <p>c. Verify the following:<br/>       "C-7A LOSS OF LOAD INTLK COND DUMP" status light (1SI 18) - LIT.<br/>       Steam dump valves - MODULATING.</p> <p>d. T-Avg - DECREASING TO T-REF.</p> |
|   | BOP | <p><b>4. Verify Pzr PORV and Pzr spray valve status as follows:</b></p> <p>a. All Pzr PORVs - CLOSED.</p> <p>b. Normal Pzr spray valves - CLOSED.</p>  |
|   | BOP | <p><b>5. Verify proper CM System operation as follows:</b></p> <p>a. WHEN reactor power is less than 75%, THEN ensure both C-htr drain pumps - OFF.</p> <p>b. Verify reactor power - GREATER THAN 56% PRIOR TO THE EVENT.</p> <p>c. Verify standby hotwell pump(s) - ON.</p>   |
| <p><b>NOTE TO EVALUATOR: The crew will determine that the RNO for step 5.c. will not be necessary</b></p> |     |  |
|   | BOP | <p>d. Verify standby condensate booster pump(s) - ON</p>   |
| <p><b>NOTE TO EVALUATOR: The crew will determine that the RNO for step 5.d. will not be necessary</b></p> |     |  |
|   | BOP | <p><b>6. Verify the following generator alarms - DARK:</b></p> <ul style="list-style-type: none"> <li>• 1AD-11, C/1 "GEN BKR A OVER CURRENT"</li> <li>• 1AD-11, F/1 "GEN BKR B OVERCURRENT".</li> </ul>  |
|   | RO  | <p><b>6. RNO Ensure turbine generator load - REDUCED TO APPROXIMATELY 48% AND THE ALARM CLEARS.</b></p>  |
|   | RO  | <p><b>7. Verify S/G levels are adequate as follows:</b></p> <ul style="list-style-type: none"> <li>• All S/G low level alert alarms (1AD-4) - DARK</li> <li>• All S/G low CF flow alarms (1AD-4) - DARK.</li> </ul>  |
|   | RO  | <p><b>8. Verify reactor power - GREATER THAN 20%.</b></p>  |
|   | RO  | <p><b>9. IF AT ANY TIME reactor power is less than or equal to 20%, THEN perform Step 8 RNO.</b></p>   |
|   | BOP | <p><b>10. Verify AS header pressure - GREATER THAN OR EQUAL TO 140 PSIG.</b></p>   |
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|  | RO         | 11. <b>Adjust 1TL-4 (Stm Seal Reg Byp) as necessary to maintain steam seal pressure between 4 PSIG - 6 PSIG.</b>  |
|  | BOP        | 12. <b>Monitor Enclosure 3 (Rod Insertion Limit Boration).</b>  |
|  | RO         | 13. <b>Verify reactor power - LESS THAN 30%.</b>  |
|  | RO and BOP | 13. RNO <b>Perform the following:</b><br>a. IF the runback target load is less than 30%, THEN:<br>b. WHEN the appropriate runback target load is reached, THEN:<br>1) Stabilize unit at appropriate power level.<br>2) Maintain control rods above insertion limits.<br>3) Adjust the following as required to maintain T-Avg within 1°F of T-Ref:<br>• Turbine load<br>• Control rods<br>• Boron concentration.<br>c. GO TO Step 15. |
|  | BOP        | 15. <b>Verify the following PCBs - CLOSED:</b><br>• Generator breaker 1A<br>• Generator breaker 1B<br>• PCB 14 control.<br>• PCB 15<br>• PCB 17<br>• PCB 18.  |
| <b>NOTE When separated from the grid turbine reverts to speed.</b>                   |            |   |
| <b>NOTE TO EVALUATOR: The crew will determine that the RNO step 15.c. will apply</b> |            |   |
|  | BOP        | 15. RNO <b>Perform the following:</b><br>c. IF load rejection caused by loss of main busline 1A or 1B, THEN:<br>1) Notify Transmission Control Center (TCC), using one of the following methods, to investigate and repair cause of the loss of busline:<br>• 704-382-9403<br>• 704-382-9404<br>• 704-399-9744<br>• 704-382-4413 (System Operating Center).   |
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|   | BOP        | 15. RNO c. 2) <b>WHEN</b> notified by TCC that the affected busline is ready to be reenergized, <b>THEN</b> restore power to the affected busline. <b>REFER TO</b> Enclosure 1 (Offsite Power Restoration).  |
|   | RO         | 16. <b>Adjust power factor as necessary. REFER TO Unit 1 Revised Data Book Figure 43.</b>  |
|   | RO and BOP | 17. <b>WHEN the appropriate runback target load is reached, THEN:</b> <ul style="list-style-type: none"> <li>• Stabilize unit at appropriate power level.</li> <li>• Maintain control rods above insertion limits.</li> <li>• Adjust the following as required to maintain T-Avg within 1°F of T-Ref:           <ul style="list-style-type: none"> <li>• Turbine load</li> <li>• Control rods</li> <li>• Boron concentration.</li> </ul> </li> </ul> |
|   | RO or BOP  | 18. <b>Notify System Operating Center (SOC) using the red dispatcher telephone of current unit status.</b>   |
|   | CREW       | 19. <b>Determine and correct cause of load rejection.</b>  |
| <b>Booth Operator will insert Trigger 5 for EVENT 5 at discretion of lead examiner.</b> |            |  |
|   | BOP        | 20. <b>Shut down unnecessary plant equipment as follows:</b> <ol style="list-style-type: none"> <li>a. Restore CM and CF as follows:           <ol style="list-style-type: none"> <li>1) Verify C-htr drain pumps - ON.</li> </ol> </li> </ol>   |
|   | BOP        | 20.a.1) RNO 1) <b>WHEN</b> time and manpower permit, <b>THEN</b> complete the shutdown of the C-htr drain pumps. <b>REFER TO</b> OP/1/B/6250/004 (Feedwater Heater Vents, Drains and Bleed System).  |
|   | BOP        | <ol style="list-style-type: none"> <li>2) Verify both CF Pumps - IN SERVICE.</li> <li>3) Shutdown one CF pump as necessary. <b>REFER TO</b> OP/1/A/6250/001 (Condensate and Feedwater System).</li> <li>4) Shutdown excess Condensate Booster Pumps. <b>REFER TO</b> OP/1/A/6250/001 (Condensate and Feedwater System).</li> <li>5) Shutdown excess Hotwell Pumps. <b>REFER TO</b> OP/1/A/6250/001 (Condensate and Feedwater System).</li> </ol>     |
|   | BOP        | b. RC pump(s) and cooling tower fans. <b>REFER TO</b> OP/1/B/6400/001A (Condenser Circulating Water System).   |
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|  | RO        | <p>21. <b>Reset steam dump valves as follows:</b></p> <p>a. Verify reactor power - STABLE.</p> <p>b. Verify steam dump valves - IN "T-AVG" MODE.</p> <p>c. Verify steam dump valves - CLOSED.</p> <p>d. <b>Reset steam dump valves.</b></p> <p>e. Verify the following status lights (1SI-18) - DARK:</p> <ul style="list-style-type: none"> <li>• "C-7A LOSS OF LOAD INTLK COND DUMP"</li> <li>• "C-7B LOSS OF LOAD INTLK ATMOS DUMP".</li> </ul> <p>f. <b>IF</b> "T-AVG" mode of operation is available, <b>THEN</b> ensure steam dump valves in "T-AVG" mode.</p> <p>g. Verify "STM DUMP CTRL" - IN AUTO.</p> |
|  | RO        | 22. <b>Verify reactor power - GREATER THAN 15%.</b>  |
|  | RO        | 23. <b>Verify CA pumps - OFF.</b>  |
|  | RO        | 24. <b>Verify reactor power change – GREATER THAN OR EQUAL TO 15% IN A 1 HOUR PERIOD.</b>  |
|  | RO or BOP | <p>25. <b>Notify the following sections to take appropriate samples:</b></p> <ul style="list-style-type: none"> <li>• Radiation Protection to sample and analyze gaseous effluents. <b>REFER TO</b> Selected Licensee Commitments Manual, Section 16.11-6.</li> <li>• Primary Chemistry to sample for isotopic analysis of iodine. <b>REFER TO</b> Tech Specs 3.4.16 (Sample must be taken between 2 hours and 6 hours following last power change greater than or equal to 15% rated thermal power within a 1hour period).</li> </ul>   |
|  | SRO       | <p>26. <b>Ensure compliance with appropriate Tech Specs:</b></p> <ul style="list-style-type: none"> <li>• 3.1.1 (Shutdown Margin (SDM))</li> <li>• <b>3.1.6 (Control Bank Insertion Limits)</b></li> <li>• <b>3.8.1 (AC Sources - Operating)</b></li> <li>• SLC 16.8-2 (230 KV Switchyard Systems).</li> </ul>   |
| <p><b>NOTE TO EVALUATOR:</b> The SRO will determine that Tech Spec 3.1.6 condition A and 3.8.1 condition A should be entered. This may be a follow up.</p> |           |  |
|  | BOP       | 27. <b>Notify Reactor Group Engineer of occurrence.</b>  |
|  | SRO       | 28. <b>Determine long term plant status. RETURN TO OP/1/A/6100/003 (Controlling Procedure For Unit Operation).</b>   |
| <b>END OF EVENT 3</b>  |           |  |
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| <b>EVENT 5</b>   |            |  |
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| Indications: OAC pt C1Q0974 VLV SB24 MN STM BYPASS TO CON CONTROL #24 - OPEN                     |            |  |
|  | RO         | Recognize 1SB-24 open  |
|  | RO         | Place "STEAM DUMP INTLK BYP" train A and/or Train B to "OFF RESET"   |
|  | CREW       | Enter AP/1/A/5500/028 (Secondary Steam Leak)   |
| <b>NOTE TO EVALUATOR: The following actions are from AP/1/A/5500/028 (Secondary Steam Leak).</b> |            |  |
|  | RO and BOP | 1. <b>Monitor Enclosure 1 (Foldout Page).</b>  |
|  | RO         | 2. <b>Verify turbine - ONLINE.</b>   |
|  | RO         | 3. <b>Verify the following:</b> <ul style="list-style-type: none"> <li>• Reactor power - LESS THAN OR EQUAL TO 100% POWER</li> <li>• T-Avg - WITHIN 1.5°F OF T-Ref.</li> </ul>   |
|  | RO         | 3. RNO <b>Perform the following:</b> <ol style="list-style-type: none"> <li>a. <b>Select "MANUAL" on turbine control panel.</b></li> <li>b. <b>Depress "CONTROL VALVES LOWER" pushbutton and reduce turbine load to maintain:</b> <ul style="list-style-type: none"> <li>• Reactor power - LESS THAN OR EQUAL TO 100% POWER</li> <li>• T-Avg - WITHIN 1.5°F OF T-Ref.</li> </ul> </li> </ol> |
|  | RO         | 4. <b>Verify proper reactor response as follows:</b> <ul style="list-style-type: none"> <li>• Control rods - IN AUTO AND STEPPING IN</li> <li>• P/R neutron flux - DECREASING.</li> </ul>  |
|  | RO         | 4 RNO <b>IF T-Avg is greater than 1.5°F higher than T-Ref, THEN insert control rods as required to maintain T-Avg within 1°F of T-Ref.</b>   |
|  | RO         | 5. <b>IF AT ANY TIME reactor power is greater than 100%, THEN perform Step 3 RNO.</b>  |
|  | BOP        | 6. <b>Verify Pzr level - STABLE OR INCREASING.</b>   |
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|   | CRS       | 7. <b>IF AT ANY TIME while in this procedure Pzr level is decreasing in an uncontrolled manner, THEN RETURN TO Step 6.</b>  |
|   | RO or BOP | 8. <b>IF AT ANY TIME VCT level goes below 23%, THEN align NV pump suction to FWST as follows:</b><br>a. OPEN the following valves:<br><ul style="list-style-type: none"> <li>• 1NV-252A (NV Pumps Suct From FWST)</li> <li>• 1NV-253B (NV Pumps Suct From FWST).</li> </ul> b. CLOSE the following valves:<br><ul style="list-style-type: none"> <li>• 1NV-188A (VCT Otlt Isol)</li> <li>• 1NV-189B (VCT Otlt Isol).</li> </ul>                                     |
|   | RO or BOP | 9. <b>Attempt to identify and isolate leak as follows:</b><br>a. Verify the following conditions - NORMAL:<br><ul style="list-style-type: none"> <li>• Containment temperature</li> <li>• Containment pressure</li> <li>• Containment humidity</li> <li>• Containment floor &amp; equipment sump level.</li> </ul> b. Dispatch operators to locate and identify source of steam leak.<br>c. Verify S/G PORVs - CLOSED.<br>d. Verify condenser dump valves - CLOSED. |
|   | RO        | d.RNO <b>Perform the following:</b><br>1) Select "OFF RESET" on the following switches:<br><ul style="list-style-type: none"> <li>• "STEAM DUMP INTLK BYP TRN A"</li> <li>• "STEAM DUMP INTLK BYP TRN B".</li> </ul>  |
| <b>Booth Operator will insert Trigger 7 for EVENT 6 at discretion of lead examiner.</b> |           |   |
|   | RO        | e. Verify atmospheric dump valves - CLOSED.<br>f. Verify CA PMP #1 - OFF.   |
| <b>NOTE TO EVALUATOR: The crew will determine step 9.g. does not apply</b>              |           |   |
|   | SRO       | 10. <b>Determine required notifications:</b><br><ul style="list-style-type: none"> <li>• REFER TO RP/0/A/5000/001 (Classification Of Emergency)</li> <li>• REFER TO RP/0/B/5000/013 (NRCNotification Requirements).</li> </ul>  |
|   | BOP       | 11. <b>Notify RP of leak.</b>   |
|   | RO        | 12. <b>Verify - LEAK ISOLATED.</b>  |
|   | SRO       | 13. <b>Determine long term plant status. RETURN TO procedure and step in effect.</b>  |
| <b>END OF EVENT 5</b>   |           |   |
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| <b>EVENT 6</b>   |              |  |
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| Indications: 1AD-6, A/5 'NCP HI VIBRATION'<br>1AD-6, B/5 'NCP HI-HI VIBRATION'<br>1AD-6, C/5 'NCP VIBRATION MON TROUBLE'   |              |  |
| <b>NOTE TO EVALUATOR: Crew may choose to use the Annunciator Response Procedure</b>  |              |  |
| <b>NOTE TO EVALUATOR: The following steps are taken from OP/1/B/6100/010 G (Annunciator Response for Panel 1AD-6) B/5.</b> |              |  |
|  | RO or<br>BOP | 1. <b>Verify which pump has Hi-Hi vibration, from 1EMMN5390 (NC Pump Vibration Monitor Panel System Panel (back of 1MC6).</b>  |
|  | RO or<br>BOP | 2. <b>Read all 4 vibration channels for the alarming pump and compare readings to determine if a real vibration problem exists.</b>  |
|  | CREW         | 3. <b>IF a valid frame or shaft vibration indication exists, then perform the following:</b><br>3.1 <b>IF in Modes 1 OR 2:</b><br>3.1.1 <b>Trip reactor.</b><br>3.1.2 <b>WHEN reactor power less than 5%, THEN trip the affected NC pump.</b><br>3.1.3 <b>IF A OR B NCP is tripped, ensure that the spray valve associated with the pump is closed.</b><br>3.1.4 Go to EP/1/A/5000/E-0 (Reactor Trip or Safety Injection). |
| <b>Transition to EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)</b>  |              |  |
| <b>END OF EVENT 6</b>  |              |  |
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| <b>EVENTS 7, 8 and 9</b>   |            |  |
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| <b>NOTE TO EVALUATOR: The following actions are from EP/1/A/5000/E-0 (Reactor Trip or Safety Injection).</b> |            |  |
|  | RO and BOP | 1. <b>Monitor Enclosure 1 (Foldout Page).</b>  |
|  | RO         | 2. <b>Verify Reactor Trip: Perform the following:</b> <ul style="list-style-type: none"> <li>• All rod bottom lights - LIT</li> <li>• All reactor trip and bypass breakers - OPEN</li> <li>• I/R power - DECREASING.</li> </ul>          |
|  | RO         | 3. <b>Verify Turbine Trip: Perform the following:</b> <ul style="list-style-type: none"> <li>• All turbine stop valves - CLOSED</li> </ul>   |
|  | BOP        | 4. <b>Verify 1ETA and 1ETB - ENERGIZED.</b>  |
|  | RO         | 5. <b>Verify S/I is actuated:</b> <ol style="list-style-type: none"> <li>a. "SAFETY INJECTION ACTUATED" status light (1SI-13) – LIT</li> <li>b. Both E/S load sequencer actuated status lights (1SI-14) - LIT.</li> </ol>                |
|  | RO         | 6. <b>Announce "Unit 1 Safety Injection".</b>  |
|  | SRO        | 7. <b>Determine required notifications:</b> <ul style="list-style-type: none"> <li>• <b>REFER TO</b> RP/0/A/5000/001(Classification Of Emergency)</li> <li>• <b>REFER TO</b> RP/0/B/5000/013 (NRC Notification Requirements).</li> </ul> |
|  | RO         | 8. <b>Verify all Feedwater Isolation status lights (1SI-5) - LIT</b>   |
| <b>CRITICAL STEP</b>   | RO         | 8. RNO <b>Perform the following:</b> <ol style="list-style-type: none"> <li>a. <b>Initiate Feedwater Isolation.</b></li> <li>b. <b>IF</b> proper status light indication is not obtained, <b>THEN</b> CLOSE valves.</li> </ol>           |
| <b>END OF EVENT 8</b>  |            |  |
|  | BOP        | 9. <b>Verify Phase A Containment Isolation status as follows:</b> <ol style="list-style-type: none"> <li>a. Phase A "RESET" lights - DARK.</li> <li>b. Monitor Light Panel Group 5 St lights on energized train(s) - LIT.</li> </ol>     |
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|   | BOP       | 10. <b>Verify proper Phase B actuation as follows:</b><br>a. Verify Containment pressure - HAS REMAINED LESS THAN 3 PSIG  |
|   | RO or BOP | b. <b>IF AT ANY TIME</b> containment pressure exceeds 3 PSIG while in this procedure, <b>THEN</b> perform Step 10.a.  |
|   | RO        | 11. <b>Verify proper CA pump status as follows:</b><br>a. Motor driven CA pumps - ON.<br>b. 3 S/G N/R levels - GREATER THAN 11%.  |
|   |           | 11.b. RNO b. Perform the following:<br>1) Place CA PMP #1 control switch to ON.<br>2) Ensure CA Pump #1 - RUNNING   |
|   | BOP       | 12. <b>Verify all of the following S/I pumps - ON: Perform the following for affected train(s):</b><br><ul style="list-style-type: none"> <li>• NV pumps</li> <li>• ND pumps</li> <li>• NI pumps.</li> </ul>  |
|   | BOP       | 13. <b>Verify all KC pumps - ON.</b>  |
|   | BOP       | 14. <b>Verify all Unit 1 and Unit 2 RN pumps</b>  |
|   | BOP       | 15. <b>Verify proper ventilation systems operation as follows:</b><br><ul style="list-style-type: none"> <li>• <b>REFER TO</b> Enclosure 2 (Ventilation System Verification).</li> <li>• Notify Unit 2 operator to perform Enclosure 3 (Opposite Unit Ventilation Verification).</li> </ul> |
| <b>NOTE TO EVALUATOR: SRO will state that they will hand Enclosure 3 to a Unit 2 operator and set Enclosure 3 off to the side</b> |           |   |
| <b>NOTE TO EVALUATOR: The BOP will address the failure of 1A VE Fan to start with Enclosure 2.</b>                                |           |   |
| <b>END OF EVENT 9</b>   |           |   |
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|  | RO        | 16. <b>Verify all S/G pressures - GREATER THAN 775 PSIG.</b>  |
|  | RO        | 16. RNO <b>Perform the following:</b><br>a. Verify Main Steam Isolation as follows: <ul style="list-style-type: none"> <li>• All MSIVs - CLOSED</li> <li>• All MSIV bypass valves - CLOSED</li> <li>• All S/G PORVs - CLOSED.</li> </ul> b. <b>IF</b> any valve is open, <b>THEN</b> perform the following: <ol style="list-style-type: none"> <li>1) <b>Initiate Main Steam Isolation.</b></li> <li>2) <b>IF any valve is still open, THEN CLOSE valve.</b></li> </ol> |
|  | RO        | 17. <b>Verify proper S/I flow as follows:</b><br>a. "NV S/I FLOW" - INDICATING FLOW.<br>b. NC pressure - LESS THAN 1620 PSIG.<br>c. NI pumps - INDICATING FLOW.<br>d. NC pressure - LESS THAN 285 PSIG.   |
|  | RO        | 17.d. RNO d. Perform the following:<br>1) Ensure ND pump miniflow valve on operating ND pump(s) - OPEN.   |
| <b>NOTE TO EVALUATOR: Step 17 RNO d. 2) will not apply</b>   |           |   |
|  | SRO       | 3) <b>GO TO</b> Step 18.  |
| <b>NOTE Spent Fuel Pool parameters should be monitored within 2 hours of event.</b>  |           |   |
|  | RO or BOP | 18. <b>WHEN</b> time and manpower permit, <b>THEN</b> monitor Spent Fuel Pool level and temperature. <b>REFER TO EP/1/A/5000/G-1 (Generic Enclosures), Enclosure 1 (Unit 1 Spent Fuel Pool Monitoring).</b>   |
|  | RO        | 19. <b>Control S/G levels as follows:</b><br>a. Verify total CA flow - GREATER THAN 450 GPM.  |
|  | RO        | b. <b>WHEN</b> at least one S/G N/R level is greater than 11% (29% ACC), <b>THEN THROTTLE</b> feed flow to maintain all S/G N/R levels between 11% (29% ACC) and 50%.   |
|  | RO        | 20. <b>Verify all CA isolation valves - OPEN.</b>   |
|  | BOP       | 21. <b>Verify S/I equipment status based on monitor light panel - IN PROPER ALIGNMENT.</b>  |
| <b>NOTE Enclosure 4 (NC Temperature Control) shall remain in effect until subsequent procedures provide alternative NC temperature control guidance.</b> |           |   |
|  | RO        | 22. <b>Control NC temperature. REFER TO Enclosure 4 (NC Temperature Control).</b>   |
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|  | BOP        | 23. <b>Verify Pzr PORV and Pzr Spray Valve status as follows:</b><br>a. All Pzr PORVs - CLOSED.<br>b. Normal Pzr spray valves - CLOSED.<br>c. At least one Pzr PORV isolation valve - OPEN.   |
|  | RO or BOP  | 24. <b>Verify NC subcooling based on core exit T/Cs - GREATER THAN 0°F.</b>   |
|  | RO or BOP  | 25. <b>Verify main steamlines intact:</b><br>• All S/G pressures - STABLE OR INCREASING<br>• ALL S/Gs - PRESSURIZED.  |
|  | CREW       | 25. RNO <b>IF pressure in any S/G is decreasing in an uncontrolled manner OR any S/G is depressurized, THEN perform the following:</b><br>a. Implement EP/1/A/5000/F-0 (Critical Safety Function Status Trees).<br>b. <b>GO TO EP/1/A/5000/E-2 (Faulted Steam Generator Isolation).</b> |
| <b>Transition to EP/1/A/5000/E-2 (Faulted Steam Generator Isolation)</b>                                     |            |   |
| <b>NOTE TO EVALUATOR: The following actions are from EP/1/A/5000/E-2 (Faulted Steam Generator Isolation)</b> |            |   |
|  | RO and BOP | 1. <b>Monitor Enclosure 1 (Foldout Page).</b>   |
|  | RO         | 2. <b>Maintain any faulted S/G or secondary break isolated during subsequent recovery actions unless needed for NC System cooldown</b>  |
|  | RO         | 3. <b>Verify the following valves - CLOSED:</b><br>• All MSIVs<br>• All MSIV bypass valves.   |
|  | RO         | 3. RNO <b>CLOSE valve(s).</b>   |
|  | RO         | 4. <b>Verify at least one S/G pressure - STABLE OR INCREASING.</b>  |
|  | CREW       | 4. RNO <b>IF all S/Gs are faulted, THEN GO TO EP/1/A/5000/ECA-2.1 (Uncontrolled Depressurization Of All Steam Generators).</b>  |
| <b>Transition to EP/1/A/5000/ECA-2.1 (Uncontrolled Depressurization Of All Steam Generators)</b>             |            |   |
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| NOTE TO EVALUATOR: The following actions are from EP/1/A/5000/ECA-2.1<br>(Uncontrolled Depressurization Of All Steam Generators) |            |  |
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|  | RO and BOP | 1. Monitor Enclosure 1 (Foldout Page).   |
|  | RO or BOP  | 2. Verify secondary pressure boundary is isolated as follows:<br>a. S/G 1A:<br>1) Verify S/G 1A MSIV - CLOSED.   |
|  | RO or BOP  | 2.a.1) RNO 1) Perform the following:<br>a) CLOSE valve.<br>b) IF valve cannot be closed, THEN dispatch maintenance to isolate air to S/G 1A MSIV.<br><b>REFER TO EM/1/A/5200/010 (Venting of Air From The Main Steam Isolation Valve 1SM-1, 1SM-3, 1SM-5, and 1SM-7 Operators).</b>  |
|  | RO or BOP  | 2) Verify S/G 1A MSIV bypass valve - CLOSED.<br>3) Verify S/G 1A PORV - CLOSED.<br>4) Verify S/G 1A Feedwater Isolation status light (1SI-5) - LIT.<br>5) Verify the following blowdown isolation valves - CLOSED:<br>a) 1BB-56A (S/G 1A Bldwn Cont Isol Insd).<br>b) 1BB-148B (S/G 1A Bldwn Cont Isol Byp).<br>c) 1BB-57B (S/G 1A Bldwn Cont Isol Otsd).<br>6) CLOSE 1SM-77A (S/G 1A Otlt Hdr Bldwn C/V). |
|  | RO or BOP  | b. S/G 1B:<br>1) Verify S/G 1B MSIV - CLOSED   |
|  | RO or BOP  | 2.b.1) RNO 1) Perform the following:<br>a) CLOSE valve.<br>b) IF valve cannot be closed, THEN dispatch maintenance to isolate air to S/G 1B MSIV.<br><b>REFER TO EM/1/A/5200/010 (Venting of Air From The Main Steam Isolation Valve 1SM-1, 1SM-3, 1SM-5, and 1SM-7 Operators).</b>  |
|  | RO or BOP  | 2) Verify S/G 1B MSIV bypass valve - CLOSED.<br>3) Verify S/G 1B PORV - CLOSED.<br>4) Verify S/G 1B Feedwater Isolation status light (1SI-5) - LIT.<br>5) Verify the following blowdown isolation valves - CLOSED:<br>a) 1BB-19A (S/G 1B Bldwn Cont Isol Insd).<br>b) 1BB-150B (S/G 1B Bldwn Cont Isol Byp).<br>c) 1BB-21B (S/G 1B Bldwn Cont Isol Otsd).<br>6) CLOSE 1SM-76B (S/G 1B Otlt Hdr Bldwn C/V). |
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|                      | RO or BOP | 2) Verify S/G 1D MSIV bypass valve - CLOSED.<br>3) Verify S/G 1D PORV - CLOSED.<br>4) Verify S/G 1D Feedwater Isolation status light (1SI-5) - LIT.<br>5) Verify the following blowdown isolation valves - CLOSED:<br>a) 1BB-8A (S/G 1D Bldwn Cont Isol Insd).<br>b) 1BB-147B (S/G 1D Bldwn Cont Isol Byp).<br>c) 1BB-10B (S/G 1D Bldwn Cont Isol Otsd).<br>6) CLOSE 1SM-74B (S/G 1D Otlt Hdr Bldwn C/V).   |
|                      | BOP       | 3. <b>Reset the following:</b><br>a. ECCS.<br>b. D/G load sequencers.<br>c. Phase A.<br>d. Phase B.   |
|                      | RO or BOP | e. <b>IF AT ANY TIME</b> B/O occurs, <b>THEN</b> restart S/I equipment previously on.   |
|                      | BOP       | 4. <b>Establish VI to Containment as follows: Perform the following:</b><br><ul style="list-style-type: none"> <li>• Ensure 1VI-77B (VI Cont Isol) - OPEN</li> <li>• Verify VI pressure - GREATER THAN 85 PSIG.</li> </ul>  |
|                      | BOP       | 5. <b>Monitor shutdown margin during cooldown as follows:</b><br>a. Notify station management to monitor shutdown margin during NC System cooldown.<br>b. Request periodic NC boron samples from Primary Chemistry.<br>c. <b>WHEN</b> each NC boron sample obtained, <b>THEN</b> perform the following:<br>1) Perform shutdown margin calculation. <b>REFER TO</b> OP/0/A/6100/006 (Reactivity Balance Calculation).<br>2) Verify NC boron concentration - GREATER THAN OR EQUAL TO REQUIRED BORON CONCENTRATION. |
|                      | RO        | 6. <b>Control feed flow to minimize NC system cooldown as follows:</b><br>a. Verify all S/G N/R levels – GREATER THAN 11% (29% ACC).  |
|                      | RO        | 6.a. RNO a. Maintain at least 75 GPM feed flow to any S/G with N/R level less than 11% (29% ACC).   |
|                      | RO        | b. Verify cooldown rate based on NC T-Colds - LESS THAN 100°F IN AN HOUR.   |
| <b>CRITICAL STEP</b> | RO        | 6.d. RNO b. Perform the following:<br>1) Reduce feed flow to 75 GPM to each S/G.  |
|                      | SRO       | 2) GO TO Step 6.d.  |
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|  | RO        | d. Verify all NC T-Hots - STABLE OR DECREASING.   |
|  | RO or BOP | 7. <b>Verify NC subcooling based on core exit T/Cs - GREATER THAN 0°F.</b>  |
|  | BOP       | 8. <b>Verify Pzr PORV and isolation valve status as follows:</b><br>a. Power to all Pzr PORV isolation valves - AVAILABLE.<br>b. All Pzr PORVs - CLOSED.<br>c. Any Pzr PORV isolation valve - OPEN.   |
|  | RO or BOP | d. <b>IF AT ANY TIME</b> Pzr PORV opens due to high pressure, <b>THEN</b> , after Pzr pressure decreases to less than 2315 PSIG, ensure valve closes or is isolated.  |
|  | RO or BOP | 9. <b>Verify secondary radiation normal as follows:</b><br>a. Verify S/G(s) fault - INSIDE CONTAINMENT.   |
|  | RO or BOP | 9.a. RNO a. Request RP to perform the following:<br>1) Monitor area of steam fault for radiation.<br>2) Notify Control Room of any abnormal radiation conditions.   |
|  | BOP       | b. Ensure the following signals - RESET:<br>1) CA System valve control<br>2) <b>KC NC NI NM St signals.</b><br>c. Align all S/Gs for Chemistry sampling.<br>d. Perform the following:<br>• Notify Chemistry to sample all S/Gs for activity.<br>OR<br>• Notify RP to frisk all cation columns for activity.<br>e. Verify the following EMF trip 1 lights - DARK:<br>• 1EMF-33 (Condenser Air Ejector Exhaust)<br>• 1EMF-26 (Steamline 1A)<br>• 1EMF-27 (Steamline 1B)<br>• 1EMF-28 (Steamline 1C)<br>• 1EMF-29 (Steamline 1D).<br>f. <b>WHEN</b> activity results are reported, <b>THEN</b> verify all S/Gs indicate no activity. |
|  | BOP       | 10. <b>Determine if ND pumps should be stopped as follows:</b><br>a. Any ND pump - ON.<br>b. Verify ND pump suction - ALIGNED TO FWST.<br>c. NC pressure - GREATER THAN 285 PSIG.<br>d. NC pressure - STABLE OR INCREASING<br>e. <b>Stop ND pumps.</b>  |
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|  | RO or BOP | f. <b>IF AT ANY TIME</b> NC pressure decreases to less than 285 PSIG in an uncontrolled manner, <b>THEN</b> restart ND pumps.  |
|  | BOP       | 11. <b>Determine if transfer to Cold Leg Recirc is required:</b><br>a. Verify FWST level - LESS THAN 20% (1AD-9, D/8 "FWST 2/4 LO LEVEL").   |
|  | SRO       | 11.a. RNO a. <b>GO TO</b> Step 12.   |
|  | BOP       | 12. <b>Determine if CLAs should be isolated as follows:</b><br>a. Verify at least two NC T-Hots - LESS THAN 396°F<br>b. Dispatch operator to restore power to all CLA discharge isolation valves. <b>REFER TO</b> EP/1/A/5000/G-1 (Generic Enclosures), Enclosure 9 (Power Alignment for CLA Valves).<br>c. Maintain NC pressure greater than CLA pressure until CLAs are isolated or vented.<br>d. <b>WHEN</b> power is aligned, <b>THEN</b> perform the following:<br>1) CLOSE all of the following valves:<br>• 1NI-54A (C-Leg Accum A Disch Isol)<br>• 1NI-65B (C-Leg Accum B Disch Isol)<br>• 1NI-76A (C-Leg Accum C Disch Isol)<br>• 1NI-88B (C-Leg Accum D Disch Isol).<br>2) Notify dispatched operator to remove power from all CLA isolation valves. <b>REFER TO</b> EP/1/A/5000/G-1 (Generic Enclosures), Enclosure 9 (Power Alignment for CLA Valves). |
|  | RO or BOP | 13. <b>Verify S/I termination criteria as follows:</b><br>a. NC subcooling based on core exit T/Cs - GREATER THAN 0°F.<br>b. NC pressure - STABLE OR INCREASING.<br>c. Pzr level - GREATER THAN 11% (30% ACC).   |
|  | BOP       | 14. <b>Ensure only one NV pump - ON.</b>   |
|  | RO or BOP | 15. <b>Verify NC pressure - STABLE OR INCREASING.</b>  |
|  | BOP       | 16. <b>Verify VI pressure - GREATER THAN 50 PSIG.</b>  |
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|  | BOP | <p>17. <b>Isolate NV S/I flowpath as follows:</b></p> <p>a. Verify the following valves - OPEN:</p> <ul style="list-style-type: none"> <li>• 1NV-252A (NV Pumps Suct From FWST)</li> <li>• 1NV-253B (NV Pumps Suct From FWST).</li> </ul> <p>b. Verify the following valves - OPEN:</p> <ul style="list-style-type: none"> <li>• 1NV-203A (NV Pumps A&amp;B Recirc Isol)</li> <li>• 1NV-202B (NV Pmps A&amp;B Recirc Isol).</li> </ul> <p>c. <b>CLOSE the following valves:</b></p> <ul style="list-style-type: none"> <li>• 1NI-9A (NV Pmp C/L Inj Isol)</li> <li>• 1NI-10B (NV Pmp C/L Inj Isol).</li> </ul>   |
|  | BOP | <p>18. <b>Establish charging as follows:</b></p> <p>a. <b>THROTTLE 1NV-294 (NV Pmps A&amp;B Disch Flow Ctrl) for 32 GPM charging line flow.</b></p> <p>b. <b>CLOSE 1NV-309 (Seal Water Injection Flow).</b></p> <p>c. Verify 1NV-32B (NV Supply To Loop A Isol) - OPEN.</p> <p>d. Verify 1NV-37A (NV Supply To Pzr Aux Spray) - CLOSED.</p> <p>e. OPEN the following valves:</p> <ul style="list-style-type: none"> <li>• 1NV-312A (Chrg Line Cont Isol)</li> <li>• 1NV-314B (Chrg Line Cont Isol)</li> </ul> <p>f. Verify 1NV-309 - ABLE TO BE OPERATED FROM CONTROL ROOM.</p> <p>g. <b>Place 1NV-309 in auto.</b></p> <p>h. Perform the following:</p> <ul style="list-style-type: none"> <li>• <b>Maintain charging flow less than 180 GPM.</b></li> <li>• <b>Maintain 32 GPM seal water flow.</b></li> </ul> |
|  | BOP | <p>19. <b>Control charging as follows:</b></p> <p>a. <b>Control charging to maintain Pzr level stable.</b></p> <p>b. Verify Pzr level - STABLE OR INCREASING.</p>  |
|  |     | <p>20. <b>Determine if NI pumps should be stopped as follows:</b></p> <p>a. Verify any NI pump - ON.</p>   |
| <p><b>NOTE If Pzr heaters are off, NC pressure may decrease slowly due to Pzr spray bypass flow. This may be considered "stable" pressure.</b></p> |     |  |
|  |     | <p>b. Verify the following:</p> <ul style="list-style-type: none"> <li>• NC pressure - STABLE OR INCREASING</li> <li>• NC pressure - GREATER THAN 1620 PSIG.</li> </ul>  |
|  |     | <p>20.b. RNO b. <b>RETURN TO</b> Step 5.</p>   |
| <p><b>END OF EVENT 7</b></p>   |     |  |
| <p><b>END OF SCENARIO</b></p>  |     |  |
|  |     |  |
|  |     |  |
|  |     |  |

## Attachment List

|   |
|---|
| <b>ATTACHMENT 1</b> - Crew Critical Task Summary  |
| <b>ATTACHMENT 2</b> - Shift Turnover Information  |
| <b>ATTACHMENT 3</b> – OP/1/A/6150/009 Enclosure 5 (Manual Operation of the Makeup Controls) |
| <b>ATTACHMENT 4</b> – AP/1/A/5500/003 Enclosure 3 (Rod Insertion Limit Boration)            |
| <b>ATTACHMENT 5</b> – AP/1/A/5500/028 Enclosure 1 (Foldout Page)                            |
| <b>ATTACHMENT 6</b> – EP/1/A/5000/E-0 Enclosure 1 (Foldout Page)                            |
| <b>ATTACHMENT 7</b> – EP/1/A/5000/E-0 Enclosure 2 (Ventilation System Verification)         |
| <b>ATTACHMENT 8</b> – EP/1/A/5000/E-0 Enclosure 4 (NC Temperature Control)                  |
| <b>ATTACHMENT 9</b> – EP/1/A/5000/E-2 Enclosure 1 (Foldout Page)                            |
| <b>ATTACHMENT 10</b> – EP/1/A/5000/ECA-2.1 Enclosure 1 (Foldout Page)                       |

### ATTACHMENT 1

| <b>CREW CRITICAL TASK SUMMARY</b> |              |             |   |
|-----------------------------------|--------------|-------------|---|
| <b>SAT</b>                        | <b>UNSAT</b> | <b>CT #</b> | <b>CRITICAL TASK</b>  |
|                                   |              | C-1         | Control AFW flowrate to 75 gpm (lowest readable on indicator) per S/G to minimize cooldown rate before an ORANGE path challenge develops to the integrity Critical Safety Function. |
|                                   |              | C-2         | Manually initiate Main Feedwater Isolation.   |

Comments:

ATTACHMENT 2

| <b>SHIFT TURNOVER INFORMATION</b>  |                      |                  |              |
|--|----------------------|------------------|--------------|
| <b>Unit 1 Status</b>   |                      |                  |              |
| <b>Power Level</b>   | <b>Power History</b> | <b>NCS Boron</b> | <b>Xenon</b> |
| 100%   | MOL                  | Per OAC          | per OAC      |
| <b>Controlling Procedure</b>   |                      |                  |              |
| <ul style="list-style-type: none"> <li>OP/1/A/6100/003 (Controlling Procedure for Unit Operation), Enclosure 4.3 (Unit Operation Between 85% and 100% Power) is in progress through step 3.15.</li> </ul>  |                      |                  |              |
| <b>Other Information Needed to Assume the Shift</b>  |                      |                  |              |
| <ul style="list-style-type: none"> <li>1A KF pump is tagged out for breaker refurbishment.</li> <li>Maintenance estimates that repairs will take 2 hours to complete.</li> <li>Direction for the crew is to reduce reactor power to 50% per the reactivity management plan to remove 1A CFPT from service for maintenancs on 1CF-6 (Recirc valve)</li> </ul> |                      |                  |              |
| <b>NEOs Available</b>  |                      |                  |              |
| Six NEOs are available as listed on the status board   |                      |                  |              |
| <b>METEOROLOGICAL CONDITIONS</b>   |                      |                  |              |
| <ul style="list-style-type: none"> <li>Upper wind direction = 315 degrees, speed = 10 mph</li> <li>Lower wind direction = 315 degrees, speed = 10.5 mph</li> <li>York County is under a severe thunderstorm watch for the next 6 hours.</li> </ul>   |                      |                  |              |