

**Draft Submittal**  
(Pink Paper)

**HATCH OCTOBER/NOVEMBER 2005 EXAM**

**05000321/2005301 & 05000366/2005301**

**OCTOBER 28, 2005, (WRITTEN) AND  
OCTOBER 31 - NOVEMBER 4, 2005**

1. ADMINISTRATIVE TOPICS OUTLINE (ES-301-1)
2. CONTROL ROOM SYSTEMS & FACILITY WALK-THROUGH  
TEST OUTLINE (ES-301-2)
3. ADMINISTRATIVE JPMS
4. IN-PLANT JPMS
5. CONTROL ROOM JPMS (SIMULATOR JPMS)

**DRAFT****Facility:** E. I Hatch**Scenario No.:** 4**Op-Test No.:**

**Examiners:** \_\_\_\_\_ **Operators:** \_\_\_\_\_  
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**Initial Conditions:** Unit 2 is at 60% RTP returning to 100% following repair and return to service of the "2B" Rx feed pump. The National Weather Service has predicted Severe Thunderstorms for Appling and surrounding counties.

**Turnover:** Continue RFPT "2B" start-up at step 7.1.11.9 of 34SO-N21-007-2. Increase Reactor Power to 100% RTP using Rx Recirc system and Control Rods.

Event No.	Malf. No.	Event Type*	Event Description
1		N (BOP)	Continue RFPT Start-Up
2		R (CBO)	Raise Power with Recirc to 65%
3	mfE41_213	I (BOP) (SRO TS)	HPCI Suction swap to Torus due to inoperable torus level transmitter, time compressed repair and re-aligned to CST.
4	mf60211148	C (CBO)	Recirc Pump "A" high vibration, power increase will be stopped and decrease started. Decreasing to about 62% power will correct condition.
5	mfE51_114	C (BOP) (SRO TS)	RCIC inadvertent Start
6	mfB21_130K	C (CBO) (SRO TS)	SRV "K" intermittently cycles open and closed until the fuses are pulled.
7	svoT48140 svoT48142 svoT48143 svoT48144 svoT48147 svoT48148 svoT48149	M (All)	Torus level decreases due to un-isolable leak from the torus caused by fatigue from repeated SRV cycling. Rx Scram required.
8	mfN21_99	C (BOP)	Feedwater Level Cntrl valve fails closed. Must use bypass.
9	mfS22_270A mfS22_270B	C (CBO)	Main Generator PCBs fail to open on Main Generator trip. Must be manually opened.
10		M (All)	Emergency Depress due to low Torus Level.
			Scenario is terminated after reactor is emergency depressed.

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor



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Event Description: Raise Power with Recirc to 65%

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> <li>Directs RO to increase reactor power to 75% by increasing Recirc flow. Power increases should be made as recommended by the STA/Reactor Engineering at a rate not to exceed 10 MWE/min.</li> </ul>
	CBO	Enters the following procedures <ul style="list-style-type: none"> <li>34GO-OPS-005-2S, "Power Changes"</li> <li>34SO-B31-001-2S, "Recirculation System"</li> </ul>
		<ul style="list-style-type: none"> <li>Increases reactor power with Recirc flow increase per 34SO-B31-001-2S by slowly adjusting Recirc Master Flow Controller.</li> <li>Monitors power increase by observing APRM and generator output indications.</li> </ul>
		May get the RBM Upscale and Rod Out Block alarm, if a peripheral control rod is not selected. This is expected and the operator may select a peripheral rod at this time. May get some Feedwater heater level alarms. This is expected at this power level.
		<i>Simulator Operator enters the next event after power has been increased by 5% or at the Chief Examiner's request.</i>

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Event Description: HPCI Suction swap to Torus due to inoperable torus level transmitter, time compressed repair and re-aligned to CST. (mfE41\_213)

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator enters mfE41_213</i>
	All	<ul style="list-style-type: none"> <li>• Torus level high alarm received on 2H11-P601, 34AR-601-127-2</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs an operator to enter 34AR-601-127-2</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Enters 34AR-601-127-2</li> <li>• Determines that HPCI Suction has aligned to the torus               <ul style="list-style-type: none"> <li>• Verifies 2E41-F041, 2E41-F042 and 2E41-F051 are open.</li> <li>• Verifies that 2E41-F004 is closed.</li> </ul> </li> <li>• Determines that Torus level is not high.</li> <li>• Determines that RCIC should not have auto swapped to the torus. (It didn't)</li> <li>• Notifies SS that HPCI has automatically aligned to the Torus, but torus level is normal.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Dispatches RO/Maint to the ATTS panel</li> <li>• Has the operator monitor suction pressure on HPCI.</li> </ul>
		<i>Simulator Operator, as RO sent to ATTS, notifies the control room that 2E41-LS-N662B is reading upscale.</i>
	BOP	<ul style="list-style-type: none"> <li>• Reports to the SS that 2E41-LS-N662B is indicating upscale</li> </ul>





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Event Description: Recirc Pump "A" high vibration (mf60211148)

Time	Position	Applicant's Actions or Behavior
	CBO	<ul style="list-style-type: none"> <li>• Enters the following procedures               <ul style="list-style-type: none"> <li>• 34GO-OPS-005-2S, "Power Changes"</li> <li>• 34SO-B31-001-2S, "Recirculation System"</li> </ul> </li> <li>• Decreases reactor power with Recirc flow decrease per 34SO-B31-001-2S by slowly adjusting Recirc Master Flow Controller.</li> <li>• Monitors power decrease by observing APRM and generator output indications.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Stops power reduction periodically and depresses the High vibration reset pushbutton.</li> <li>• The alarm will not clear until after power is reduced by at least 2%.</li> </ul>
		<i>Simulator Operator DELETES mf6021148 after power has been reduced by 2%.</i>
	CBO	<ul style="list-style-type: none"> <li>• Depresses the Hi vibration reset pushbutton and determines that the alarm does clear.</li> <li>• Notifies the SS that the vibration alarm is clear after reducing Recirc pump speed.</li> </ul>
		<i>Simulator Operator, If power is increased again, enter the high vibration malfunction again and delete it again when power is decreased.</i>

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Event Description: Recirc Pump "A" high vibration (mf60211148)

Time	Position	Applicant's Actions or Behavior
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	SS	<ul style="list-style-type: none"> <li>Has the operator determine if the plant is in the safe region of the Power to Flow map.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>Determines that the plant is in the safe area of the Power to Flow map.</li> </ul>
		<p><i>Simulator Operator enters the next event now or at the Chief Examiner's request.</i></p>

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Event Description: RCIC inadvertent Start (mfE51\_114)

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator enters mfE51_114</i>
	All	<ul style="list-style-type: none"> <li>• Receives SEC System Auto Initiation Signal Present Alarm</li> <li>• Recognizes that RCIC has started.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Determines RCIC has auto started and that RWL is normal.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Tells operator that RWL is normal</li> <li>• Directs operator to trip RCIC</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Trips RCIC by depressing the RCIC Trip pushbutton. (This is IAW 34SO-E51-001-2, RCIC System, but will not enter the procedure prior to performing the step.) (Critical Task)</li> </ul>
		<ul style="list-style-type: none"> <li>• Enters 34AB-E10-001-2, Inadvertent Initiation of ECCS/RCIC</li> <li>• Enters 34SO-E51-001-2, RCIC System</li> <li>• Dispatches RO/Maint to determine cause of initiation signal</li> <li>• May attempt to reset the Initiation signal</li> <li>• May Close 2E51-F524, Trip and Throttle Vlv</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• May have the operator run the Trip and Throttle Valve down to re-latch in case RCIC is needed later.</li> <li>• Enters TS for RCIC 3.5.3.A, 14 days for RCIC inoperable.</li> </ul>
		<i>If requested, Simulator Operator will report that I &amp; C is still investigating the cause of the RCIC Initiation signal, but have not identified the cause at this time. (Continue to the next event.)</i>

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**Event Description:** SRV "K" intermittently cycles open and closed until the fuses are pulled (mfB21\_130K)

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator intermittently cycles SRV "K" open and closed until the fuses are pulled, mfB21_130K</i>
	All	<ul style="list-style-type: none"> <li>Receives Safety Blowdown pressure High 34AR-602-311-2 and Safety Blowdown Valves leaking 34AR-603-122-2 alarms</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>Determines that SRV "K" is opening and closing intermittently.</li> <li>May attempt to reset ADS as follows:               <ul style="list-style-type: none"> <li>Depresses the ADS Logic A Timer Reset pushbutton.</li> <li>Depresses the ADS Logic B Timer Reset pushbutton.</li> </ul> </li> <li>May cycle the SRV Control Switch several times in an attempt to close the SRV</li> <li>Informs SS that the "K" SRV is cycling open and closed.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>Directs operator to enter 34AB-B21-003-2, Failure of Safety/Relief valves, and dispatch an operator to pull the fuses for SRV "K".</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>Enters 34AB-B21-003-2, Failure of Safety/Relief valves               <ul style="list-style-type: none"> <li>Dispatches an operator to pull the fuses for SRV "K".</li> </ul> </li> </ul>
		<i>Simulator Operator, after 3 minutes, enter rfb21_308 to simulate pulling the fuses for SRV K. Then, Notify the crew that the fuses have been pulled for SRV "K".</i>

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Event Description: SRV "K" intermittently cycles open and closed until the fuses are pulled (mfB21\_130K)

Time	Position	Applicant's Actions or Behavior
	SS	<ul style="list-style-type: none"> <li>• Enters a Tracking RAS for TS LCO 3.5.1.E</li> <li>• Directs operators to verify that the "K" SRV is closed, after the fuses are pulled.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Confirms that SRV "K" is closed by monitoring:               <ul style="list-style-type: none"> <li>• SRV tailpipe temperature decrease</li> <li>• Torus level stabilizing</li> <li>• Torus Temp stabilizing</li> <li>• Rx and Generator power returns to the pre-event level</li> </ul> </li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Resets the SRV leak detection by placing the Leak Detection Logic A Reset keylock switch and/or Leak Detection Logic B Reset keylock switch to Reset position and back to Normal position and confirm that the Amber SRV indicating lights have Extinguished.</li> <li>• Informs the SS that SRV "K" is closed.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Informs the crew that operability of the suppression chamber-drywell vacuum breakers must be performed within 12 hours per 34SV-T48-002-2, Suppression Chamber To Drywell Vacuum Breaker System Operability.</li> <li>• Notifies Chemistry and initiates a CR to initiate increased monitoring of vessel moisture content carryover per 64CH-SAM-025-0.</li> </ul>
		<i>Simulator Operator continues to next event</i>

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**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator Enters: svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10) 3 Minutes later enter: svoT48144 (200/15), svoT48149 (200/15)</i>
	ALL	<ul style="list-style-type: none"> <li>Receives Panel 2H11-P657 System Trouble alarm</li> </ul>
	SS	<ul style="list-style-type: none"> <li>Directs operator to investigate 2H11-P657 Trouble alarm.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>Determines that several Torus Area Sump Level High, High-High, and High-High-High alarms are annunciating, including the S-W, N-W, N-E, and S-E areas.</li> <li>Notifies the SS of the alarms and enters the ARPs for the alarms.</li> <li>May notice that the Torus level is decreasing.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>Directs BOP operator to enter and follow the ARPs for the Torus Area High Sump Levels.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>During this time, Receives the Torus Water Level High/Low alarm.</li> <li>Determines that Torus Level is decreasing.</li> <li>Notifies the SS that the Torus Level is decreasing.</li> </ul>

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**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
	SS	<ul style="list-style-type: none"> <li>• Directs the operator to investigate the cause of the Torus level decrease.</li> <li>• Enters the:               <ul style="list-style-type: none"> <li>• Primary Containment Control EOP Flowchart (PC Chart) when Torus level reaches 146 inches.</li> </ul> </li> <li>and</li> <li>• Secondary Containment Control EOP Flowchart (SC Chart) due to the Sump High-High-High level alarms.</li> <li>• The SS may decide not to add water to the Torus until the leak can be isolated. (This will decrease the chance of flooding multiple areas and will preserve the CST level for use if needed later for RPV injection.)</li> </ul>
	SS/CBO	<ul style="list-style-type: none"> <li>• Using SPDS and STA, determines that torus level is decreasing at about 2 inches a minute.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Enters 34AB-T23-001-2, Loss of Primary Containment Integrity and 34AB-T22-003-2, Secondary Containment Control.</li> <li>• Dispatches SOs to determine the source of leak and level of water in the Rx bldg. Torus Area</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• IAW with RB S-E and RB S-W Diagonal Floor Drain Sump Level High annunciators, closes 2T45-F001, 2T45-F002, 2T45-F003, 2T45-F004, and 2T45-F005 by placing the control switch to close on 2H11-P654 panel.</li> </ul>

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**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Actions may not be performed in sequence. When notified by the SO that the leak is un-isolable, actions for isolating ECCS/RCIC suction valves will be stopped and any isolated systems suction valves opened.</p> <ul style="list-style-type: none"> <li>• As directed by high sump level ARPs, and 34AB-T22-003-2, enters 34SO-G11-009-2 to attempt to isolate the leak, by performing the following steps:</li> <li>• Notifies the SS that "B" Loop ECCS pumps suction to the Torus will be isolated.</li> </ul>
		<ul style="list-style-type: none"> <li>• Places the control switches for the following valves to Close.               <ul style="list-style-type: none"> <li>• 2E21-F019B, Torus Suction Vlv</li> <li>• 2E11-F065B, Torus Suction Vlv</li> <li>• 2E11-F065D, Torus Suction Vlv</li> </ul> </li> <li>• Determines that Torus Water level is still decreasing at the same rate.</li> <li>• Notifies the SS that Torus level is still decreasing.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs the operator to re-open the suction valves for the "B" loop of ECCS.</li> </ul>

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**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>• Places the control switches for the following valves to Open.               <ul style="list-style-type: none"> <li>• 2E21-F019B, Torus Suction Vlv</li> <li>• 2E11-F065B, Torus Suction Vlv</li> <li>• 2E11-F065D, Torus Suction Vlv</li> </ul> </li> <li>• Notifies the SS that the "B" loop of ECCS suction is re-aligned to the Torus.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Notifies the SS that "A" Loop ECCS pumps suction to the Torus will be isolated.</li> </ul>
		<ul style="list-style-type: none"> <li>• Places the control switches for the following valves to Close.               <ul style="list-style-type: none"> <li>• 2E21-F019A, Torus Suction Vlv</li> <li>• 2E11-F065A, Torus Suction Vlv</li> <li>• 2E11-F065C, Torus Suction Vlv</li> </ul> </li> <li>• Determines that Torus Water level is still decreasing at the same rate.</li> <li>• Notifies the SS that Torus level is still decreasing.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs the operator to re-open the suction valves for the "A" loop of ECCS.</li> </ul>

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**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>• Places the control switches for the following valves to Open.               <ul style="list-style-type: none"> <li>• 2E21-F019A, Torus Suction Vlv</li> <li>• 2E11-F065A, Torus Suction Vlv</li> <li>• 2E11-F065C, Torus Suction Vlv</li> </ul> </li> <li>• Notifies the SS that the "A" loop of ECCS suction is re-aligned to the Torus.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Notifies the SS that RCIC suction to the Torus will be isolated.</li> </ul>
		<ul style="list-style-type: none"> <li>• Places the control switch for the following valve to Close.               <ul style="list-style-type: none"> <li>• 2E51-F003, Torus Suction Vlv</li> </ul> </li> <li>• Determines that Torus Water level is still decreasing at the same rate.</li> <li>• Notifies the SS that Torus level is still decreasing.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs the operator to re-open the suction valve for RCIC.</li> </ul>
		<ul style="list-style-type: none"> <li>• Places the control switch for the following valve to Open.               <ul style="list-style-type: none"> <li>• 2E51-F003, Torus Suction Vlv</li> </ul> </li> <li>• Notifies the SS that the RCIC suction is re-aligned to the Torus.</li> </ul>

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**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
		<p><i>Simulator Operator, as the SO sent to look for a leak in the Torus, reports that:</i></p> <ul style="list-style-type: none"> <li>• <i>There is a leak on the Core Spray pump "B" suction line. The break is between the suction valve and the Torus and that there is no way to isolate the leak.</i></li> <li>• <i>The SO also reports that water level in the torus area is 12 inches deep on the EOP measuring stick.</i></li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Determines that water level in the Torus area is above Max Safe in one area per the SC flowchart.</li> <li>• Determines that Torus level cannot be maintained above 98 inches due to an un-isolable leak in the Torus.</li> <li>• IAW the PC flowchart path SP/L, enters the RPV Control flowchart (RC Chart) at point A.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Enters RC EOP Flowchart</li> <li>• Orders the Rx scrambled</li> <li>• Directs CBO to perform RC-1 placard</li> <li>• Directs BOP to perform RC-2 and RC-3 placards</li> </ul>

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**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
	CBO	<ul style="list-style-type: none"> <li>• Manually SCRAMs the Reactor using the SCRAM pushbuttons</li> <li>• Places Rx Mode Switch in S/D.</li> <li>• Verifies and reports all rods inserted past position 02.</li> <li>• Inserts IRMs and SRMs.</li> <li>• Places SDV Isol Vlv Switch to "ISOL" and verifies closed.</li> <li>• If not tripped, places Recirc to minimum speed.</li> </ul>
	BOP	<p>Performs actions of RC-2 and RC-3 after Reactor SCRAM.</p> <ul style="list-style-type: none"> <li>• Confirms proper operation of the Feedwater Level Control System to restore and maintain RPV level.               <ul style="list-style-type: none"> <li>• Ensures FW Master Controller setpoint reduces to 9 inches and output reduces to 25% of previous value.</li> </ul> </li> </ul>
		<ul style="list-style-type: none"> <li>• IF NOT needed to restore RPV level,               <ul style="list-style-type: none"> <li>• Trips One RFPT.</li> <li>• Confirms OPEN 2N21-F125.</li> <li>• Places 2C32-R619, FW S/U LVL CONTROL VLV Controller, in AUTO, set at approximately 9 inches.</li> <li>• Closes 2N21-F110.</li> <li>• Checks ECCS Injection Systems and secures as necessary.</li> </ul> </li> </ul>

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**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> <li>• Monitors RPV pressure.</li> <li>• Confirms proper operation of pressure control system (TBV, LLS, etc.).</li> <li>• If necessary, allows RPV pressure to exceed 1074 psig then cycles any SRV to initiate LLS.</li> <li>• Maintains RPV pressure between 1074 and 800 psig.</li> <li>• Notifies SS of pressure control system operation.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Assigns a RWL band between 3" and 50"</li> </ul>
		<i>Simulator Operator enters mfN21_99, Start-up level control valve (SULCV) fails closed.</i>
	BOP	<ul style="list-style-type: none"> <li>• Controls RWL using the Feedwater system. Notifies SS if RWL gets outside assigned band.</li> <li>• Determines that the SULCV has failed.</li> <li>• Throttles open 2N21-F110 as needed to control Feedwater flow. (RWL control will be difficult due to the size of the bypass valve and lack of a finesse control system for the valve.)</li> <li>• May choose to use HPCI or RCIC for level control.</li> <li>• As time allows, notifies SS that the SULCV has failed and dispatches Maint to investigate the problem with the valve.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 7 Page 9 of 14

**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
	CBO	<ul style="list-style-type: none"> <li>• Performs Turbine trip Actions per TC -1 placard on the 2H11-P650 panel</li> </ul>
		<ul style="list-style-type: none"> <li>• Manually Trips the Turbine.</li> <li>• Confirms that TSV's, TCV's, and CIV's are <b>Closed</b>.</li> <li>• Confirms or Trips Gen, PCB's and Exciter ACB.</li> </ul>
	CBO	<p>The PCBs will not be open due to malfunctions entered during scenario setup.</p> <ul style="list-style-type: none"> <li>• Determines that the Main Generator PCBs did not open.</li> <li>• Opens PCB 179740 by placing the control switch to Trip.</li> <li>• Opens PCB 179750 by placing the control switch to Trip.</li> <li>• As time allows, notifies the SS that the Main Generator PCBs did not Open automatically.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Continues TC - 1 actions:               <ul style="list-style-type: none"> <li>• Confirms House Loads Swap to SUT'S.</li> <li>• Confirms or Places TGM in Auto.</li> <li>• Starts:                   <ul style="list-style-type: none"> <li>• TG Oil Pump</li> <li>• Motor Suction Pump</li> <li>• Lift Pumps</li> </ul> </li> <li>• Closes the RSSV'S, 2N11-F004A and F004B.</li> <li>• Notifies the SS when actions are complete.</li> </ul> </li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 7 Page 10 of 14

**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
	SS	<ul style="list-style-type: none"> <li>• Directs an Operator to Place HPCI Aux Oil Pump in pull-to-lock (PTL) Off, prior to reaching a 110 inches in the torus.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Confirms that HPCI is not operating</li> <li>• Places HPCI Aux Oil Pump in PTL Off. (Critical Task)</li> <li>• Notifies SS that HPCI Aux Oil Pump is in PTL Off.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• If time allows, may Anticipate Emergency Depress due to low Torus level               <ul style="list-style-type: none"> <li>• Directs an operator to decrease Rx pressure using the bypass valves to Anticipate Emergency Depress, exceeding 100°F/hr.</li> </ul> </li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• If directed to Anticipate Emergency Depress, depresses the Bypass Valve Opening Jack Selector Increase pushbutton until all three bypass valves are open. (This may complicate RWL control and the RWL control operator should be made aware of the bypass valve manipulation.)</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Prior to Torus Level decreasing below 98 inches, IAW the PC flow chart, transitions from RC pressure path to CP-1 flow chart, point G, for Emergency Depress.</li> <li>• Confirms Torus level is &gt;57.5 inches.</li> <li>• Directs the Operator to Open 7 ADS valves.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 7 Page 11 of 14

**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
	CBO	<ul style="list-style-type: none"> <li>• Opens 6 ADS valves by placing their control switches to Open.</li> <li>• Operator informs the SS that one ADS valve (SRV "K") is inoperable due to pulled fuses.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs operator to Open one additional SRV.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Places one more SRV control switch to Open</li> <li>• Notifies the SS that 7 SRVs are Open. (Critical Task)</li> <li>• Verifies that Rx pressure is decreasing.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs the operator to monitor the Rx pressure decrease and maintain Rx pressure &lt;50psig above Torus pressure.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Transitions from high pressure Feedwater to low pressure injection as Rx pressure decreases by tripping the RFPT and adjusting the 2N21-F110 valve position to maintain RWL with the Condensate Booster pumps. (During the Emergency Depress will not be able to maintain inside the RWL band, but should restore RWL to within the band at some point after the Emergency Depress.)</li> </ul>
	BOP/CBO	<ul style="list-style-type: none"> <li>• Verifies that HPCI isolates when Rx pressure decreases to 128 psig. (2E41-F002 and F003 close)</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 7 Page 12 of 14

**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
	BOP/CBO	<ul style="list-style-type: none"> <li>Verifies that RCIC isolates when Rx pressure decreases to 95 psig. (2E51-F007 and F008 close)</li> </ul>
	BOP/CBO	<ul style="list-style-type: none"> <li>Verifies that the MSIVs isolate when Main Condenser vacuum decreases to 10 inches Vac.</li> <li>Places the control Switches to close for 2B21-F022A-D and 2B21-F028A-D</li> <li>Verifies that 2B31-F019 and 2B31-F020 closes.</li> </ul>
		<p><i>Simulator Operator – The scenario can be stopped at any time after Rx pressure is within 50 psig of Torus pressure or as directed by the Chief Examiner. Placing Torus cooling in service is not a required part of this scenario.</i></p>
	SS	<ul style="list-style-type: none"> <li>If time allows, Prior to Scenario Termination (Rx pressure &lt;50 psig above Torus Pressure), the SS Directs an Operator to place torus cooling in service, per the PC flow chart, due to high Torus temperature caused by the emergency depress.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 7 Page 13 of 14

**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
	CBO	<ul style="list-style-type: none"> <li>• If directed and time allows, Places Torus cooling in service by performing the following actions per 34SO-E11-010-2, RHR System, using the placard</li> </ul>
		<ul style="list-style-type: none"> <li>• Place RHRSW in operation per 34SO-E11-010-2 by performing the following:</li> </ul>
		<ul style="list-style-type: none"> <li>• Prelube RHRSW pump.</li> <li>• Override 2E11-F068A(B) Low Discharge Pressure Interlock.</li> <li>• Position 2E11-F068A(B) to 45% OPEN</li> <li>• Start RHRSW pump.</li> <li>• Place 2E11-F068A(B) Low Discharge Pressure Interlock switch to NORMAL position.</li> <li>• Position 2E11-F068A(B) to obtain <math>\leq 4400</math> GPM <u>AND</u> <math>\leq 450</math> PSIG.</li> <li>• IF desired to start SECOND pump,</li> <li>• Throttle 2E11-F068A(B) to achieve max flow rate (not to exceed 4400 GPM).</li> <li>• Open 2E11-F068A(B) an additional 5%.</li> <li>• Start Second RHRSW Pump.</li> <li>• Position 2E11-F068A(B) to obtain <math>\leq 8800</math> GPM <u>AND</u> <math>\leq 450</math> PSIG.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 7 Page 14 of 14

**Event Description:** Torus level decreases due to un-isolable leak from the torus (svoT48140 (70/2), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/10), svoT48144 (200/15), svoT48149 (200/15) mfN21\_99, mfS22\_270A, mfS22\_270B)

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>• Open 2E11-F048A(B).</li> <li>• Open 2E11-F003A(B).</li> <li>• Start RHR Loop A(B) pump(s).</li> <li>• Open 2E11-F028A(B).</li> </ul>
		<p>NOTE: RHR system rated flow is 7700 gpm with one pump or 17,000 gpm with two pumps.</p> <p>IF the Hx Bypass Vlv, 2E11-F048A(B) is NOT full OPEN, RHR Flow is limited to <math>\leq 11,500</math> gpm.</p>
		<ul style="list-style-type: none"> <li>• Throttle Open 2E11-F024A(B).</li> <li>• Open 2E11-F047A(B).</li> <li>• Throttle 2E11-F068A(B) to maintain <math>&gt; 20</math> PSID Hx A(B) dp.</li> <li>• Refer to 34SO-E11-010-2.</li> </ul>
		<p><i>Scenario will be terminated when Rx pressure is within 50 psig of Torus pressure or as directed by the Chief Examiner.</i></p>

# **Draft Submittal**

(Pink Paper)

**HATCH OCTOBER/NOVEMBER 2005 EXAM**

**05000321/2005301 & 05000366/2005301**

**OCTOBER 28, 2005, (WRITTEN) AND  
OCTOBER 31 - NOVEMBER 4, 2005**

**SIMULATOR SCENARIOS**

DRAFT

Facility: Plant E. I. Hatch  
 Examination Level: RO/SRO

Date of Examination: 10/31/2005 – 11/11/2005

<u>Administrative Topic</u> (see Note)	<u>Type Code*</u>	<u>Describe activity to be performed</u>
Conduct of Operations	N, C/R	Determine if requirements are met to start a Recirc Pump. G2.1.20 (4.3/4.2), G2.1.32 (3.4/3.8)
Conduct of Operations <b>SRO only</b>	D, M, C/R, P	(JPM 25025) Determine if all plant administrative requirements are met to transfer the mode switch to run (with inoperable equipment). G2.1.12 (2.9/4.0)
Equipment Control	N, C/R	Review Core Spray pump surveillance data (Pump Vibration in range that requires the pump surveillance frequency to be doubled) G2.2.12 (2.9/4.0)
Radiation Control	N, C/R	Given a set of exposure conditions, determine the minimum level of authorization required to allow a worker to perform work which will exceed administrative exposure limits. G2.3.4 (2.5/3.1)
Emergency Plan <b>RO only</b>	N, C/R	Given an Emergency Notification Network (ENN) form, determine the rally point, evacuation route and then make an Emergency Announcement. G2.4.39 (3.3)
Emergency Plan <b>SRO only</b>	D, C/R	Determine Emergency Classification – Security Event. G2.4.29 (4.0)

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

\* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom  
 (D)irect from bank ( $\leq 3$  for ROs;  $\leq 4$  for SROs & RO retakes)  
 (N)ew or (M)odified from bank ( $\geq 1$ )  
 (P)revious 2 exams ( $\leq 1$ ; randomly selected)

DRAFT

Facility: **Plant E.I Hatch** Date of Examination: **10/31/2005 – 11/11/2005**

Exam Level: RO SRO-I **SRO-U** Operating Test No.: \_\_\_\_\_

Control Room Systems® (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
<b>Inject Standby Liquid (with a pump trip)</b>	A, S, D, E	3.1 Reactivity, JPM 25011 (Time Critical - Before HCTL, approx. 5 min) KA 211000A201 (RO 3.5/SRO 3.8)
<b>Terminate and Prevent RHR, Failure of F017 Valves to Close</b>	S, M, A, E	3.2 Reactor Water Level Control Based on JPM 20103 (10 min) (ESF) KA 295037EA202 (RO 4.1/SRO 4.2)
Emergency Depress the RPV with Main Turbine Bypass valves (with an SRV failure)	S, N, A, E	3.3 Reactor Pressure Control (10 min) KA 241000A406 (RO 3.9/SRO 3.9)
Reset a Recirculation Pump Scoop Tube Lockout.	S, D	3.4 Heat Removal from core JPM 04.16 (10 min) KA 202002A205 (RO 3.1/SRO 3.1)
Verify auto isolation of PCIS Group 2	S, A, M, E	3.5 Containment Integrity Based on JPM 13.46 (16 min) (ESF) KA 223002A302 (RO 3.5/SRO 3.5)
Transfer 4160 VAC bus from Startup Transformer to Unit Auxiliary Transformer	S, D	3.6 Electrical - JPM 27.40 (8 min) KA 262001A401 (RO 3.4/SRO 3.7)
<b>Perform a RWM functional test</b>	S, D, L	3.7 Instrumentation - JPM 25032 (10 min) KA 201006A302 (RO 3.4/SRO 3.5)
<i>Place Control Room HVAC in Purge Mode (RO only)</i>	C, D, E	3.9 Radiation Release - JPM 25026 (15 min) KA 290003A401 (RO 3.9/SRO 4.0)

In-Plant Systems® (3 for RO); (3 for SRO-I); (3 or 2 for **SRO-U**)

<b>Crosstie Reactor Bldg PSW</b>	D, R, E	3.8 Plant Service - JPM 25029 (8 min) KA 295018AA101 (RO 3.3/SRO 3.4)
<b>Vent the Scram Air Header</b>	D, R, E	3.1 Reactivity Control - JPM 10.15 (7 min) KA 212000A417 (RO 4.1/SRO 4.1)
Crosstie Instrument Buses	D	3.6 Electrical - JPM 20019 (15 min) KA 262001A207 (RO 3.0/SRO 3.2)

@ All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

\* Type Codes

Criteria for RO / SRO-I / SRO-U

(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

**DRAFT****Facility:** E. I Hatch**Scenario No.:** 1**Op-Test No.:** \_\_\_\_\_**Examiners:** Ron Aiello**Operators:** \_\_\_\_\_Tim KolbGerry Laska

**Initial Conditions:** Unit 2 is at 90% RTP following Turbine Control Valve testing. RCIC is isolated following repair of the outboard isolation valve breaker. System restoration to standby per 34SO-E51-001-2, RCIC System, is in progress at step 7.1.1.36. The functional test for the Valve has been performed. The National Weather Service has predicted Severe Thunderstorms for Appling and surrounding counties.

**Turnover:** Continue 34SO-E51-001-2, RCIC System, to return RCIC to Standby, at step 7.1.1.36. Increase Reactor Power to 100% RTP using Rx Recirc system and 34GO-OPS-005-2, Power Changes.

Event No.	Malf. No.	Event Type*	Event Description
1	mf60111042 diE41A-S20 loE41A-S20G1	C (BOP) (SRO TS)	HPCI Aux Oil Pump Breaker Trip due to Electricians working on Unit 1 (Wrong Unit), Return after RCIC unisolated
2		N (BOP)	Un-isolate RCIC and return to standby.
3		R (CBO)	Increase Rx Power with Recirc to 95%
4	rfC11-141 mf60311307	C (CBO) (SRO TS)	Scram Discharge Volume outboard isolation valves close, with leaking drive. (Time compressed repair.)
5	mfP42_71A mfP42_72C	C (BOP)	2A RBCCW Pump Trips, 2C RBCCW pump fails to auto start, must be manually started
6	mfC11_30B mf60311335	I (CBO)	CRD B trips due to low suction pressure instrument failure. Must start "A".
7	mfP51_222C	C (BOP)	Station Service Air Compressor "C" trip. Must manual start "A".
8	rfC71_279 mfE51_250 svoE51074 svoE51075 mfE51_113 mfE51_113B	M (All)	RCIC Steam line break in the Rx bldg. RCIC isolation valves fail to close. SRO directs crew to manually SCRAM the Rx and close Grp 1 valves due to Grp 1 isolation failure.
9	mfE41_106	I (BOP)	HPCI Flow control fails and HPCI must be manually controlled after MSIVs close on high temp. from RCIC leak.
10		M (All)	Emergency Depress Due to Secondary Containment leak.

**Facility:** E. I Hatch

**Scenario No.:** 1

**Op-Test No.:** \_\_\_\_\_

**Examiners:** Ron Aiello **Operators:** \_\_\_\_\_  
Tim Kolb \_\_\_\_\_  
Gerry Laska \_\_\_\_\_

**Initial Conditions:** Unit 2 is at 90% RTP following Turbine Control Valve testing. RCIC is isolated following repair of the outboard isolation valve breaker. System restoration to standby per 34SO-E51-001-2, RCIC System, is in progress at step 7.1.1.36. The functional test for the Valve has been performed. The National Weather Service has predicted Severe Thunderstorms for Appling and surrounding counties.

**Turnover:** Continue 34SO-E51-001-2, RCIC System, to return RCIC to Standby, at step 7.1.1.36. Increase Reactor Power to 100% RTP using Rx Recirc system and 34GO-OPS-005-2, Power Changes.

Event No.	Malf. No.	Event Type*	Event Description
11	mfB21_129A mfB21_129E mfB21_129L	C (CBO)	Three ADS valves fail to open for Emergency Depress
			Scenario is terminated after reactor is emergency depressed.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			



Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 1 Page 2 of 2

Event Description: HPCI Aux Oil Pump Trip on motor overload.  
(mf60111042, diE41A-S20, loE41A-S20G1)

Time	Position	Applicant's Actions or Behavior
	SS	<ul style="list-style-type: none"> <li>• Directs the operator to continue with RCIC return to standby.</li> <li>• When RCIC is returned to standby, it is declared operable and then only RAS 3.5.1.C applies.</li> </ul>
		<ul style="list-style-type: none"> <li>• <i>After RCIC is in standby, the simulator operator, as the SO, will notify the control room that the HPCI Aux Oil Pump overload was caused by Electricians working on Unit One checking the overload trips. The Electricians are backing out of their procedure to return HPCI Aux Oil Pump breaker to normal configuration.</i></li> <li>• <i>Simulator Operator DELETE the malfunctions on the HPCI AUX Oil Pump and report that the Unit 2 HPCI AUX Oil Pump Breaker is returned to normal.</i></li> </ul>
	SS	<ul style="list-style-type: none"> <li>• The SS will declare HPCI Operable.</li> <li>• The SS may direct the operator to run HPCI oil pump to verify that it operates properly. This is allowed, but not required.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 2 Page 1 of 1

Event Description: Un-isolate RCIC and return to standby

Time	Position	Applicant's Actions or Behavior
	SS	<ul style="list-style-type: none"> <li>Directs the operator to continue with RCIC return to standby per the Initial Condition sheet.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>Un-isolates RCIC per 34SO-E51-001-2, RCIC System, starting at step 7.1.1.36 to return RCIC to standby</li> </ul>
		<ul style="list-style-type: none"> <li>Warms and Pressurizes the RCIC Steam Line by performing the following steps:               <ul style="list-style-type: none"> <li>Confirms closed 2E51-F008, Steam Supply Line Isol Vlv.</li> <li>Confirms Closed 2E51-F007, Steam Supply Isol Vlv.</li> <li>Confirms Open/Opens 2E51-F054, Steam Line Drain Vlv.</li> </ul> </li> </ul>
		<ul style="list-style-type: none"> <li>Opens 2E51-F008, Steam Supply Line Isol Vlv.</li> <li>Slowly Throttles Open 2E51-F007, Steam Supply Isol Vlv.</li> <li>When turbine steam inlet pressure is WITHIN 50 PSIG of reactor pressure as monitored on 2B21-R623A(B), Rx Water Level/Rx Press, on panel 2H11-P601, verify 2E51-F007, Steam Supply Isol Vlv, is FULLY OPEN.</li> <li>When RCIC Turbine Inlet Drain Pot Level High (602-308), clears, confirm Closed/Close 2E51-F054, Steam Line Drain Vlv. (Alarm may not come in.)</li> <li>Has other operator perform independent verification for RCIC Standby lineup.</li> <li>Notifies SS when RCIC is returned to Standby.</li> </ul>
	SRO	<ul style="list-style-type: none"> <li>Declares RCIC Operable</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 3 Page 1 of 1

Event Description: Increase Rx Power with Recirc

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> <li>Directs RO to increase reactor power to RTP by increasing Recirc flow. Power increases should be made as recommended by the STA/Reactor Engineering at a rate not to exceed 10 MWe/min.</li> </ul>
	CBO	Enters the following procedures <ul style="list-style-type: none"> <li>34GO-OPS-005-2S, "Power Changes"</li> <li>34SO-B31-001-2S, "Recirculation System"</li> </ul>
		<ul style="list-style-type: none"> <li>Increases reactor power with Recirc flow increase per 34SO-B31-001-2S by slowly adjusting Recirc Master Flow Controller.</li> <li>Monitors power increase by observing APRM and generator output indications.</li> <li>May stop power increase before 95% and increase Rx pressure to 1025 psig by depressing the increase pushbutton on pressure set on the Main Turbine EHC panel.</li> </ul>
		<i>Simulator Operator enters the next event after power has been increased by 5% or at the Chief Examiner's request.</i>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 4 Page 1 of 2

**Event Description:** Scram Discharge Volume outboard isolation valves close, with leaking drive. (rfC11\_141, mf60311307)

Time	Position	Applicant's Actions or Behavior
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		<p><i>Simulator Operator enters:</i></p> <ul style="list-style-type: none"> <li>• <i>rfC11_141 (SDV outboard valves close) and</i></li> <li>• <i>2 minutes later enter mf60311307 (SDV Not Drained alarm)</i></li> </ul>
	All	When the "SDV Not Drained" alarm is received, recognizes that the SDV outboard valves have closed. (May recognize prior to alarm by scanning the control panels.)
	CBO	<ul style="list-style-type: none"> <li>• Acknowledges the "SDV Not Drained" alarm and enters ARP 34AR-603-119-2</li> </ul>
		<ul style="list-style-type: none"> <li>• Determines that 2C11-F035A, 2C11-F035B, and 2C11-F037 have closed.</li> </ul>
		<ul style="list-style-type: none"> <li>• Dispatches a SO to the CRD drives to check for leaking scram outlet valves</li> </ul>
		<ul style="list-style-type: none"> <li>• Dispatches a SO/Maint to determine if an air leak exists on the SDV valves piping, to verify that 2C11-F094, F095, F088 and F089 are open, and may request that electrical power to the solenoids be checked.</li> </ul>
		<p><i>If a SO was sent to the solenoid power switches, 2 minutes later, the Simulator Operator will report as the SO, that the Power supply switches in the RPS M/G set room for 2C11-F040 solenoids are turned to "ON".</i></p>
		<p><i>Simulator Operator will, 3 minutes later, as a SO that's been dispatched to check for air leaks, report that there is an air leak on the piping from 2C11-F040 on the 130' Rx bldg. It appears that the copper piping was bumped by someone or something, causing a crimp and small leak in the piping.</i></p>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 4 Page 2 of 1

**Event Description:** Scram Discharge Volume outboard isolation valves close, with leaking drive. (rfC11\_141, mf60311307)

Time	Position	Applicant's Actions or Behavior
	CBO	<ul style="list-style-type: none"> <li>• Reports to the SS that there is an air leak and crimped piping at 2C11-F040.</li> </ul>
	SRO	<ul style="list-style-type: none"> <li>• Enters Tech Spec 3.1.8.A requiring Isolation of the valves within 7 days.</li> </ul>
		<p><i>Simulator Operator, as the SO at 2C11-F040, informs the Control Room it is 1 hour later (Time Compression) and that maintenance has repaired the section of damaged air piping at 2C11-F040.</i></p> <p><i>Simulator Operator DELETES:</i></p> <ul style="list-style-type: none"> <li>• <i>rfC11_141 (SDV outboard valves close) and</i></li> <li>• <i>3 minutes later deletes mf60311307 (SDV Not Drained alarm)</i></li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Verifies that all the SDV Vent and Drain valves are open.</li> <li>• Informs SS that the leak is repaired and the SDV vent and drain valves are now open.</li> </ul>
	SRO	<ul style="list-style-type: none"> <li>• Declares TS LCO 3.1.8 is met, after the valves are re-opened.</li> </ul>
		<p><i>Simulator Operator, if requested, informs the control room that a specific leaking CRD scram valve has not been confirmed, and that you are going to get a temperature gun from the tool room and continue looking.</i></p>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 5 Page 1 of 2

Event Description: 2A RBCCW Pump Trips, 2C RBCCW pump fails to auto start, must be manually started (mfP42\_71A and mfP42\_72C)

Time	Position	Applicant's Actions or Behavior
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		<p><i>Simulator operator enters:</i></p> <ul style="list-style-type: none"> <li>• mfP42_71A and</li> <li>• mfP42_72C</li> </ul>
	All	<ul style="list-style-type: none"> <li>• Recognizes RBCCW pump 2A is tripped when "RBCCW Pumps Disch Press Low" alarm annunciates.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Acknowledges the alarms and informs the SS that the "2C" RBCCW pump did not auto start. (2C RBCCW may be started manually prior to recognizing failure to auto start.)</li> </ul>
	SS	Directs an Operator to start the 2C RBCCW pump.
	BOP	<ul style="list-style-type: none"> <li>• Manually starts the "2C" RBCCW pump per 34AR-650-239-2 or 34AB-P42-001-2, "Loss of RBCCW". (May not pull procedures until after the pump has been started.)</li> <li>• Monitors for increasing system pressure (&gt;90psig).</li> </ul>
		<ul style="list-style-type: none"> <li>• Places the control switch for the TRIPPED pump in Pull-To-Lock Off.</li> <li>• Verifies that the Low Discharge pressure alarm clears for the RBCCW system.</li> </ul>
		<ul style="list-style-type: none"> <li>• Dispatches SO/Maint to investigate the cause of the "2A" RBCCW pump tripping.</li> </ul>



Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 6 Page 1 of 2

**Event Description:** CRD B trips due to low suction pressure instrument failure. Must start "A". (mfC11\_30B and mf60311335)

Time	Position	Applicant's Actions or Behavior
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		<p><i>Simulator operator enters:</i></p> <ul style="list-style-type: none"> <li>• <i>mfC11_30B, CRD Pump A Trip and</i></li> <li>• <i>mf60311335, CRD B Suction Pressure Low alarm</i></li> </ul>
	All	<ul style="list-style-type: none"> <li>• Recognizes that "CRD Pump B Suction Pressure Low " and "CRD pump "2B" Breaker Trip" alarms annunciate</li> </ul>
	SS/CBO	<ul style="list-style-type: none"> <li>• Dispatches a SO/Maint to determine the cause of the low suction pressure condition for CRD pump "B".</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs the CBO to Place CRD Pump "A" in service.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Enters 34AB-C11-001-2, "Loss of CRD System" procedure</li> </ul>
		<ul style="list-style-type: none"> <li>• Places 2C11-R600, CRD Flow Control, in Manual and Decreases the output to zero.</li> </ul>
		<ul style="list-style-type: none"> <li>• Manually starts "A" CRD pump.</li> </ul>
		<ul style="list-style-type: none"> <li>• Increases system flow to ≈50 GPM</li> </ul>
		<ul style="list-style-type: none"> <li>• Transfers 2C11-R600, CRD Flow Control to AUTO.</li> </ul>
	SRO/CBO	<ul style="list-style-type: none"> <li>• Dispatches a SO to check CRD temperatures locally and Accumulator pressures.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 6 Page 2 of 2

**Event Description:** CRD B trips due to low suction pressure instrument failure. Must start "A". (mfC11\_30B and mf60311335)

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> <li>If CRD Pump "A" is NOT recovered prior to an accumulator becoming inoperable (940 psig as reported by the SO checking the pressures), the SS will declare the accumulator inoperable and enter Tech Spec 3.1.5.A (8 hours to declare the rod slow or inop) for one inop accumulator or 3.1.5.B (restore in 20 minutes or place mode in Shutdown) for two or more inop accumulators.</li> </ul>
		<p><i>If CRD pump "A" is not started within 3 minutes of receiving the CRD Accumulator alarm, the Simulator operator reports that 3 CRD accumulators are at 935psig.</i></p> <p><i>If it is started prior to sufficient time to check pressures, report that all accumulators are &gt;980psig.</i></p>
		<p><i>Simulator Operator reports that:</i></p> <ul style="list-style-type: none"> <li><i>If the CRD High Temp Alarm is still lit, report that 2 CRD drives are &gt; 250°F, 26-35 is 275°F and 14-31 is 285°F</i></li> <li><i>If the CRD High Temp Alarm is NOT lit, report that all temps are &lt;250°F and the highest 2 were 26-35 at 275°F and 14-31 at 285°F</i></li> <li><i>Suction pressure for the "B" CRD pump is 25psig and there is no apparent problem with suction line-up or filter.</i></li> </ul>
	SS	<ul style="list-style-type: none"> <li>May call maintenance to determine why the CRD Pump B Suction pressure low alarm is still annunciated.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 7 Page 1 of 1

Event Description: Station Service Air Compressor "C" trip. Must manual start "A".  
(mfP51\_222C)

Time	Position	Applicant's Actions or Behavior
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		<i>Simulator Operator enters mfP51_222C, SSAC 2C Trip.</i>
	All	<ul style="list-style-type: none"> <li>Recognizes that SSAC 2C has tripped when "Panel 2H11-P700 System Trouble" and "Air Cmpsr 2C tripped/Shutdown" alarms annunciate.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>Verifies or starts 2B SSAC by placing the control switch to "Start".</li> </ul>
	SS	<ul style="list-style-type: none"> <li>Directs operator to start SSAC 2B and/or SSAC 2A</li> <li>Dispatches SO/Maint to investigate the cause of the SSAC trip.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>Enters 34AR-700-233-2 (SSAC 2C Trip) or 34AB-P51-001-2 (Loss of Air)               <ul style="list-style-type: none"> <li>If started by 34AR-700-233-2, Notifies HP of Start of 2B SSAC (may be before or after start.)</li> <li>Starts the 2A SSAC by taking the Control Switch from "Stop PTL" and placing it to "Start".</li> <li>Places the 2C SSAC switch to "Stop PTL".</li> <li>Confirms/Dispatches SO/Maint to investigate the cause of the SSAC trip and verify proper operation of the 2B and 2A SSACs</li> <li>Notifies SS that the 2A and 2B SSAC are running or setup for Auto Start.</li> </ul> </li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 8 Page 1 of 9

**Event Description:** RCIC Steam line break in the Rx bldg. RCIC isolation valves fail to close. Auto Scram Failed. (rfC71\_279, mfE51\_250, svoE51074, svoE51075, mfE51\_113, mfE51\_113B, mfE41\_106, mfB21\_129A,, mfB21\_129E, and mfB21\_129L)

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator enters: mfE51_250 (RCIC Steam Line break in Rx Bldg. 10% Ramp 0.5) svoE51074 and svoE51075 (RCIC Isolation valves failed Open) rfC71_279 (Group 1 Isolation Override Jumpers – Installed)</i>
	BOP	<ul style="list-style-type: none"> <li>Enters 34AR-657-006-2, "Stm Chase SEC Clr Auto Started" alarm, and starts investigating the cause of the cooler auto start.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>Acknowledges "Leak Det Diff Temp High" and reports to SS.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>Enters the Secondary Containment EOP Flowchart on Secondary Containment High Differential Temperature.</li> <li>Has an operator monitor Sec Cont. Temps.</li> <li>Has operators monitor systems for source of the leak.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>Reports Sec Cont. temps are increasing</li> <li>If time allows, enters 34AB-T22-001-2, Primary Coolant Break Rx Bldg.</li> </ul>
	All	<ul style="list-style-type: none"> <li>Recognizes that a Group 1 isolation signal has occurred, with a failure of the MSIVs to close. (May not occur until after the scram if a manual scram is initiated first.)</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 8 Page 2 of 9

**Event Description:** RCIC Steam line break in the Rx bldg. RCIC isolation valves fail to close. Auto Scram Failed. (rfC71\_279, mfE51\_250, svoE51074, svoE51075, mfE51\_113, mfE51\_113B, mfE41\_106, mfB21\_129A,, mfB21\_129E, and mfB21\_129L)

Time	Position	Applicant's Actions or Behavior
	SS	<ul style="list-style-type: none"> <li>• Orders the Rx scrammed or if a group 1 isolation occurs before the manual scram, recognizes failure of Group1 isolation valves to close and orders manual scram of the Rx., then a manual isolation of the Group 1 isolation valves. (Inboard and Outboard MSIVs and small bore sample line.)</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Enters RC EOP Flowchart</li> <li>• Directs CBO to perform RC-1 placard</li> <li>• Directs BOP to perform RC-2 and RC-3 placards</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Manually SCRAMs the Reactor using the SCRAM pushbuttons (Critical Task)</li> <li>• Places Rx Mode Switch in S/D.</li> <li>• Closes the Group 1 isolation valves (inboard and outboard MSIVs and small bore sample line.) (Critical Task)</li> <li>• Verifies and reports all rods inserted past position 02.</li> <li>• Inserts IRMs and SRMs.</li> <li>• Places SDV Isol Vlv Switch to "ISOL" and verifies closed.</li> <li>• If not tripped, places Recirc to minimum speed.</li> </ul>
	BOP	<p>Performs actions of RC-2 and RC-3 after Reactor SCRAM.</p> <ul style="list-style-type: none"> <li>• Confirms proper operation of the Feedwater Level Control System to restore and maintain RPV level.               <ul style="list-style-type: none"> <li>• Ensures FW Master Controller setpoint reduces to 9 inches and output reduces to 25% of previous value.</li> </ul> </li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 8 Page 3 of 9

**Event Description:** RCIC Steam line break in the Rx bldg. RCIC isolation valves fail to close. Auto Scram Failed. (rfC71\_279, mfE51\_250, svoE51074, svoE51075, mfE51\_113, mfE51\_113B, mfE41\_106, mfB21\_129A,, mfB21\_129E, and mfB21\_129L)

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>• IF NOT needed to restore RPV level,               <ul style="list-style-type: none"> <li>• Trips One RFPT.</li> <li>• Confirms OPEN 2N21-F125.</li> <li>• Places 2C32-R619, FW S/U LVL CONTROL VLV Controller, in AUTO, set at approximately 9 inches.</li> <li>• Closes 2N21-F110.</li> <li>• Checks ECCS Injection Systems and secures as necessary.</li> </ul> </li> </ul>
	SS	<ul style="list-style-type: none"> <li>• The SS may direct 1 operator to perform Rx Power, Level, and Pressure control, so that the other operator can monitor secondary Containment parameters.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Monitors RPV pressure.</li> <li>• Confirms proper operation of pressure control system (TBV, LLS, etc.).</li> <li>• If necessary, allows RPV pressure to exceed 1074 psig then cycles any SRV to initiate LLS.</li> <li>• Maintains RPV pressure between 1074 and 800 psig. (This will not be possible for the during the whole scenario due to the leak.)</li> <li>• Notifies SS of pressure control system operation.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Assigns a RWL band between 3" and 50"</li> <li>• Directs an Operator to monitor Sec Cont. Temps. and Radiation</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 8 Page 4 of 9

**Event Description:** RCIC Steam line break in the Rx bldg. RCIC isolation valves fail to close. Auto Scram Failed. (rfC71\_279, mfE51\_250, svoE51074, svoE51075, mfE51\_113, mfE51\_113B, mfE41\_106, mfB21\_129A,, mfB21\_129E, and mfB21\_129L)

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> <li>Controls RWL using HPCI and CRD. Notifies SS if RWL gets outside assigned band. May use RCIC until it is determined that RCIC is the leakage path. (When LLS is initiated to control Rx pressure, RWL may go above 52", if so, the HPCI high water level trip will have to be reset to inject with HPCI prior to -35".)</li> </ul>
		<i>Simulator Operator enters mfE41_106, HPCI flow controller fails</i>
	BOP	<ul style="list-style-type: none"> <li>Recognizes that HPCI flow controller has failed and takes manual control of HPCI to maintain RWL.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>Informs SS that temperatures and radiation levels in the Rx Bldg are still increasing.</li> </ul>
	SRO	<ul style="list-style-type: none"> <li>Directs Operator to evacuate the Rx Bldg. due to high temperatures and or radiation.</li> </ul>
	CBO/BOP	<ul style="list-style-type: none"> <li>Makes page announcement to Evacuate the Rx Bldg. (Timing of announcement could vary based on Plant conditions)</li> </ul>
		<i>Simulator Operator enters mfE51_113and mfE51_113B 5 minutes after the Scram</i>
	All	<ul style="list-style-type: none"> <li>Determines that RCIC is the source of the leak.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 8 Page 5 of 9

**Event Description:** RCIC Steam line break in the Rx bldg. RCIC isolation valves fail to close. Auto Scram Failed. (rfC71\_279, mfE51\_250, svoE51074, svoE51075, mfE51\_113, mfE51\_113B, mfE41\_106, mfB21\_129A,, mfB21\_129E, and mfB21\_129L)

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> <li>Directs Operator to close the RCIC isolation valves, 2E51-F007 and 2E51-F008)</li> </ul>
	BOP/CBO	<ul style="list-style-type: none"> <li>Places 2E51-F007 and 2E51-F008 to close.</li> <li>Reports to SS that RCIC Isolation valves will not close.</li> <li>May call Maint for help to close the valves.</li> </ul>
	SRO	<ul style="list-style-type: none"> <li>Calls or confirms Operator called for Maint help to close RCIC isolation valves.</li> </ul>
		<i>Simulator Operator increases mfE51_250 to 75% at 10%/min after plant parameters have been stabilized by the operators. (About 8 to 10 minutes after the scram or as directed by the Chief Examiner.</i>
	CBO	<ul style="list-style-type: none"> <li>Informs SS that Sec Cont. temps are above Max Safe in two areas of the Rx Bldg.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>Progresses down SC flowchart to Emergency Depress required.</li> <li>Transitions from RC Pressure path to CP-1 Flowchart Point G for Emergency Depress.</li> <li>Verifies Torus Level is &gt; 57.5 in</li> <li>Directs Operator to open 7 ADS valves.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 8 Page 6 of 9

**Event Description:** RCIC Steam line break in the Rx bldg. RCIC isolation valves fail to close. Auto Scram Failed. (rfC71\_279, mfE51\_250, svoE51074, svoE51075, mfE51\_113, mfE51\_113B, mfE41\_106, mfB21\_129A,, mfB21\_129E, and mfB21\_129L)

Time	Position	Applicant's Actions or Behavior
		<i>Prior to the Emergency Depress, but after LLS has been initiated, Simulator Operator enters: mfB21_129A, mfB21_129E, and mfB21_129L (Failure of SRVs A, E, and L to Open.)</i>
	CBO	<ul style="list-style-type: none"> <li>• Places 7 ADS valves control switches to Open.</li> <li>• Determines that three ADS valves did not open. (May initially only discover 2 failed valves, if one of the failed valves has lifted earlier in the scenario and the amber light is still lit, but SPDS will show only 4 valves open.)</li> <li>• Either informs SS or continues opening SRVs until 7 SRVs are open, then notifies SS of 7 SRVs open and failure of 3 SRVs to open. (Critical Task)</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• If Operator notifies the SS that 3 SRVs will not open and that only 4 are open, the SS directs the operator to open 3 more SRVs or Open SRVs until 7 are open.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Opens more SRVs, until 7 SRVs are open</li> <li>• Verifies that Rx pressure is decreasing</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 8 Page 7 of 9

**Event Description:** RCIC Steam line break in the Rx bldg. RCIC isolation valves fail to close. Auto Scram Failed. (rfC71\_279, mfE51\_250, svoE51074, svoE51075, mfE51\_113, mfE51\_113B, mfE41\_106, mfB21\_129A., mfB21\_129E, and mfB21\_129L)

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> <li>Starts controlling RWL with low pressure systems (LPCI, Core Spray, or condensate) as Rx pressure decreases. During the Emergency Depress will not be able to maintain inside the RWL band, but should restore RWL to within the band at some point after the Emergency Depress.</li> </ul>
	BOP/CBO	<ul style="list-style-type: none"> <li>Verifies that HPCI isolates when Rx pressure decreases to 128 psig. (2E41-F002 and F003 close)</li> </ul>
	SS	<ul style="list-style-type: none"> <li>Enters the Primary Containment Control flowchart for either High Torus temperature or High Torus level</li> <li>Directs the operator to place Torus Cooling in service as man power becomes available.</li> </ul>
		<p><i>Simulator Operator – The scenario can be stopped at any time after Rx pressure is within 50 psig of Torus pressure or as directed by the Chief Examiner. Placing Torus cooling in service is not a required part of this scenario.</i></p>
	CBO	<ul style="list-style-type: none"> <li>If time and man power allows, places torus cooling in service per 34SO-E11-010-2, RHR System, using the placard</li> </ul>
		<ul style="list-style-type: none"> <li>Place RHRSW in operation per 34SO-E11-010-2 by performing the following:</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 8 Page 8 of 9

**Event Description:** RCIC Steam line break in the Rx bldg. RCIC isolation valves fail to close. Auto Scram Failed. (rfC71\_279, mfE51\_250, svoE51074, svoE51075, mfE51\_113, mfE51\_113B, mfE41\_106, mfB21\_129A,, mfB21\_129E, and mfB21\_129L)

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>• Prelube RHRSW pump.</li> <li>• Override 2E11-F068A(B) Low Discharge Pressure Interlock.</li> <li>• Position 2E11-F068A(B) to 45% OPEN</li> <li>• Start RHRSW pump.</li> <li>• Place 2E11-F068A(B) Low Discharge Pressure Interlock switch to NORMAL position.</li> <li>• Position 2E11-F068A(B) to obtain <math>\leq 4400</math> GPM <u>AND</u> <math>\leq 450</math> PSIG.</li> <li>• IF desired to start SECOND pump,</li> <li>• Throttle 2E11-F068A(B) to achieve max flow rate (not to exceed 4400 GPM).</li> <li>• Open 2E11-F068A(B) an additional 5%.</li> <li>• Start Second RHRSW Pump.</li> <li>• Position 2E11-F068A(B) to obtain <math>\leq 8800</math> GPM <u>AND</u> <math>\leq 450</math> PSIG.</li> </ul>
		<ul style="list-style-type: none"> <li>• Open 2E11-F048A(B).</li> <li>• Open 2E11-F003A(B).</li> <li>• Start RHR Loop A(B) pump(s).</li> <li>• Open 2E11-F028A(B).</li> </ul>





Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 1 Page 1 of 2

Event Description: Transfer house loads from Normal to Alternate.

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> <li>Directs Operator to transfer Station Service Busses from Normal to Alternate</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>Enters 34SO-R22-001-2, 4160 VAC System</li> <li>Verifies voltage on SUT 2C</li> <li>Verifies that an Emergency Bus is not being powered from SUT 2C.</li> <li>Performs the following steps for each 4160 VAC Station Service Bus (2A, 2B, 2C, 2D). (Buses can be transferred in any order.)</li> </ul>
		<ul style="list-style-type: none"> <li>Places Station Svc Interlock Cutout switch in OFF-(DOWN position)</li> </ul>
		<ul style="list-style-type: none"> <li>Places the Sync Switch (SSW) for the Bus's alternate supply breaker in ON.</li> </ul>
		<ul style="list-style-type: none"> <li>Confirms the sources of power to the 4160V Bus are synchronized and voltage is normal on Start-Up Aux Transformer 2C.</li> </ul>
		<ul style="list-style-type: none"> <li>Closes the ACB for the bus's Alternate Supply, AND confirms that current increases from Startup Auxiliary Transformer 2C</li> </ul>
		<ul style="list-style-type: none"> <li>Trips the Normal Supply breaker to the Bus</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.:  2  Event No.:  1  Page  2  of  2

Event Description: Transfer house loads from Normal to Alternate.

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>Places the Sync Switch for the alternate supply breaker for the Bus in OFF.</li> </ul>
		<ul style="list-style-type: none"> <li>Places Station Svc Interlock Cutout switch in Normal-(Up position)</li> </ul>
		<ul style="list-style-type: none"> <li>Repeats above steps until 4160VAC Bus 2A-2D are on alternate supply. (Busses can be transferred in any order.)</li> </ul>
		<ul style="list-style-type: none"> <li>Notifies the SS when all the Buses have been transferred.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 2 Page 1 of 3

**Event Description:** System Operator reports Condensate Booster pump "C" has an oil leak, "A" or "B" must be started, "C" shutdown.

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator notifies the Control Room, as a System Operator (SO), that he is on rounds and has discovered that the 2C Condensate Booster pump has an oil leak and that he recommends that it be shutdown for repair and to add oil. ( If asked, the SO does not think that the pump needs to tripped immediately, but should be shutdown as soon as possible.)</i>
	SS	<ul style="list-style-type: none"> <li>• Directs Operator to place 2A or 2B Condensate Booster pump (CBP) in service and shutdown the 2C Condensate Booster pump.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Enters 34SO-N21-007-2 and performs the following actions:</li> </ul>
		<ul style="list-style-type: none"> <li>• Verifies that the Hydrogen injection system is removed from service.</li> </ul>
		<ul style="list-style-type: none"> <li>• Has SO:               <ul style="list-style-type: none"> <li>• Verify that 2A or 2B CBP Oil Reservoir and motor bearing oil levels are WITHIN normal level marks.</li> <li>• Throttle 2P41-F364A or B, outlet valve as necessary to maintain the oil temperature between 50°F and 115°F.</li> <li>• Confirm / Place CBP 2A or 2B Oil Pump control switch in Auto and Confirm pump is running.</li> <li>• Confirm Closed/Close 2N21-F020A or B, Standby CBP Discharge Valve.</li> </ul> </li> </ul>
		<p><i>Simulator Operator does NOT have to enter the remote function for closing the discharge valve for the CBP, because it has to be throttled prior to pump start and we do not have throttle capability.</i></p> <p><i>Simulator Operator, as SO, reports that CBP 2A or 2B oil levels are normal, oil temperature is at 95°F, the oil pump is running in Auto and that the 2N21-F020A or B is closed.</i></p>

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 2 Page 2 of 3

**Event Description:** System Operator reports Condensate Booster pump "C" has an oil leak, "A" or "B" must be started, "C" shutdown.

Time	Position	Applicant's Actions or Behavior
	CBO	<ul style="list-style-type: none"> <li>• Directs SO to:               <ul style="list-style-type: none"> <li>• Throttle Open 2N21-F020A or B, CBP Discharge Valve, for 15 seconds</li> <li>• Observe for indication of a stuck open / leaking discharge check valve as evidenced by increasing pressure on the pump side of the discharge check valve.</li> </ul> </li> </ul>
		<i>Simulator Operator, as SO, reports that the 2N21-F020A or B is opened 15 seconds and the discharge check valve does NOT indicate leakage. (Verify that rfN21_60A or B is in Open.)</i>
	CBO	<ul style="list-style-type: none"> <li>• Starts Condensate Booster Pump 2A or 2B, by placing the control switch to Start.</li> <li>• Has SO throttle open the Discharge valve and maintain oil temp by throttling PSW to the oil cooler.</li> </ul>
		<i>Simulator Operator, as SO, reports that the discharge valve is now full open for CBP 2A or 2B, and that oil temp is being maintained at 95°F</i>
	CBO	<ul style="list-style-type: none"> <li>• When condensate and feedwater flows and pressures have stabilized, directs the SO to close 2N21-F020C</li> </ul>
		<i>Simulator Operator, enters rfN21_62 (CBP "C" disch valve close), then as the SO, reports that the discharge valve for CBP 2C is started closed.</i>

Op-Test No.: \_\_\_\_\_ Scenario No.:  2  Event No.:  2  Page  3  of  3

**Event Description:** System Operator reports Condensate Booster pump "C" has an oil leak, "A" or "B" must be started, "C" shutdown.

Time	Position	Applicant's Actions or Behavior
	CBO	<ul style="list-style-type: none"> <li>Places CBP 2C control switch to stop within 90 secs of being told the discharge valve has started closing.</li> <li>Reports to SS that 2A or 2B CBP is operating and that the 2C CBP has been secured. May ask SS if it is desired to place the 2C CBP in standby. If so the CBP 2C control switch will be placed in Auto.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>May direct the operator to place CBP 2C in PTL Off or Standby.</li> </ul>

Op-Test No.: _____ Scenario No.: <u>2</u> Event No.: <u>3</u>		Page <u>1</u> of <u>2</u>
Event Description: Insert Rods to 24% rx power.		
Time	Position	Applicant's Actions or Behavior
	SS	<ul style="list-style-type: none"> <li>Directs operator to continue the power reduction to 15% by inserting control rods.</li> </ul>
		<i>Simulator Operator, as STA, will inform operators that continuous-in rod movement is desired for the upcoming rod movements. (Operator may notch 1 or 2 notches to get a feel for nuclear response.)</i>
	CBO	<ul style="list-style-type: none"> <li>Gets other operator to be second verifier since RWM is inoperable.</li> <li>Inserts control rods per 34GO-OPS-065-0, starting with control rod 22-15 in Step 44 from position 30-12. <ul style="list-style-type: none"> <li>Selects Rod 22-15</li> <li>Gets concurrence from 2<sup>nd</sup> operator that the correct rod is selected.</li> <li>Places Control Rod movement switch to the IN position</li> <li>Verifies Rod moves using Rod display information and Rx and Generator power decreasing.</li> </ul> </li> </ul> <p>Note: RBM Downscale alarm will alarm during this movement due to the significant rod worth of these rods.</p> <ul style="list-style-type: none"> <li>Releases Rod movement switch so that the control rod stops at position 14</li> <li>Inserts Rod to position 12</li> <li>Initials Rod movement Sheet.</li> <li>Verifier Initials Rod movement sheet</li> </ul>
		<i>Simulator Operator inserts diC11A-S2 when the operator starts moving the next Control Rod (14-31). Go to continuous rod insertion operator action sheet, then return here after rod is recovered.</i>



Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 4 Page 1 of 3

**Event Description:** Rod movement timer malfunction causes continual rod insertion. Rod is recovered after time compressed repair. (diC11A-S2)

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator inserts diC11A-S2 when the operator starts moving the second Control Rod.</i>
	CBO	<ul style="list-style-type: none"> <li>• Alarm RMCS/RWM Rod Block or SYS Trouble is received</li> <li>• Recognizes that Control Rod 14-31 inserts to position 00</li> <li>• Recognizes that Rod 14-31 has a continuous insert signal</li> <li>• Stops Rod Movement and Notifies the SS and STA.</li> <li>• Enters ARP 34AR-603-239-2</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs operator to enter 34AB-C11-004-2, Mispositioned Control Rod</li> <li>• Contacts Maint to investigate the continuous insert signal on Rod 14-31.</li> <li>• May enter a tracking RAS for LCO 3.1.6</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Enters 34AB-C11-004-2, Mispositioned Control Rod and determines that section 4.6 should be performed, including:               <ul style="list-style-type: none"> <li>• Turns off Rod Select Power</li> <li>• Confirm cooling water differential pressure, drive water pressure, and CRD system flow are <u>WITHIN</u> the limits</li> <li>• Enters section 4.7 of the procedure</li> <li>• Performs Attachment 1</li> <li>• Has STA/Rx Engineering verify that no thermal limits have been exceeded.</li> <li>• Performs Attachment 2 for recovery actions and documentation of the problem.</li> </ul> </li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 4 Page 2 of 3

**Event Description:** Rod movement timer malfunction causes continual rod insertion. Rod is recovered after time compressed repair. (diC11A-S2)

Time	Position	Applicant's Actions or Behavior
		<p><i>Simulator Operator</i>, after the crew has had time to work through the first part of the AB procedure, deletes diC11A-S2 AND as I&amp;C, notifies the SS that there was a stuck relay in the RMCS system Insert Bus. Using time compression, the Relay has been replaced and the RMCS insert logic should work properly now.</p>
		<p><i>Simulator Operator, as Rx Engineering</i>, notifies the Control Room that NO thermal limits have been exceeded.  <i>Also Notify the crew, as requested, that: (This information is needed to complete Attachment 2)</i></p> <ul style="list-style-type: none"> <li>• The Rod can be recovered at the current power level.</li> <li>• Use single Notch withdrawal to position 12.</li> <li>• No other rods will have to be move to recover 14-31</li> <li>• The Rod will not be bypassed in the RWM since RWM is already inoperable</li> <li>• A RBM upscale alarm may be received. If so deselect and reselect the rod and continue withdrawal.</li> <li>• If requested, provide a special Rod Movement sheet for withdrawing rod 14-31 to position 12. (Attachment 2 can be used instead of the special movement sheet.)</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs operator to withdraw Control Rod 14-31 to position 12.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Turns Select power on.</li> <li>• Ensures all procedural requirements for rod movement that were checked earlier, (including verifier) still exist.</li> <li>• Notches Rod 14-31 from position 00 to position 12</li> <li>• Completes data sheet in Attachment 2 for Rod Recovery actions.</li> <li>• Notifies SS that Rod recovery has been completed.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 4 Page 3 of 3

**Event Description:** Rod movement timer malfunction causes continual rod insertion. Rod is recovered after time compressed repair. (diC11A-S2)

Time	Position	Applicant's Actions or Behavior
	SS	<ul style="list-style-type: none"> <li>• Directs operator to continue rod insertion for the planned shutdown.</li> </ul>
		<i>Simulator Operator go back to reactivity manipulation action sheet.</i>

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 5 Page 1 of 2

**Event Description:** Main Turbine Steam seal regulator fails closed. Manual bypass must be opened to prevent loss of vacuum. (mfN33\_154)

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator intermittently enters mfN33_154 until the N33-F004 is opened, then completely fails the regulator. Use intermittently to start with or the Turbine and RFPT will trip on low vacuum before the team has ample time to respond.</i>
	BOP	<ul style="list-style-type: none"> <li>• Responds to the Steam Seal Low pressure alarm and determines that steam seal pressure is low</li> <li>• Notifies SS that Steam Seal pressure is low.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs the operator to enter and perform the actions of the ARP.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Enters ARP 34AR-650-125-2</li> <li>• Confirms 2N33-R601A, Steam Seal Hdr Pressure Indicator, is below 1.5 PSIG panel 2H11-P650.</li> <li>• Confirms Open 2N33-F003, Steam Seal Main Steam Feed Vlv.</li> <li>• Confirms Closed 2N33-F005, Unloading Bypass Vlv.</li> <li>• Confirms Closed 2N33-F008, Aux Steam Feed Vlv.</li> <li>• Opens 2N33-F004, Steam Seal Feed Vlv Bypass, to bring steam seal pressure to between 2.5 PSIG and 4.5 PSIG.</li> <li>• Dispatches SO to 2N33-R301, Steam Seal Feed Valve Controller, to confirm &gt; 20 # Air Inlet Pressure <u>AND</u> &lt; 15 # Air Outlet Pressure.</li> <li>• Notifies SS that Steam seal pressure has been re-established and being controlled with the bypass valve.</li> <li>• May dispatch SO to check 7 piping temperatures downstream of 2N33-N006, N007A, and F007B, Relief Valves, to determine <u>IF</u> they are stuck open. Pipe temperatures are expected to be ambient.</li> </ul>



Op-Test No.: \_\_\_\_\_ Scenario No.:  2  Event No.:  6  Page  1  of  3

**Event Description:** Recirc Pump "A" seal leakage causes DW leakage. Pump is secured and isolated. (mfB31\_39A (20/10), mfB31\_45A (90/100), aoB31-603A (50/10))

Time	Position	Applicant's Actions or Behavior
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		<i>Simulator Operator enters mfB31_39A (20/10), mfB31_45A (90/100), and aoB31-603A (50/10)</i>
	BOP	<ul style="list-style-type: none"> <li>• Receives Outer Seal A Leak Detection Flow High alarm, 34AR-602-116-2</li> <li>• Observes and compares 2B31-R603A, Seal A No. 1 pressure indicator, AND 2B31-R602A, Seal A No. 2 pressure indicator, to determine the outer seal has failed and that the inner seal may have some failure.</li> <li>• Notifies SS that the Outer Seal on Recirc A has failed</li> <li>• Has an Operator perform 34SV-SUV-019-2, Surveillance Checks, to determine magnitude of leak.</li> <li>• Monitors 2D11-R630, Fission Products Monitor recorder, to determine IF primary system coolant is leaking from seals.</li> <li>• Monitors Drywell pressure</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs Operator Check DW Leakage</li> <li>• May direct the Operator To Enter 34AB-T23-002-2, Small Pipe Break in Primary Containment.</li> <li>• May direct the operator to vent the DW with SGBT, if DW pressure approaches 0.65 psig.</li> </ul>
		<i>Simulator Operator, as the operator checking DW leakage, reports that DW Equipment drain leakage is stable at 1.7 gpm and that Floor drain leakage has increased from 0.8 gpm to 12.1 gpm.</i>

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 6 Page 2 of 3

**Event Description:** Recirc Pump "A" seal leakage causes DW leakage. Pump is secured and isolated. (mfB31\_39A (20/10), mfB31\_45A (90/100), aoB31-603A (50/10))

Time	Position	Applicant's Actions or Behavior
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	SS	<ul style="list-style-type: none"> <li>If DW venting is required, Directs Operator to start SGBT 2A or 2B</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>Starts SGBT 2A or 2B per 34SO-T46-001-2 SGBT System procedure or uses placard.</li> </ul>
		<ul style="list-style-type: none"> <li>Opens 2T46-F001A or B or 2T46-F003A or B</li> <li>Places SGBT Fan 2A or 2B control switch to Start</li> <li>Continues to vent the Drywell by performing the following:</li> </ul>
		<ul style="list-style-type: none"> <li>Opens 2T48-F334A and/or 2T48-F334B</li> <li>Opens 2T48-F335A and/or 2T48-F335B</li> <li>Opens 2T48-F336A and/or 2T48-F336B</li> <li>Monitors DW pressure</li> </ul>
	SS	<ul style="list-style-type: none"> <li>Directs operator to shutdown and isolate Recirc pump A</li> <li>Enters Tech Specs 3.4.4 for Rx Coolant Leakage (4 hours to reduce leakage to within limits.</li> <li>After Recirc pump is tripped, enters Tech Spec 3.4.1 for Single Loop Recirc operation. (Notifies STA that new limits apply for APLHGR, MCPR, LHGR, and APRMs Simulated Thermal power – High setpoint.)</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 6 Page 3 of 3

**Event Description:** Recirc Pump "A" seal leakage causes DW leakage. Pump is secured and isolated. (mfB31\_39A (20/10), mfB31\_45A (90/100), aoB31-603A (50/10))

Time	Position	Applicant's Actions or Behavior
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	BOP	<ul style="list-style-type: none"> <li>• Per 34AR-602-116-2 and 34SO-B31-001-2, Recirc System,:</li> <li>• Places Recirc MG Set A control switch to Stop</li> <li>• Acknowledges Recirc Loop A Out of Service alarm</li> <li>• Closes 2B31-F031A, Reactor Recirc A Pump Disch Vlv</li> <li>• Closes 2B31-F023A, Reactor Recirc A Pump Suction Vlv</li> <li>• Dispatches SO to close Seal Injection To Pump A Header Isolation Valve, 2B31-F008A.</li> </ul> <p>(Critical Task - isolate Recirc)</p>
		<p><i>Simulator Operator:</i></p> <ul style="list-style-type: none"> <li>• Enter rfB31_29, Recirc mini purge B31-F016A to close (This simulates B31-F008A being closed)</li> </ul> <p>and</p> <ul style="list-style-type: none"> <li>• MODIFY aoB31-603A to 10 @ 40</li> <li>• Proceed to the next I/C failure at the Chief Examiner's direction.</li> </ul>
		<p>Note: To determine core flow, jet pump flows must be added together per 34SO-B31-001-2.</p>

Op-Test No.: \_\_\_\_\_ Scenario No.:  2  Event No.:  7  Page  1  of  3

**Event Description:** CRD Flow Control Valve fails closed, standby placed in-service.  
(mfC11\_31a)

Time	Position	Applicant's Actions or Behavior
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		<p><b>This component failure is OPTIONAL. The Chief Examiner will determine if this Event should be used.</b></p> <p><i>Simulator Operator enters mfC11_31a</i></p>
	CBO	<ul style="list-style-type: none"> <li>• Receives Charging Water Pressure High alarm</li> <li>• Will also receive CRD Hydraulic Temp High alarm a short time later</li> <li>• Determines that the CRD Flow Control Valve A has failed closed.</li> <li>• Notifies SS that the CRD Flow Control Valve A has failed closed.</li> <li>• Enters                             <ul style="list-style-type: none"> <li>• 34AR-603-139-2, Charging Water pressure High</li> <li>• 34AR-603-140-2, CRD Hydraulic Temp High</li> <li>• 34AB-C11-001-2, Loss of CRD System</li> </ul> </li> </ul>
	SS	<ul style="list-style-type: none"> <li>• SS/CBO dispatches a SO/Maint to investigate the cause of the FCV failing closed.</li> <li>• SS/CBO dispatches a SO to Monitor CRD drive temperatures</li> <li>• Directs the operator to perform actions per the ARPs and 34AB-C11-001-2, Loss of CRD system.</li> <li>• May direct operator to swap Flow Control Valves at this time, or may wait for report from SO, before ordering the swap.</li> </ul>



Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 7 Page 3 of 3

Event Description: CRD Flow Control Valve fails closed, standby placed in-service.  
(mfC11\_31a)

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>• Returns CRD System to normal configuration by:               <ul style="list-style-type: none"> <li>• Adjusting 2C11-R600 to desired flow</li> <li>• Places 2C11-R600 to AUTO</li> <li>• Confirms system parameters are normal</li> <li>• "Charging Water Pressure High" alarm clears</li> <li>• "CRD Hydraulic Temp High" alarm clears</li> </ul> </li> <li>• Reports to SRO that CRD flow control valves have been shifted and the CRD System has been restored to normal configuration</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Acknowledges operator and directs operator to continue shutting down</li> </ul>
		<i>Simulator Operator Proceed to the next I/C failure at the Chief Examiner's direction.</i>

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 8 Page 1 of 1

**Event Description:** Loss of DC Bus "2R25-S002", Recirc "2B" to be locally Tripped due to low oil pressure. Recirc hi vibration (mfR25\_238B, mf60221220)

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator enters mfR25_238B and 1 minute later, enters mf60221220, Pump Motor B vibration High</i>
	All	<ul style="list-style-type: none"> <li>Determines that DC Buss R25-S002 has been lost by receiving several alarms, including Station Service SWGR DC Off and Fluid Drive B Oil Press Low. Should also notice that the top row of DC power lights are off for the DC power indication on 2H11-P651 panel.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>Directs operator to enter 34AB-R22-001-2, Loss of DC Busses.</li> <li>Dispatches SO/Maint to investigate the cause of the trip.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>Enters 34AB-R22-001-2, Loss of DC Busses               <ul style="list-style-type: none"> <li>Dispatches a SO to locally trip the breaker for the 2B Recirc pump</li> <li>Enter 34AB-B31-001-2, Trip of One or Both Reactor Recirculation Pumps</li> <li>If time allows, Dispatches a SO to locally trip the exciter field breaker 2B31-CB1B to allow the core flow summing circuit to give proper indication of core flow</li> </ul> </li> </ul>
		<i>2 minutes after being dispatched, Simulator Operator enters rfB31_182, Recirc "B" Local breaker trip and reports this to the Control Room.</i> <u>Immediately go to the Major Event</u>

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 9 Page 1 of 7

Event Description: B" Recirc suction piping ruptures causing a LOCA. (mfB31\_210B, mfE11\_202B, diE11-F021A, and diE11-F021B)

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator enters mfB31_210B, Recirc Loop B suction rupture(0.2/0.02)</i>
	All	Determines that DW pressure is increasing.
	SS	<ul style="list-style-type: none"> <li>• Orders the Rx manually scrammed (may not have time to insert manual scram before the Rx auto scrams).</li> <li>• Enters RC EOP Flowchart</li> <li>• Directs CBO to perform RC-1 placard</li> <li>• Directs BOP to perform RC-2 and RC-3 placards</li> <li>• Enters Primary Containment Control Flowchart</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Manually SCRAMs the Reactor using the SCRAM pushbuttons</li> <li>• Places Rx Mode Switch in S/D.</li> <li>• Verifies and reports all rods inserted past position 02.</li> <li>• Inserts IRMs and SRMs.</li> <li>• Places SDV Isol Vlv Switch to "ISOL" and verifies closed.</li> </ul>
	BOP	<p>Performs actions of RC-2 and RC-3 after Reactor SCRAM.</p> <ul style="list-style-type: none"> <li>• Confirms proper operation of the Feedwater Level Control System to restore and maintain RPV level. <ul style="list-style-type: none"> <li>• Ensures FW Master Controller setpoint reduces to 9 inches and output reduces to 25% of previous value. (This won't happen due to low initial power.)</li> </ul> </li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 9 Page 2 of 7

Event Description: B" Recirc suction piping ruptures causing a LOCA. (mfB31\_210B, mfE11\_202B, diE11-F021A, and diE11-F021B)

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> <li>• IF NOT needed to restore RPV level,</li> <li>• Trips One RFPT.</li> <li>• Confirms OPEN 2N21-F125.</li> <li>• Places 2C32-R619, FW S/U LVL CONTROL VLV Controller, in AUTO, set at approximately 9 inches.</li> <li>• Closes 2N21-F110.</li> <li>• Checks ECCS Injection Systems and secures as necessary. (HPCI will not start due to loss of S002 DC bus.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Monitors RPV pressure.</li> <li>• Confirms proper operation of pressure control system (TBV, LLS, etc.).</li> <li>• If necessary, allows RPV pressure to exceed 1074 psig then cycles any SRV to initiate LLS.</li> <li>• Maintains RPV pressure between 1074 and 800 psig. (Pressure will slowly decrease outside the band throughout the scenario due the leak.)</li> <li>• Notifies SS of pressure control system operation.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Assigns a RWL band between 3" and 50"</li> </ul>
	All	<ul style="list-style-type: none"> <li>• Recognizes that the RHR pumps did not start on a high DW pressure LOCA Signal.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Starts RHR pumps and verifies that the Core Spray pumps are running. (Critical Task)</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 9 Page 3 of 7

**Event Description:** B" Recirc suction piping ruptures causing a LOCA. (mfB31\_210B, mfE11\_202B, diE11-F021A, and diE11-F021B)

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> <li>• Controls RWL with the RFPTs. Notifies SS if RWL gets outside assigned band.</li> <li>• Re-opens 2P41-F316s due to high oil temp on the RFPTs per 34AB-P41-001-2, Loss of PSW, Placard.               <ul style="list-style-type: none"> <li>• Places the "A" and "B" Isolation Override switches on the 2H11-P652 panel to Override</li> <li>• Fully opens 2P41-F316A or C and 2P41-F316B or D</li> <li>• Throttles 2P41-F316C or A and 2P41-F316D or B to open while monitoring PSW division 1 and 2 pressure on 2H11-P650 panel ensuring that PSW pressure remains above 80 psig.</li> </ul> </li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Per the PC flowchart, verifies torus level is &lt;285 inches and directs an operator to place Torus Sprays in service</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Sprays the Torus per 34SO-E11-010-2 placard on the 2H11-P601 Panel as follows:               <ul style="list-style-type: none"> <li>• Places Cnmt Spray Vlv Cntl switch in the MANUAL position.</li> <li>• Starts RHR pump(s) in loop A (B), if not already running.</li> <li>• Opens 2E11-F028A(B)</li> <li>• Throttles Open 2E11-F027A(B)</li> <li>• Notifies SS that RHR is in Torus Sprays</li> </ul> </li> </ul> <p>(One or Both loops of RHR may be placed in Torus Sprays. The flow is only 700gpm, so it may be difficult to see flow indication from a distance.)</p>

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 9 Page 4 of 7

Event Description: B" Recirc suction piping ruptures causing a LOCA. (mfB31\_210B, mfE11\_202B, diE11-F021A, and diE11-F021B)

Time	Position	Applicant's Actions or Behavior
	SS	<ul style="list-style-type: none"> <li>• When Torus pressure exceeds 11 psig, verifies that Torus Level is &lt;215 inches, in the safe area of Graph 8 (DWSIL) and Directs an operator to:               <ul style="list-style-type: none"> <li>• Place the DW cooling fans to Off</li> <li>• Spray the DW</li> </ul> </li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Places all DW cooling fans control switches in the OFF position.</li> <li>• Notifies the SS that the fans are Off.</li> <li>• Sprays the Drywell using 34SO-E11-010-2 placard at the 2H11-P601 panel. (Critical Task)               <ul style="list-style-type: none"> <li>• Places Cnmt Spray (A or B) Vlv Cntl switch in the MANUAL position.</li> <li>• Starts RHR pump(s) in loop A (B), if not already running.</li> <li>• Opens 2E11-F021A or B (WILL NOT OPEN)</li> </ul> </li> </ul>
		<p><i>Simulator Operator watch which loop the Operator goes to first for DW sprays and <b>DELETES</b> diE11-F021A <b>OR</b> diE11-F021B, whichever loop the operator <b>DOES NOT ATTEMPT FIRST.</b></i></p>
	CBO	Informs SS that the 2E11-F021A (or B) will not Open
	SS	Directs the operator to use the other loop of RHR for DW Sprays.

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 9 Page 5 of 7

**Event Description:** B" Recirc suction piping ruptures causing a LOCA. (mfB31\_210B, mfE11\_202B, diE11-F021A, and diE11-F021B)

Time	Position	Applicant's Actions or Behavior
	CBO	<ul style="list-style-type: none"> <li>• Sprays the Drywell using the other Loop of RHR</li> <li>• Places Cnmt Spray (A or B) Vlv Cntl switch in the MANUAL position.</li> <li>• Starts RHR pump(s) in loop A (B), if not already running.</li> <li>• Opens 2E11-F021A or B</li> <li>• Throttles Open 2E11-F016A or B</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs operator to terminate DW Sprays prior to 0 psig in the DW.</li> </ul>
		<i>Simulator Operator delete mfR25_238B and inform the control room as an Electrician that a blown fuse was replaced.</i>
	BOP	<ul style="list-style-type: none"> <li>• Recognizes that 2R25-S002 has been returned to service and that HPCI has auto started.</li> <li>• Takes manual control of HPCI to control RWL.</li> </ul>
		<i>Reducing DW pressure to a point of termination of DW sprays is not required to complete this Scenario. The scenario can be terminated at any time after DW sprays have been initiated and Drywell pressure is decreasing or at the Chief Examiner's direction.</i>
		The following actions may be performed while DW pressure is decreasing or earlier based on available man power and time.



Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 9 Page 7 of 7

**Event Description:** B" Recirc suction piping ruptures causing a LOCA. (mfB31\_210B, mfE11\_202B, diE11-F021A, and diE11-F021B)

Time	Position	Applicant's Actions or Behavior
	CBO	<ul style="list-style-type: none"> <li>• If directed to perform 31EO-EOP-114-2, the operator:               <ul style="list-style-type: none"> <li>• Closes 2E21-F005A and B</li> <li>• Trips Core Spray Pump 2A and 2B</li> <li>• Closes 2E11-F017A and B</li> <li>• Calls the SSS to OPEN the following LINKS to Override LOCA Open interlocks for RHR Outbd Inj Vlvs, 2E11-F017A/B</li> </ul> </li> </ul>
		<p><i>If requested to perform 31EO-EOP-114-2 actions for opening 2E11-F017 links, Simulator Operator enter rfE11_167 with a 4 minute delay. After 4 minutes inform the operator that the 2E11-F017A and B links have been opened per 31EO-EOP-114-2.</i></p>
		<p><i>Simulator Operator will terminate the scenario after DW sprays have been initiated and Drywell pressure is decreasing or at the Chief Examiner's direction.</i></p>

**DRAFT****Facility:** E. I Hatch**Scenario No.:** 3**Op-Test No.:**

**Examiners:** \_\_\_\_\_ **Operators:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Initial Conditions:** Unit 2 is at 100% RTP. 2D11-K615B ,OffGas Post treatment radiation monitor, failed Downscale. RAS written. Drywell pressure is at 0.65psig due to normal pressure increase. The National Weather Service has predicted Severe Thunderstorms for Appling and surrounding counties.

**Turnover:** Vent the Drywell for normal pressure increase using SBTG "2A". Maintain Rated Power.

Event No.	Malf. No.	Event Type*	Event Description
1	diT46-D001A-1	C (BOP) (SRO TS)	SBGT "2A" fails to start
2		N (BOP)	Start SBTG 2B to vent Primary Containment
3	diD11-K615A-S1	I(CBO) (SRO TS)	2D11-K615A ,Offgas Post treatment radiation monitor, intermittently fails Inop. Stack isolation valves closes and must be re-opened.
4	mfG31_207A svoG31071 mfG31_52	C(CBO) (SRO TS)	RWCU line break outside containment. Must be manually isolated, with failure of outboard isolation valve to close.
5	mfR13_164A mfR13_164B	C(BOP)	Generator Isophase Bus duct cooling fan trips, Standby can be started, then trips. breaker must be reset to start standby.
6		R (CBO)	Rx power reduced due to loss of Bus duct cooling.
7**	mfB21_131	C(CBO) (SRO TS)	**OPTIONAL – use if needed. No effect on scenario. Inadvertent ADS initiation, must be inhibited within 100 seconds to prevent actuation.
8	mfC11_211 mfN43_148A mfN43_148B	M (All)	Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS requiring RWL be maintained between -60" and -90"..
9	mfC11_30A	C (CBO)	CRD "2A" pump trip. Must start "2B" to continue to insert rods.
10	mfE51_61	C (BOP)	RCIC trips on Mechanical over-speed, must be reset locally and RCIC restarted.
			Scenario is terminated after all Rods are full in.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 1 Page 1 of 1

Event Description: SBTG "2A" fails to start, Must Start "2B" (diT46-D001A-1)

Time	Position	Applicant's Actions or Behavior
	SS	<ul style="list-style-type: none"> <li>• Directs operator to vent the Drywell with SBTG "2A" due to normal pressure increase.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Enters 34SO-T48-002-2, "Containment Atmosphere Dilution System" or uses placard to vent the Drywell.</li> <li>• Enters 34SO-T46-001-2, "Standby Gas Treatment System" procedure or uses placard at the 2H11-P657 panel to start SBTG "2A". <ul style="list-style-type: none"> <li>○ Opens 2T46-F001A or 2T46-F003A</li> <li>○ Places SBTG Fan "2A" control switch to START.</li> <li>○ <b>Determines SBTG "2A" will not start.</b></li> <li>○ Informs SS that SBTG "2A" will not start.</li> </ul> </li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs Operator to start SBTG "2B"</li> </ul>
		<i>Note: The task of starting SBTG and venting containment with the "2B" train of SBTG is contained on the Required Operator Action sheet for Event #2.</i>
	SS	<ul style="list-style-type: none"> <li>• Notifies Maintenance of SBTG "2A" failure to operate.</li> <li>• Enters Tech Spec section 3.6.4.3.B and determines that a 7 day RAS exist. (SEC Cont. TYPE A, if REQUESTED.)</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 2 Page 1 of 1

Event Description: Start SBTG "2B" to vent Primary Containment

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> <li>• Starts SBTG IAW 34SO-T46-001-2, "Standby Gas Treatment System" procedure or uses placard at the 2H11-P657 panel to start SBTG "2B".</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Opens 2T46-F001B or 2T46-F003B</li> <li>• Places SBTG Fan "2B" control switch to Start</li> <li>• Continues to vent the Drywell by performing the following:               <ul style="list-style-type: none"> <li>○ Opens 2T48-F334A (and/or 2T48-F334B)</li> <li>○ Opens 2T48-F335A (and/or 2T48-F335B)</li> <li>○ Opens 2T48-F336A (and/or 2T48-F336B)</li> </ul> </li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Monitors Drywell pressure and secures DW venting if DW pressure decreases to 0.1 psig</li> <li>• Report to the SS that containment is being vented using the "2B" Train of SBTG.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 3 Page 1 of 2

**Event Description:** 2D11-K615A ,Offgas Post treatment radiation monitor, fails INOP. Stack isolation valves closes and must be re-opened. (diD11\_K615A S1 to Inop)

Time	Position	Applicant's Actions or Behavior
		Simulator Operator enters diD11_K615A S1 to Inop, 30 seconds later deletes override diD11_K615A S1
		Post Treatment O/G Radiation HI HI HI / Inop alarm is received.
	BOP	<ul style="list-style-type: none"> <li>• Enters ARP 34AR-601-405-2</li> <li>• Post Treatment O/G Radiation HI HI HI / Inop alarm Clears.</li> <li>• Verifies 2N62-F057 and Offgas drain valves are closed</li> <li>• Determines that D11-K615A is reading normal.</li> <li>• May Notify Lab and Verify Charcoal adsorbers are not being bypassed.</li> </ul>
		<ul style="list-style-type: none"> <li>• Inlet Flow to Holdup line low alarm is received.</li> <li>• Sends operator to 34SO-N62-001-2, Off-Gas system.</li> </ul>
		<i>Simulator Operator, as I &amp; C tech, reports to the Control Room that you were dispatched to work on 2D11-K615B and inadvertently unplugged the cable to 2D11-K615A, instead of 2D11-K615B. The cable has been re-connected and a CR will be initiated.</i>
	SS	Directs operator to Open 2N62-F057
	SS	<ul style="list-style-type: none"> <li>• Enters TRM T3.3.8 , requiring "Exit Applicability in 12 hours or verify adequate alternative monitoring facilities are available in 24 hours".</li> <li>• Opening N62-F057 will clear alarm.</li> </ul>



Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 4 Page 1 of 3

**Event Description:** RWCU line break outside containment. Must be manually isolated, with failure of outboard isolation valve to close. (mfG31\_207A, svoG31071, mfG31\_52)

Time	Position	Applicant's Actions or Behavior
		<p><i>Simulator Operator enters:</i></p> <ul style="list-style-type: none"> <li>• mfG31_207A</li> <li>• svoG31071</li> <li>• mfG31_52</li> </ul>
	All	<ul style="list-style-type: none"> <li>• “RWCU System Leak” Alarm is received.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• May send a RO to Control Room back panel to determine leakage.</li> <li>• May direct the BOP operator to trip and isolate RWCU.</li> </ul> <p><i>If asked to determine leakage, the Simulator Operator reports a delta flow of 78 gpm (2G31-N603A &amp; B).</i></p>
	BOP	<ul style="list-style-type: none"> <li>• Enters 34AR-602-421-2, “RWCU Sys Leak”</li> <li>• Determines that RWCU should have tripped and isolated.</li> <li>• Trips RWCU Pump “2B”</li> <li>• Attempts to close 2G31-F001 and 2G31-F004.</li> <li>• Determines that the RWCU System 2G31-F001 DID close. (Critical Task)</li> <li>• Determines that the RWCU System 2G31-F004 DID NOT close.</li> <li>• Notifies SS that 2G31- F004 will not close.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 4 Page 2 of 3

**Event Description:** RWCU line break outside containment. Must be manually isolated, with failure of outboard isolation valve to close. (mfG31\_207A, svoG31071, mfG31\_52)

Time	Position	Applicant's Actions or Behavior
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	BOP	<ul style="list-style-type: none"> <li>• Enters 34AB-G31-001-2, RWCU System isolation.</li> <li>• ENTER 34AB-T22-001-1, Primary Coolant System Pipe Break Reactor Building.</li> <li>• IF the RWCU System is isolated for more than 30 minutes, contact Chemistry to isolate Mitigation Monitor Panel 1P73-P003.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Enters 34AB-T22-001-2, "Primary Coolant System Pipe Break Reactor Building."</li> <li>• Monitor Reactor level.</li> <li>• Monitor Reactor power.</li> <li>• Confirm all Automatic Actions have occurred.</li> <li>• Investigate the extent of damage to the RWCU System.</li> <li>• Monitor Reactor Chemistry and continue operations, as allowed by TS.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 4 Page 3 of 3

**Event Description:** RWCU line break outside containment. Must be manually isolated, with failure of outboard isolation valve to close. (mfG31\_207A, svoG31071, mfG31\_52)

Time	Position	Applicant's Actions or Behavior
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	SS	<ul style="list-style-type: none"> <li>• Dispatches SO to determine location RWCU leak.</li> <li>• Dispatches SO/Maintenance to determine why 2G31-F004 did not close.</li> <li>• Enters TS for 2G31-F004.</li> <li>• Determines that LCO 3.6.1.3.A applies and that the RWCU Line must be isolated within 4 hours.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 5 Page 1 of 3

**Event Description:** Generator Isophase Bus duct cooling fan "2A" and "2B" trips, breaker must be reset to restart fan "2A" (mfR13\_164A, mfR13\_164B)

Time	Position	Applicant's Actions or Behavior
		<p>Simulator Operator enters mfR13-164A  <i>"2A Bus Duct Cooling Fan Trip"</i>.</p> <p><i>The Generator "2A" Iso-Phase Bus Duct Cooling fan trips.</i></p>
		Generator Bus cooling Alarm is received
	BOP	<ul style="list-style-type: none"> <li>• Determines Iso Phase bus cooling unit "A" is tripped.</li> <li>• Place Iso Phase bus cooling unit B in start.</li> <li>• The "B" unit starts, then trip after only a short time.</li> <li>• Enters ARP 34AR-651-107-2</li> </ul>
		<p>The Simulator Operator:</p> <p><i>After the Generator Bus Cooling Annunciator clears, the Simulator Operator enters the following:</i></p> <p><i>mfR13_164 "2B Bus Duct Cooling Fan Trip"</i>.</p>
	BOP	<ul style="list-style-type: none"> <li>• Dispatches SO/Maintenance to determine problem with the "2A" and "2B" Iso Phase Bus Cooling Units</li> </ul>
		<ul style="list-style-type: none"> <li>• Dispatches SO to determine temps.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 5 Page 2 of 3

**Event Description:** Generator Isophase Bus duct cooling fan "2A" and "2B" trips, breaker must be reset to restart fan "2A" (mfR13\_164A, mfR13\_164B)

Time	Position	Applicant's Actions or Behavior
		<p><i>After 3 minutes of being sent to monitor Bus Duct temperatures, the Simulator Operator reports as a SO:</i></p> <p><i>"Bus duct metal temperatures are 170°F"</i></p> <p><i>Note: readings per ARP are from 2N44-N306A, 2N44-N318A, 2N44-N303</i></p>
	SS	<ul style="list-style-type: none"> <li>• Directs the CBO to reduce reactor power.</li> </ul> <p><b>Note:</b> The power change is documented in Event #6 of this simulator guide.</p>
	SS	<ul style="list-style-type: none"> <li>• Informs the Load Dispatcher of the power decrease per ARP 34AR-651-107-2, "Generator Bus Cooling".</li> </ul> <p><i>The Simulator Operator directs the SS as Load Dispatcher:</i></p> <p><i>"Attempt to maintain approximately +50 MVARs."</i></p>
	BOP	<p>Adjusts MVARs per ARP 34AR-651-107-2</p> <ul style="list-style-type: none"> <li>• Raises the Automatic Voltage Regulator setpoint.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 5 Page 3 of 3

**Event Description:** Generator Isophase Bus duct cooling fan "2A" and "2B" trips, breaker must be reset to restart fan "2A" (mfR13\_164A, mfR13\_164B)

Time	Position	Applicant's Actions or Behavior
		<p>The Simulator Operator will:</p> <p><i>Report as Maintenance that "The breaker to trip on the "2A" Bus Duct Cooling unit" has tripped.</i></p> <p><i>"There is no apparent problem with the breaker and it is recommended that the SO attempt to reset the breaker while maintenance observes."</i></p>
	SS	Directs the "2A" Bus Duct Cooling unit breaker to be reset.
		SO Resets breaker on "2A" Bus Duct Cooling (unit after power is reduced by 5%.)
	BOP	<ul style="list-style-type: none"> <li>• Maintains VARs at approximately 50 MVARs by adjusting the Automatic Voltage Regulator setpoint.</li> </ul>
		The Generator Bus Cooling alarm clears approx. 2 minutes after The "2A" Bus Duct Cooling unit is restarted.
	SS	<ul style="list-style-type: none"> <li>• Directs the CBO to halt the reactor power reduction. The SS may direct the STA or CBO to verify the location on the Power to Flow map.</li> </ul>
		<p>The Simulator Operator will:</p> <p><i>Report as a SO that "The "2A" Bus Duct Cooling unit" breaker has been reset and no problems have been noted.</i></p>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 6 Page 1 of 1  
 Event Description: Rx power reduced due to loss of Bus Duct Cooling.

Time	Position	Applicant's Actions or Behavior
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		<p><b>Note:</b> This reactivity change will occur as a result of a loss of Bus Duct Cooling (See event #5 of this simulator guide for details)</p>
	CBO	<ul style="list-style-type: none"> <li>Reduces Rx power as directed by ARP 34AR-651-107-2, "Generator Bus Cooling".</li> </ul>
		<p><b>Note:</b> The SS may direct the operator to exceed 10MWe/min. This action is allowed in abnormal situations per 34GO-OPS-005-2, "Power Changes."</p>
	CBO	<p>Enters the following procedures</p> <ul style="list-style-type: none"> <li>34GO-OPS-005-2, "Power Changes"</li> <li>34SO-B31-001-2, "Recirculation System"</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>Reduces reactor power by lowering Recirc flow per 34SO-B31-001-2.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 7 Page 1 of 2

Event Description: Inadvertent ADS initiation (mfB21\_131)

Time	Position	Applicant's Actions or Behavior
		<p><b>This component failure is OPTIONAL. The Chief Examiner will determine if this Event should be used.</b></p> <p>Simulator Operator enters mfB21_131 "<i>Inadvertent ADS Initiation</i>".</p>
		<p>The following alarms are received:</p> <ul style="list-style-type: none"> <li>• Auto Blowdown Timers Initiated</li> <li>• Auto Blowdown Relays Energized</li> </ul>
	CBO	Acknowledges the alarms and reports them to the SS.
	SS	May observe the ADS timer on SPDS begin counting down.
		<p><b>Note:</b> The SS may direct the CBO to inhibit ADS prior to pulling the 34AB-E10-001-2, "Inadvertent Initiation of ECCS/RCIC."</p>
	CBO	<ul style="list-style-type: none"> <li>• Enters 34AB-E10-001-2</li> <li>• Monitor plant parameters to determine extent of ECCS/RCIC actuations.</li> <li>• At Shift Supervisor direction, inhibit ADS using 2B21C-S7A and S7B, ADS Auto Logic Inhibit Switches, on 2H11-P602.</li> </ul>



Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 1 of 16

**Event Description:** Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
		Simulator Operator enters:  mfC11_211, mfN43_148A, and mfN43_148B (SDV Hydraulic Lock and Stator Cooling pump "2A" and "2B" trips).
		<ul style="list-style-type: none"> <li>• Stator Cooling pumps "2A" and "2B" trip.</li> </ul>
		Annunciators received: <ul style="list-style-type: none"> <li>• 34AR-651-201-2, "Generator Inlet Flow Low"</li> <li>• 34AR-651-211-2, "Generator Protection Ckt Energized"</li> </ul>
		<p><i>The plant responds to this condition by automatically "running back" the main generator.</i></p> <p><i>The Main Turbine Control Valves begin to close, which reduces MWe, and reactor pressure begins to increase.</i></p> <p><i>As reactor pressure increases, the Bypass Valves open to maintain RPV pressure.</i></p> <p><i>After all three Bypass Valves fully open, RPV pressure increases rapidly resulting in a reactor scram due to APRM trip setpoints or a High Pressure scram setpoint.</i></p>
	SS	<ul style="list-style-type: none"> <li>• The reactor may automatically scram or may be manually scrambled before the SS has time to order the scram.</li> <li>• Enters RC or RC-A EOP Flowchart.</li> <li>• Directs CBO to perform RC-1 placard.</li> <li>• Directs BOP to perform RC-2 and RC-3 placards.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 2 of 16

Event Description: Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
	CBO	<ul style="list-style-type: none"> <li>• Manually SCRAMs the Reactor using the SCRAM pushbuttons.</li> <li>• Places Rx Mode Switch in S/D.</li> <li>• May initiate Alternate Rod Insertion (ARI) by rotating the button collars and depressing both ARI pushbuttons at the same time.</li> <li>• Uses the Full Core Display and Rod Worth Minimizer to determine that all control rods <b>are not</b> inserted past position 02.</li> <li>• Informs the SS that all rods are not fully inserted (ATWS).</li> <li>• Inserts IRMs and SRMs.</li> <li>• Places SDV Isol Vlv Switch to "ISOL" and verifies closed.</li> <li>• If not tripped, places Recirc to minimum speed.</li> </ul>
	BOP	<p>Performs actions of RC-2 and RC-3 after Reactor SCRAM.</p> <ul style="list-style-type: none"> <li>• Confirms proper operation of the Feedwater Level Control System to restore and maintain RPV level. <ul style="list-style-type: none"> <li>• Ensures FW Master Controller setpoint reduces to 9 inches and output reduces to 25% of previous value.</li> </ul> </li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• IF NOT needed to restore RPV level, <ul style="list-style-type: none"> <li>• Trips One RFPT.</li> <li>• Confirms OPEN 2N21-F125.</li> <li>• Places 2C32-R619, FW S/U LVL CONTROL VLV Controller, in AUTO, set at approximately 9 inches.</li> <li>• Closes 2N21-F110.</li> <li>• Checks ECCS Injection Systems and secures as necessary.</li> </ul> </li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 3 of 16

**Event Description:** Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> <li>• Monitors RPV pressure.</li> <li>• Confirms proper operation of pressure control system (TBV, LLS, etc.).</li> <li>• If necessary, allows RPV pressure to exceed 1074 psig then cycles any SRV to initiate Low Low Set.</li> <li>• Maintains RPV pressure between 1074 and 800 psig.</li> <li>• Notifies SS of pressure control system operation.</li> </ul>
	SS	Enters RC-A Flowchart (ATWS) and CP3 (ATWS Level Control).
	SS	<ul style="list-style-type: none"> <li>• Directs CBO to:               <ul style="list-style-type: none"> <li>• Confirm the reactor Mode Switch in Shutdown.</li> <li>• Confirm ARI Initiation.</li> <li>• Confirm Recirc runback to minimum.</li> </ul> </li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Reports to the SS that:               <ul style="list-style-type: none"> <li>• The Reactor Mode Switch is in the Shutdown position.</li> <li>• ARI has been initiated (CBO may initiate ARI at this time)</li> <li>• Recirc is at minimum speed.</li> </ul> </li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs CBO or STA to report reactor power.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 4 of 16

**Event Description:** Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
	CBO/STA	<ul style="list-style-type: none"> <li>• Reports power level to the SS.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs CBO to trip the Recirc Pumps if power is &gt;5%.</li> <li>• Directs CBO to Reset ARI and insert control rods per 31EO-EOP-103-2.</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Enters 31EO-EOP-103-2, "EOP Control Rod Insertion Methods".</li> <li>• Directs the SSS to send a SO to place the ARI test switches in test on 2C11-P001 (local panel) per the 103 procedure.</li> <li>• Places the SDV high level trip bypass switch in the "Open" position.</li> <li>• Direct the SSS to override all automatic scram signals per the 103 procedure.</li> <li>• Places the Disch Vol Isol Test Switch to NORM (this action may not be done until the SSS reports back that the automatic scrams have been overwritten).</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 5 of 16

**Event Description:** Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
	CBO	<ul style="list-style-type: none"> <li>• Prepares to manually insert control rods IAW 31EO-EOP-103: (Critical Task – insert rods)</li>   <li>• Places the Reactor Mode Switch in “Refuel”.</li> <li>• Places the RWM Bypass Switch in “Bypass”.</li> <li>• Ask STA which rods have the highest worth.</li> <li>• Establish adequate drive water pressure by adjusting 2C11-F003, Drive Pressure Control Valve.</li> <li>• May start a second CRD pump to establish adequate drive water pressure.</li> <li>• Select a rod.</li> <li>• Drive selected rod to at least the 02 position using the Emergency In Notch Override switch or Rod Movement Switch.</li> </ul>
		<p><i>STA will direct the CBO to start in the center of the core and spiral out in a “black and white” pattern.</i></p>
	BOP	<ul style="list-style-type: none"> <li>• As time allows, and when generator load goes below 80 MWe, the crew performs TC-1 to trip the Main Turbine.</li>   <li>• Manually Trip the Turbine.</li> <li>• Confirm TSV’s, TCV’s, and CIV’s have properly closed.</li> <li>• Confirm the generator PCBs and exciter field breaker tripped.</li> <li>• Confirm the 4160 VAC station service busses have transferred to their alternate supply.</li> <li>• Confirm/Place TGM in auto. <ul style="list-style-type: none"> <li>○ Start TG Oil Pump</li> <li>○ Motor Suction Pump</li> <li>○ Lift Pumps</li> </ul> </li> <li>• Close the RSSV’s (2N11-F004A and F004B).</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 6 of 16

**Event Description:** Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
	SS	<ul style="list-style-type: none"> <li>• <i>If the Main Turbine is tripped (manually or automatically),</i> Directs the BOP operator to lower reactor pressure to &lt;845 psig.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Presses the Pressure Set pushbutton to lower the pressure setpoint to &lt;845 psig.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• May direct CBO to inject SBLC (not initially required).</li> <li>• Verify that ADS is inhibited.</li> <li>• Directs SSS to override MSIV low RWL closure.</li> <li>• May order BOP to override 2P41-F316 isolation.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs BOP to Lower RWL to &lt; -60 inches, using 31EO-EOP-113-2 as needed.</li> <li>• Directs STA to verify Isolations and ECCS initiations.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 7 of 16

**Event Description:** Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> <li>• Reduces injection to lower RWL to &lt; -60 inches: (Critical Task – reduce level for power control)</li> <li>• Places the individual RFPT controller in manual and lowers speed as necessary to achieve a lowering RWL trend.</li> <li>• Lowers the HPCI setpoint as necessary to achieve a lowering RWL trend. (may trip HPCI or place the HPCI controller in manual and use the manual control to reduce HPCI speed/injection).</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• When RPV level is below –60 inches, Directs the BOP operator to control RPV level within a level band. Any band between –60 inches and –185 inches is acceptable.  (Typically –60” to –90” to maintain RPV level above –101”)</li> <li>• If RWL is subsequently allowed to increase to &gt;-60 inches and Rx power is &gt;5%, the override will be addressed to, once again, lower level to &lt; -60.</li> </ul>
		<p>Simulator Operator - Trip CRD A, prior to operator starting CRD B or resetting the scram, to drive Rods.</p>
		<ul style="list-style-type: none"> <li>• “CRD Pump A Breaker” annunciator will alarm.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 8 of 16

**Event Description:** Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
	CBO	<ul style="list-style-type: none"> <li>• Determines that CRD pump "2A" has tripped.</li> <li>• Reports the trip of "2A" CRD pump to the SS.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Directs the CBO to address the ARP for the tripped CRD pump annunciator (34AR-603-128-2).</li> <li>• Directs the CBO to enter 34AB-C11-001-2, "Loss of CRD System".</li> </ul>
	CBO	<ul style="list-style-type: none"> <li>• Addresses 34AR-603-128-2, "CRD Pump A Breaker Trip".</li> <li>• Enters 34AB-C11-001-2, "Loss of CRD System".</li> <li>• Places the CRD Flow Controller in manual.</li> <li>• Lowers the controller output to "0".</li> <li>• Starts "2B" CRD pump.</li> <li>• Raises CRD flow to 50 gpm.</li> <li>• May send a SO locally to close 2C11-F034, "Charging Water Header Isolation Valve" to establish adequate drive water pressure.</li> </ul>
	SS	<ul style="list-style-type: none"> <li>• Orders SO and Maintenance to investigate the loss of CRD Pump "2A".</li> </ul>

<b>Op-Test No.:</b> _____	<b>Scenario No.:</b> <u>3</u>	<b>Event No.:</b> <u>8</u>	<b>Page</b> <u>9</u> <b>of</b> <u>16</u>
<b>Event Description:</b> Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11_211, mfN43_148A, mfN43_148B, mfC11_30A, mfE51_61)			
Time	Position	Applicant's Actions or Behavior	

		<p>If MSIVs close due to a Group 1 signal (RPV level decreases below -101") before being overridden, it is possible that Torus temperature and Reactor power may enter the unsafe region of the Boron Injection Initiation Temperature (BIIT) curve. In this case the SS will direct the BOP operator to Terminate and Prevent Injection per 31EO-EOP-113-2.</p> <p>The following 5 pages contain steps that will be taken in the event of MSIV closure.</p>
	SS	<ul style="list-style-type: none"> <li>• Before Reactor power and Suppression Pool water temperature enter the unsafe region of the BIIT curve:</li> </ul> <p style="margin-left: 40px;">Directs the CBO to inject boron to the RPV. (Standby Liquid Control (SBLC)).</p>
	CBO	<ul style="list-style-type: none"> <li>• Initiates SLC Injection</li> <li>• Unlocks and places SBLC pump select switch in "Start Sys A" or "Start Sys B" position.</li> <li>• Confirms Squib Valve Ready Lights are extinguished.</li> <li>• Confirms SBLC Loss of Continuity to Squib Valve annunciator is alarmed.</li> <li>• Confirmed the selected SBLC pump started.</li> <li>• Confirm that 2G31-F004 (RWCU Isolation Valve) has closed.</li> <li>• Report to the SS that SBLC is injecting to the RPV.</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 10 of 16

**Event Description:** Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
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	SS	<ul style="list-style-type: none"> <li>• Addresses the override located at coordinate C2 on EOP Flowchart CP-3 and determines the need to Terminate and Prevent injection to the RPV based on:                             <ul style="list-style-type: none"> <li>• Reactor power &gt;5%.</li> <li>• RWL above TAF.</li> <li>• Torus temperature is above the BIIT curve.</li> <li>• SRVs are open.</li> </ul> </li> <li>• Directs the BOP operator to Terminate and Prevent Injection per 31EO-EOP-113-2, "Terminating and Preventing Injection into the RPV".</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Enters 31EO-EOP-113-2 (these systems may be addressed in any order).</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 11 of 16

**Event Description:** Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> <li>• Terminates and Prevents Injection from HPCI (any of the following methods is acceptable):               <ul style="list-style-type: none"> <li>• If HPCI is not operating at the time, places the HPCI Aux Oil pump in Pull-to-lock off.</li> <li>• If HPCI is operating, HPCI may be secured by:                   <ul style="list-style-type: none"> <li>• Pressing and holding the HPCI Trip pushbutton until the turbine rpm = 0.</li> <li>• The Aux Oil Pump switch will then be placed in PTL Off.</li> <li>• The HPCI Trip pushbutton is released after the HPCI low oil pressure is received.</li> </ul> </li> <li>• If HPCI is operating, speed of HPCI may be reduced, with the HPCI turbine still in service by:                   <ul style="list-style-type: none"> <li>• Placing the HPCI flow controller in "Manual".</li> <li>• Reduce turbine speed as necessary to prevent injection to the RPV, yet maintaining HPCI speed &gt;2000 rpm.</li> </ul> </li> </ul> </li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Terminates and Prevents Condensate and Feedwater               <ul style="list-style-type: none"> <li>• Manually reduce RFPT speed to maintain discharge pressure below reactor pressure.</li> <li>• Close 2N21-F110, "S/U Level Control Bypass".</li> <li>• Close 2N21-F125, "S/U Level Control Isol".</li> </ul> </li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 12 of 16

**Event Description:** Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> <li>• Terminates and prevents Core Spray</li> <li>• Core Spray may (it is acceptable) be considered Terminated and Prevented due to RPV pressure &gt; CS shutoff head.</li> <li>• The BOP operator may:               <ul style="list-style-type: none"> <li>• Close 2E21-F005A and F005B.</li> <li>• Trip CS Pump A and B.</li> <li>• Direct the SSS to open links to override the LOCA open interlock.</li> </ul> </li> </ul>
		<p><i>Simulator Operator – If directed to open links for CS, <u>insert the override</u> for the links 4 minutes after the direction is given, then report that the links have been opened.</i></p>
	BOP	<ul style="list-style-type: none"> <li>• Terminates and Prevents RHR.</li> <li>• RHR may (it is acceptable) be considered Terminated and Prevented due to RPV pressure &gt; RHR shutoff head.</li> <li>• The BOP operator may:               <ul style="list-style-type: none"> <li>• Close/verify closed 2E11-F016A and F016B.</li> <li>• Close/verify closed 2E11-F028A and F028B.</li> <li>• Trip RHR pumps “2A”, “2B”, “2C” and “2D”.</li> <li>• Close 2E11-F017A and F017B.</li> <li>• Direct the SSS to open links and install jumpers to override the LOCA open interlock.</li> </ul> </li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 13 of 16

**Event Description:** Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator – If directed to open links and install jumpers for RHR, insert the override for the links 4 minutes after the direction is given, then report the links have been opened and jumpers installed.</i>
	SS	<ul style="list-style-type: none"> <li>• Monitors/directs STA to monitor for the following parameters (parameters being met will allow a RPV level band to be established).               <ul style="list-style-type: none"> <li>• Reactor power below 5% <u>and</u> RWL below –60 inches.</li> <li>• RWL at Top of Active Fuel.</li> <li>• Drywell pressure &lt; 1.85 psig <u>and</u> all SRVs closed <u>and</u> RWL below –60 inches.</li> </ul> </li> </ul>
	SS	<ul style="list-style-type: none"> <li>• When one of the above conditions have been satisfied, the SS directs the BOP operator to maintain RPV level within a level band.</li> </ul> <p>Any band between the RPV level at the time the condition was satisfied and –185 inches is acceptable.</p>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 14 of 16

**Event Description:** Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
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	CBO	<p>When Scram Discharge Volume (SDV) high level trip or SDV not drained alarms clear, the operator inserts a manual scram. (will wait a few minutes between subsequent scrams).</p> <p>The CBO will determine that control rods did are not all fully inserted.</p>
		<i>Simulator Operator – Insert RCIC trip (mfE51_61)</i>
		<p>Annunciators received:</p> <p>“RCIC Turbine Trip”.</p>
	BOP	<ul style="list-style-type: none"> <li>• Identifies that RCIC has tripped.</li> <li>• Reports to the SS that RCIC has tripped.</li> <li>• Refers to 34AR-602-301-2, “RCIC Turbine Trip”.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Attempt to reset RCIC per 34SO-E51-001-2 per RCIC Recovery From a Turbine Trip section.</li> <li>• Place the RCIC Flow controller in manual.</li> <li>• Adjust the RCIC Flow controller output at 50%.</li> <li>• Attempt to reset 2E52-F524, “RCIC Trip and Throttle Valve” (will not reset).</li> </ul>

Op-Test No.: \_\_\_\_\_ Scenario No.: 3 Event No.: 8 Page 15 of 16

**Event Description:** Stator cooling pump 2A trips, 2B will not start. Rx scram with ATWS (mfC11\_211, mfN43\_148A, mfN43\_148B, mfC11\_30A, mfE51\_61)

Time	Position	Applicant's Actions or Behavior
	SS or BOP	<ul style="list-style-type: none"> <li>• Sends SO to locally reset the RCIC Trip and Throttle Valve.</li> </ul>
		<p><i>Simulator Operator Delete RCIC trip (mfE51_61)</i></p> <p><i>Report as the SO sent to reset the RCIC Trip and Throttle Valve that "The mechanical overspeed trip linkage was tripped and has been reset".</i></p>
	BOP	<ul style="list-style-type: none"> <li>• RCIC restarted per 34SO-E51-001-2 section for RCIC Recovery From a Turbine Trip start with initiation signal present.</li> <li>• Reset the RCIC Trip and Throttle Valve (F524)..</li> <li>• Slowly throttle open the Trip and Throttle Valve and concurrently open/verify open the discharge valve 2E51-F013.</li> <li>• Transfers the controller to Auto.</li> <li>• Adjust the controller setpoint as necessary to control injection.</li> </ul>
		<p><i>Simulator Operator – Ensure the reactor scram has been reset, then DELETE mfC11_211.</i></p>
	CBO	<ul style="list-style-type: none"> <li>• When Scram Discharge Volume (SDV) high level trip or SDV not drained alarms clear, the operator inserts a manual scram.</li> <li>• Determines that all control rods are fully inserted (using Full Core Display indications and RWM).</li> <li>• Informs the SS that all control rods are fully inserted.</li> </ul>



# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

Determine if plant conditions allow a "Quick Restart" of a Recirculation Pump.

E. L. Jones

LR-JP-25050-00

12.0 Minutes

N/R



*Energy to Serve Your World*<sup>SM</sup>





**Determine if plant conditions allow a "Quick Restart" of a Recirculation Pump.**



LR-JP-25050-00



The task shall be complete when it has been determined that the requirements of 34SO-B31-001-1, "Reactor Recirculation System" have NOT been met to start a Reactor Recirculation pump.



004.002



004.002.A

**K/A CATALOG NUMBER:** Generic 2.1.20/Generic 2.1.32

**K/A CATALOG JTA IMPORTANCE RATING:**

**RO** 4.3/3.4

**SRO** 4.2/3.8

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)/Senior Reactor Operator (SRO)



34SO-B31-OPS-001-1 (current version)



34GO-OPS-001-1 (current revision)

**APPROXIMATE COMPLETION TIME:** 12.0 Minutes

**SIMULATOR SETUP:** N/A, Used for NRC Admin JPM (classroom setting)

# UNIT 1

## READ TO THE OPERATOR

### INITIAL CONDITIONS:

1. 10 minutes ago, the Unit 1 reactor scrammed from 100 % power.
2. Both Reactor Recirculation pumps tripped during the scram transient.
3. Reactor water level went as low as –10 inches and has been restored to +37 inches using Reactor Feedwater Pumps.
4. HPCI and RCIC were not required during the transient and have remained in standby.
5. RWCU is in service.
6. The Shift Supervisor has given directions to perform a Quick Restart of the “**1B**” Reactor Recirculation pump to prevent thermal stratification.
7. An operator has entered 34SO-B31-001-1, “Reactor Recirculation System” and completed steps 7.1.3.1 through 7.1.3.9 (“Recirc Pump A(B) Quick Restart”).
8. Data collection began 4 minutes ago and the operator has completed gathering plant data for use with step 7.1.3.10 of 34SO-B31-001-1.

### INITIATING CUES:

Determine if plant conditions meet the procedural requirements for starting the “**1B**” Reactor Recirculation pump per step 7.1.3.10 of 34SO-B31-001-1, “Reactor Recirculation System”.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

NOTE: Attachment 1 serves as an answer key for this JPM. It is **not** to be provided to the student.

NOTE: **At this time**, provide the operator with **Attachment 2** (Plant Data page) and a copy of 34SO-B31-001-1.

PROMPT: If addressed by the operator, inform the operator that the Scoop Tube positioner is not in local manual control.

1.	Operator reviews the procedure's precautions and limitations.	The operator has reviewed the procedure's precautions and limitations.	
2.	Operator refers to step 7.1.3.10 and is directed to Attachment 6 of 34SO-B31-001-1	Step 7.1.3.10	
3.	Operator selects "B" Recirc Pump.	Places a check mark next to "B" Recirc. Att. 6 Step 1.0	
4.	The operator enters the current time.	Records current time. Att. 6 Step 1.1	
		T <sub>sat</sub> = 521° F (±2° F) Att. 6 Step 1.1 (A)	

NOTE: Data is not required to be filled in for the "1A" Recirc Pump in the following step.

6.	The Operator enters suction temperature for Recirculation Pumps.	Recirc "1A": 470° F Recirc "1B": 475° F (Att. 6 Step 1.1 (A) & (B))	
7.	The operator enters the bottom head temperature.	Bottom head temperature: 365° F (Att. 6 Step 1.1 (D))	

(\*\* Indicates critical step)

8.	The operator calculates the $\Delta t$ between the "1B" loop and the RPV.	$\Delta t = (521^\circ \text{ F} - 475^\circ \text{ F}) = 46^\circ \text{ F}$ ( $\pm 2^\circ \text{ F}$ ) (Att. 6 Step 1.2.1)	
		$\Delta t$ of $46^\circ \text{ F}$ ( $\pm 2^\circ \text{ F}$ ) is $< 50^\circ \text{ F}$ (Att. 6 Step 1.2.1)	

NOTE: The student should not use step 1.3.2 to perform the following confirmation of plant conditions due to the note that precedes step 1.3 (RWCU is in service). If the operator does refer to step 1.3.2, the check will not be acceptable due to Feedwater temperature  $< 300^\circ \text{ F}$ .

		$\Delta t = (521^\circ \text{ F} - 365^\circ \text{ F}) = 156^\circ \text{ F}$ ( $\pm 2^\circ \text{ F}$ ) (Att. 6 Step 1.3.1)	
		$\Delta t$ of $156^\circ \text{ F}$ ( $\pm 2^\circ \text{ F}$ ) is $> 145^\circ \text{ F}$ (Att. 6 Step 1.3.1)	
12	The operator reports to the Shift Supervisor.	Plant conditions are not acceptable for starting the "1B" Reactor Recirculation pump.	

PROMPT: IF addressed by the operator, as the STA, **INFORM** the operator that power/flow map conditions are acceptable for starting the Recirc Pump.

PROMPT: IF addressed by the operator, as the Shift Supervisor, **INFORM** the operator that another operator will verify his calculations.

**END**  
**TIME:** \_\_\_\_\_

NOTE: The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

(\*\* Indicates critical step)

**NOTE:** This attachment may be performed in Modes 1,2, and 3.

1.0 Recirc Loop and RPV Limit Checks:

Pre-startup checks for (√): \_\_\_\_\_ "A" recirc  
 ✓ "B" recirc

1.1 Record the following data: Time Current Time Initials

	Parameter	Location	Value	
(A)	RPV Saturation Temp.	SPDS MISC RPV Heatup/ Cooldown OR Steam Tables	521° F (±2° F)	(A)
(B)	"A" Recirc Suction Temp	1B31-R650 OR Equivalent	470° F	(B)
(C)	"B" Recirc Suction Temp	1B31-R650 OR Equivalent	475° F	(C)
(D)	*Vessel Bottom Head Drain	*1B21-R606 Pt 3 OR 1G31-N601 Pt 5	*365° F	(D)

\* The Bottom Head Drain temperature (D) may still be used even if RWCU is not in service. (See Limitation 5.2.12). IF Bottom Head Drain temperature is NOT available, (i.e., inoperable), THEN use the alternate method of confirming the Bottom Head to Coolant ΔT in step 1.3.

1.2 FOR the Recirc loop to be started, CONFIRM the ΔT between the reactor coolant temperature in the loop and the RPV coolant temperature is ≤ 50°F by performing step 1.2.1 or 1.2.2 below:

1.2.1 Loop "A" ΔT = |(A) - (B)| = \_\_\_\_\_ (acceptable ≤ 50°F) N/A  
OR  
 Loop "B" ΔT = |(A) - (C)| = 46° F (±2° F) (acceptable ≤ 50°F) Initials

..... OR .....

1.2.2 IF only one recirc loop is idle,  
 THEN loop ΔT = |(B) - (C)| = \_\_\_\_\_ (acceptable ≤ 50°F) N/A

**NOTE:** IF a direct indication is NOT available for Vessel Bottom Head Drain temp (D), THEN within 30 minutes of an RPT, the bottom head to coolant  $\Delta T$  ( $\leq 145^\circ F$ ) may be confirmed per the alternate method in step 1.3.2.

1.3 CONFIRM the  $\Delta T$  between the bottom head coolant temperature and the reactor pressure vessel (RPV) coolant temperature is  $\leq 145^\circ F$  by performing step 1.3.1 or 1.3.2 below:

1.3.1  $\Delta T = |(A) - (D)| = \underline{156^\circ F (\pm 2^\circ F)}$  (acceptable  $\leq 145^\circ F$ ) \_\_\_\_\_

..... OR .....

1.3.2 Per Tech Spec BASES B.3.4.9, CONFIRM ALL of the following:

- (a) One or more loop drive flows were  $> 40\%$  (18,000 gpm) of rated flow prior to the RPT, AND N/A
- (b) HPCI and RCIC Systems have not injected since the RPT, AND N/A
- (c) Feedwater temperature has remained  $> 300^\circ F$  since the RPT, AND N/A
- (d) Time between the RPT and restart is  $< 30$  minutes.

Record Recirc RPT trip time: \_\_\_\_\_(T1)

Recirc start is required prior to:  
(T1) + 30 minutes = \_\_\_\_\_ N/A

1.4 IF only ONE Recirc pump is idle, THEN CONFIRM the operating pump loop flow is  $< 22,500$  GPM. N/A

1.5 CONFIRM that:

(1) Power/flow condition is acceptable for restart per the STA/Rx Engineering. \_\_\_\_\_

OR

(2) IF the OPRM System is inoperable, the reactor is 10% below the 61% Load Line of Attachment 1, OPRM System Inop Power vs. Flow map in 34AB-C51-001-1, in order to avoid inadvertent entry into the RPI.

1.6 INDEPENDENTLY VERIFY that the data recorded in section 1.0 above is ACCEPTABLE prior to proceeding with the recirc pump start. (VERIFIED) \_\_\_\_\_

2.0 CONFIRM data taken per Section 1.0, was performed within the last 15 minutes.

3.0 Record Recirc pump start time: \_\_\_\_\_

**Plant Data**

- **Reactor pressure:** 805 psig
- **“A” Recirc Suction Temp (1B31-R650):** 470° F
- **“B” Recirc Suction Temp (1B31-R650):** 475° F
- **Vessel Bottom Head Drain (1B21-R606 Pt 3):** 365° F
- **Reactor Feedwater temperature:** 295° F

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

**DETERMINE IF THE REACTOR MODE SWITCH CAN BE TRANSFERRED  
FROM STARTUP/HOT STANDBY TO RUN**

E. L. Jones

LR-JP-25025-03

12.0 Minutes

N/R



*Energy to Serve Your World<sup>SM</sup>*



UNIT 1 ( ) UNIT 2 (X)



**DETERMINE IF THE REACTOR MODE SWITCH  
CAN BE TRANSFERRED FROM STARTUP/HOT  
STANDBY TO RUN**



LR-JP-25025-03



The task shall be complete when it has been determined that the requirements of 34GO-OPS-001-2S, "Plant Startup" and Technical Specifications have NOT been met and the Reactor Mode Switch CANNOT be placed in RUN.



010.019



010.019.J

**PLANT HATCH JTA IMPORTANCE RATING:**

RO 3.62

SRO 3.42

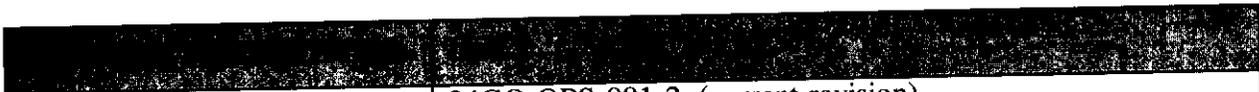
**K/A CATALOG NUMBER:** Generic 2.1.12

**K/A CATALOG JTA IMPORTANCE RATING:**

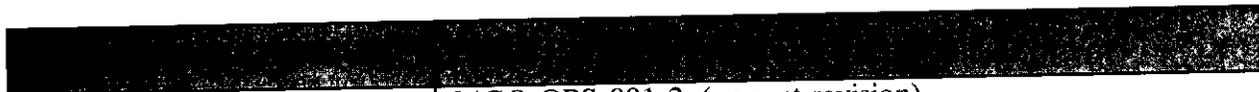
RO 2.9

SRO 4.0

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)/Senior Reactor Operator (SRO)



34GO-OPS-001-2 (current revision)  
Unit 2 Technical Specifications



34GO-OPS-001-2 (current revision)  
Unit 2 Technical Specifications

**APPROXIMATE COMPLETION TIME:** 12.0 Minutes

**SIMULATOR SETUP:** N/A

## UNIT 2

### READ TO THE OPERATOR

#### INITIAL CONDITIONS:

1. A plant startup is in progress. Operators have completed up to step 7.4.14.3 in section 7.4 of 34GO-OPS-001-2, "Plant Startup".
2. RCIC is out of service and under clearance. A RAS has been written.
3. It has been reported that one of the Main Control Room Air Conditioning units (1Z41-B003A) has a coolant leak.
  - The associated air-handling unit cooling coils have been isolated to stop the leak and the fan has been de-energized.
  - The other Control Room air-handling units are not affected.
  - 1R24-S029 is aligned to 1R24-S002.
4. Outside air temperature is 80° F.
5. No other Required Action Statements (RAS's) are in effect.

#### INITIATING CUES:

Evaluate plant and equipment status to determine if both procedural and Technical Specification requirements are met for placing the Reactor Mode Switch in "RUN."

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

**NOTE:** Provide the student with a copy of Attachment 2, 34GO-OPS-001-2, "Plant Startup" section 7.4.

**NOTE:** If the operator reviews Technical Specifications (TS) for RCIC first, progression of the JPM will be JPM steps 1, 2, 3, 4, 5, 6, 7.

If the operator reviews Technical Specifications (TS) for MCREC first, progression of the JPM will be JPM steps 1, 2, 5, 6, 7, 3, 4.

**PROMPT:** The candidate should determine that "A" MCREC Air Handling Unit is Inoperable. **IF** the candidate addresses writing a RAS, **INFORM** the operator that another SRO will write the RAS.

1.	Operator reviews the procedure's precautions and limitations.	The operator has reviewed the procedure's precautions and limitations.	
2.	Operator reviews paperwork completed by the Nuclear Plant Operator.	Section 7.4 of 34GO-OPS-001-2 has been completed and all required steps have been correctly initialed by the Nuclear Plant Operator.	

**PROMPT:** **IF** the candidate requests specific information about plant parameters/status, **REFER** to attachment 1 (Plant Data) and **PROVIDE** the requested information.

3.	Operator addresses Technical Specifications for RCIC.	The operator <b>REVIEWS</b> Tech Spec 3.5.3 due to RCIC being inoperable.	
4.	Operator determines that the Mode Switch <b>can</b> be placed in RUN based on RCIC.	The operator <b>DETERMINES</b> that the Reactor Mode Switch <b>CAN</b> be placed in RUN, because LCO 3.0.4 is not applicable.	

**Note:** If the operator addresses TS for MCREC, before addressing TS for RCIC, and determines that the reactor mode switch cannot be transferred to Run, it is acceptable for the operator to end the task at that time without referring to the RCIC RAS.

**(\*\* Indicates critical step)**



	The operator <b>REVIEWS</b> Tech Spec 3.7.5 for the inoperable MCREC Air Handling Unit.	
--	---	--

RESPONSE CUE: N/A

	The operator <b>DETERMINES</b> that the Reactor Mode Switch <b>CANNOT</b> be placed in RUN, referring to Tech Spec 3.0.4.	
--	---	--

RESPONSE CUE: Mode Switch is in RUN.

7.	Operator informs the Shift Supervisor that the Mode Switch <b>CANNOT</b> be placed in RUN.	Operator informs the Shift Supervisor that the Mode Switch <b>CANNOT</b> be placed in RUN.	
----	--	--	--

PROMPT: **IF** the condition MCREC is addressed by the operator, **INFORM** the operator that the time for repairs on the AHU is unknown at this time.

**END TIME:** \_\_\_\_\_

- NOTE:** The terminating cue shall be given to the operator when:
- With no reasonable progress, the operator exceeds double the allotted time.
  - Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

(\*\* Indicates critical step)

## Attachment 1

### Unit 2 Plant Data

- Reactor pressure: 924 psi
- The #1 Main Turbine Bypass Valve is 75% open, the other 2 valves are closed.
- The STA has performed 34SV-SUV-021-0, APRM Adjustment To Core Thermal Power.
- APRM A: 9%  
APRM B: 8%  
APRM C: 9%  
APRM D: 9%
- All APRM Downscale lights are extinguished.
  
- IRM A: 20/40 Range 9            IRM B: 19/40 Range 9  
IRM C: 19/40 Range 9            IRM D: 21/40 Range 9  
IRM E: 22/40 Range 9            IRM F: 20/40 Range 9  
IRM G: 21/40 Range 9            IRM H: 20/40 Range 9
  
- The following have been verified to be current:
  - 57SV-C51-001-0, APRM Functional Test.
  - 57SV-C51-005-0, APRM Calibration.
  - 57SV-C51-003-0, APRM Two Out of Four Logic Module FT, is current.
  
- 603-232, "Main Steam Line Press A Low," and  
603-233, "Main Steam Line Press B Low," are CLEAR.
  
- The on-shift Lab Foreman reports that Reactor Water, Condensate and Feedwater are acceptable for power operation based on samples taken per 64CH-SAM-023-0.
  
- ALL relays have been verified to be in their NORMAL state,"
  
- No unexpected TRIP condition exists on any RPS relay.
  
- There are NO abnormal conditions on any relay.

## 7.4 TRANSFER OF REACTOR MODE SWITCH TO THE RUN POSITION

### CONTINUOUS

- 7.4.1 Confirm that the pressure setpoint is set to maintain 920 PSIG. ELLJ
- 7.4.2 Notify the lab Foreman to begin taking required samples for reactor water, condensate, and feedwater for power operation per the Sampling and Analysis During Power Operation, subsection of 64CH-SAM-023-0. ELLJ
- 7.4.3 Continue pulling rods in sequence provided by Shift Technical Advisor UNTIL the highest APRM reading is between 6% and 7% with pressure > 920 PSIG. ELLJ
- 7.4.4 Have STA perform the following:
- 7.4.4.1 Adjust all of the APRMS for a desired reading of 7% per 34SV-SUV-021-0, APRM Adjustment To Core Thermal Power. ELLJ

#### **CAUTION:**

IF THE BYPASS VALVES INDICATE OUTSIDE THE SPECIFIED RANGE IN THE FOLLOWING STEP, THE STARTUP WILL BE HALTED UNTIL AN EVALUATION CAN BE MADE BY THE REACTOR ENGINEER AND THE SHIFT MANAGER. DO NOT REDUCE THE APRM SETTINGS BELOW THAT REQUIRED IN THE PREVIOUS STEP.

- 7.4.4.2 Perform alternate power level check by confirming that one main turbine bypass valve is between 50% and 100% OPEN. ELLJ
- 7.4.5 Confirm operable APRMs indicate between 7% and 10%. ELLJ
- 7.4.6 Confirm operable APRM DOWNSCALE trips are clear by performing the following at the APRM ODAs:
- 7.4.6.1 DEPRESS the "ETC" key UNTIL "TRIP STATUS" option ILLUMINATES. ELLJ
- 7.4.6.2 DEPRESS "TRIP STATUS" key, THEN confirm "APRM FLUX DOWNSCALE ALARM" is not active. ELLJ
- 7.4.7 Confirm no operable IRMs are UPSCALE. ELLJ

7.4.8 Confirm the following:

- at least three APRM channels per RPS Trip System are OPERABLE ELJ

AND

- at least 2 "APRM TWO-OUT-OF-FOUR-VOTER-CHANNELS" per RPS Trip System are OPERABLE. ELJ

AND

- at least 3 OPRM channels per RPS Trip System are OPERABLE ELJ

7.4.9 Confirm 57SV-C51-001-0, APRM Functional Test, 57SV-C51-005-0, APRM Calibration and 57SV-C51-003-0, APRM Two Out of Four Logic Module FT, are current. ELJ

7.4.10 Confirm that the following annunciators are CLEAR:

- 603-232, MAIN STEAM LINE PRESS A LOW ELJ

- 603-233, MAIN STEAM LINE PRESS B LOW ELJ

7.4.11 Obtain confirmation from the on-shift Lab Foreman that reactor water, condensate and feedwater are acceptable for power operation as per the Sampling and Analysis During Power Operation, subsection of 64CH-SAM-023-0. ELJ

<b><u>CAUTIONS:</u></b>	<ol style="list-style-type: none"><li>1. THE PROCESS COMPUTER REACTOR HEAT BALANCE WILL NOT INITIALIZE IF KEY PROCESS POINTS ARE EITHER OUT OF RANGE OR NOT INSERTED TO SCAN.</li><li>2. THE PROCESS COMPUTER REACTOR HEAT BALANCE INDICATION MAY DIFFER FROM ACTUAL REACTOR POWER IF CERTAIN PROCESS POINTS ARE NOT INSERTED TO SCAN.</li><li>3. VALID FINAL FEEDWATER TEMPERATURES MUST BE MANUALLY INSERTED TO THE PROCESS COMPUTER UNTIL AUTOMATIC SCANNING OF THE VALUE(S) COMMENCES AT APPROXIMATELY 140° F.</li></ol>
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7.4.12 At approximately 10% RTP, notify the STA to start the CTP program per DI-ENG-51-1197, CTP User's Guide. ELJ

DOCUMENT TITLE:  
PLANT STARTUP

DOCUMENT NUMBER:  
34GO-OPS-001-2

VERSION NO:  
38.0

- 7.4.13 PRIOR to starting the CTP program, the STA must ensure that Process Computer process points affecting the reactor heat balance calculation have been inserted to scan where possible. The STA shall consult with Reactor Engineering as necessary. ELJ
- 7.4.14 Have STA perform the following as soon as possible just PRIOR to placing the mode switch to RUN.
- 7.4.14.1 Select miscellaneous Relay status on SPDS and ensure that ALL relays are in their NORMAL state. ELJ
- 7.4.14.2 Select Group Point Display List on PCRS Main Menu. THEN select GROUP 10, RPS Relay Status, and ENSURE that no unexpected TRIP condition exists on ANY RPS relay. ELJ
- 7.4.14.3 IF any abnormal conditions are noted on ANY relays, notify the Shift Supervisor IMMEDIATELY. N/A
- 7.4.15 PLACE the Reactor Mode switch in RUN. Record Time: \_\_\_\_\_
- 7.4.16 PLACE all Recorder Select switches (APRM/IRM) in the APRM, RBM or "0" position. \_\_\_\_\_
- 7.4.17 Confirm 2C51-K620A & B, APRM ODAs, switch to "RUN MODE". \_\_\_\_\_
- 7.4.18 Visually confirm that the following MSIV Closure Trip Bypass relays are deenergized:
- 7.4.18.1 On panel 2H11-P609:
- 2C71-K11A \_\_\_\_\_
  - 2C71-K11C \_\_\_\_\_
- 7.4.18.2 On panel 2H11-P611:
- 2C71-K11B \_\_\_\_\_
  - 2C71-K11D \_\_\_\_\_

**NOTE:**

WHEN withdrawing IRM detectors, detector motion can be confirmed by momentarily switching the Recorder Select switches to monitor IRM channels and noting a power decrease as detectors are withdrawn.

- 7.4.19 Fully WITHDRAW all operable IRM detectors. \_\_\_\_\_

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

<b>REVIEW OF CORE SPRAY PUMP OPERABILITY SURVEILLANCE</b>		
E. L. Jones	LR-JP-25051-0	15.0 Minutes
N/R		



*Energy to Serve Your World<sup>SM</sup>*



UNIT 1 ( )    UNIT 2 (X)

**REVIEW OF CORE SPRAY PUMP OPERABILITY SURVEILLANCE**

LR-JP-25051-0

The task shall be complete when the operator reviews the completed surveillance procedure, 34SV-E21-001-2, and determines the results are in the Alert area and the surveillance frequency is required to be doubled.

300.011

300.011.O

**K/A CATALOG NUMBER:**    Generic 2.2.12

**K/A CATALOG JTA IMPORTANCE RATING:**

- RO**    2.9
- SRO**  4.0

**OPERATOR APPLICABILITY:**    Nuclear Plant Operator (NPO)/Senior Reactor Operator (SRO)

34SV-E21-001-2 (current version)

Completed surveillance package: 34SV-E21-001-2.

**APPROXIMATE COMPLETION TIME:**    15.0 Minutes

**SIMULATOR SETUP:**    N/A

## **UNIT 2**

### **READ TO THE OPERATOR**

#### **INITIAL CONDITIONS:**

1. Unit 2 is at 100% power.
2. An In-Service Test (IST) has just been completed for the "2A" Core Spray pump IAW 34SV-E21-001-2, "Core Spray Pump Operability".

#### **INITIATING CUES:**

Review Attachment 1 of 34SV-E21-001-2, "Core Spray Pump Operability".

Complete any calculations required by the surveillance data sheets.

Inform the Shift Supervisor of your results and any recommendations or procedural requirements based on the results.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

PROMPT: **AT** this time, **GIVE** the operator a complete copy of 34SV-E21-001-2, "Core Spray Pump Operability."

PROMPT: **AT** this time, **GIVE** the operator Attachment 1 of this (Data has been filled in for this JPM).

PROMPT: **IF** the operator addresses the IST Book, **INFORM** the operator that a supervisor has verified the reference data.

<b>1.</b>	The operator reviews the procedure.	The operator <b>REVIEWS</b> 34SV-E21-001-2, "Core Spray Pump Operability."	
<b>2.</b>	The operator evaluates parameters on Attachment 1 and finds Outlet Pressure (pump running) P <sub>o</sub> acceptable.	On Attach. 1 of 34SV-E21-002-1, the operator <b>EVALUATES</b> outlet pressure (pump running) P <sub>o</sub> data is <b>SATISFACTORY.</b> <b>290 psig (spec &gt; 261 psig)</b>	
<b>3.</b>	The operator evaluates parameters on Attachment 1 and finds Differential Pressure (3) dPr acceptable.	On Attach. 1 of 34SV-E21-001-2, the operator <b>EVALUATES</b> Differential Pressure (3) dPr data is <b>SATISFACTORY.</b> <b>0.98 (Accept 0.98±.005)</b> <b>(spec is 0.95 to 1.10 dPr)</b>	

(\*\* Indicates critical step)

4.	The operator evaluates parameters on Attachment 1 and finds Flowrate (7) Qr acceptable.	On Attach. 1 of 34SV-E21-001-2, the operator EVALUATES finds Flowrate (7) Qr data is <b>SATISFACTORY. 4160 gpm (spec = ref data, ratio 1.0)</b>	
	On Attach. 1 of 34SV-E21-001-2, the operator EVALUATES Vibration Point 1, (V01) Vr data is in the <b>Alert Range.</b>  <b>Vibration of .32 is ACCEPTABLE (spec &lt; 0.325in/sec)</b>  <b>Ratio of 3.2 is in the ALERT range (spec = ≤ 2.5 Vr)</b>		

NOTE: The operator may elect to inform the SS at this time that there is an out of spec. item on the form. This action is acceptable.

It is also acceptable for the operator to complete the review before bringing this to the supervisors attention.

PROMPT: **IF** the operator addresses the out of spec. item(s), **DIRECT** the operator to finish the data package review.

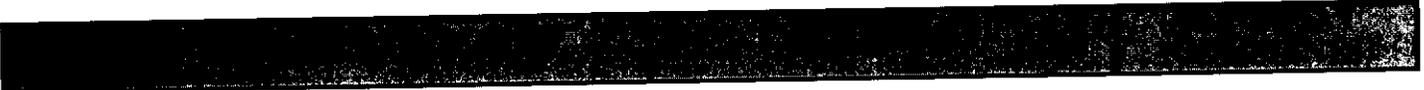
(\*\* Indicates critical step)

	<p>On Attach. 1 of 34SV-E21-001-2, the operator EVALUATES Vibration Point 2, (V01) Vr data is in the <b>Alert Range</b>.</p> <p><b>Vibration of .275 is ACCEPTABLE (spec &lt; 0.275 in/sec)</b></p> <p><b>Ratio of 3.44 is in the ALERT range (spec = ≤ 2.5 Vr)</b></p>		
<p>7.</p>	<p>The operator evaluates parameters on Attachment 1 and finds Vibration Point 3 (Axial), (A01) Vr acceptable.</p>	<p>On Attach. 1 of 34SV-E21-001-1, the operator EVALUATES finds Point 3 (Axial), (A01) Vr data is <b>SATISFACTORY</b>.</p> <p><b>0.280 (spec ≤ 0.275 in/sec)</b></p> <p><b>Ratio 2.33 (spec ≤ 2.5 Vr)</b></p>	

RESPONSE CUE: N/A

<p>8.</p>	<p>The operator evaluates the stroke time data for the cooling water valve 2P41-F036A.</p>	<p>On Attach. 1 of 34SV-E21-001-2, the operator evaluates the stroke time data for 2P41-F036A and determines that the valve data is <b>Satisfactory</b>.</p>	
<p>9.</p>	<p>The operator evaluates the stroke time data for the cooling water vavles 2P41-F036B.</p>	<p>On Attach. 1 of 34SV-E21-001-2, the operator evaluates the stroke time data for 2P41-F036B and determines that the valve data is <b>Satisfactory</b>.</p>	
<p>10.</p>	<p>The operator evaluates the stroke time data for the cooling water vavles 2P41-F039A.</p>	<p>On Attach. 1 of 34SV-E21-001-2, the operator evaluates the stroke time data for 2P41-F039A and determines that the valve data is <b>Satisfactory</b>.</p>	

(\*\* Indicates critical step)



11.	The operator evaluates the stroke time data for the cooling water vavles 2P41-F039A.	On Attach. 1 of 34SV-E21-001-2, the operator evaluates the stroke time data for 2P41-F039B and determines that the valve data is <b>Satisfactory</b> .	
-----	--	--	--

RESPONSE CUE: N/A

	The Operator informs the SS that Vibration Point 1, (V01) Vr dVibration Point 2, (H01) Vr are in the <b>Alert range</b> .	
--	---	--

RESPONSE CUE: N/A

PROMPT: **WHEN** the operator addresses the readings in the ALERT range, **TELL** the operator to make recommendations based on the findings.

	The operator determines that the Core Spray pump is operable, however; <b>the surveillance frequency is required to be doubled.due to the readings in the ALERT range</b> .	Step 4.3.5 and Note (1) of Attachment 1.
--	---	--

NOTE: If the operator addresses writing a Condition Report (CR) based on this surveillance, inform the operator that another operator will write the CR.

**END**  
**TIME:** \_\_\_\_\_

NOTE: The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

TERMINATING CUE: We will stop here.

(\*\* Indicates critical step)

DOCUMENT TITLE:  
CORE SPRAY PUMP OPERABILITY

DOCUMENT  
NUMBER:  
34SV-E21-001-2

Version No:  
16.3

ATTACHMENT 1  
TITLE: CORE SPRAY PUMP 2A (2B) QUARTERLY IST DATA AND ACCEPTANCE CRITERIA

Att. Pg.  
1 of 3

Test Date: \_\_\_\_\_

Core Spray Test Loop (  ) A (  ) B

Reference Data Changes:

Is reference data being changed? (  ) Yes (  ) No

If YES, list justification for so doing: \_\_\_\_\_

(2E21-C001A and B)

PARAMETER	INSTRU MPL NO.	REFERENCE VALUE	DATE REF VALUE TAKEN	TEST VALUE	ACCEPT. RANGE	ALERT RANGE (1)	REQD ACTION RANGE (2)	TECH. SPEC.	RATIO (6)
Inlet Pressure (Pump Running)	N/A	N/A	N/A	5 PSIG	N/A	N/A	N/A	N/A	N/A
Outlet Pressure (Pump Running) P <sub>o</sub>	2E21-R600A(B)	<u>295</u>	<u>09/03/2005</u>	<u>290</u>	N/A	N/A	N/A	> 261 PSIG	N/A
Differential Pressure (3) dPr	N/A	<u>290</u>	<u>09/03/2005</u>	<u>285</u>	0.95 to 1.10 dPr	≥.93 and <.95 dPr	<0.93 dPr or >1.10 dPr	N/A	_____
Flowrate (7) Q <sub>r</sub>	2E21-R601A(B)	<u>4260</u>	<u>09/03/2005</u>	<u>4260</u>	N/A	N/A	N/A	At least 4250 GPM	1.0
Vibration Point 1 (V01) V <sub>r</sub>	(5)	<u>0.100</u>	<u>09/03/2005</u>	<u>0.320</u>	(4)	(4)	(4)	N/A	_____
Point 2 (H01) V <sub>r</sub>	(5)	<u>0.080</u>	<u>09/03/2005</u>	<u>0.275</u>				N/A	_____
Point 3 (Axial) (A01) V <sub>r</sub>	(5)	<u>0.120</u>	<u>09/03/2005</u>	<u>0.280</u>				N/A	_____

DOCUMENT TITLE:  
CORE SPRAY PUMP OPERABILITY

DOCUMENT  
NUMBER:  
34SV-E21-001-2

Version No:  
16.3

ATTACHMENT 1

TITLE: CORE SPRAY PUMP 2A (2B) QUARTERLY IST DATA AND ACCEPTANCE CRITERIA

Att. Pg.  
2 of 3

- (1) Test Frequency to be doubled according to 31GO-INS-001-0.
- (2) Pump declared inoperable according to 31GO-INS-001-0.
- (3) Differential pressure must be calculated as:  $dP = \text{Outlet pressure (pump running)} - 5 \text{ psig}$ .

(4)

Vref.	ACCEPTABLE V	ALERT V	ACTION V
ALL	$\leq 2.5 V_r$ AND $\leq .325 \text{ IN/SEC}$	$> 2.5 V_r \text{ to } 6 V_r$ AND $>.325 \text{ IN/SEC to } .70 \text{ IN/SEC}$	$> 6 V_r$ AND $> .70 \text{ IN/SEC}$

- (5) Use Portable Instrument
- (6) Ratio = Test Value divided by Reference Value
- (7) Test value must equal reference value. Ratio for flowrate must equal 1.0.

DOCUMENT TITLE:  
CORE SPRAY PUMP OPERABILITY

DOCUMENT  
NUMBER:  
34SV-E21-001-2

Version No:  
16.3

ATTACHMENT 1

TITLE: CORE SPRAY PUMP 2A (2B) QUARTERLY IST DATA AND ACCEPTANCE CRITERIA

Att. Pg.  
3 of 3

**NOTE:** WHEN calculating OR recording valve stroke times, round off to the nearest tenth second.

	COLUMN 2 REFERENCE TIME (SEC)		COLUMN 3 CALCULATED ALLOWABLE TIME (SEC)				COLUMN 4 OPERATING TIME (SEC)		COLUMN 5 MAXIMUM TIME LIMIT (SEC)		TIMED BY: INIT
	OPEN	CLOSE	OPEN		CLOSE		OPEN	CLOSE	OPEN	CLOSE	
			MIN/MAX		MIN/MAX						
2P41-F036A AOV	<u>8.8</u>	N/A	<u>4.4</u>	<u>13.2</u>	N/A	N/A	<u>8.9</u>	N/A	≤15	N/A	JGK
2P41-F036B AOV	<u>8.4</u>	N/A	<u>4.2</u>	<u>12.6</u>	N/A	N/A	<u>8.2</u>	N/A	≤15	N/A	JGK
2P41-F039A AOV	<u>7.2</u>	N/A	<u>3.6</u>	<u>10.8</u>	N/A	N/A	<u>7.1</u>	N/A	≤15	N/A	JGK
2P41-F039B AOV	<u>8.0</u>	N/A	<u>4.0</u>	<u>12.0</u>	N/A	N/A	<u>8.0</u>	N/A	≤15	N/A	JGK

VERIFY STROKE  
TIMES ACCEPTABLE: \_\_\_\_\_

DATE: \_\_\_\_\_

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

**Radiation Exposure Calculation and Required Authorization**

E. L. Jones

LR-JP-25052-00

10 Minutes

N/R



*Energy to Serve Your World<sup>SM</sup>*





**Radiation Exposure Calculation and Required Authorization.**



LR-JP-25052-00



The task shall be complete when it has been determined the job cannot be performed without exceeding annual administrative radiation exposure limits, and determining the level of approval to exceed the annual administrative radiation exposure limit.



N/A



LT-30008.01

**K/A CATALOG NUMBER:** Generic 2.3.4

**K/A CATALOG JTA IMPORTANCE RATING:**

**RO** 2.5

**SRO** 3.1

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)/ Senior Reactor Operator (SRO)



60AC-HPX-001-0 (current version)



60AC-HPX-001-0 (current version)

**APPROXIMATE COMPLETION TIME:** 10 Minutes

**SIMULATOR SETUP:** N/A, Used for NRC Admin JPM (classroom setting)

# UNIT 1

## READ TO THE OPERATOR

### INITIAL CONDITIONS:

1. You have been assigned to perform a local system alignment in the Residual Heat Removal (RHR) Heat Exchanger room.
2. You will be inside the room for 30 minutes.
3. Your total exposure (TEDE) for the year so far has been confirmed to be 1400 mRem.
4. One of the radiation fields you will work in for 10 minutes is 2.7 Rem/hour (gamma radiation).
5. The other radiation field that you will work in for 20 minutes is 900 mRem/hour (gamma radiation).

### INITIATING CUES:

Calculate the exposure you will receive.

Determine if any administrative radiation exposure limits will be exceeded.

Considering your current exposure (1400mRem) and that which will be received from doing the work, determine who must authorize the exposure, if anyone, IAW 60AC-HPX-001-0.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

**PROMPT:** IF the operator addresses other types of radiation, **STATE** that gamma radiation is the only type of radiation of concern for this particular job (no airborne, beta or alpha).

**PROMPT:** IF the operator asks whether he will receive additional exposure in transit to and from the work site, **STATE** that the fields and times given include travel time (there is no additional exposure).

1.	The operator calculates exposure in the 2.7 Rem/hour field.	$(2,700 \text{ mrem/hr} * 10 \text{ minutes})/60 \text{ min/hr} = 450 \text{ mRem.}$	
2.	The operator calculates exposure in the 900 mRem/hour field.	$(900 \text{ mrem/hr} * 20 \text{ minutes})/60 \text{ min/hr} = 300 \text{ mRem.}$	
		$1,400 \text{ mRem} + 450 \text{ mRem} + 300 \text{ mRem} = 2,150 \text{ mRem.}$	
		The Hatch Administrative limit is 2,000 mRem/year. (60AC-HPX-001-0 step 8.2.1)	

**NOTE:** The operator may address being on the Margin List when within 400 mRem of the administrative exposure limit. It is not necessary for the operator to discuss the requirements of the margin list for this JPM.

**PROMPT:** IF the operator addresses the margin list, **STATE** that the Health Physics department is taking appropriate actions based on expected exposures for this job.

(\*\* Indicates critical step)

	With available exposure confirmed, authorization must be written approval from an HP Supervisor. (Step 8.2.2)	

**END**  
**TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

**(\*\* Indicates critical step)**

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

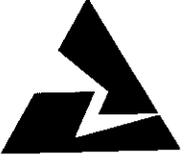
MAKE AN EMERGENCY ANNOUNCEMENT AFTER FILLING OUT EP  
FORM TRN-0144

E. L JONES

LR-JP-25053-0

13 Minutes

N/R

**SOUTHERN**   
**COMPANY**

*Energy to Serve Your World<sup>SM</sup>*



UNIT 1 (X)    UNIT 2 (X)

**MAKE AN EMERGENCY ANNOUNCEMENT  
AFTER FILLING OUT EP FORM TRN-0144**

LR-JP-25053-0

The task shall be completed when form TRN-0144 has been filled out and an emergency announcement has been made per 73EP-EIP-005-0 & TRN-0144.

200.059

200.059.A

**K/A CATALOG NUMBER:** Generic 2.4.39

**K/A CATALOG JTA IMPORTANCE RATING:**

**RO** 3.3

**SRO** 3.1

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)

73EP-EIP-001-0 (current version)  
73EP-EIP-005-0 (current version)  
TRN-0144 (current version)

73EP-EIP-005-0 (current version)  
TRN-0144 (current version)

**APPROXIMATE COMPLETION TIME:** 13 Minutes

**SIMULATOR SETUP:** N/A

## **UNIT 2**

### **READ TO THE OPERATOR**

#### **INITIAL CONDITIONS:**

1. A Reactor scram has occurred on Unit 2.
2. Due to a steam leak into the Reactor Building that cannot be isolated, a Site Area Emergency has been declared per 73EP-EIP-001-0.
3. The Shift Manager has given orders for the evacuation of all non-essential personnel.
4. 73EP-EIP-005-0 is in progress and Section 7.4.1 through 7.4.5 have been completed.
5. Security has been directed to activate the Simulator and Skills Buildings' Public Address system.
6. A Radiation Release is in progress. The Shift Manager and the Shift Supervisor have been notified of the release.

#### **INITIATING CUES:**

Continue performance of 73EP-EIP-005-0 at Step 7.4.6 and make an emergency announcement using section III of TRN-0144, "Standard Announcement".

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

NOTE: Attachment 2 is to be used as a key for this JPM (this is how the student is expected to fill out TRN-0144) and **IS NOT** to be handed out to the student.

PROMPT: **AT THIS TIME** provide the operator with:

- a copy of Attachment 1 of this JPM (Southern Nuclear ENN form).
- a copy of 73EP-EIP-005-0 (Emergency Announcement Guide procedure).
- a blank form TRN-0144 (Emergency Announcement Guide attachment).

1.	The operator addresses 73EP-EIP-005-0, Step 7.4.6 .	The operator addresses 73EP-EIP-005-0 at Step 7.4.6 which provides guidance to complete TRN-0144.	
2.	The operator reviews instructions.	The operator reviews instructions on TRN-0144 before beginning the emergency announcement.	
		<b>Site-Area Emergency</b> has been selected on TRN-0144.	
4.	Using the ENN form, the operator fills in step 1 of TRN-0144.	The operator selects " <b>This is a Drill</b> " and writes that the emergency was due to an <b>unisolable steam line break in Sec. Cont.</b>	

(\*\* Indicates critical step)

5.	Using the ENN form, the operator fills in step 2 of TRN-0144.	The operator checks off that a <b>radiological release is in progress.</b>	
[REDACTED]		The operator has determined that the Rally Point is at <b>the PESB</b> based on wind direction of 83°.	
		The operator has determined that the other personnel will evacuate the plant site using <b>Gate 10</b> based on wind direction of direction of 83°.	
		The operator checks off that a <b>radiological release is in progress</b> and that the evacuation is to be:  <b>South on U.S. Highway 1. Personnel will report to the State Reception Center at Appling Co. High School/Baxley.</b>	

NOTE: If this JPM is performed in the simulator, the announcement may be completed using the simulator page system, otherwise refer to the prompt below this note.

PROMPT: **INFORM** the operator that the announcement may be simulated using a regular telephone handset (if the JPM is not performed in the simulator). If the JPM is performed in the classroom, the operator should state that he would sound the tone for an emergency.

(\*\* Indicates critical step)

		The operator <b>sounds the applicable tone</b> (if the JPM is being performed in the simulator) and <b>makes an emergency announcement</b> based on the information contained on TRN-0144.	
10.	The announcement is repeated.	The operator <b>repeats the announcement</b> immediately following the first announcement.	
11.	The operator fills in the date and time of the Initial Announcement.	The operator <b>fills in the date and time</b> of the Initial Announcement on form TRN-0144.	

PROMPT: **IF** the operator addresses subsequent announcements, **INFORM** the operator that another operator will be taking over the responsibility of making the further emergency announcements.

**END  
TIME:** \_\_\_\_\_

- NOTE:** The terminating cue shall be given to the operator when:
- With no reasonable progress, the operator exceeds double the allotted time.
  - Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

(\*\* Indicates critical step)

1.  DRILL  ACTUAL EVENT MESSAGE # CR 01  
 2.  INITIAL  FOLLOW-UP NOTIFICATION: TIME \_\_\_\_\_ DATE \_\_\_\_/\_\_\_\_/\_\_\_\_ AUTHENTICATION # \_\_N/A\_\_  
 3. SITE: **HATCH NUCLEAR PLANT** Confirmation Phone # (912) 366-2000 ext. \_\_\_\_\_

4. EMERGENCY CLASSIFICATION:  UNUSUAL EVENT  ALERT  SITE AREA EMERGENCY  GENERAL EMERGENCY

BASED ON EAL # 4.0 EAL DESCRIPTION: Steam line break in Secondary Containment which cannot be isolated.

5. PROTECTIVE ACTION RECOMMENDATIONS:  NONE  
 EVACUATE \_\_\_\_\_  
 SHELTER \_\_\_\_\_  
 Consider the use of KI (potassium iodide) in accordance with State plans and policy.  
 OTHER \_\_\_\_\_

6. EMERGENCY RELEASE:  None  Is Occurring  Has Occurred

7. RELEASE SIGNIFICANCE:  Not applicable  Within normal operating limits  Above normal operating limits  Under evaluation

8. EVENT PROGNOSIS:  Improving  Stable  Degrading

9. METEOROLOGICAL DATA: Wind Direction from 83 degrees Wind Speed 5 mph  
 Precipitation No rain Stability Class  A  B  C  D  E  F  G

10.  DECLARATION  TERMINATION Time 10:12 Date 11/01/2005

11. AFFECTED UNIT(S):  1  2  All

12. UNIT STATUS: (Unaffected Unit(s) Status Not Required for Initial Notifications)  
 U1 100 % Power Shutdown at Time \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_  
 U2 \_\_\_\_\_ % Power Shutdown at Time 10:00 Date 11/01/2005

13. REMARKS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**FOLLOW-UP INFORMATION (Lines 14 through 16 Not Required for Initial notifications)**  
**EMERGENCY RELEASE DATA. NOT REQUIRED IF LINE 6 A IS SELECTED.**

14. RELEASE CHARACTERIZATION: TYPE:  Elevated  Mixed  Ground UNITS:  Ci  Ci/sec  µCi/sec

MAGNITUDE: Noble Gases: 1.0E-01 Iodines: 1.3E-03 Particulates: 0.0E+00 Other: \_\_\_\_\_

FORM:  Airborne Start Time 10:00 Date 11/01/2005 Stop Time \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_

Liquid Start Time \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Stop Time \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_

15. PROJECTION PARAMETERS: Projection period: \_\_\_\_\_ Hours Estimated Release Duration 4.0 Hours

Projection performed: Time 10:07 Date 11/01/2005 Accident Type: \_\_\_\_\_

16. PROJECTED DOSE: DISTANCE TEDE (mrem) Adult Thyroid CDE (mrem)

**Training  
Use  
Only**

Site boundary	9.5E-01	5.2E-02
2 Miles	7.9E-01	9.9E-01
5 Miles	3.9E-01	1.7E+00
10 Miles	1.2E-01	7.7E-01

17. APPROVED BY: Ed Jones Title Shift Manager/Emergency Director Time 10:15 Date 11/01/2005

NOTIFIED BY: \_\_\_\_\_

RECEIVED BY: \_\_\_\_\_ Time \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_  
 (To be completed by receiving organization)

FORM TITLE:

EMERGENCY PAGE ANNOUNCEMENT GUIDE

**EVALUATOR USE ONLY**  
**DO NOT** give to candidate

**III. STANDARD ANNOUNCEMENT**

INSTRUCTIONS:

- a. Record below the information needed to make this announcement.
- b. Verify Security has been directed to activate the Simulator and Skills Buildings' Public Address system.
- c. Sound the applicable tone, **THEN** make the following announcement using the applicable sections below.
- d. **The appropriate announcement/tone must be made as soon as practicable but must not exceed 15 minutes after the initial emergency declaration. Immediately repeat the announcement.**
- e. **During the first (2) hours of the declared emergency, repeat the announcement/tone every thirty (30) minutes.**  
After the first two (2) hours, repeat the announcement/ tone as directed by the Shift Manager or SS.

**Emergency Classification (SELECT ONE):**

- Notification of Unusual Event (use . 1. only)
- Alert Emergency (use . 1. through 3. only)
- Site-Area Emergency or  General Emergency (use . 1. through 6.)

1. ATTENTION ALL PERSONNEL. THIS  **IS** /  **IS NOT** A DRILL. A/AN Site Area Emergency HAS BEEN DECLARED BASED ON: Steam line break in Secondary Containment which cannot be isolated.

2. (SELECT ONE):  A radiological release **IS NOT** in progress.  A radiological release **IS** in progress.

**NOTE:** Announcement of items 3 thru 6 may be discontinued upon verification of completion of personnel accountability.

3. All emergency response personnel will report to your emergency response facility and initiate emergency implementing procedures.

4. (SELECT ONE) All other personnel inside the protected area will report to the rally point at:  
 the PESB  Gate 17  Other (specify location) \_\_\_\_\_.

5. (SELECT ONE) All other personnel will exit the plant site using:  
 the main access road  Gate 10  Other (specify other exit route) \_\_\_\_\_.

6. (SELECT ONE):

- (Use if a radiological release **is not** in progress)  
The evacuation route is either direction on U. S. Highway 1.
- (Use if a radiological release **is** in progress)  
(SELECT ONE): The evacuation route is:
  - Either direction on U.S. Highway 1. Report to the State Reception Center at either Toombs Co. High School/Lyons or Appling Co. High School/Baxley.
  - South on U.S. Highway 1. Report to the State Reception Center at Appling Co. High School/Baxley.
  - North on U.S. Highway 1. Report to the State Reception Center at Toombs Co. High School/Lyons.

Record the date and time of announcements:

Initial announcement: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Follow-up announcements: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

### SRO ONLY

**CLASSIFY AN EVENT PER THE HATCH EMERGENCY PLAN AND  
DETERMINE PARS**

**TIME CRITICAL**

E. L. JONES

LR-JP-25054-0

15.0 Minutes

N/R



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UNIT 1 (X)    UNIT 2 (X)

**CLASSIFY AN EVENT PER THE HATCH  
EMERGENCY PLAN AND DETERMINE PARS**

LR-JP-25054-0

The task shall be completed when the event has been classified per 73EP-EIP-001-0 and PARS have been determined per 73EP-EIP-054-0.

200.052

200.052.A

**K/A CATALOG NUMBER:** Generic 2.4.29

**K/A CATALOG JTA IMPORTANCE RATING:**

**RO**    2.1

**SRO**   4.0

**OPERATOR APPLICABILITY:** Senior Reactor Operator (SRO)

73EP-EIP-001-0 (current version)  
73EP-EIP-054-0 (current version)

73EP-EIP-001-0 (current version)  
73EP-EIP-054-0 (current version)  
TRN-0123 (current version)

**APPROXIMATE COMPLETION TIME:** 15.0 Minutes

**SIMULATOR SETUP:** N/A

## **UNIT 1 & 2**

### **READ TO THE OPERATOR**

#### **INITIAL CONDITIONS:**

1. A confirmed report from the Nuclear Security Shift Supervisor has just been received in the Main Control. Armed gunmen have entered the protected area by parachute and have taken control of the Diesel Building.
2. A firefight is occurring between Hatch Security officers and the gunmen.
3. Hatch Security is confident that all intruders were contained inside the Diesel Building within seconds of their arrival inside the Protected Area,
4. Hatch Security personnel are unable to enter the Diesel Building at this time.
5. There are no known casualties.
6. Both units are currently in Mode 1 with preparations being made to scram the units.
7. Security states that no personnel will be allowed outside of substantial structures at this time.
8. Radioactive release rates are normal for power operation.
9. Drywell Wide Range Radiation monitors are reading 2 R/hour.

#### **INITIATING CUES:**

Determine if an emergency classification should be declared.  
If there is a classification, state which one.

#### **And**

Determine if Protective Action Recommendations (PARs) should be issued.

If PARs should be issued, complete a PARs worksheet.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

Note: Attachment 1 is to be used as a key for this JPM and is **not to be handed out to the student.**

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

1.	Operator identifies the procedure needed to perform the task.	Operator has identified the correct procedure as 73EP-EIP-001-0.	
		Operator has <b>CLASSIFIED</b> the event as a <b>GENERAL EMERGENCY</b> .  (Section 9.0, Security Event)	

RESPONSE CUE: N/A

**NOTE:** There is a **GENERAL EMERGENCY** classification based on Section 9.0, which states A loss of physical control of the plant is imminent as indicated by: Loss of physical barrier capabilities of any vital building **OR** Loss of control of any vital area including: .... Diesel Generator Bldg **AND** SOS/ED judgment based on Nuclear Security Shift Supervisor advice. If follow-up questioning reveals that a classification was declared and based on another section of the procedure, the classification should be evaluated for validity.

**PROMPT:** **IF** the operator addresses the recommendations from the Nuclear Security Shift Supervisor, **INFORM** the operator that security is unable to gain control of the Diesel Building, no further information is available at this time.

3.	Operator identifies the procedure needed to perform the task.	Operator has identified the correct procedure as 73EP-EIP-054-0 and TRN-0123	
----	---	--	--



	The operator selects that a <b>General Emergency has been declared.</b>	
--	---	--

PROMPT: **WHEN** the operator addresses Wide Range Drywell radiation monitor indicate that K621A is reading 2 R/hr.

	The operator determines that DWWRM levels are < 4.8E5R/HR; however, <b>a loss of a vital area to an intruder has occurred.</b>	
	The operator determines that a <b>radiation release is not underway and that containment failure is not imminent.</b>	

PROMPT: The operator may be uncertain about whether containment failure is imminent or projected, **IF** the operator asks for clarifying information, **INFORM** the operator as security that intruders have not, nor are they expected to, entered the Reactor Building.

	The operator has DETERMINED the PAR for this Emergency is <b>PAR 2.</b>	
--	---	--

RESPONSE CUE: N/A

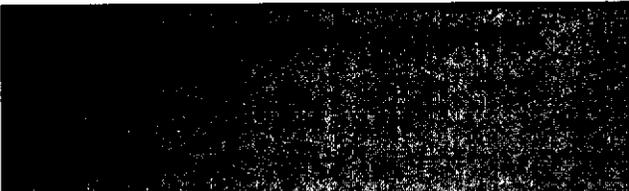
PROMPT: **IF** the operator addresses actual field measurements, as the Shift Manager, **INFORM** the operator that neither actual field measurements nor dose projections have been obtained yet.

8.	The operaor reviews the flowchart for PARs based on Dose Projections.	The operator determines that since neither dose projections nor field measurements have been performed, <b>there are no PAR requirements based on Dose Projections.</b>	
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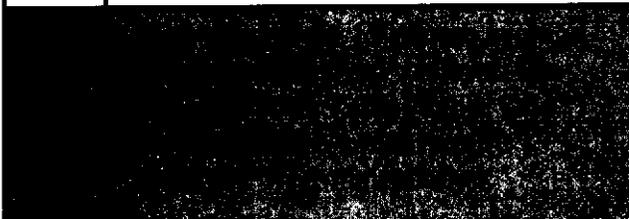
9.	RECORD the PAR based on <b>plant conditions</b> and dose projections Section II of TRN-0123 AND check the applicable box indicating the most conservative PAR.	The Operator has DETERMINED that <b>PARs should be based on Plant Conditions.</b>	
----	--	---	--

10.	Check the block to the left of the most conservative PAR.	<b>Check PAR 2.</b>	
-----	---	---------------------	--

PROMPT: **WHEN** the operator addresses wind direction/meterological data, **PROVIDE** attachment 2, SPDS Meterological Data.

	At panel 1H11-P690, the operator has DETERMINED wind direction to be from 270°, using the SPDS Meterological Data Screen.	
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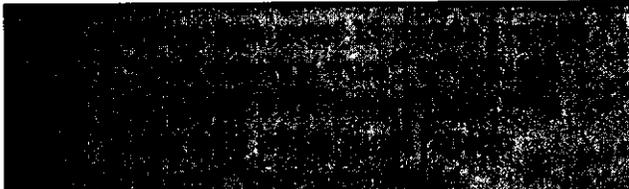
RESPONSE CUE: N/A

12.	Record "wind direction from" on Section II of TRN-0123.	The operator has RECORDED wind direction (Wind From) on Section II of TRN-0123.	
	The operator has determined the zones required to be evacuated are: <b>B-5, E-5</b>		

RESPONSE CUE: N/A

	The operator has RECORDED <b>B-5, E-5</b> in the Evacuate row on Section II of TRN-0123.	
---	--	--

RESPONSE CUE: N/A

	The operator has DETERMINED the zones required to be sheltered are: <b>C-5, D-5, B-10, K-10, L-10</b>	
---	---	--

RESPONSE CUE: N/A



	The operator has <b>RECORDED C-5, D-5, B-10, K-10, L-10</b> in the Shelter-In-Place row Section II of TRN-0123.	
--	---	--

	The Operator has <b>DETERMINED</b> that PARs should be based on Plant Conditions.	
--	---	--

RESPONSE CUE: N/A

<b>18.</b>	Obtain ED concurrence on PARs.	Emergency Director has <b>SIGNED</b> Section II.	
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**NOTE:** The evaluator may sign as the ED or tell the operator that it has been signed.

**NOTE:** It is not necessary for the student to verbally state the PARs.

**PROMPT:** **IF** the operator addresses notifications, as the Shift Manager, **INFORM** the operator that another operator will make the State and Local notifications.

**PROMPT:** **IF** the operator addresses continuing assessment, as the Shift Manager, **INFORM** the operator that another operator will continue the assessment of the emergency conditions.

**END TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

**EVALUATOR USE ONLY**  
**DO NOT** give to candidate

**SECTION II**

INSTRUCTIONS:

1. Check the box of the most conservative PAR (1, 2, or 3).
2. Indicate the basis for the PAR.

**NOTE:** The "wind direction" to be used should be based on the meteorological instrumentation which corresponds to the elevation of the primary release point.

3. Record the 15 minute average "wind direction from" for the selected PAR.
4. Use the applicable PAR table (Table 1, 2 or 3) to determine the affected "evacuate zones" and "shelter zones"
5. Record the "evacuate zones" and "shelter zones" for the selected PAR.

"PAR 1" Based on: Plant conditions  Dose Projections

Wind direction from	
Evacuate	A only
Shelter-In-Place	

"PAR 2" Based on: Plant conditions  Dose Projections

Wind direction from	270°
Evacuate	A + B-5, E-5
Shelter-In-Place	C-5, D-5, B-10, K-10, L-10

"PAR 3" Based on: Plant conditions  Dose Projections

Wind direction from	
Evacuate	A, B-5, C-5, D-5, E-5, +
Shelter-In-Place	
Other	

**CAUTION:** PAR Revisions must include previous PARs.

Approval: \_\_\_\_\_

Emergency Director

\_\_\_\_\_  
Date/Time

## MIDAS INFORMATION

## METEOROLOGICAL

10M WIND SPD 1Y33-R601 5	100M WIND SPD 1Y33-R603 7	10M WIND DIR 1Y33-R601 270	100M WIND DIR 1Y33-R603 270
AMBIENT TEMP (F) 10M 89	DELTA T 60-10 -0.983	DELTA T 100-10 -1.985	RAINFALL 15 MIN AVG .000

## RADIOLOGICAL

MAIN STACK		U1 RX. BLDG VENT		U2 RX. BLDG VENT	
NORMAL RANGE	KAMAN	NORMAL RANGE	KAMAN	NORMAL RANGE	KAMAN
1D11-K600A 7.7E+00	1D11-R631	1D11-K619A 7.59E+01	1D11-R631	2D11-K636A 2.98E+01	2D11-R631
1D11-K600B 7.38E+00		1D11-K619B 2.65E+01		2D11-K636B 2.91E+01	

STABILITY CLASS  
D

## FLOW

MAIN STACK EXHAUST FLOW A	MAIN STACK EXHAUST FLOW B	U1 RX BLDG VENT STACK FLOW A	U1 RX BLDG VENT STACK FLOW B	U2 RX BLDG VENT STACK FLOW A	U2 RX BLDG VENT STACK FLOW B
18972	17823	231170	240783	215287	229814

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

INJECT SBLC (WITH A PUMP TRIP)

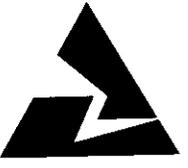
TIME CRITICAL

E. L. JONES

LR-JP-25011-12

Before Exceeding  
the HCTL

N/R

**SOUTHERN**   
**COMPANY**

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UNIT 1 ( )    UNIT 2 (X)



**INJECT SBLC (WITH A PUMP TRIP)**



LR-JP-25011-12



The task shall be completed when the SBLC System is injecting to the Reactor, and Reactor power is decreasing per 34SO-C41-003-2.



011.002



011.002.C

**PLANT HATCH JTA IMPORTANCE RATING:**

**RO**    4.43

**SRO**   4.20

**K/A CATALOG NUMBER:** 211000A201

**K/A CATALOG JTA IMPORTANCE RATING:**

**RO**    3.50

**SRO**   3.80

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)/Senior Reactor Operator



31EO-EOP-011-2  
34SO-C41-003-2  
(current versions)



34SO-C41-003-2 (current version)  
Key for Standby Liquid Control Key switch

**APPROXIMATE COMPLETION TIME:** Before Exceeding the HCTL

**SIMULATOR SETUP:** REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING PAGE

## SIMULATOR SETUP

### Simulator Initial Conditions:

1. **RESET** the Simulator to a 100% power **IC** and leave in **FREEZE**.
2. **INSERT** the following **MALFUNCTIONS**:

mfC11_211	Scram Discharge Volume ATWS	74	100	00000
mfB21_247A	Spurious Group I Isolation A Side			00000
mfB21_247B	Spurious Group I Isolation B Side			00000
mfC41_240A	SBLC Pump 2A Failure to Start			00000

3. Take the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:
  - A. Place the MSIV control switches in **CLOSE**.
  - B. Allow the simulator to run until Torus temperature reaches approximately 106°F.
  - C. Acknowledge annunciators.
4. **PLACE** the Simulator in **FREEZE** until the **INITIATING CUE** is given.
5. **ESTIMATED Simulator SETUP TIME: 15 Minutes**

## **UNIT 2**

### **READ TO THE OPERATOR**

#### **INITIAL CONDITIONS:**

- 1.** A Unit 2 Reactor scram has occurred and control rods cannot be inserted. Reactor power is greater than 10%.
- 2.** All MSIVs are closed.
- 3.** Torus water temperature is approaching 110°F.
- 4.** 31EO-EOP-011-2 (RCA) is in progress.

#### **INITIATING CUES:**

Inject boron into the Reactor with the "A" SBLC System per 34SO-C41-003-2.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

1.	Operator identifies the materials that are required.	Operator has identified the required materials and where to obtain them.	
2.	Place SBLC Pump Select Switch to start system "A" position.	At panel 2H11-P603, SBLC PUMP SELECT SWITCH (keylock) is in START SYS A position.	

NOTE: The System "A" position of the Standby Liquid Control key switch has been failed and the SBLC System will remain in the Standby lineup.

3.	Confirm/verify Squib Valve Ready indicating lights are extinguished and SBLC Loss of Continuity to Squib Valve annunciator is alarmed.	At panel 2H11-P603, the operator has VERIFIED the following:  SQUIB VLV READY amber indicating lights are EXTINGUISHED.  SBLC LOSS OF CONTINUITY TO SQUIB VALVE (603-152) annunciator has ALARMED.	
4.	Confirm SBLC pump has started.	At panel 2H11-P603, the operator has DETERMINED SBLC PUMP "2A" has NOT started, green light illuminated.	

NOTE: If the operator does not recognize that SBLC Pump "A" did not start the operator may try to complete the JPM at Step 9.

PROMPT: IF the operator notifies the Shift Supervisor of SBLC pump failure, as the Shift Supervisor, **DIRECT** the operator to respond to the failure using procedure 34SO-C41-003-2.

(\*\* Indicates critical step)

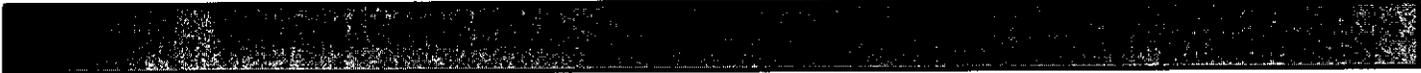


	At panel 2H11-P603, SBLC PUMP SELECT SWITCH (keylock) is in START SYS B position.	
--	---	--

RESPONSE CUE: SBLC Pressure indicates 0 psig.

6.	Confirm/verify Squib Valve Ready indicating lights are extinguished and SBLC Loss of Continuity to Squib Valve annunciator is alarmed.	At panel 2H11-P603, the operator has VERIFIED the following: SQUIB VLV READY amber indicating lights are EXTINGUISHED. SBLC LOSS OF CONTINUITY TO SQUIB VALVE (603-152) annunciator has ALARMED.	
7.	Confirm SBLC pump has started.	At panel 2H11-P603, the operator VERIFIES the STANDBY LIQUID CNTL PUMP 1-2 RUNNING, red light illuminated.	
8.	Confirm RWCU valve 2G31-F004, closes.	At panel 2H11-P601, the operator VERIFIES RX WATER CLEANUP VLV, 2G31-F004, is CLOSED, green light illuminated.	
9.	Confirm that SBLC solution is being injected into the reactor vessel by observing the following: SBLC tank level is decreasing. SBLC pressure is greater than Reactor pressure. Reactor power is decreasing.	At panel 2H11-P603, the operator has VERIFIED SBLC solution is being injected into the reactor vessel by identifying the following: SBLC tank level is DECREASING as indicated by meter 2C41-R601, TANK LEVEL. SBLC pressure is GREATER than Reactor pressure as indicated by meter 2C41-R600, DISCH PRESS. Reactor power is DECREASING as indicated on neutron monitoring instrumentation.	

(\*\* Indicates critical step)



**PROMPT:** **WHEN** the operator addresses SBLC tank level, **INDICATE** for the operator that level is decreasing slowly, but is greater than 20%.

**PROMPT:** **WHEN** the operator addresses SBLC pressure, **INDICATE** for the operator that SBLC pressure is greater than Reactor pressure.

**NOTE:** APRM recorders at panel 2H11-P603 or SPDS can be used to verify Reactor power is decreasing.

**PROMPT:** **WHEN** the operator addresses neutron monitors for power trend, **INDICATE** for the operator that Reactor power is decreasing.

**END**  
**TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- The operator exceeds the Heat Capacity Temperature Limit.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

PREVENT INJECTION FROM RHR AND CORE SPRAY

E. L. JONES

LR-JP-25032-07

20 Minutes

N/R



*Energy to Serve Your World<sup>SM</sup>*



UNIT 1 ( ) UNIT 2 (X)



**PREVENT INJECTION FROM RHR AND CORE  
SPRAY**



LR-JP-25032-07



The task shall be complete when the operator has prevented injection from RHR and Core Spray Systems per 31EO-EOP-114-2.



201.101



201.101.A

**PLANT HATCH JTA IMPORTANCE RATING:**

RO 4.71

SRO Not Available

**K/A CATALOG NUMBER:** 295037EA202

**K/A CATALOG JTA IMPORTANCE RATING:**

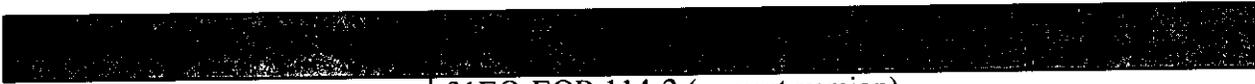
RO 4.10

SRO 4.20

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)



31EO-EOP-017-2 (current version)  
31EO-EOP-114-2 (current version)



31EO-EOP-114-2 (current version)

**APPROXIMATE COMPLETION TIME:** 20 Minutes

**SIMULATOR SETUP:** REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING PAGE

## SIMULATOR SETUP

### Simulator Initial Conditions:

1. **RESET** the Simulator to **75% Power** and leave in **FREEZE**.
2. **INSERT** the following **MALFUNCTIONS**:

mfC11_211	Scram Discharge Volume ATWS (Var)	30	1000	00000
mfB21_128B	Main Steam Relief B leak	100	1000	99999
mfN30_122	Main Turbine Trip			99999
diE11-F017A	RHR Outboard Inj. Sys 1	OPEN		00000
diE11-F017B	RHR Outboard Inj. Sys 2	OPEN		00000
RfE11_22	2E11-F015A & B Override Jumpers and Links	ORIDE		99999
MfG31_242	RWCU Non-Isol Leak (0-10000 gpm)	1	1	99999

3. Take the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:
  - A. Ensure Malfunction mfC11\_211 is active.
  - B. Activate Malfunction mfN30\_122.
  - C. Activate Malfunction mfB21\_130B.
  - D. Activate Malfunction MfG31\_242.
  - E. Perform RC-1, RC-2 and TC-1.
  - F. RPV level between -60 inches and -90 inches.
  - G. Inhibit ADS.
  - H. Stabilize reactor pressure between 375 psig and 425 psig by adjusting the final value of mfB21\_128B and/or MfG31\_242.
4. **PLACE** the Simulator in **FREEZE** until the **INITIATING CUE** is given.
5. **ESTIMATED Simulator SETUP TIME:**      **20 Minutes**

## **UNIT 2**

### **READ TO THE OPERATOR**

#### **INITIAL CONDITIONS:**

1. An ATWS condition exists.
2. RWL is being controlled between -60 inches and -90 inches.
3. SRV 2B21-F013B has failed open, its fuses have been pulled and it is still open.
4. Drywell pressure is above 1.85 psig.
5. Reactor pressure is below 500 psig and lowering.
6. The RCA, CP-3 and PC flowcharts are in progress.

#### **INITIATING CUES:**

Prevent RHR and Core Spray injection per 31EO-EOP-114-2.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

NOTE: The Core Spray System OR the RHR System may be addresses first.

PROMPT: IF the operator addresses IMMEDIATE Terminating and Preventing, as the Shift Supervisor, **INFORM** the operator that "immediate" Terminating and Preventing is not required at this time.

1.	Operator obtains the procedure needed to perform the task.	Operator has obtained 31EO-EOP-114-2.	
2.	Operator closes the Core Spray "A" Inboard Discharge Valve.	At panel 2H11-P601, the operator PLACES 2E21-F005A, Core Spray INBD DISCHARGE VLV, to CLOSE, green light illuminated.	

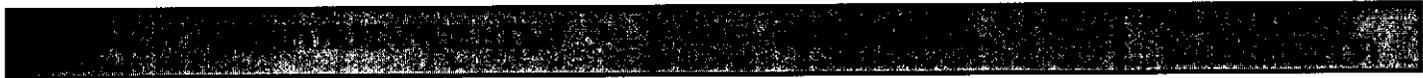
RESPONSE CUE: Valve, 2E21-F005A, red light illuminated

3.	Operator closes the Core Spray "B" Inboard Discharge Valve.	At panel 2H11-P601, the operator PLACES 2E21-F005B, Core Spray INBD DISCHARGE VLV, to CLOSE, green light illuminated.	
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RESPONSE CUE: Valve, 2E21-F005B, red light illuminated.

4.	Operator trips Core Spray Pump "A".	At panel 2H11-P601, the operator verifies that CORE SPRAY PUMP "A" is TRIPPED, green light illuminated.	
5.	Operator trips Core Spray Pump "B".	At panel 2H11-P601, the operator verifies that CORE SPRAY PUMP "B" is TRIPPED, green light illuminated.	

(\*\* Indicates critical step)



	At panel 2H11-P601, the operator PLACES 2E11-F017A, RHR OUTBD INJ VLV, to CLOSE, red light illuminated.	
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RESPONSE CUE: N/A

	At panel 2H11-P601, the operator PLACES 2E11-F017B, RHR OUTBD INJ VLV, to CLOSE, red light illuminated.	
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RESPONSE CUE: N/A

	The operator has contacted the Shift Support Supervisor to have the following links OPENED:  Panel 2H11-P617B: FF-38.  Panel 2H11-P618B: FF-36.	
--	---	--

RESPONSE CUE: N/A

	The operator has CONTACTED the Shift Support Supervisor to have the following jumpers INSTALLED:  Panel 2H11-P617B: Jumper from FF-39 to FF-40.  Panel 2H11-P618B: Jumper from FF-37 to FF-38.	
--	--	--

RESPONSE CUE: N/A

	At panel 2H11-P601, the operator PLACES 2E11-F017A, RHR OUTBD INJ VLV, to CLOSE, red light illuminated.	
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RESPONSE CUE: N/A

(\*\* Indicates critical step)



12.	Operator determines that 2E11-F017A has failed to close.	The operator determines that 2E11-F017A has failed to close and informs the SS.	
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	At panel 2H11-P601, the operator PLACES 2E11-F017B, RHR OUTBD INJ VLV, to CLOSE, red light illuminated.	
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14.	Operator determines that 2E11-F017B has failed to close.	The operator determines that 2E11-F017B has failed to close and informs the SS.	
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	The operator has contacted the Shift Support Supervisor to have the following links OPENED: Panel 2H11-P617B: FF-32. Panel 2H11-P618B: FF-30.	
--	---	--

RESPONSE CUE: N/A

	The operator has CONTACTED the Shift Support Supervisor to have the following jumpers INSTALLED: Panel 2H11-P617B: Jumper from FF-33 to FF-34. Panel 2H11-P618B: Jumper from FF-31 to FF-32.	
--	--	--

**SIMULATOR OPERATOR –**

If the operator has asked for the jumpers and links per procedure, then insert Remote Function rfE11\_22.

	At panel 2H11-P601, the operator PLACES 2E11-F015A, RHR INBD INJ VLV, to CLOSE, green light illuminated.	
--	--	--

RESPONSE CUE: Valve, 2E11-F017A, red light illuminated.

(\*\* Indicates critical step)



	At panel 2H11-P601, the operator PLACES 2E11-F015B, RHR INBD INJ VLV, to CLOSE, green light illuminated.	
--	--	--

RESPONSE CUE: Valve, 2E11-F017B, red light illuminated.

<b>19.</b>	Operator confirms that the RHR Inboard Injection valves are closed.	At panel 2H11-P601, the operator CONFIRMS 2E11-F015A & B, RHR INBD INJ VLVs, are CLOSED, green light illuminated.	
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PROMPT: IF the operator addresses System restoration, as the Shift Supervisor, **INFORM** the operator that it is not desired at this time.

**END**  
**TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

EMERGENCY DEPRESS THE REACTOR WITH THE MAIN MAIN STEAM  
LINE DRAINS

E. L. JONES

LR-JP-14.12-0

15 Minutes

N/R



*Energy to Serve Your World<sup>SM</sup>*



UNIT 1 ( )    UNIT 2 (X)



**EMERGENCY DEPRESS THE REACTOR WITH  
THE MAIN MAIN STEAM LINE DRAINS**



LR-JP-14.12-0



The task shall be completed when the Main Steam Line drains have been manually opened to emergency depress the Reactor per 31EO-EOP-108-2.



014.012



014.012.B

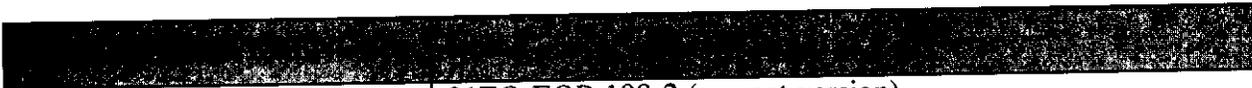
**K/A CATALOG NUMBER:** 239001A402

**K/A CATALOG JTA IMPORTANCE RATING:**

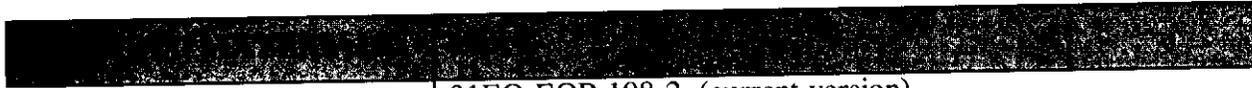
**NPO** 3.2

**SRO** 3.2

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)



31EO-EOP-108-2 (current version)  
31EO-EOP-012-2 (current version)  
31EO-EOP-015-2 (current version)



31EO-EOP-108-2 (current version)

**APPROXIMATE COMPLETION TIME:** 15 Minutes

**SIMULATOR SETUP:** REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING  
PAGE

## SIMULATOR SETUP

### Simulator Initial Conditions:

1. **RESET** the Simulator to a 100% power IC and leave in **FREEZE**.
2. **INSERT** the following **MALFUNCTIONS**:

aoP11-R601	CST Level	16	.3	00000
diE41A-S20	HPCI Auxilliary Oil Pump C002-3	LOCK		00000
diN32-C001A	EHC Pmp 2A 600V Bus 2A	TRIP		99999
loE41-F002_MG1	HPCI Steam Isolation Vlv	OFF		00000
loE41-F002_MR2	HPCI Steam Isolation Valve	OFF		00000
loE41-F002G1	HPCI Steam Isolation Vlv	OFF		00000
loE41-F002R2	HPCI Steam Isolation Vlv	OFF		00000
loE41-F003_MG1	HPCI Steam Isolation Vlv	OFF		00000
loE41-F003_MR2	HPCI Steam Isolation Valve	OFF		00000
loE41-F003G1	HPCI Steam Isolation Vlv	OFF		00000
loE41-F003R2	HPCI Steam Isolation Vlv	OFF		00000
loE41A-S20G1	HPCI Auxilliary Oil Pump	OFF		00000
loE41A-S20R2	HPCI Auxilliary Oil Pump	OFF		00000
mfB21_129A	Main Steam Relief Valve A Fails Stuck			00000
mfB21_129B	Main Steam Relief Valve B Fails Stuck			00000
mfB21_129C	Main Steam Relief Valve C Fails Stuck			00000
mfB21_129D	Main Steam Relief Valve D Fails Stuck			00000
mfB21_129E	Main Steam Relief Valve E Fails Stuck			00000
mfB21_129G	Main Steam Relief Valve G Fails Stuck			00000
mfB21_129K	Main Steam Relief Valve K Fails Stuck			00000
mfB21_129L	Main Steam Relief Valve L Fails Stuck			00000
mfB21_129M	Main Steam Relief Valve M Fails Stuck			00000
svoT48140	Water Level in Torus	220	3	00000

mfN21_87A	Feedwater Pump A Trip	TRIP		99999
mfN21_87B	Feedwater Pump B Trip	TRIP		99999

3. Take the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:
  - A. Close 2E41-F002 and 2E41-F003 (Place danger tags on the valves).
  - B. Place the HPCI Aux Oil Pump in Pull-to-Lock (place a danger tag on the c/s)
  - C. Perform RC-1, RC-2 (ensure all actions of RC-2 are complete), and TC-1
  - D. Insert malfunction mfN21\_87A and mfN21\_87B
  - E. Start RCIC and inject to the RPV
  - F. Acknowledge annunciators
  - G. Allow CST level to increase to 180 inches.
4. **PLACE** the Simulator in **FREEZE** until the **INITIATING CUE** is given.
5. **ESTIMATED** Simulator **SETUP TIME**:      **30 Minutes**

## **UNIT 2**

### **READ TO THE OPERATOR**

#### **INITIAL CONDITIONS:**

1. A series of events have resulted in an uncontrolled Suppression Pool level increase.
2. Suppression Pool level is approaching 193”.
3. Unit 2 reactor is shutdown with all rods fully inserted.
4. HPCI is tagged out (isolated) for maintenance.
5. RCIC is being used for RPV reactor water level control.
6. The “2A” and “2B” RFPTs have tripped and cannot be reset. Maintenance is investigating.

#### **INITIATING CUES:**

Emergency Depress the Reactor by opening 7 ADS valves.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

	<p>At panel 2H11-P602, the following ADS RELIEF VLV control switches are in the OPEN position, red light illuminated:</p> <p>2B21-F013A                  2B21-F013C                  2B21-F013E                  **2B21-F013H                  2B21-F013K                  2B21-F013L                  2B21-F013M</p>	
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RESPONSE CUE: ADS Relief Valve(s), green light illuminated.

2.	<p>Confirm red and amber indicator lights for ADS Relief Valves are illuminated.</p>	<p>At panel 2H11-P602, the operator VERIFIES red and amber lights are illuminated for the following ADS RELIEF VLV:</p> <p>2B21-F013A (red light only)                  2B21-F013C(red light only)                  2B21-F013E(red light only)                  2B21-F013H                  2B21-F013K (red light only)                  2B21-F013L (red light only)                  2B21-F013M (red light only)</p>	
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(\*\* Indicates critical step)

NOTE: The operator should detect that SRVs A, C, E, K, L, & M have failed to open, amber light extinguished. The operator may use SPDS to confirm SRV position.

PROMPT: **IF** the operator addresses the stuck closed SRVs, as the Shift Supervisor, **DIRECT** the operator to meet the requirements for an emergency depressurization.

NOTE: Switches for all 4 of the LLS valves should be taken to the open position.

	<p>At panel 2H11-P602, the following LLS/MANUAL RELIEF VLV control switches are in the OPEN position, red light illuminated:</p> <p>2B21-F013B 2B21-F013D 2B21-F013F 2B21-F013G.</p>	
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RESPONSE CUE: LLS/Manual Relief Vlv, green light illuminated.

4.	Confirm red and amber indicator light is illuminated for LLS/Manual Relief Valve opened in previous step.	<p>At panel 2H11-P602, the operator VERIFIES red light and amber light illuminated for LLS/MANUAL RELIEF VLV:</p> <p>2B21-F013F</p>	
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NOTE: The operator should detect that SRVs B, D & G has failed to open, amber light extinguished. The operator may use SPDS to confirm SRV position.

5.	The operator reports SRV status to the SS.	The operator reports to the SS that only 2 SRVs are open.	
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PROMPT: **AFTER** the operator reports that only 2 SRVs are open, **DIRECT** the operator to perform Alternate RPV Depressurization per 31EO-EOP-108-2.

6.	The operator enters 31EO-EOP-108-2.	The operator reviews the systems that are available for alternate depressurizaion	
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(\*\* Indicates critical step)

**NOTE:** 31EO-EOP-108-2 has several parallel paths available. The operator is expected to use plant conditions determine the most effective methods. The goal of this JPM is for the operator to perform the section associated with using Main Steam Line Drains to depressurize the reactor vessel.

**NOTE:** During the performance of this JPM, the operator should eliminate following sections of 31EO-EOP-108-2 for reason as indicated:

- 3.2 HPCI Turbine: System tagged out (piping disconnected).
- 3.3 HPCI steam line drains: System is tagged out
- 3.4 RCIC Turbine: Initiation signal present/used for level control
- 3.5 RCIC Drains: RCIC turbine available
- 3.6 RFPTs: RFPTs cannot be reset.
- 3.8 Main Turbine Chest Warming: EHC not available
- 3.9 Head Vents/DW Coolers: Cannot vent containment (Gr II isol.)
- 3.11 RWCU Blowdown Mode: RWCU is not in operation

**PROMPT:** IF the operator addresses **Section 3.10** RWCU Recirculation mode or **Section 3.12** Steam Jet Air Ejectors, **INFORM** the operator that System Operations are out locally performing actions to line up those systems, then **DIRECT** the operator to progress on to other sections of the 108 procedure.

7.	Note at step 3.1 of 31EO-EOP-108-2	The operator verifies that condenser vacuum is at least 10" Hg.	
8.	Step 3.1.1	Verify that EHC Hydraulic Power Unit is in service.	
9.	Step 3.1.2 directs the operator to step 3.1.15	Slowly open all 3 Main Turbine Bypass Valves using the the Hydraulic Jack while maintaining RPV level below +100 inches.	

**PROMPT:** **WHILE** the operator is opening the Bypass Valves, **THE SIMULATOR OPERATOR WILL** trip the running EHC pump which will cause the Bypass Valves to go closed.

10.	The operator identifies the loss of the EHC pump.	The operator identifies the loss of the EHC pump and reports the loss to the SS.	
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(\*\* Indicates critical step)

**NOTE:** The operator may anticipate the closure of the Bypass Valves and inform the SS at this point, if this happens, the following critical task is considered complete/SAT.

	The operator identifies the Bypass Valves have gone closed and reports the closure to the SS.	
--	---	--

**PROMPT:** **WHEN** the operator identifies the Bypass Valves have gone closed, **DIRECT** the operator to proceed to another section of the 108 procedure.

12.	The operator determines which system(s) is(are) available to depressurize the RPV.	The operator determines that Main Steam Line Drains may be used to depressurize the RPV.	
-----	--	--	--

**PROMPT:** **IF** the operator addresses section 3.10 or 3.12, **INFORM** the operator that another operator is addressing those sections and SO's are performing local operations to support those sections. **DIRECT** the operator to progress to other sections of the 108 procedure.

13.	The operator performs Step 3.7.1	The operator verifies the Circ. Water system and Condensate System are in operation. The operator verifies that Main Condenser Vacuum is > 10" Hg.	
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**PROMPT:** **IF** the operator requests jumpers to be installed per step 3.7.3, **INFORM** the operator that an operator has been dispatched to install the jumpers. *This action is not necessary since an isolation signal is not present which would close the valves of concern.*

14.	The operator performs Step 3.7.4	The operator confirms the following valves are closed: 2B21-F038 MSL Drain 2B21-F020 Drain 2B21-F021 Drain	
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(\*\* Indicates critical step)



	The operator confirms open/opens the following valves: 2B21-F016 MSL Drain 2B21-F019 MSL Drain	
	The operator confirms open/opens 2B21-F021 Drain	

**Note:** The operator may look to verify RPV pressure is decreasing.

**PROMPT:** IF the operator addresses further sections of 31EO-EOP-108, **INFORM** the operator that another operator will take actions to complete the procedure.

**END TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

**(\*\* Indicates critical step)**

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

PERFORM A MANUAL INITIATION OF LPCI (IF IN SHUTDOWN COOLING)

R. A. BELCHER

LR-JP-06.08-14

9.0 Minutes

N/R

R. A. BELCHER

5/31/2005



*Energy to Serve Your World<sup>SM</sup>*



UNIT 1 (X)    UNIT 2 (X)



**PERFORM A MANUAL INITIATION OF LPCI (IF IN SHUTDOWN COOLING)**



LR-JP-06.08-14



The task shall be completed when the RHR loop previously in the shutdown cooling mode is aligned for LPCI, with both pumps running and injecting to the Reactor at approximately 17,000 gpm, as indicated on 2E11-R603A, per 34SO-E11-010.



006.008



006.008.O

**PLANT HATCH JTA IMPORTANCE RATING:**

**RO**    4.33

**SRO**    3.76

**K/A CATALOG NUMBER:** 203000A405

**K/A CATALOG JTA IMPORTANCE RATING:**

**RO**    4.30

**SRO**    4.10

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)/Senior Reactor Operator (SRO)



34SO-E11-010-2  
(current version)



34SO-E11-010-2  
(current version)  
Keys for 2E11-F004A and C

**APPROXIMATE COMPLETION TIME:** 9.0 Minutes

**SIMULATOR SETUP:** REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING PAGE

## SIMULATOR SETUP

### Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #102** and leave in **FREEZE**.
2. **INSERT** the following **MALFUNCTIONS**:

mfG31_242	RWCU Non-Isol Leak	50	100	99999
mfE11_115B	RHR Pump B Trip			00000
mfE11_115D	RHR Pump D Trip			00000
mfE21_202A	Core Spray LOCA Signal Failure			00000

3. **INSERT** the following **ORS OVERRIDES**:

diE21-C001A	P	Core Spray Pmp 1A	STOP	00000
diE21-C001B	P	Core Spray Pmp B	STOP	00000
diE11-F007A	P	Min Flow Bypass Valve	CLOSE	00000
diE11-F028A	P	RHR A Torus Spray/Test Vlv	CLOSE	00000
diE11-F016A	P	Contmt Spray Outboard Drywell	CLOSE	00000
loE11-F007AG1	L	Min Flow Bypass Valve	OFF	00000
loE11-F007AR2	L	Min Flow Bypass Valve	OFF	00000
loE11-F028AG1	L	RHR A Torus Spray/Test Vlv	OFF	00000
loE11-F028AR2	L	RHR A Torus Spray/Test Vlv	OFF	00000
loE11-F016AG1	L	Contmt Spray Outboard Drywell	OFF	00000
loE11-F016AR2	L	Contmt Spray Outboard Drywell	OFF	00000

4. Take the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:
  - A. Place RHR Loop A into Shutdown Cooling.
  - B. Activate malfunction mfG31\_242 and allow to run until LOCA Signal is received.
  - C. Acknowledge annunciators.
5. **PLACE** the Simulator in **FREEZE** until the crew assumes the shift.

(\*\* Indicates critical step)

6. **PLACE DANGER TAGS** on the following equipment:

2E11-F007A	Min Flow Bypass Valve	CLOSED
2E11-F028A	Torus Spray Or Test Vlv	CLOSED
2E11-F016A	Cmt Spray Outboard Vlv	CLOSED

7. **ESTIMATED Simulator SETUP TIME:**      **20 Minutes**

(\*\* Indicates critical step)

## **UNIT 2**

### **READ TO THE OPERATOR**

#### **INITIAL CONDITIONS:**

1. Unit 2 is shutdown.
2. RHR loop "2A" was in the Shutdown Cooling mode with RHR Pump "2A" in service.
3. Both Core Spray System Pumps are inoperable.
4. HPCI and RCIC are isolated on low steam supply pressure.
5. A LOCA has occurred and 31EO-EOP-010-2 (RC) is in progress.
6. RHR Pumps "2B" and "2D" are inoperable.

#### **INITIATING CUES:**

Place RHR Loop "A" in the LPCI Mode and inject to the Reactor.

For INITIAL Operator Programs:  
**For OJT/OJE;** ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations;** ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

1.	Operator identifies the procedure needed to perform the task.	Operator has identified the correct procedure as 34SO-E11-010-2.	
2.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	
3.	Confirm RHRSW pumps are tripped.	At panel 2H11-P601, SERVICE WATER PUMPS, 2E11-C001A/B/C/D are TRIPPED, green lights illuminated.	
4.	Confirm RHR pumps are tripped.	At panel 2H11-P601, the following pumps are TRIPPED, green light illuminated:  RHR PUMPS, 2E11-C002A/B/C/D	
5.	Confirm/close Shutdown Cooling Suction Valve, 2E11-F008.	At panel 2H11-P601, SDC SUCTION VLV, 2E11-F008, is CLOSED, green light illuminated.	
6.	Confirm/close Shutdown Cooling Suction Valve, 2E11-F009.	At panel 2H11-P602, SDC SUCTION VLV, 2E11-F009, is CLOSED, green light illuminated.	
7.	Close Shutdown Cooling Suction Valves, 2E11-F006B and 2E11-F006D.	At panel 2H11-P601, the following valves are CLOSED, green light illuminated:  SHUTDOWN COOLING VLV, 2E11-F006B  SHUTDOWN COOLING VLV, 2E11-F006D	

(\*\* Indicates critical step)



	<p>At panel 2H11-P601, the following valves are CLOSED, green light illuminated:</p> <p>SHUTDOWN COOLING VLV, 2E11-F006A</p> <p>SHUTDOWN COOLING VLV, 2E11-F006C</p>	
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RESPONSE CUE: Valves, 2E11-F006A and 2E11-F006C, red lights illuminated.

NOTE: Valves in Step 8 must be closed before valves in Step 8 will open.

	<p>At panel 2H11-P601, the following valves are OPEN, red light illuminated:</p> <p>TORUS SUCTION VLV, 2E11-F004A</p> <p>TORUS SUCTION VLV, 2E11-F004C</p>	
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RESPONSE CUE: Valves, 2E11-F004A and 2E11-F004C, green lights illuminated.

NOTE: The control switch for each pump must be taken to STOP before the RHR pump will start on the loop that was in Shutdown Cooling.

	<p>At panel 2H11-P601, control switch for ONE the following pumps have been taken to STOP and then to START, red light illuminated:</p> <p>RHR PUMP, 2E11-C002A</p> <p>OR</p> <p>RHR PUMP, 2E11-C002C</p>	
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RESPONSE CUE: RHR Pump 2A or 2C, green light illuminated.

	<p>At panel 2H11-P601, RHR INBD INJ VLV, 2E11-F015A, is OPEN, red light illuminated.</p>	
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RESPONSE CUE: Valve, 2E11-F015A, green light illuminated.

NOTE: 2E11-F015A will close on a Group II Signal level signal if 2E11-F008 and 2E11-F009 are open and Reactor pressure is less than 138 psig.

(\*\* Indicates critical step)



	At panel 2H11-P601, HX BYPASS VLV, 2E11-F048A, is OPEN, red light illuminated.	
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RESPONSE CUE: Valve, 2E11-F048A, green light illuminated.

<b>13.</b>	Throttle the RHR Outboard Injection Vlv, 2E11-F017A, to obtain 17,000 gpm.	<p>At panel 2H11-P601, the following has been performed:</p> <p>RHR OUTBD INJ VLV, 2E11-F017A, has been THROTTLED, red and green lights illuminated.</p> <p>Operator has OBTAINED approximately 17,000 gpm as indicated on RHR FLOW, 2E11-R603A (accept <math>\pm 2,000</math> gpm).</p>
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NOTE: If a LOCA signal is present, the 2E11-F017A is interlocked open and the operator will be unable to throttle flow for five minutes.

NOTE: The valves in Steps 13, 14, and 15 may be verified in any order.

<b>14.</b>	<p>Confirm the following valves are closed:</p> <p>2E11-F040</p> <p>2E11-F049</p>	<p>At panel 2H11-P602, the following valves are CLOSED, green lights illuminated:</p> <p>RHR TO RAD WASTE VLV, 2E11-F040</p> <p>RHR TO RAD WASTE VLV, 2E11-F049</p>
<b>15.</b>	Confirm 2E11-F053A is closed:	<p>At panel 2H11-P601, 2E11-F053A is CLOSED, controller demand signal is zero:</p> <p>OR</p> <p>2E11-F053A SOLENOID switch is in CLOSE.</p>

(\*\* Indicates critical step)

<p><b>16.</b></p>	<p>Confirm the following valves are closed:</p> <p>2E11-F016A 2E11-F026A 2E11-F011A 2E11-F021A 2E11-F024A 2E11-F027A 2E11-F028A 2E11-F103A 2E11-F104A</p>	<p>At panel 2H11-P601, the following valves are CLOSED, green lights illuminated:</p> <p>CNMT SPRAY OUTBD VLV, 2E11-F016A RHR HX TO RCIC VLV, 2E11-F026A RHR HX TO TORUS VLV, 2E11-F011A CNMT SPRAY INBD VLV, 2E11-F021A FULL FLOW TEST LINE VLV, 2E11-F024A TORUS SPRAY VLV, 2E11-F027A TORUS SPRAY OR TEST VLV, 2E11-F028A HX VENT VLV, 2E11-F103A HX VENT VLV, 2E11-F104A</p>	
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**NOTE:** CNMT SPRAY OUTBD VLV, 2E11-F016A and TORUS SPRAY OR TEST VLV, 2E11-F028A were closed with their breakers racked out for Shutdown Cooling. Verification of closed position is accomplished by noting the clearance tag.

**NOTE:** When the operator addresses 2E11-F026A, inform the operator as the Shift Supervisor, that this valve has been closed locally.

**PROMPT:** **IF** the operator addresses shutting down LPCI, as the Shift Supervisor, **INFORM** the operator that shutdown of RHR is not required at this time.

**END TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

(\*\* Indicates critical step)

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

VERIFY AN AUTOMATIC ISOLATION OF PCIS GROUP II

E. L. JONES

LR-JP-25055-0

16.0 Minutes

N/R



*Energy to Serve Your World<sup>SM</sup>*



UNIT 1 ( ) UNIT 2 (X)



**VERIFY AN AUTOMATIC ISOLATION OF PCIS GROUP II**



LR-JP-25055-0



The task shall be completed when the operator has verified Group II isolation per 34AB-C71-001-2 and isolated those valves that have failed to close.



013.046



013.046.A

**PLANT HATCH JTA IMPORTANCE RATING:**

**RO** 3.57

**SRO** Not Available

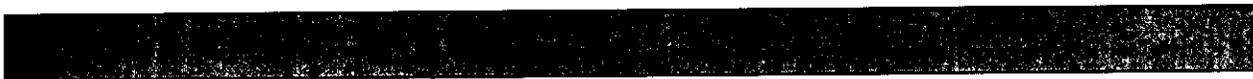
**K/A CATALOG NUMBER:** 223002A302

**K/A CATALOG JTA IMPORTANCE RATING:**

**RO** 3.50

**SRO** 3.50

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)



34AB-C71-001-2



34AB-C71-001-2 (current version)

**APPROXIMATE COMPLETION TIME:** 16.0 Minutes

**SIMULATOR SETUP:** REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING PAGE

## SIMULATOR SETUP

### Simulator Initial Conditions:

1. **RESET** the Simulator to a 100% power **IC** and leave in **FREEZE**.
2. **INSERT** the following **MALFUNCTIONS**:

MALFUNCTIONS				
mfD11_192A	2D11-F071 fails to isolate	N/A	N/A	0
mf65704241	Window 62: PCIS RPV Level Low Signal In OVRD (Annunciator Off)	N/A	N/A	0
mfP64_193A	Drywell Chiller compressor A failure	N/A	N/A	0

3. **INSERT** the following **REMOTE FUNCTIONS**:

REMOTE FUNCTIONS		
	None	

4. **INSERT** the following **ORS OVERRIDES**:

ORS OVERRIDES				
diT48-334A-2	P	Override for 2T48-F334A	Override	
diT48-335A-2	P	Override for 2T48-F335A	Override	

5. Take the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:
  - A. Perform RC-1, RC-2, and TC-1. Ensure that RWL drops below +3 inches before recovering.
  - B. Place DW venting in service using the "2A" CAD valves.
  - C. Restore RWL to the normal level band and stabilize the plant.
6. **PLACE** the Simulator in **FREEZE** until the **INITIATING CUE** is given.
7. **ESTIMATED Simulator SETUP TIME: 20 Minutes**

## **UNIT 2**

### **READ TO THE OPERATOR**

#### **INITIAL CONDITIONS:**

1. The "2A" Drywell Chiller has tripped.
2. The team has taken actions based on 34AR-603-115-2, "PRIMARY CNMT PRESSURE HIGH".
3. The Reactor has been manually scrammed due to increasing DW pressure.
4. The "2B" Drywell Chiller has subsequently started.
5. RWL dropped to approximately -10 inches before the operators restored it to the normal level band.

#### **INITIATING CUES:**

Verify Group II isolations.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

1.	Operator obtains the procedure needed to perform the task.	Operator has obtained procedure 34AB-C71-001-2.	
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NOTE: It is the intent of the JPM that the operator verify Group II isolations and determine which valves have failed to isolate. The action to close the unisolated valves is necessary to complete the critical portion of the step.  
**Steps 2 through 13 may be performed in any order.**

NOTE: **In the following steps, the parts of the Standard marked with “\*\*\*” are the critical portion of that step.**

2.	Operator confirms or performs the following automatic actions: 2G11-F003, CLOSED, 2G11-F019, CLOSED, 2E11-F040, CLOSED, 2T48-F118B, CLOSED, 2T48-F309, CLOSED, and 2T48-F307, CLOSED.	At panel 2H11-P602, the operator has <b>CONFIRMED OR PERFORMED</b> the following: 2G11-F003, FLOOR DRAIN VLV, CLOSED, green light illuminated. 2G11-F019, EQUIP DRAIN VLV, green light illuminated. 2E11-F040, RHR TO RADWASTE VLV, CLOSED, green light illuminated. 2T48-F118B, N <sub>2</sub> MAKEUP TO TORUS VLV, CLOSED, green light illuminated. 2T48-F309, TORUS AIR PURGE VLV, CLOSED, green light illuminated. 2T48-F307, DRWL AIR PURGE VLV, CLOSED, green light illuminated.	
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RESPONSE CUE: N/A

(\*\* Indicates critical step)

<p>3.</p>	<p>Operator confirms the following automatic actions: 2T48-F341, CLOSED, 2T48-F339, CLOSED, 2T48-F118A, CLOSED, 2T48-F318, CLOSED, and 2T48-F319, CLOSED.</p>	<p>At panel 2H11-P602, the operator has CONFIRMED the following: 2T48-F341, DRWL VENT &amp; RELIEF VLV, CLOSED, green light illuminated. 2T48-F339, TORUS VENT &amp; RELIEF VLV, CLOSED, green light illuminated. 2T48-F118A, N<sub>2</sub> MAKEUP TO DRWL VLV, CLOSED, green light illuminated. 2T48-F318, TORUS VENT VLV, CLOSED, green light illuminated. 2T48-F319, DRWL VENT VLV, CLOSED, green light illuminated.</p>	
<p>4.</p>	<p>Operator confirms or performs the following automatic actions: 2G11-F004, CLOSED, 2G11-F020, CLOSED, 2E11-F049, CLOSED, and 2T48-F324, CLOSED.</p>	<p>At panel 2H11-P601, the operator has CONFIRMED OR PERFORMED the following: 2G11-F004, FLOOR DRAIN VLV, CLOSED, green light illuminated. 2G11-F020, EQUIP DRAIN VLV, green light illuminated. 2E11-F049, RHR TO RADWASTE VLV, CLOSED, green light illuminated. 2T48-F324, TORUS AIR PURGE VLV, CLOSED, green light illuminated.</p>	

(\*\* Indicates critical step)

<p>5.</p>	<p>Operator confirms the following automatic actions:                  2T48-F308, CLOSED,                  2T48-F340, CLOSED,                  2T48-F338, CLOSED,                  2T48-F104, CLOSED,                  2T48-F103, CLOSED,                  2T48-F326, CLOSED,                  2T48-F320, CLOSED,                  2E11-F122B, CLOSED, and                  2E11-F122A, CLOSED.</p>	<p>At panel 2H11-P601, the operator has CONFIRMED the following:                  2T48-F308, DRYWELL AIR PURGE VLV, CLOSED, green light illuminated.                  2T48-F340, DRWL VENT &amp; RELIEF VLV, CLOSED, green light illuminated.                  2T48-F338, TORUS VENT &amp; RELIEF VLV, CLOSED, green light illuminated.                  2T48-F104, NITROGEN MAKEUP VLV, CLOSED, green light illuminated.                  2T48-F103, NITROGEN PURGE VLV, CLOSED, green light illuminated.                  2T48-F326, TORUS VENT VLV, CLOSED, green light illuminated.                  2T48-F320, DRYWELL VENT VLV, CLOSED, green light illuminated.                  2E11-F122B, TESTABLE CHECK F050B BYPASS VLV, CLOSED, green light illuminated.                  2E11-F122A, TESTABLE CHECK F050A BYPASS VLV, CLOSED, green light illuminated.</p>	
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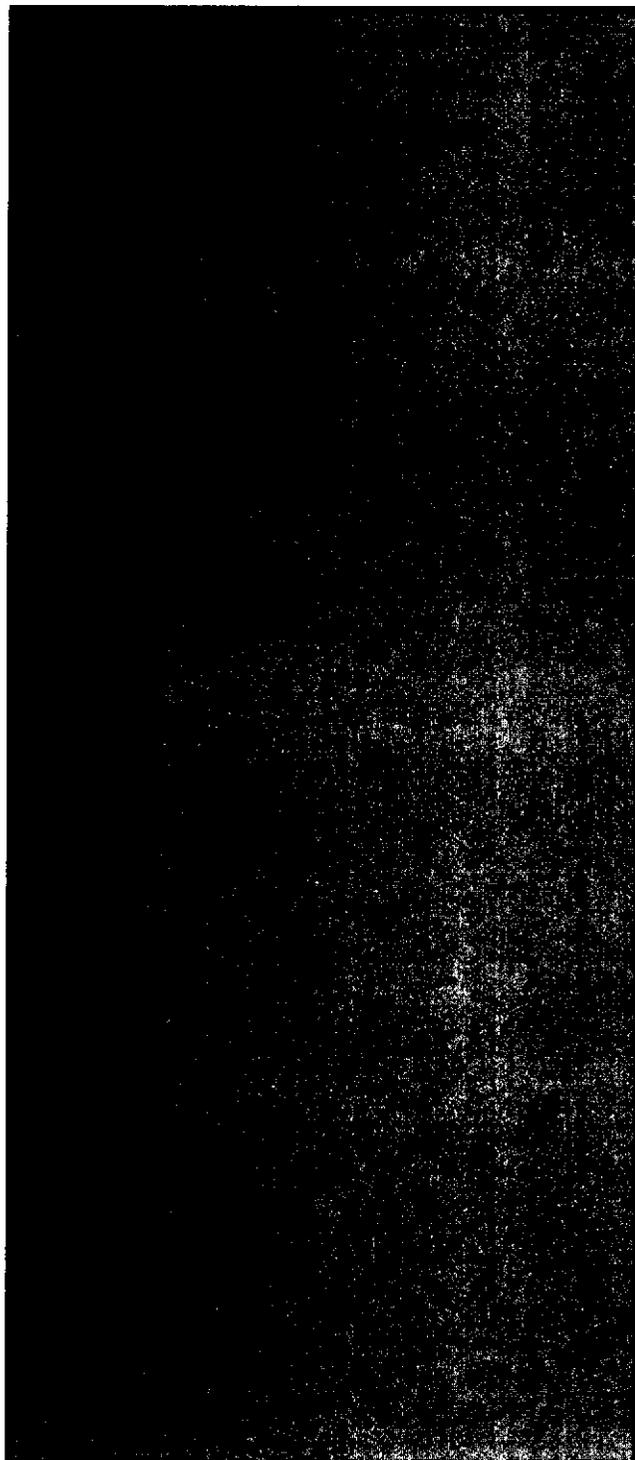
PROMPT: IF 2E11-F015A & B are checked, **INFORM** the operator that the GREEN light is illuminated.

(\*\* Indicates critical step)

<p>6.</p>	<p>Operator confirms or performs the following automatic actions:</p> <p>2D11-F051, CLOSED, 2D11-F050, CLOSED, 2E41-F122, CLOSED, 2B21-F111, CLOSED, 2P70-F002, CLOSED, 2P33-F002, CLOSED, 2P33-F007, CLOSED, 2P33-F004, CLOSED, 2P33-F003, CLOSED, and 2P33-F005, CLOSED</p>	<p>At panel 2H11-P700, the operator has CONFIRMED the following:</p> <p>2D11-F051, PRI CNMT FIS PROD MON INBD ISOL, CLOSED, green light illuminated.</p> <p>2D11-F050, PRI CNMT FIS PROD MON INBD ISOL, CLOSED, green light illuminated.</p> <p>2E41-F122, POST ACC RX COOL/CNMT ATMOS SMPLG INBD ISOL, CLOSED, green light illuminated.</p> <p>2B21-F111, POST ACC RX COOL/CNMT ATMOS SMPLG INBD ISOL, CLOSED, green light illuminated.</p> <p>2P70-F002, DRWL PNEU INBD SUCTION ISOL, CLOSED, green light illuminated.</p> <p>2P33-F002, PRI CNMT ATMOS H2O2 ANLY INBD ISOL CH B, CLOSED, green light illuminated.</p> <p>2P33-F007, PRI CNMT ATMOS H2O2 ANLY INBD ISOL CH A, CLOSED green light illuminated.</p> <p>2P33-F004, PRI CNMT ATMOS H2O2 ANLY A RTN LINE INBD ISOL, CLOSED green light illuminated.</p> <p>2P33-F003, PRI CNMT ATMOS H2O2 ANLY INBD ISOL CH A, CLOSED, green light illuminated.</p> <p>2P33-F005, PRI CNMT ATMOS H2O2 ANLY INBD ISOL CH B RETURN LINE, CLOSED, green light illuminated.</p>	
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(\*\* Indicates critical step)

RESPONSE CUE: N/A

	<p>At panel 2H11-P700, the operator has CONFIRMED OR PERFORMED the following:</p> <p><b>2D11-F071, PRI CNMT ATMOS FIS PROD MON SAMPLE LINE ISOL, switch taken to CLOSE, green light illuminated.</b></p> <p>2P33-F006, PRI CNMT ATMOS H2O2 ANLY INBD ISOL CH B, CLOSED, green light illuminated.</p> <p>2G51-F011, TORUS WATER CLEANUP INBD ISOL, CLOSED, green light illuminated.</p> <p>2G51-F017, TORUS WATER MAKEUP OUTBD ISOL, CLOSED, green light illuminated.</p> <p>2D11-F052, PRI CNMT FIS PROD MON OUTBD ISOL, CLOSED, green light illuminated.</p> <p>2D11-F053, PRI CNMT FIS PROD MON OUTBD ISOL, CLOSED, green light illuminated.</p> <p>2B21-F112, POST ACC RX COOL/CNMT ATMOS SMPLG OUTBD ISOL, CLOSED, green light illuminated.</p> <p>2E41-F121, POST ACC RX COOL/CNMT ATMOS SMPLG OUTBD ISOL, CLOSED, green light illuminated.</p>	
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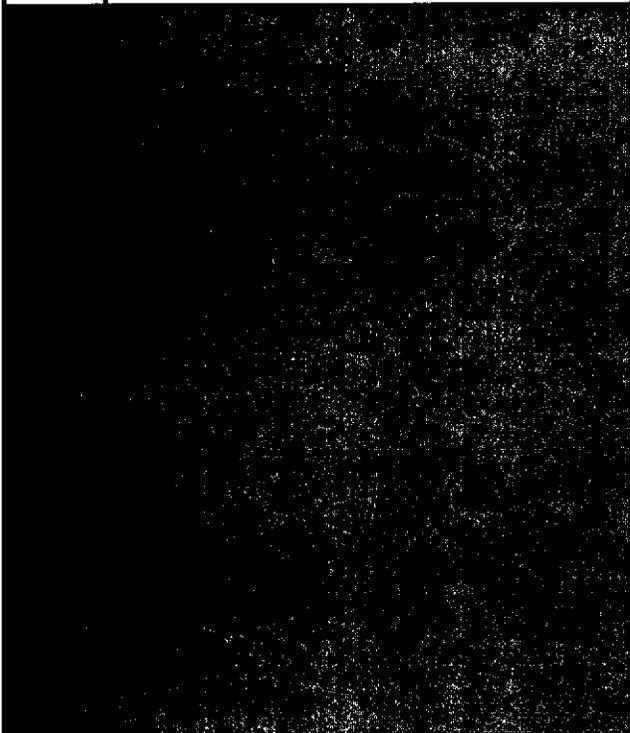
RESPONSE CUE: 2D11-F071 red light illuminated.

(\*\* Indicates critical step)

<p>8.</p>	<p>Operator confirms or performs the following automatic actions:                  2P33-F015, CLOSED,                  2P33-F010, CLOSED,                  2P70-F003, CLOSED,                  2P33-F013, CLOSED,                  2P33-F011, CLOSED,                  2P33-F012, CLOSED                  2P33-F605, CLOSED, and                  2D11-F072, CLOSED.</p>	<p>At panel 2H11-P700, the operator has CONFIRMED OR PERFORMED the following:                  2P33-F015, PRI CNMT ATMOS H2O2 ANLY OUTBD ISOL CH A, CLOSED, green light illuminated.                  2P33-F010, PRI CNMT ATMOS H2O2 ANLY OUTBD ISOL CH B, CLOSED, green light illuminated.                  2P70-F003, DRWL PNEU OUTBD SUCTION ISOL, CLOSED, green light illuminated.                  2P33-F013, PRI CNMT ATMOS H2O2 ANLY OUTBD ISOL CH B RETURN LINE, CLOSED, green light illuminated.                  2P33-F011, PRI CNMT ATMOS H2O2 ANLY OUTBD ISOL CH A, CLOSED, green light illuminated.                  2P33-F012, H2O2 ANLY CH A RTN LN OUTBD ISOL, CLOSED, green light illuminated.                  2P33-F605, O<sub>2</sub> Analyzer Isol Valve, green light illuminated                  2D11-F072, PRI CNMT ATMOS H2O2 ANLY FIS PROD MON RTN LN ISOL, green light illuminated.</p>	
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RESPONSE CUE: N/A

(\*\* Indicates critical step)

<p>9.</p>	<p>Operator confirms the following automatic actions: 2P33-F014, CLOSED, 2G51-F013, CLOSED, and 2G51-F012, CLOSED.</p>	<p>At panel 2H11-P700, the operator has CONFIRMED the following: 2P33-F014, PRI CNMT ATMOS H2O2 ANLY OUTBD ISOL CH B, CLOSED, green light illuminated. 2G51-F013, TORUS WATER MAKEUP INBD ISOL, CLOSED, green light illuminated. 2G51-F012, TORUS DRN/PURIF TORUS WATER CLEANUP OUTBD ISOL, CLOSED, green light illuminated.</p>	
<p>10.</p>	<p>Operator confirms that 2C51-J004A-D are CLOSED</p>	<p>At panel 2H11-P607, the operator has CONFIRMED that 2C51-J004A-D, TIP BALL VLVS, CLOSED, green light illuminated.</p>	
		<p>At panel 2H11-P657, the operator has CONFIRMED the following: <b>2T48-F334A, CAD A DRYWELL VENT ISOL VLV, CLOSED, switch taken to CLOSE, green light illuminated.</b> <b>2T48-F335A, CAD A DRYWELL VENT ISOL VLV, CLOSED, switch taken to CLOSE, green light illuminated.</b> 2T48-F332A, CAD A TORUS VENT ISOL VLV, CLOSED, green light illuminated. 2T48-F333A, CAD A TORUS VENT ISOL VLV, CLOSED, green light illuminated.</p>	

RESPONSE CUE: 2T48-F334A, 2T48-F335A red light illuminated.

(\*\* Indicates critical step)

<p><b>12.</b></p>	<p>Operator confirms the following automatic actions: 2T48-F209, CLOSED, and 2T48-F211, CLOSED.</p>	<p>At panel 2H11-P657, the operator has CONFIRMED the following: 2T48-F209, DRWL TO TORUS DP SYS INBD ISOL, CLOSED, green light illuminated. 2T48-F211, DRWL TO TORUS DP SYS INBD ISOL, CLOSED, green light illuminated.</p>	
<p><b>13.</b></p>	<p>Operator confirms the following automatic actions: 2T48-F334B, CLOSED, 2T48-F335B, CLOSED, 2T48-F332B, CLOSED, 2T48-F333B, CLOSED, 2T48-F210, CLOSED, and 2T48-F212, CLOSED.</p>	<p>At panel 2H11-P657, the operator has CONFIRMED the following: 2T48-F334B, CAD B DRYWELL VENT ISOL VLV, CLOSED, green light illuminated. 2T48-F335B, CAD B DRYWELL VENT ISOL VLV, CLOSED, green light illuminated. 2T48-F332B, CAD B TORUS VENT ISOL VLV, CLOSED, green light illuminated. 2T48-F333B, CAD B TORUS VENT ISOL VLV, CLOSED, green light illuminated. 2T48-F210, DRWL TO TORUS DP SYS OUTBD ISOL, CLOSED, green light illuminated. 2T48-F212, DRWL TO TORUS DP SYS OUTBD ISOL, CLOSED, green light illuminated.</p>	

PROMPT: **WHEN** the operator addresses 2E11-F079A/B and 2E11-F080A/B on panels 2H21-P018 and 2H21-P021, **INFORM** the operator that another operator has verified these valves are closed.

(\*\* Indicates critical step)



**PROMPT:** IF the operator addresses resetting the Group Isolation, **INFORM** the operator that it is not desired at this time.

**END**  
**TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

**(\*\* Indicates critical step)**

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

**TRANSFER A STATION SERVICE 4160 VAC BUS FROM STARTUP SUPPLY  
TO THE AUXILIARY TRANSFORMER**

E. L. JONES

LR-JP-27.40-13

8.0 Minutes

N/R



*Energy to Serve Your World<sup>SM</sup>*



UNIT 1 (X)    UNIT 2 (X)

**TRANSFER A STATION SERVICE 4160 VAC BUS  
FROM STARTUP SUPPLY TO THE AUXILIARY  
TRANSFORMER**

LR-JP-27.40-13

The task shall be completed when the operator has transferred one station service bus from its Alternate to Normal source per 34SO-R22-001.

027.040

027.040.A

**PLANT HATCH JTA IMPORTANCE RATING:**

**RO**    2.93

**SRO**   2.81

**K/A CATALOG NUMBER:** 262001A401

**K/A CATALOG JTA IMPORTANCE RATING:**

**RO**    3.4

**SRO**   3.7

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)/Senior Reactor Operator (SRO)

34SO-R22-001-2  
(current version)

34SO-R22-001-2  
(current version)

**APPROXIMATE COMPLETION TIME:** 8.0 Minutes

**SIMULATOR SETUP:** REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING PAGE

## **SIMULATOR SETUP**

### **Simulator Initial Conditions:**

- 1. RESET** the Simulator to **100% Power** and leave in **FREEZE**.
- 2. Take the Simulator OUT OF FREEZE and PERFORM** the following **MANIPULATIONS:**
  - A. Place 4160 VAC Bus "2A" on SUT "2C."
  - B. Reduce Reactor power to 90% as indicated on the APRMs.
- 3. PLACE** the Simulator in **FREEZE** until the **INITIATING CUE** is given.
- 4. ESTIMATED Simulator SETUP TIME: 10 Minutes**

## **UNIT 2**

### **READ TO THE OPERATOR**

#### **INITIAL CONDITIONS:**

- 1.** The Reactor is at 90% power.
- 2.** 4160 VAC Station Service Bus "2A." is being powered by its Alternate Supply.
- 3.** All other systems are in their normal full power configuration.

#### **INITIATING CUES:**

Hot Transfer 4160 VAC Station Service Bus "2A" to its Normal Supply per 34SO-R22-001-2.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

**NOTE:** This JPM was written for 4160 VAC Station Service Bus "2A." Other buses may be chosen. The performance step sequence will be identical, but the switch names will be different.

**PROMPT:** IF the operator asks what current power is, **STATE** that power = 2550 MWth (limit is below 2558 while the bus is on the alternate supply).

1.	Operator identifies the procedure needed to perform the task.	Operator has identified the correct procedure as 34SO-R22-001-2.	
2.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	
		At panel 2H11-P651, ACB 135434-135454 STATION SVC INTERLOCK CUTOFF Switch is in OFF (down).	

RESPONSE CUE: N/A

		At panel 2H11-P651, SSW ACB 135434 is in ON.	
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RESPONSE CUE: N/A

**NOTE:** Step 5 requires the operator to place the VOLT SELECT UNIT AUX XFMR 2B voltmeter switch to ON position.

(\*\* Indicates critical step)

5.	Confirm that both 4160 VAC Bus "2A" supply sources are synchronized and voltage is normal on UAT "2B."	<p>At panel 2H11-P651, the operator VERIFIES:</p> <p>The SYNCHSCOPE indicates 12 o'clock.</p> <p>SYNCHSCOPE lights are extinguished.</p> <p>VOLT SELECT UNIT AUX XFMR 2B voltmeter switch is in ON position.</p> <p>4160V VOLTMETER indicates about 4160 VAC (accept 4100 to 4400 VAC).</p>	
		At panel 2H11-P651, NORMAL SUPPLY ACB 135434 is CLOSED, red light illuminated.	

RESPONSE CUE: ACB 135434, green light illuminated.

NOTE: The next step requires 2R22-S001(BUS 2A) XFMR 2B AMPS SELECT switch to be in position 1, 2, or 3.

7.	Confirm that current increases from UAT "2B."	At panel 2H11-P651, the operator VERIFIES ACB 135434 AC AMPS meter indicates an increase in amperage.	
----	---	---	--

PROMPT: **WHEN** the operator addresses amperage, **INDICATE** for the operator that there has been an increase in amperage.

		At panel 2H11-P651, ALTERNATE SUPPLY ACB 135454 is OPEN, green light illuminated.	
--	--	---	--

RESPONSE CUE: ACB 135454, red light illuminated.

10.	Place ACB 135434 Sync Switch in OFF.	At panel 2H11-P651, SSW ACB 135434 is in OFF.	
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(\*\* Indicates critical step)

11.	Place the Interlock Cutout switch for 4160 VAC Bus "2A" in NORMAL position.	At panel 2H11-P651, ACB 135434-135454 STATION SVC INTERLOCK CUTOOUT Switch is in the NORMAL (up) position.	
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**END**  
**TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

(\*\* Indicates critical step)

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

CONDUCT A ROD WORTH MINIMIZER (RWM) FUNCTIONAL TEST  
(FAILURE)

E. L. JONES

LR-JP-25032-05

10.0 Minutes

N/R



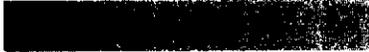
*Energy to Serve Your World<sup>SM</sup>*



UNIT 1 (X)    UNIT 2 (X)



**CONDUCT A ROD WORTH MINIMIZER (RWM) FUNCTIONAL TEST (FAILURE)**



LR-JP-25032-05



The task shall be completed when the operator has conducted a Rod Worth Minimizer Functional Test per 34GO-OPS-001.



001.014



001.014.A

**PLANT HATCH JTA IMPORTANCE RATING:**

**RO**    3.40

**SRO**   2.85

**K/A CATALOG NUMBER:** 201006A302

**K/A CATALOG JTA IMPORTANCE RATING:**

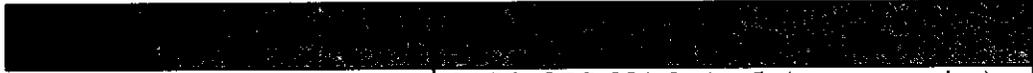
**RO**    3.40

**SRO**   3.50

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)



34GO-OPS-001-2  
34GO-OPS-065-0  
34AB-C11-004-2  
Control Rod Movement Sequence  
(current versions)



34GO-OPS-001-2 Att 5 (current version)  
Control Rod Movement Sequence

**APPROXIMATE COMPLETION TIME:** 10.0 Minutes

**SIMULATOR SETUP:** REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING PAGE

## SIMULATOR SETUP

### Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #102** and leave in **FREEZE**.
2. **INSERT** the following **ORS OVERRIDES**:

C91_J001DI	P	RWM Mode Switch	BYPASS	99999
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3. Take the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:
  - A. Reset all annunciators.
  - B.
  - B. Select a control rod from Step 1 and initialize the RWM by pushing the ETC button on the operator display.
  - C. Verify that all RWM rod blocks are clear and the Rod Sequence Selector Switch is in A12 (B12).
  - D. Remove the key from the RWM.
4. **PLACE** the Simulator in **FREEZE** until the crew assumes the shift.
5. **ESTIMATED Simulator SETUP TIME:**      **10 Minutes**

## **UNIT 2**

### **READ TO THE OPERATOR**

#### **INITIAL CONDITIONS:**

1. The Reactor is shutdown; the manual scram has been reset.
2. The Reactor Mode Switch is in START & HOT STBY.
3. All systems required for plant startup are in service.
4. 34GO-OPS-001-2, "Plant Startup," is in progress.
5. Permission for Reactor startup has been received.

#### **INITIATING CUES:**

Perform the Rod Worth Minimizer Functional Test using Attachment 5 of 34GO-OPS-001-2.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

1.	Operator confirms that power is turned on to the Refueling Bridge.	Operator has VERIFIED power is turned on to the Refueling Bridge.	
----	--	---	--

PROMPT: **WHEN** the operator addresses confirming power on the Refueling Bridge, as the SO, **INFORM** the operator that the Refueling Bridge has power.

2.	Confirm RMCS/RWM ROD BLOCK OR SYS TROUBLE annunciator is clear.	At panel 2H11-P603, the operator VERIFIES that annunciator 603-239, RMCS/RWM ROD BLOCK OR SYS TROUBLE, is clear.	
----	---	--	--

PROMPT: **WHEN** the operator addresses the Select Sequence, **INFORM** the operator that the currently selected sequence in the RWM is identical to the Control Rod Movement Sheets and conforms to BPWS.

PROMPT: **IF** the operator addresses bypassed rods and the Change Log of the Control Rod Movement Sequence, **INFORM** the operator there are no bypassed rods listed.

PROMPT: **IF** the operator addresses RWM's Full Range Sequence Control mode, **INFORM** the operator that RWM is in Sequence Control mode.

3.	Confirm RWM keylock switches are in OPERATE with keys removed.	At panel 2H11-P603, the Operator's Display keylock switch is in OPERATE.  Operator IDENTIFIES that the keylock switch at panel 2H11-P616 must also be in OPERATE.	
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(\*\* Indicates critical step)

**PROMPT:** WHEN the operator addresses the Instrument Console keylock switch on panel 2H11-P616, **INFORM** the operator it is in the OPERATE position and the key is removed.

4.	Confirm Step 01 is displayed on RWM Operator's Display.	At panel 2H11-P603, the operator has VERIFIED that 01 is displayed on the RWM Operator's Display.	
5.	Confirm the Reactor Mode switch is in START & HOT STBY.	At panel 2H11-P603, the operator places or CONFIRMS the Reactor Mode switch is in START & HOT STBY.	

**NOTE:** This step should only require the operator to confirm the mode switch position. This is one of the initial conditions given to the operator at the beginning of the task.

6.	Select a rod from Step 2 of the Rod Worth Minimizer Sequence and verify system response.	At panel 2H11-P603, using the CONTROL ROD SELECT matrix pushbuttons, a rod is SELECTED from Step 2 of the RWM Sequence  AND  At the RWM operator's display, the operator has CONFIRMED the following messages are displayed: -"SE" "WB" -"BLOCK: WITHDRAW".	
----	--	---	--

RESPONSE CUE: N/A

**NOTE:** If the operator selects any rod not in Step 1 of the RWM Sequence, he will still receive the same indications as a Step 2 rod.

7.	Attempt to withdraw the selected rod.	At panel 2H11-P603, the operator VERIFIES no rod motion occurred.	
----	---------------------------------------	---	--

RESPONSE CUE: N/A

(\*\* Indicates critical step)

8.	Select a rod from Step 6 of the Rod Worth Minimizer Sequence and verify system response.	<p>At panel 2H11-P603, using the CONTROL ROD SELECT matrix pushbuttons, a rod is SELECTED from Step 6 of the RWM Sequence</p> <p>AND</p> <p>At the RWM operator's display, the operator has CONFIRMED the following messages are displayed: -"SE" "WB" -"BLOCK: WITHDRAW".</p>	
----	--	--	--

RESPONSE CUE: N/A

9.	Attempt to withdraw the selected rod.	At panel 2H11-P603, the operator VERIFIES no rod motion occurred.	
----	---------------------------------------	---	--

RESPONSE CUE: N/A

**SIMULATOR OPERATOR: BEFORE the operator selects this control rod, ACTIVATE OVERRIDE C91\_J001DI to BYPASS.**

	<p>At panel 2H11-P603, using the CONTROL ROD SELECT matrix pushbuttons, a rod is SELECTED from Step 10 of the RWM Sequence</p> <p>AND</p> <p>At the RWM operator's display, the operator has CONFIRMED the following messages are displayed: -"SE" "WB" -"BLOCK: WITHDRAW".</p>	
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RESPONSE CUE: N/A

(\*\* Indicates critical step)

	At panel 2H11-P603, the operator <b>RECOGNIZES</b> that the control rod moved.	
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**RESPONSE CUE:** No rod motion has occurred

**PROMPT:** **IF** operator asks the SS for direction, **DIRECT** the operator to insert the control rod to position 00.

	At panel 2H11-P603, the operator <b>INSERTS</b> the control rod and informs the SS that the RWM is <b>INOP.</b>	
--	--	--

**RESPONSE CUE:** The control rod is not at Position 00.

**PROMPT:** **IF** addressed by the operator, **INFORM** the operator that the STA has confirmed the RWM Scram Buffers are clear and ready to accept data.

**END  
TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

(\*\* Indicates critical step)

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

PLACE THE CONTROL ROOM HVAC SYSTEM IN THE PURGE MODE

E. L. JONES

LR-JP-25026-05

15.0 Minutes

N/R



*Energy to Serve Your World<sup>SM</sup>*



UNIT 1 (X)    UNIT 2 ( )



**PLACE THE CONTROL ROOM HVAC SYSTEM IN THE PURGE MODE**



LR-JP-25026-05



The task shall be completed when the Control Room Ventilation System has been placed in the Purge Mode per 34SO-Z41-001-1.



037.010



037.010.O

x

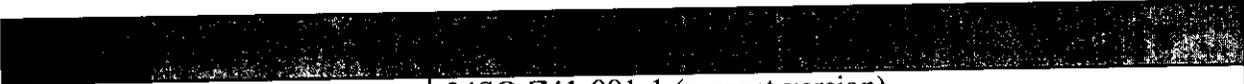
**K/A CATALOG NUMBER:** 290003A401

**K/A CATALOG JTA IMPORTANCE RATING:**

**RO** 3.2

**SRO** 3.2

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)/Senior Reactor Operator (SRO)



34SO-Z41-001-1 (current version)  
34AR-603-214-2 (current version)  
34AR-603-215-2 (current version)



34SO-Z41-001-1 (current version)

**APPROXIMATE COMPLETION TIME:** 15.0 Minutes

**SIMULATOR SETUP:** N/A

# **UNIT 1**

## **READ TO THE OPERATOR**

### **INITIAL CONDITIONS:**

- 1.** Unit 1 and Unit 2 have both been scrammed due to a loss of Plant Service Water.
- 2.** The Main Control Room Ventilation System has been operating in a Normal Ventilation configuration for several days.
- 3.** No cooling water is available for the Main Control Room Air Handling Units.
- 4.** 34AB-T41-001-1, "Loss of Area Ventilation", is in progress.

### **INITIATING CUES:**

Purge the **Unit 1** Main Control Room with the Main Control Room Ventilation System per 34SO-Z41-001-1, Step 7.1.4.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

1.	Operator identifies the procedure needed to perform the task.	Operator has IDENTIFIED the correct procedure as 34SO-Z41-001-1.	
2.	Operator reviews the procedure's precautions and limitations.	Operator has REVIEWED the precautions and limitations.	

**PROMPT:** IF the operator asks the status of Main Control Room Ventilation, per the initial conditions, **INFORM** the operator that it is operating in the normal configuration.

3.	Confirm STOPPED or STOP the following HVAC units: 1Z41-B003B 1Z41-B003A	On 1H11-P654, CONFIRM 1Z41-B00A, B, control switch in STOP (OFF), GREEN light illuminated.	
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**RESPONSE CUE:** N/A

**NOTE:** The 1Z41-B003C should remain running when purging Unit 1. If the operator stops it flow will still exist if the exhaust fan is started. It is not critical to have 1Z41-B003C running; but, if it is secured the operator will have committed a procedure violation.

4.	Confirm CLOSED the following dampers: 1Z41-F009A 1Z41-F030A	On 1H11-P657, CONFIRM 1Z41-F009A & 1Z41-F030A, green light illuminated.	
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**NOTE:** 1Z41-F009A & 1Z41-F030A will close when AHU 1Z41-B003A is stopped.

(\*\* Indicates critical step)



	On 1H11-P654, PLACE control switch for 1Z41-F028A & 1Z41-F028B in CLOSE, green light illuminated.	
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RESPONSE CUE: 1Z41-F028A, red light illuminated. 1Z41-F028B, red light illuminated.

NOTE: It is only critical to close ONE of the two valves.

	On 1H11-P654, PLACE control switch for 1Z41-F010A & 1Z41-F010B in CLOSE, green light illuminated.	
--	---	--

RESPONSE CUE: 1Z41-F028A, red light illuminated. 1Z41-F028B, red light illuminated.

NOTE: It is only critical to close ONE of the two valves.

7.	Open Roll Filter Bypass, 1Z41-F015.	At MCR Door C70, ROLL FILTER BYPASS, 1Z41-F015 control switch is in OPEN, red light illuminated.	
8.	Confirm Open Outside Air Intake Damper, 1Z41-F016.	At panel 1H11-P657, FILTER INLET control switch, 1Z41-F016, is in OPEN position, red light illuminated.	
		Have SSS send a SO to the 180' elevation of the control building to OPEN inlet control damper 1Z41-F017A.	

RESPONSE CUE: Inlet Control Damper, 1Z41-F017A, Closed.

PROMPT: **WHEN** asked to send someone to open 1Z41-F017A, **INFORM** the operator that 1Z41-F017A is open.

(\*\* Indicates critical step)



	At panel 1H11-P657, PLACE the control switch for 1Z41-C011A in RUN(ON), RED light illuminated and confirm 1Z41-F018A OPENS, RED light illuminated.	
---	--	--

**RESPONSE CUE:** Fan 1Z41-C011A, green light illuminated. Damper, 1Z41-F018A, green light illuminated.

**NOTE:** It is only critical to start exhaust fan 1Z41-C011A because damper 1Z41-F018A automatically opens when the fan is started.

**END  
TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

**(\*\* Indicates critical step)**

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

<b>CROSSTIE REACTOR BUILDING PLANT SERVICE WATER</b>		
E. L. Jones	LR-JP-25029-06	8.0 Minutes
N/R		



*Energy to Serve Your World<sup>SM</sup>*



UNIT 1 (X)    UNIT 2 (X)

**CROSSTIE REACTOR BUILDING PLANT SERVICE WATER**

LR-JP-25029-06

The task shall be complete when the operator has crosstied Reactor Building Plant Service Water divisions per 34AB-P41-001-1/2.

200.013

200.013.E

**PLANT HATCH JTA IMPORTANCE RATING:**

**RO**    4.00

**SRO**   4.00

**K/A CATALOG NUMBER:** 295018AA101

**K/A CATALOG JTA IMPORTANCE RATING:**

**RO**    3.30

**SRO**   3.40

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)

34AB-P41-001-1 (current version)	34AB-P41-001-2 (current version)
-------------------------------------	-------------------------------------

34AB-P41-001-1 (current version)	34AB-P41-001-2 (current version)
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**APPROXIMATE COMPLETION TIME:** 8.0 Minutes

**SIMULATOR SETUP:** N/A

# **UNIT 1**

## **READ TO THE OPERATOR**

### **INITIAL CONDITIONS:**

- 1.** The Unit 1 Reactor has been scrammed due to a loss of Plant Service Water.
- 2.** 1P41-F310A, B, C, and D are closed. This isolated the PSW break.
- 3.** Both the “A” and “C” PSW pumps will not operate.

### **INITIATING CUES:**

Crosstie Reactor Building Plant Service Water divisions per 34AB-P41-001-1.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

**PROMPT:** IF requested, **INFORM** the operator that 1P41-F310A, B, C, & D are closed and the PSW break is isolated.

**NOTE:** The operator may decide to open 1P41-F052A & F052B first. If this happens, the critical steps will be completed satisfactorily **only if** 1P41-F070A and F070B are opened on steps 3 and 4.

**NOTE:** The operator may decide to open 1P41-F070A & F070B first. If this happens, the critical steps will be completed satisfactorily **only if** 1P41-F052A and F052B are opened on steps 3 and 4.

1.	Open 1P41-F070A (or 1P41-F052A).	At 135RHR09, the operator <b>URNS</b> 1P41-F070A (or 1P41-F052A) handwheel, fully counter-clockwise.
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**RESPONSE CUE:** 1P41-F070A (or 1P41-F052A) is fully clockwise.

2.	Attempt to open 1P41-F070B (or 1P41-F052B).	At 135RHR09, the operator attempts to turn 1P41-F070B (or 1P41-F052B) handwheel but it does not move.
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**PROMPT:** Regardless of which valve the candidate opens first (F070 or F052), **WHEN** the candidate attempts to open the second valve in series, **INFORM** the operator that the handwheel did not turn at all, indicate that the stem of the valve is still inside the valve.

**Note:** **IF** the operator notifies the SS of the failed valve at this time and asks for direction, **INFORM** the operator that it is still desired to crosstie the PSW divisions and the SS will take care of writing the Condition Report.

(\*\* Indicates critical step)

	At 135RHR09, the operator TURNS 1P41-F052A (or 1P41- F070A) handwheel, fully counter- clockwise.	
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RESPONSE CUE: 1P41-F052A (or 1P41-F070A) is fully clockwise.

	At 135RHR09, the operator TURNS 1P41-F052B (or 1P41- F070B) handwheel, fully counter- clockwise.	
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RESPONSE CUE: 1P41-F052B (or 1P41-F070B) is fully clockwise.

**END**  
**TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

(\*\* Indicates critical step)

## **UNIT 2**

### **READ TO THE OPERATOR**

#### **INITIAL CONDITIONS:**

1. The Unit 2 Reactor has been scrammed due to a loss of Plant Service Water.
2. 2P41-F316A, B, C, and D are closed. This isolated the PSW break.
3. Both the "A" and "C" PSW pumps will not operate.

#### **INITIATING CUES:**

Crosstie Reactor Building Plant Service Water divisions per 34AB-P41-001-2.



For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

**PROMPT:** IF requested, **INFORM** the operator that 2P41-F316A, B, C, & D are closed and the PSW break is isolated.

**NOTE:** The operator may decide to open 2P41-F052A & F052B first. If this happens, the critical steps will be completed satisfactorily **only if** 2P41-F070A and F070B are opened on steps 3 and 4.

**NOTE:** The operator may decide to open 2P41-F070A & F070B first. If this happens, the critical steps will be completed satisfactorily **only if** 2P41-F052A and F052B are opened on steps 3 and 4.

<b>1.</b>	Open 2P41-F070A (or 2P41-F052A).	At 135RLR19, the operator <b>URNS</b> 2P41-F070A (or 2P41-F052A) handwheel, fully counter-clockwise.	
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**RESPONSE CUE:** 2P41-F070A (or 2P41-F052A) is fully clockwise.

<b>2.</b>	Open 2P41-F070B (or 2P41-F052B).	At 135RLR19, the operator attempts to turn 2P41-F070B (or 2P41-F052B) handwheel, but it does not move.	
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**PROMPT:** Regardless of which valve the candidate opens first (F070 or F052), **WHEN** the candidate attempts to open the second valve in series, **INFORM** the operator that the handwheel did not turn at all, indicate that the stem of the valve is still inside the valve.

**Note:** IF the operator notifies the SS of the failed valve at this time and asks for direction, **INFORM** the operator that it is still desired to cross tie the PSW divisions and the SS will take care of writing the Condition Report.

**(\*\* Indicates critical step)**

	At 135RLR19, the operator TURNS 2P41-F052A (or 2P41- F070A) handwheel, fully counter- clockwise.	
--	---	--

RESPONSE CUE: 2P41-F052A (or 2P41-F070A) is fully clockwise.

	At 135RLR19, the operator turns 2P41-F052B (or 2P41-F070B) handwheel, fully counter- clockwise.	
--	--	--

RESPONSE CUE: 2P41-F052A (or 2P41-F070A) is fully clockwise.

**END**  
**TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

(\*\* Indicates critical step)

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

**VENT THE SCRAM AIR HEADER**

R. A. BELCHER

LR-JP-10.15-13

7.0 Minutes

N/R

R. A. BELCHER

6/1/2005



*Energy to Serve Your World<sup>SM</sup>*



UNIT 1 (X)    UNIT 2 (X)

**VENT THE SCRAM AIR HEADER**

LR-JP-10.15-13

The task shall be completed when the operator has successfully vented the scram air header per 31EO-EOP-103.

010.015

010.015.O

**PLANT HATCH JTA IMPORTANCE RATING:**

RO 4.50

SRO 3.65

**K/A CATALOG NUMBER:** 212000A417

**K/A CATALOG JTA IMPORTANCE RATING:**

RO 4.10

SRO 4.10

**OPERATOR APPLICABILITY:** Systems Operator (SO)

31EO-EOP-103-1 (current version) 31EO-EOP-011-1 (current version)	31EO-EOP-103-2 (current version) 31EO-EOP-011-2 (current version)
--	--

31EO-EOP-103-1 (current revision) Adjustable Wrench	31EO-EOP-103-2 (current revision) Adjustable Wrench
---	---

**APPROXIMATE COMPLETION TIME:** 7.0 Minutes

**SIMULATOR SETUP:** N/A

# **UNIT 1**

## **READ TO THE OPERATOR**

### **INITIAL CONDITIONS:**

- 1.** A Reactor scram signal has been received and all the control rods did not insert to Position 02 and Reactor power is greater than 10%.
- 2.** The blue scram inlet and outlet valve lights are extinguished.
- 3.** 31EO-EOP-011-1 (RCA) is in progress.

### **INITIATING CUES:**

Vent the scram air header per 31EO-EOP-103-1.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

<b>1.</b>	Operator identifies the materials that are required.	Operator identifies the required materials and where to obtain.	
		At location 130RAR03, 1C11-F095, SCRAM AIR HEADER ISOLATION VALVE is CLOSED.	Step 3.6.1

RESPONSE CUE: N/A

		At location 130RAR03, cap is REMOVED from end of piping downstream of 1C11-R013-TV1.	Step 3.6.2
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RESPONSE CUE: N/A

<b>4.</b>	Open or verify open 1C11-R013-IV1.	At location 130RAR03, 1C11-R013-IV1, PRESSURE INSTRUMENTATION ISOLATION VALVE is OPEN.	Step 3.6.3
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RESPONSE CUE: N/A

(\*\* Indicates critical step)



	At location 130RAR03, 1C11-R013-TV1, PRESSURE INSTRUMENTATION VENT VALVE, is OPEN, Scram Air Header pressure decreasing on 1C11-PI-R013.	Step 3.6.4
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**RESPONSE CUE:** Scram Air Header pressure not decreasing on 1C11-PI-R013 or the sound of air bleeding off is not heard.

**END  
TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

## **UNIT 2**

### **READ TO THE OPERATOR**

#### **INITIAL CONDITIONS:**

- 1.** A Reactor scram signal has been received and all the control rods did not insert to Position 02 and Reactor power is greater than 10%.
- 2.** The blue scram inlet and outlet valve lights are extinguished.
- 3.** 31EO-EOP-011-2 (RCA) is in progress.

#### **INITIATING CUES:**

Vent the scram air header per 31EO-EOP-103-2.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

1.	Operator identifies the materials that are required.	Operator identifies the required materials and where to obtain.	
		At location 130RAR22, 2C11-F095, SCRAM AIR HEADER ISOLATION VALVE is CLOSED.	

RESPONSE CUE: N/A

		At location 130RAR22, cap is REMOVED from end of piping downstream of 2C11-R013-TV1.	
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RESPONSE CUE: N/A

4.	Open or verify open 2C11-R013-IV1.	At location 130RAR22, 2C11-R013-IV1, PRESSURE INSTRUMENTATION ISOLATION VALVE is OPEN.	
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RESPONSE CUE: N/A

(\*\* Indicates critical step)

	At location 130RAR22, 2C11-R013-TV1, PRESSURE INSTRUMENTATION VENT VALVE, is OPEN, Scram Air Header pressure decreasing on 2C11-PI-R013.	
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**RESPONSE CUE:** Scram Air Header pressure not decreasing on 2C11-PI-R013 or the sound of air bleeding off is not heard.

**END  
TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

**(\*\* Indicates critical step)**

# Southern Nuclear E. I. Hatch Nuclear Plant

## Operations Training JPM

<b>CROSSTIE INSTRUMENT BUS "B" TO INSTRUMENT BUS "A"</b>		
R. A. BELCHER	LR-JP-20019-06	15.0 Minutes
N/R	R. A. BELCHER	6/21/2005



*Energy to Serve Your World<sup>SM</sup>*



UNIT 1 (X)      UNIT 2 (X)



**CROSSTIE INSTRUMENT BUS "B" TO  
INSTRUMENT BUS "A"**



LR-JP-20019-06



The task shall be completed when Instrument Bus "B" is  
cross-tied to Instrument Bus "A" per 34AB-R25-002.



200.019



200.019.A

**PLANT HATCH JTA IMPORTANCE RATING:**

**RO** 4.00

**SRO** 3.64

**K/A CATALOG NUMBER:** 262001A207

**K/A CATALOG JTA IMPORTANCE RATING:**

**RO** 3.00

**SRO** 3.20

**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)



34AB-R25-002-1  
(current version)

34AB-R25-002-2  
(current version)



34AB-R25-002-1  
(current version)  
Key to Unit 2 RPS MG Set  
Room  
CAT 60 key

34AB-R25-002-2  
(current version)  
Key to Unit 2 RPS MG Set  
Room  
CAT 60 key

**APPROXIMATE COMPLETION TIME:** 15.0 Minutes

**SIMULATOR SETUP:** N/A

# **UNIT 1**

## **READ TO THE OPERATOR**

### **INITIAL CONDITIONS:**

1. Unit 1 is operating at 60% power.
2. Essential Cabinet "1B," 1R25-S037, is de-energized.
3. Instrument Bus "1B," 1R25-S065, is de-energized due to the loss of Essential Cabinet "1B," 1R25-S037.
4. 34AB-R24-001-1, "Loss of Essential AC Distribution Buses," is in progress.
5. Essential Cabinet "1B," 1R25-S037, cannot be energized due to a faulted Feeder Breaker from 600 VAC Bus "1D," 1R23-S004.
6. 34AB-R25-002-1, "Loss of Instrument Buses," is in progress.

### **INITIATING CUES:**

Energize Instrument Bus "1B," 1R25-S065, from Instrument Bus "1A," 1R25-S064, per 34AB-R25-002-1.

For **INITIAL** Operator Programs:  
**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.  
**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

<b>1.</b>	Operator identifies the procedure needed to perform the task.	Operator has identified the correct procedure as 34AB-R25-002-1.	
		At Essential Cabinet "1B," 1R25-S037, breaker 26, 120/208V CABINET 1C INSTR BUS 1B, is OPEN. Breaker switch is in the OFF position.	Step 4.9.1

RESPONSE CUE: Cabinet 1R25-S037, Breaker 26 is in the ON position.

		At Instrument Bus "1B," 1R25-S065, Breaker 39, CROSSTIE TO INSTR BUS 1A, is CLOSED. Breaker switch is in the ON position.	Step 4.9.2
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RESPONSE CUE: Bus 1R25-S065, Breaker 39 is in the OFF position.

		At Instrument Bus "1B," 1R25-S065, Breaker 40, CROSSTIE TO INSTR BUS 1A, is CLOSED. Breaker switch is in the ON position.	Step 4.9.2
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RESPONSE CUE: Bus 1R25-S065, breaker 40 is in the OFF position.

		At Instrument Bus "1A," 1R25-S064, Breaker 39, CROSSTIE TO INSTR BUS 1B, is CLOSED. Breaker is in the ON position.	Step 4.9.3
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RESPONSE CUE: Bus 1R25-S064, breaker 39 is in the OFF position.

(\*\* Indicates critical step)



	At Instrument Bus "1A," 1R25-S064, Breaker 40, CROSSTIE TO INSTR BUS 1B, is CLOSED. Breaker is in the ON position.	Step 4.9.3
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**RESPONSE CUE:** Bus 1R25-S064, Breaker 40 is in the OFF position.

**PROMPT:** IF the operator addresses restoring any of the loads of the Instrument Bus, as the Shift Supervisor, **INFORM** the operator that another operator will perform the load restoration.

**END  
TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

## **UNIT 2**

### **READ TO THE OPERATOR**

#### **INITIAL CONDITIONS:**

1. Unit 2 is operating at 60% power.
2. Essential Cabinet "2B," 2R25-S037, is de-energized.
3. Instrument Bus "2B," 2R25-S065, is de-energized due to the loss of Essential Cabinet "2B," 2R25-S037.
4. 34AB-R24-001-2, "Loss of Essential AC Distribution Buses," is in progress.
5. Essential Cabinet "2B," 2R25-S037, cannot be energized due to a faulted Feeder Breaker from 600 VAC Bus "2D," 2R23-S004.
6. 34AB-R25-002-2, "Loss of Instrument Buses," is in progress.

#### **INITIATING CUES:**

Energize Instrument Bus "2B," 2R25-S065, from Instrument Bus "2A," 2R25-S064, per 34AB-R25-002-2.

For **INITIAL** Operator Programs:

**For OJT/OJE**; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.

**For License Examinations**; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

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

1.	Operator identifies the procedure needed to perform the task.	Operator has identified the correct procedure as 34AB-R25-002-2.	
		At Essential Cabinet "2B," 2R25-S037, breaker 28, 120/208V CAB 2C INSTR BUS 2B, is OPEN. Breaker switch is in the OFF position.	Step 4.5.1

RESPONSE CUE: Cabinet 2R25-S037, Breaker 28 is in the ON position.

		At Instrument Bus "2B," 2R25-S065, Breaker 40, CROSSTIE TO INSTR BUS 2A, is CLOSED. Breaker switch is in the ON position.	Step 4.5.2
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RESPONSE CUE: Bus 2R25-S065, Breaker 40 is in the OFF position.

		At Instrument Bus "2A," 2R25-S064, Breaker 39, CROSSTIE TO INSTR BUS 2B, is CLOSED. Breaker is in the ON position.	Step 4.5.3
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RESPONSE CUE: Bus 2R25-S064, Breaker 39 is in the OFF position.

		At Essential Cabinet "2B," switch 2R26-M004 is OPEN and both keys are removed.	Step 4.5.4
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RESPONSE CUE: 2R26-M004 is CLOSED and/or one or both keys are INSTALLED.

(\*\* Indicates critical step)



	In the Unit 2 RPS MG Set Room, 2R26-M003 is CLOSED.	Step 4.5.5
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RESPONSE CUE: 2R26-M003 is OPEN.

	In the Unit 2 RPS MG Set Room, 2R26-M005 is CLOSED.	Step 4.5.6
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RESPONSE CUE: 2R26-M005 is OPEN.

PROMPT: **IF** the operator addresses restoring any of the loads of the Instrument Bus, as the Shift Supervisor, **INFORM** the operator that another operator will perform the load restoration.

**END**  
**TIME:** \_\_\_\_\_

**NOTE:** The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

**TERMINATING CUE:** We will stop here.

(\*\* Indicates critical step)