

Final Submittal

**E. I. HATCH NUCLEAR PLANT
EXAM 2002-301
50-321 & 50-366
OCTOBER 16 - 18, 21 - 25, &
OCTOBER 30, 2002,**

1. As Given Simulator Scenario Operator Actions ES-D-2

Facility: E.I.Hatch Scenario No.: 1 Op-Test No.: _____

Examiners: _____ Operators: _____

Initial Conditions: Unit is at 85% RTP, B RBCCW Pump tagged OOS for motor replacement, 2A RHR Pump OOS for maintenance, Instrument Maintenance performing HPCI Channel Functional Test surveillance. (Need to insert malfunction N21 99, E21 202A and R43 62A) SU FWLC Failure.

Turnover: Hold power constant. In Day 2 of 7 for TS 3.5.1. Perform Quarterly Surveillance for Inboard MSIV's.

Event No.	Malf. No.	Event Type*	Event Description
1		N (BOP) (SRO)	Perform MSIV Surveillance, 34SV-B21-001-2S for the Inboard MSIV's. The Outboard MSIV's are done.
2	C11_30A	C (CBO) (SRO)	2A CRD Pump trip.
3	RfN21065	C (CBO) (SRO)	Loss of feedwater heating due to 4 th stage heater bypass inadvertent operation.
4		R (CBO) (SRO)	Reduce Reactor power due to loss of feedwater heating.
5	E41_103	C (BOP) (SRO)	HPCI Inadvertent Start-Up.
6	N21_84A	I (BOP) (SRO)	Feedwater Pump Minimum Flow Recirc Valve F117 Failure (open)
7	B21_48B R43_62A E21_202A	M (ALL) C (BOP)	Steam Line B Break (After Restrictor) (Var) 2A D/G, 2A & 2B Core Spray Pumps Fail to Auto Start (Starts manually)
			SU Water Level Controller Failure

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

Event Description: Perform 34SV-B21-001-2S, MSIV Exercise and Closure Instrument
Functional Test for the Inboard MSIV's. The surveillance is complete for the Outboard
MSIV's.

Time	Position	Applicant's Actions or Behavior
	SRO	Direct the BOP to perform the Quarterly MSIV functional surveillance for the Inboard MSIV's.
	BOP	Review Precautions and Limitations. Instruct RO to monitor Rx Pressure and Main Steam Line Flow during valve stroking.
	BOP	Confirm that applicable relays are energized.
		Confirm that MSIV AC and DC Coil LEDs are illuminated.
	BOP	Direct SSS to check relay status on 2H11-P609 & P611
		Place/Confirm applicable MSIV control switch in OPEN.SLOW TEST
		Take MSIV Vlv Test Switch to TEST and HOLD.
	BOP	With CBO monitoring Reactor pressure and MSL flow and SSS monitoring relay status at 2H11-P609 and P611, the BOP will release the Test Switch immediately upon any one of the following:
		1) Relays de-energized on 2H-11-P609 & P611
		2) MSL flow change observed
		3) Reactor pressure change observed.
		When appropriate relays de-energize OR precaution 5.1.2 is met, THEN release test switch

MSIV's.

[illegible]

Op-Test No.: _____ Scenario No.: 1 Event No.: 2 Page 3 of 21
Event Description: 2A CRD Pump Trip. Execute malfunction C11 30A when directed by the
Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	ALL	Recognize the loss of the 2A CRD pump.
		1) Receive alarm "CRD Pump A Breaker Trip."

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Event Description: 2A CRD Pump Trip. Execute malfunction C11 30A when directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	CBO	Dispatches SO to investigate reason for trip OR May immediately
		start 2B CRD pump per steps 3.1 and 3.3 of procedure
		<u>34AB-C11-001-2S</u> , Loss of CRD System:
		Step 3.1 - Place CRD Flow Control, 2C11-R600, in Manual
		and DECREASE output to zero.
		Step 3.3 - Attempt to start 2B CRD Pump.
	SRO	After receiving report that 2A CRD pump cannot be restarted,
		direct operator to start the 2B CRD pump.
	CBO	Per <u>34AB-C11-001-2S</u> , starts and places 2B CRD pump in service
		as follows:
		1) Place CRD Flow Control, 2C11-R600, in Manual and
		DECREASE output to zero.
		2) Start 2B CRD Pump.
		3) Increase system flow to 59 GPM.
		4) Transfer controller to AUTO.
	SRO	• Notify on-call personnel. (Operations Duty Manager)

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[illegible]

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Event Description: Loss of Feedwater Heating due to 4th Stage Heater Bypass opening.
Execute malfunction RfN21065 per Lead Examiner direction.

Time	Position	Applicant's Actions or Behavior
	Crew	Recognize Mwe is increasing and investigate.
		May receive 4 th and 6 th Stage heater high level alarms.
	Crew	Recognize 4 th stage Feedwater Heater outlet temperature
		decreasing as indicated on SPDS or instr 2N21-R608.
	SRO	Direct actions of 34AB-N21-001-2S , Loss of Feedwater
		Heating by ordering CBO/STA to:
		1) Reduce Recirc Flow to stay within Analyzed Region.
		2) Track Feedwater temperature in accordance with 34SV-SUV-020-0S, Core Parameter Surveillance.
	CBO	Reduce/ Maintain Rx Power @ the current power level (should be approx. 84%) with Recircs per 34GO-OPS-005-2S, "Power Changes." IAW 34AB-N21-001-2S, Loss of Feedwater (I.O.A.)
	BOP	Notifies maintenance to investigate cause of heater bypass coming open. MAINTENANCE will REPORT - They will report that they were working on the wrong valve and accidentally shorted the control switch and it needs to be replaced.

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Event Description: Reactivity Change due to loss of Feedwater Heating.

Time	Position	Applicant's Actions or Behavior
	SRO	Direct power reduction due to loss of feedwater heating. (75%)
	CBO	Reduce reactor power with Recircs as directed by SRO.
		NOTE: Power may be reduced 10 to 20% depending on severity of
		feedwater temperature reduction.
	BOP/Crew	Monitor Power/Flow Map to determine need for inserting Control
		Rods due to entering Region for Potential Instability.
	SRO	Notify Load Dispatcher, on-call personnel and Resident Inspector
		of load drop.
	SRO	Review Power/Flow map requirements.

Event Description: HPCI Inadvertent Start-up. Enter malfunction E41 103 when directed by Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	BOP/Crew	Recognize and report HPCI has started from an invalid initiation signal.
		Sec SYS Auto Initiation Signal Present 2-34
	CBO	Verify reactor water level stable. May receive APRM Hi Alarm and Rx Water Level Hi alarm.
	BOP	Verify Drywell Pressure is normal.
	SRO	Direct operator to secure HPCI per 34SO-E41-001-2S, High Pressure Coolant Injection (HPCI) System.
	BOP	Secure HPCI as follows: (Critical Task)
		1) Depress AND Hold the HPCI Turbine Trip push-button.
		2) When HPCI turbine has stopped, place HPCI Aux Oil Pump in PTL.
		3) When receive "HPCI Turbine Brg Oil Press Low" alarm then, release the HPCI Turbine Trip push-button.
	CBO	Monitor reactor water level, pressure and power during the event and keep crew informed.

Event Description: Feedwater Pump Minimum Flow Recirc Valve F117 (OPEN) Failure.
Execute malfunction N21_84B when directed by Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize the following change in indications:
		1) Feed Pump Minimum Flow Recirc Valves open.
		2) Total Feedwater Flow indication decreases.
		3) Feedwater header pressure decreases.
	SRO	Directs CBO to close the Feedwater Pump Minimum Flow Recirc Valve.
	BOP	Closes Feedwater Pump Minimum Flow Recirc Valve.
		1) Monitors Reactor Water Level and Feed Pump parameters.
	SRO	Notify Ops Management, Reactor Engineering and IM's to investigate problem.
	CBO	Support Plant Operations.

Event Description: Steam Line B Break after the Flow Restrictor. Execute malfunction
when directed by Lead Examiner. Failure of 2A D/G, 2A and 2B Core Spray to
start on an Auto-start signal but may be started manually. Malfunctions R43, 62A and
E21, 202A shall be inserted at the beginning of the scenario.

Time	Position	Applicant's Actions or Behavior
	Crew	Recognize Drywell pressure and temperature increase.
		1) High Drywell Pressure alarm @ 0.65 psig.
		2) Entry into PC-1 and 2 @ Drywell Temp of 150°F.
		3) Enter 34AB-T23-002-2S , Small Pipe Break inside Primary Containment. Monitor containment.
	SRO	Direct BOP to vent the Drywell per 34SO-T48-002-2S , Containment Atmosphere Control and Dilution Systems.
	BOP	Vent the Drywell by performing the following:
		1) Open SBGT A(B) Fltr Inlet from Rx Bldg, 2T46-F001A(B)
		2) Place SBGT A(B) Fan/Filter, 2T46-D001A(B), in the RUN position.
		3) (7.2.2.3) Confirm that SBGT A(B) Fltr Disch damper, 2T46-F002A(B), OPENS.
		4) (7.2.2.4) Confirm SBGT A(B) HTR on Red Light ILLUMINATED.

Event Description: Steam Line B Break after the Flow Restrictor. Execute malfunction
when directed by Lead Examiner. Failure of 2A D/G, 2A and 2B Core Spray to
start on an Auto-start signal but may be started manually. Malfunctions R43 62A and
E21 202A shall be inserted at the beginning of the scenario.

Time	Position	Applicant's Actions or Behavior
		5) (7.2.2.5) Confirm that Standby Gas Treatment System Flow increases to 1500-4000 SCFM(CFM) as indicated on SBTG A(B) Flow To Main Stack, 2T46
		6) Open 2T48-F334A(B), Drywell Vent Isol Vlv.
		7) Open 2T48-F335A(B), Drywell Vent Isol Vlv.
		8) Open Drywell Vent Flow Cntl Vlv using 2T48-R615A(B), Drywell Flow Controller for F336A(B).
		Isolate RWCU, if time allows IAW 34SO-G31-003-2S, Section 7.5
	SRO	Order Reactor SCRAM prior to 1.85 psig Drywell Pressure.
	CBO	Manually SCRAM the Reactor using SCRAM pushbuttons.
		1) Place Mode Switch in S/D.
		2) Verify and report all rods inserted past position 02.
		3) Insert IRM's and SRM's.
		4) Place SDV Isol Vlv Switch to "ISOL" and verify closed.
		5) If not tripped, place Recircs to minimum speed.
	BOP	Perform actions of RC-2 and RC-2 after Reactor SCRAM.

Event Description: Steam Line B Break after the Flow Restrictor. Execute malfunction
when directed by Lead Examiner. Failure of 2A D/G, 2A and 2B Core Spray to
start on an Auto-start signal but may be started manually. Malfunctions R43 62A and
E21 202A shall be inserted at the beginning of the scenario.

Time	Position	Applicant's Actions or Behavior
		1) Place RFPT controller in Auto controlling +3 to +15".
		2) Place SU/LCV controller in Auto controlling +3 to +15".
		3) Place FWLC Select Switch in Single Element.
		4) If not needed for level control, THEN: Trip 1 RFPT, OPEN 2N21-F125 and CLOSE 2N21 -F110.
		5) Monitor Reactor Pressure and maintain 800 -1080 psig.
	SRO	Enters the following EOP's:
		1) RC, PC-1 and PC-2 when reach 1.85 psig in Drywell Pressure..
		2) PC-1 and PC-2 if reach 150°F Drywell temperature.
	SRO	Direct BOP and RO to verify automatic actuations occurred when Drywell pressure exceeds 1.85 psig.

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Event Description: Steam Line B Break after the Flow Restrictor. Failure of 2A D/G, 2A and 2B Core Spray to start on an Auto-start signal but may be started manually.

Time	Position	Applicant's Actions or Behavior									
	CBO/BOP	Verify and report the following occurred:									
		1) Failure of both Core Spray pumps to auto-start.									
		2) B, C and D RHR Pumps start.									
		3) Diesel Generators start and run unloaded except 2A Diesel Generator fails to start automatically.									
		4) Group II Isolation successful.									
		5) SBTG System starts.									
	BOP	Preventing Injecting IAW 31-EO-EOP-114-2S:									
		3.0 OPERATOR ACTIONS									
		<div style="border: 1px solid black; padding: 5px;"><p style="text-align: center;">NOTE</p><p>Performance of this procedure is NOT required IF 31EO-EOP-113-2S, TERMINATING AND PREVENTING INJECTION INTO THE RPV, has been performed.</p></div>									
		3.1 CORE SPRAY									
		3.1.1. CLOSE:									
		<table><thead><tr><th>VALVE</th><th>DESCRIPTION</th><th>PANEL</th></tr></thead><tbody><tr><td>2E21-F005A</td><td>INBD DISCHARGE VLV</td><td>2H11-P601</td></tr><tr><td>2E21-F005B</td><td>INBD DISCHARGE VLV</td><td>2H11-P601</td></tr></tbody></table>	VALVE	DESCRIPTION	PANEL	2E21-F005A	INBD DISCHARGE VLV	2H11-P601	2E21-F005B	INBD DISCHARGE VLV	2H11-P601
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		3.1.2. TRIP									
		<table><thead><tr><th>PUMP</th><th>DESCRIPTION</th><th>PANEL</th></tr></thead><tbody><tr><td>2E21-C001A</td><td>Core Spray Pump A</td><td>2H11-P601</td></tr><tr><td>2E21-C001B</td><td>Core Spray Pump B</td><td>2H11-P601</td></tr></tbody></table>	PUMP	DESCRIPTION	PANEL	2E21-C001A	Core Spray Pump A	2H11-P601	2E21-C001B	Core Spray Pump B	2H11-P601
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2E21-C001B	Core Spray Pump B	2H11-P601									
		<div style="border: 1px solid black; padding: 5px;"><p style="text-align: center;">CAUTION</p><p>ANY SUBSEQUENT LOCA SIGNAL WILL CAUSE THE CORE SPRAY PUMPS TO AUTO START AND WILL ALSO ALLOW THE DISCHARGE VALVE TO AUTO OPEN.</p></div>									
		3.1.3. Perform SYSTEM RESTORATION per Attachment 1 as directed by the Shift Supervisor.									

Event Description: Steam Line B Break after the Flow Restrictor. Failure of 2A D/G, 2A and 2B Core Spray to start on an Auto-start signal but may be started manually.

Time	Position	Applicant's Actions or Behavior																																				
		<p>3.2 LPCI</p> <div style="border: 1px solid black; padding: 5px;"><p style="text-align: center;"><u>CONTINUOUS RECHECK STATEMENT</u></p><p>WHILE performing the steps in this section:</p><p><u>IF</u> IMMEDIATE Prevention of LPCI injection is required, <u>THEN</u> perform the following:</p><p>a) POSITION control switches for the following valves to CLOSE:</p><table><thead><tr><th><u>VALVE</u></th><th><u>DESCRIPTION</u></th><th><u>PANEL</u></th><th></th></tr></thead><tbody><tr><td>2E11-F016A (B)</td><td>CNMT SPRAY OUTBD VLV</td><td>2H11-P601</td><td>_____</td></tr><tr><td>2E11-F028A (B)</td><td>TORUS SPRAY OR TEST VLV</td><td>2H11-P601</td><td>_____</td></tr></tbody></table><p>b) TRIP LPCI Pump(s), 2E11-C002A (B, C, D). _____</p></div> <p>3.2.1 <u>IF</u> RHR OUTBD INJ VLV, 2E11-F017A(B), can be closed using the control switch,</p> <p style="padding-left: 40px;"><u>THEN</u> CLOSE:</p> <table><thead><tr><th><u>VALVE</u></th><th><u>DESCRIPTION</u></th><th><u>PANEL</u></th><th></th></tr></thead><tbody><tr><td>2E11-F017A</td><td>RHR OUTBD INJ VLV</td><td>2H11-P601</td><td>_____</td></tr><tr><td>2E11-F017B</td><td>RHR OUTBD INJ VLV</td><td>2H11-P601</td><td>_____</td></tr></tbody></table> <div style="border: 1px solid black; padding: 5px;"><p style="text-align: center;"><u>NOTE</u></p><p>Keys for opening Unit 2 cabinets and a pre-staged nutdriver for opening links are located in the Unit 2 Key cabinet.</p></div> <p>3.2.2 OPEN the following LINKS to Override LOCA OPEN interlocks for RHR OUTBD INJ VLVs, 2E11-F017A/B:</p> <table><thead><tr><th></th><th><u>LINK</u></th><th><u>PANEL</u></th><th></th></tr></thead><tbody><tr><td>LPCI A LOOP</td><td>FF-38</td><td>2H11-P617B</td><td>_____</td></tr><tr><td>LPCI B LOOP</td><td>FF-36</td><td>2H11-P618B</td><td>_____</td></tr></tbody></table>	<u>VALVE</u>	<u>DESCRIPTION</u>	<u>PANEL</u>		2E11-F016A (B)	CNMT SPRAY OUTBD VLV	2H11-P601	_____	2E11-F028A (B)	TORUS SPRAY OR TEST VLV	2H11-P601	_____	<u>VALVE</u>	<u>DESCRIPTION</u>	<u>PANEL</u>		2E11-F017A	RHR OUTBD INJ VLV	2H11-P601	_____	2E11-F017B	RHR OUTBD INJ VLV	2H11-P601	_____		<u>LINK</u>	<u>PANEL</u>		LPCI A LOOP	FF-38	2H11-P617B	_____	LPCI B LOOP	FF-36	2H11-P618B	_____
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Event Description: Steam Line B Break after the Flow Restrictor. Failure of 2A D/G, 2A and 2B Core Spray to start on an Auto-start signal but may be started manually. Feedwater SU Level Control Valve has failed

Time	Position	Applicant's Actions or Behavior
	SRO	Direct CBO to maintain reactor water level +3 to +50 inches.
	CBO	Determines the Feedwater SU Level Control Valve has failed due to vessel level continuing to decrease. Notifies SS and maintenance. OR Throttles 2N21-E110.
		1) Coordinates with BOP to maintain level band with RCIC OR uses Feedwater manually.
	BOP	Helps maintain level band by controlling RCIC manually as needed by CBO or throttles 2N21-F110 to maintain reactor water level.
	BOP	Reports all automatic actions occurred for +1.85 psig Drywell pressure with the exception that 2A D/G, 2A & 2B Core Spray pumps failed to auto-start.
	SRO	Direct BOP to start 2A D/G and 2A & 2B Core Spray pumps.
	BOP	Start 2A Diesel Generator by performing the following:
		1) RESET the shutdown logic by depressing the Diesel
		2) Momentarily place the Diesel Start switch to START.
		3) Verify Diesel comes up to speed and voltage.
		4) Report the Diesel is running to the SS.
	BOP	:
		Start 2A and 2B Core Spray Pumps by performing the following
		1) Confirm 2E21-F031A(B), Minimum Flow Vlv is OPEN.
		2) Start 2A Core Spray Pump.

Event Description: Steam Line B Break after the Flow Restrictor. Failure of 2A D/G, 2A and 2B Core Spray to start on an Auto-start signal but may be started manually. Feedwater SU Level Control Valve has failed

Time	Position	Applicant's Actions or Behavior
		3) Start 2B Core Spray Pump
		4) Confirm room cooler automatically starts.
	BOP/CBO	Keeps SRO informed of trends on containment and reactor parameters.
	SRO	Directs BOP to commence a cooldown using bypass valves not to exceed 100°F/hr UNLESS cooldown rate has already been exceeded due to the leak. (Rx Press < 500 psig)
	BOP	Performs ONE of the following to establish $\leq 100^\circ\text{F}$ cooldown rate using a Bypass Valve:
		1) Depress the OPEN pushbutton on the Bypass Valve Opening Jack.
		2) Reduce Pressure Regulator Setpoint.
	BOP/CBO	Report to SRO that Torus Pressure is approaching 11 psig OR Drywell Temperature approaching 340°F.

Event Description: Steam Line B Break after the Flow Restrictor. Failure of 2A D/G, 2A and 2B Core Spray to start on an Auto-start signal but may be started manually.

Time	Position	Applicant's Actions or Behavior
	SRO	Direct Drywell Spray Initiation when Torus Pressure is above 11 psig OR Drywell Temperature is approaching 340°F.
		1) Verify Drywell Temperature and Pressure within Drywell Spray Initiation Limit (Graph 8)
		2) Verify Torus Level is below 215".
	BOP	Initiate Drywell Sprays by performing the following:
		1) Verify/Trip Recirc Pumps.
		2) Trip Drywell Cooling fans.
		3) Open 2E11-F021A(B), Containment Spray INBD Valve.
		4) Throttle OPEN 2E11-F016A(B), Containment Spray OTBD Valve. Must provide at least 5000 gpm to ensure effective Drywell Pressure reduction. (Critical Task)
		5) Terminate Drywell and/or Torus Sprays before Drywell negative pressure is sustained. (Critical Task)
		END SCENARIO WHEN PROPER SPRAY FLOW IS ACHIEVED AND DRYWELL PRESSURE IS DECREASING
		EAL Classification - Alert based on > 50 gpm leakage.

Facility: E.I.Hatch Scenario No.: 2 Op-Test No.: _____

Examiners: _____ Operator: _____

Initial Conditions: Unit is at 100% RTP, "2B" CRD pump is OOS for maintenance, Severe weather is predicted for the upcoming shift.

Turnover: Reduce reactor power to 90% RTP for a rod shuffle per Reactor Engineer.

Event No.	Malf. No.	Event Type*	Event Description
1		R (CBO) (SRO)	Lower Load to approx. 90% RTP per 34GO-OPS-005-2, Power Changes.
2	C11_31A	C (CBO) (SRO)	2A CRD Flow Control Valve fails CLOSED.
3	C71_57B & C11_26	CBO (N) BOP	<i>RDD RECOVERY</i> Loss of RPS "2B" with one Control Rod scrambling in due to blown fuse in other RPS Power supply.
4		N (BOP)	<i>Place the RWCU System in operation per RWCU System Quick Recovery. ("2B" Pump)</i> <i>145 DELETED</i>
5	N61_73	C (ALL)	Decreasing condenser vacuum due to in-leakage,
	N71_68B		followed by the Loss of "2B" Circ Wtr Pump
6	C11_211	M (ALL)	ATWS with control rods able to be inserted manually.
			*Scenario ends when operators begin to re-inject to
			increase water level after terminating and preventing
			injection sources. This is a critical task.

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

Event Description: Reduce reactor power to 90% RTP per 34GO-OPS-005-0S, Power Changes, for a rod shuffle per Reactor Engineer.

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

Event Description: 2A CRD Flow Control Valve fails closed

Time	Position	Applicant's Actions or Behavior
	Team	Recognizes failure/closure of 2A CRD FCV by:
		<ul style="list-style-type: none"> Panel scan
		<ul style="list-style-type: none"> Annunciator "CRD HYDRAULIC TEMP HIGH" (P603-140)
		<ul style="list-style-type: none"> Drive water DP decrease to near 0 psid
	CBO	Enters procedures:
		<ul style="list-style-type: none"> 34AR-603-140-2S, CRD HYDRAULIC TEMP HIGH
		<ul style="list-style-type: none"> 34AB-C11-001-2S, LOSS OF CRD SYSTEM
		<ul style="list-style-type: none"> 34SO-C11-005-2S, CRD SYSTEM
	CBO	Dispatches SO to CRD equipment area to:
		<ul style="list-style-type: none"> Investigate cause of 2A FCV failure, per 34AB-C11-001-2S
		<ul style="list-style-type: none"> Monitor CRD drive temperatures, per 34AR-603-140-2S
		<ul style="list-style-type: none"> Shift FCVs if required, per 34SO-C11-005-2S
	SRO	Contact Maintenance personnel for support
		REPORT: SO reports to crew that the 2A flow control station has malfunctioned. Maintenance reports that repairs can be made in approximately 2 hours.
		SO also reports two CRD drives at 255 degrees F, temperature of others is slowly increasing

Event Description: 2A CRD Flow Control Valve fails closed

Time	Position	Applicant's Actions or Behavior
	SRO	Directs CBO to place 2B FCV into service
	CBO	Transfers CRD FCV 's per 34SO-C11-005-2S by:
		<ul style="list-style-type: none"> • Directs SO to locally shift CRD FCV
		<ul style="list-style-type: none"> • At 2H11-P603, places 2C11-R600 to Manual
		REPORT: SO reports CRD FCV's have been shifted and that
		CRD temperatures are decreasing
	CBO	Returns CRD System to normal configuration by:
		<ul style="list-style-type: none"> • At 2H11-P603, places 2C11-R600 to AUTO
		<ul style="list-style-type: none"> • Confirming system parameters are normal
		<ul style="list-style-type: none"> • Annunciator "CRD HYDRAULIC TEMP HIGH" clears
	CBO	Reports to SRO that CRD flow control valves have been shifted
		and the CRD System has been restored to normal configuration

Event Description: Loss of 2B RPS Bus with one control rod scrambling in due to a blown fuse in the other power supply.

Time	Position	Applicant's Actions or Behavior
	CBO	Stop power decrease, if in progress.
	TEAM	<ul style="list-style-type: none"> Recognize loss of 2B RPS bus
		<ul style="list-style-type: none"> Dispatches SO to investigate cause of 2B RPS bus loss
	BOP	Enters 34AB-C71-002-2S, Loss of RPS, and verifies the
		following automatic actions per Att. 3 of 34AB-C71-002-2S:
		<ul style="list-style-type: none"> Half scram on RPS Channel B
		<ul style="list-style-type: none"> Listed Group 1, 2, and 5 isolation valve closure
		<ul style="list-style-type: none"> MCRECS shifts to pressurization mode (calls U1 CBO)
		<ul style="list-style-type: none"> Steam Packing Exhausters trip
	CBO/TEAM	Recognize control rod scram by either:
		<ul style="list-style-type: none"> "ROD DRIFT" Annunciator (P603-247)
		<ul style="list-style-type: none"> Green full-in light illuminate on full core display
		<ul style="list-style-type: none"> OD7 following bus restoration, and scram reset
	SRO	Contact Maintenance for support in restoration of 2B RPS bus
		and determination of cause of rod scram
	SRO	Determine applicable Tech Specs due to loss of 2B RPS
		(T S 3.4.5)
		(T S 3.1.3)

Event Description: Loss of 2B RPS Bus with one control rod scrambling in due to a blown fuse in the other power supply.

Time	Position	Applicant's Actions or Behavior
	SRO	Upon discovery of scrambled rod:
		• Contact Maintenance to determine cause and perform
		corrective action
		• Direct CBO to enter 34AB-C11-004-2S, Mispositioned
		Control Rods
		REPORT: The SO reports that 2B RPS M/G set has tripped.
		Workers in the area of the 2D 600VAC bus report that
		a mop handle fell against the local panel causing the
		breaker to the 2B RPS M/G set to trip open.
	SRO	• Directs the BOP to transfer 2B RPS to the alternate supply
		OR
		• Directs the SO to reclose the breaker and restart the
		2B RPS M/G set
	BOP	If directed to transfer 2B RPS to the alternate supply:
		• At panel 2H11-P610, CONFIRM that power is available
		• Place the Power Source Select switch to ALT B
		on panel 2H11-P610.

Event Description: Loss of 2B RPS Bus with one control rod scrambling in due to a blown fuse in the other power supply.

Time	Position	Applicant's Actions or Behavior
	BOP	Upon restoration of the 2B RPS bus:
		• Reset ½ scram
		• Reset ½ Group 1 isolation
		• Reset ½ Group 2 isolation
		• Reset radiation monitors
		• Restore Drywell Floor and Equipment Drain sumps
		Open 2G11-F004 and 2G11-020 (P601)
		• Restore Fission Product Monitoring system
		Open 2D11-F052, F053 & F072 (P700)
		• Enter 34SO-G31-001-2S to restore RWCU system
		• Reset TIP system at 2H11-P607
	SRO	Contacts STA/Reactor Engineering for recommendations for
		control rod recovery
		REPORT: Reactor Engineering recommends that control rod
		02-23 be recovered by continuous withdrawal.
		REPORT: Maintenance reports that fuse in other RPS supply was
		found blown. Fuse will be replaced when directed by
		SRO.

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

Event Description: Loss of 2B RPS Bus with one control rod scrambling in due to a blown fuse in the other power supply.

Time	Position	Applicant's Actions or Behavior
	SRO	Directs Maintenance to replace fuse in 2A RPS supply
	SRO	Directs CBO to recover control rod 02-23 upon fuse replacement
		by continuous withdrawal to pre-event position
	CBO	Enters 34GO-OPS-065-0S, Control Rod Movement, and withdraws
		control rod 02-23 to pre-event position by continuous withdrawal
		as recommended by STA/Reactor Engineering
	SRO/CBO	Perform pre-brief per att. 2 of 34GO-OPS-065-0S, Control Rod
		Movement, prior to control rod withdrawal
	CBO	Continuously withdraws control to position 48 by performing the
		following:
		• Selects control rod
		• Places EMERG IN NOTCH OVERRIDE Sw. to
		OVERRIDE position
		• Places ROD MOVEMENT CONTROL Sw to OUT NOTCH
		NOTE: The two steps above are performed simultaneously.
		• Performs coupling check after rod has settled at position
		48 by attempting to withdraw the control rod and verifying
		that Annunciator "ROD OVERTRAVEL" (P603-248)
		is not received.

Event Description: Return RWCU system to service per 34SV-G31-001-2S, Section 7.6.2, RWCU System Quick Recovery

Time	Position	Applicant's Actions or Behavior
	SRO	Directs the BOP to place the RWCU system into service with the
		"2B" pump in service per 34SO-G31-001-2S, Section 7.6.2,
		RWCU System Quick Recovery.
	BOP	Enters 34SO-G31-001-2S, reviews Precautions and Limitations
		Enters section 7.6.2, proceeds to Att. 8 to place "B" pump in service
		Dispatches SO to RWCU equipment area for support activities
		Determines that prewarming is not required
		Throttles open 2G31-F044
		Contacts SSS for installation of jumpers per Att. 4
		Opens 2G31-F001
		Slowly opens 2G31-F004
		Contacts SO locally to monitor fault indicator
		Places 2G31-C001B control switch to START
		With SO locally returns demins to service
		Reports to SRO that RWCU system has been placed in service

Event Description: Decreasing Condenser vacuum due to in-leakage followed by a trip of the 2B Circ Water Pump

Time	Position	Applicant's Actions or Behavior
	TEAM	Recognizes condenser vacuum is decreasing by:
		• Decrease in generator output
		• Decreasing condenser vacuum trend
		• Annunciators "TURBINE VACUUM LOW" (P650-102)
		"INLET FLOW TO HOLDUP LINE HIGH" (P600-1-020)
		"PRETREATMENT O/G RADIATION DOWNSCALE/INOP"
		(P601-428)
	SRO	Directs CBO to rapidly reduce reactor power with Recirc flow to
		restore Condenser vacuum to >25"
	CBO	Initiates a rapid power reduction with Recirc flow per
		34GO-OPS-005-0S, Power Changes.
	SRO	Directs BOP to enter 34AB-N61-002-2S, Main Condenser Vacuum
		Low, and attempt to determine cause of vacuum decreasing.
	BOP	Dispatches SO to investigate and determine cause of
		decreasing condenser vacuum
	SRO	Contacts Maintenance to assist in determination of cause of
		decreasing condenser vacuum

Event Description: Decreasing Condenser vacuum due to in-leakage followed by a trip of the 2B Circ Water Pump

Time	Position	Applicant's Actions or Behavior
		REPORT: SO reports that Maintenance has found air
		in-leakage on south end of the condenser.
		NOTE: Power reduction will result in an increase in condenser
		vacuum. When power reduction is stopped, vacuum
		continues to decrease.
	BOP	Reports to SRO that 2B Circ Water Pump has tripped as indicated
		by the following:
		• Amber light indication above pump control switch
		• Condenser vacuum decreasing more rapidly
	BOP	Dispatches SO to investigate cause of 2B Circ Water Pump trip
	SRO	Determines that Condenser vacuum is decreasing and will reach
		setpoint for a turbine trip before in-leakage can be stopped.
	SRO	Directs CBO to:
		• Insert a manual scram
		• Place mode switch to shutdown
	CBO	CBO depresses scram pushbuttons and places Reactor Mode
		Switch to SHUTDOWN and reports to the SRO:
		• All rods are not inserted (ATWS)

Op-Test No.: _____ Scenario No.: 2 Event No.: 6 Page 1 of 5

Event Description: Reactor scram ATWS (With capability to manually insert control rods).

Time	Position	Applicant's Actions or Behavior
	TEAM/CBO	Recognize failure of all control rods to insert on reactor scram.
	SRO	<ul style="list-style-type: none"> Enters EOP flow charts RCA and CP-3
		<ul style="list-style-type: none"> Enters EOP flow charts PC-1 and PC-2
		<ul style="list-style-type: none"> Directs CBO to perform RC-1 actions
		<ul style="list-style-type: none"> Directs BOP to perform RC-2 and RC-3 actions
	CBO	Per RC-1 placard completes the following:
		<ul style="list-style-type: none"> Insert SRM/IRM detectors
		<ul style="list-style-type: none"> Shift APRM/IRM recorders
		<ul style="list-style-type: none"> Range IRM's
	BOP	Per RC-2 placard completes the following:
		<ul style="list-style-type: none"> Places RFPT controller in auto with setpoint +3" to +15"
		<ul style="list-style-type: none"> Places SU/LCV controller in auto with setpoint +3" to +15"
		<ul style="list-style-type: none"> Place FWLC to single element
		<ul style="list-style-type: none"> Open 2N21-F125
		<ul style="list-style-type: none"> Trip one RFPT

Event Description: Reactor scram ATWS (With capability to manually insert control rods).

Time	Position	Applicant's Actions or Behavior
	SRO	Directs CBO to:
		<ul style="list-style-type: none"> Confirm mode switch in shutdown
		<ul style="list-style-type: none"> Confirm ARI initiated
		<ul style="list-style-type: none"> Confirm Recirc runback to minimum
		<ul style="list-style-type: none"> Trip Recirc pumps if power is >5%
		<ul style="list-style-type: none"> Reset ARI and insert control rods per 31EO-EOP-103-2S
		<ul style="list-style-type: none"> Monitor reactor power for peak to peak oscillations >25%
	SRO	Directs BOP to:
		<ul style="list-style-type: none"> Initiate LLS for pressure control
		<ul style="list-style-type: none"> Reduce pressure set to <845 psig if turbine is off-line
		and any MSL is open
		<ul style="list-style-type: none"> Inhibit ADS
		<ul style="list-style-type: none"> Bypass MSIV low RWL isolation interlocks per EOP-100
		<ul style="list-style-type: none"> Override 2P41-F316 isolation per EOP-100
	CBO	<ul style="list-style-type: none"> Confirms mode switch in shutdown
		<ul style="list-style-type: none"> Confirms ARI initiated
		<ul style="list-style-type: none"> Confirms Recirc runback to minimum
		<ul style="list-style-type: none"> Trips Recirc pumps if power is >5%
		<ul style="list-style-type: none"> Resets ARI

Event Description: Reactor scram ATWS (With capability to manually insert control rods).

Time	Position	Applicant's Actions or Behavior
	CBO	Enters 31EO-EOP-103-2S and performs the following:
		<ul style="list-style-type: none"> • Directs SSS to place ARI to TEST locally
		<ul style="list-style-type: none"> • Places reactor mode switch to REFUEL
		<ul style="list-style-type: none"> • Places RWM bypass switch to BYPASS
		<ul style="list-style-type: none"> • Directs SSS to install jumpers to override auto scrams
		<ul style="list-style-type: none"> • Establishes adequate drive water pressure to drive rods by:
		1) Resetting scram and adjusting 2C11-F003, or
		2) Starting second CRD pump and adjusting CRD flow
		Controller in MANUAL
		<ul style="list-style-type: none"> • Drives selected control rods with Emerg In Notch Override
		Switch in the EMER ROD IN or Rod Movement Switch
		NOTE: Rods selected will be at STA recommendation or central
		Rods in a black-and-white pattern
		<ul style="list-style-type: none"> • Reports control rod insertion in progress to SRO
		<ul style="list-style-type: none"> • Places SDV Isol Test switch to NORM, when scram is reset
		<ul style="list-style-type: none"> • When "SCRAM DISCH VOL NOT DRAINED" alarm clears,
		<ul style="list-style-type: none"> • Repeats manual scram, observing for rod movement
	BOP	Performs the following:
		<ul style="list-style-type: none"> • Places ADS inhibits switches to OVERRIDE
		<ul style="list-style-type: none"> • Lowers EHC pressure set to <845 psig by depressing PB
		<ul style="list-style-type: none"> • Reports to SRO EHC pressure set at <845 psig

Event Description: Reactor scram ATWS (With capability to manually insert control rods)

Time	Position	Applicant's Actions or Behavior
	SRO	Determines that conditions to Terminate and Prevent Injection per
		CP-3 to lower RWL to less than -60" have been met, and orders
		the BOP to:
		<ul style="list-style-type: none"> • Terminate and Prevent all injection per 31EO-EOP-113-2S,
		Excepted from:
		-Boron
		-RCIC
		-CRD
		To lower RWL to below -60"
	BOP	Terminates and Prevents injection per 31EO-EOP-113-2S,by
		performing the following:
		<ul style="list-style-type: none"> • Closes 2N21-F110
		<ul style="list-style-type: none"> • Closes 2N21-F125
		<ul style="list-style-type: none"> • Reduces speed of running RFPT to lower discharge
		pressure to less than reactor pressure
		<ul style="list-style-type: none"> • Trips HPCI and places Aux Oil pump to PTL
		<ul style="list-style-type: none"> • Directs SSS to perform T&P actions for LPCI and Core
		Spray
		<ul style="list-style-type: none"> • Closes 2E21-F005A & F005B, and trips Core Spray pumps
		<ul style="list-style-type: none"> • Closes 2E11-F017A & F017B
		Reports to SRO that Terminate & Prevent actions are complete

Event Description: Reactor scram ATWS (With capability to manually insert control rods).

Time	Position	Applicant's Actions or Behavior
	CBO/BOP	Monitors and reports Reactor Power and RWL to SRO
	BOP	Reports RWL is below -60"
	SRO	<ul style="list-style-type: none"> Recognizes conditions met to end Terminate and Prevent. Determines appropriate RWL band. Directs BOP to end Terminate and Prevent, and
		establish injection with table 13 systems to maintain
		RWL between -185" and -60"
	BOP	Establish injection to maintain RWL between -185" and -60" by:
		<ul style="list-style-type: none"> Opening 2N21-F110 or 2N21-F125, AND increasing the
		speed of a running RFPT to greater than reactor pressure,
		or
		<ul style="list-style-type: none"> Placing HPCI Aux Oil pump in AUTO and placing HPCI
		into service (Critical Task)
	BOP	Will report to SRO that injection has been established and RWL
		Is being maintained in the band given
		Scenario ends when RO begins injection to maintain RWL
		EAL Classification - Alert based on Failure of RPS to initiate and
		Complete a Scram, SAE if SBLC is injected.

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

Examiners: _____ Operators: _____

Initial Conditions: Plant is at 58% RTP with 2A RFPT in operation. Severe weather is predicted for the upcoming shift, RCIC Mechanical Overspeed Trip E51_61, G11_63B/D, G11_218A/B Fail to Isolate on Grp II, P64_193B B DW Chiller trip, HPCI failure to start E41_107.

Turnover: Start the 2nd RFPT and increase power to full load.

Event No.	Malf. No.	Event Type*	Event Description
1		N (BOP) (SRO)	Start the 2 nd RFPT per 34SO-N21-007-2S section 7.1.11.
2		R (CBO) (SRO)	Commence load increase after starting RFPT.
3	C51_14A	I (CBO) (SRO)	"A" APRM fails INOP.
4	P64_193C	C(BOP) (SRO)	2A Drywell Chiller Compressor Failure.
5	B31_41A	C (CBO)	"A" Recirc Pump high vibes. Operator will trip.
6	S11_161 R43_239A	M(ALL) C(BOP)	Loss of off-site power due to storm. 2A D/G Tie Breaker Failure to Auto Close.
7	B31_210B	M(ALL)	Recirc suction piping leak. Small enough that crew can control parameters for loss of all high pressure feed.
			*Scenario ends with Emergency Depressurization and level restored above TAF.

* (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: Start the second RFPT per 34SO-N21-007-2S, "Condensate and Feedwater System," section 7.1.11. 2B RFPT is windmilling and step 7.1.11.4 has been completed.

Time	Position	Applicant's Actions or Behavior
	SRO	Directs BOP to place 2B RFPT into service per
		34SO-N21-007-2S, section 7.1.11
	BOP	Enters 34SO-N21-007-2S and reviews Precautions and Limitations,
		Places 2B RFPT into service by:
		<ul style="list-style-type: none"> • Confirming status of 2B RFPT
		<ul style="list-style-type: none"> • Trip & reset RFPT
		<ul style="list-style-type: none"> • Raise pump speed with the Speed Setter
		<ul style="list-style-type: none"> • Direct SO to close RFPT drains locally
		<ul style="list-style-type: none"> • Raise speed to 2100 rpm (+ 100)
		<ul style="list-style-type: none"> • Transfer control to M/A station
		<ul style="list-style-type: none"> • Place 2B RFPT into service by increasing pump speed
		with M/A station in Manual until pump flows are balanced.
		<ul style="list-style-type: none"> • Transfer M/A station to Auto
		<ul style="list-style-type: none"> • Report to SRO that 2B RFPT has been placed in service

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

Event Description: Commence load increase after placing 2B RFPT in service.

Time	Position	Applicant's Actions or Behavior
	SRO	Directs CBO 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.
	CBO	Enters the following procedures and reviews Precautions and
		Limitations:
		• 34GO-OPS-005-2S, "Power Changes"
		• 34SO-B31-001-2S, "Recirculation System"
	CBO	Increases reactor power with Recirc flow increase per
		Section 7.1.4, of 34SO-B31-001-2S by slowly adjusting
		Recirc Master Flow Controller.
	CBO	Monitors power increase by observing APRM and generator
		output indications.

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

Event Description: "A" APRM fails INOP

Time	Position	Applicant's Actions or Behavior
	CBO	Responds to Annunciator alarms:
		• "APRM/OPRM TRIP" (P603-210)
		• "ROD OUT BLOCK" (P603-238)
		• "RMCS/RWM ROD BLOCK OR SYS TROUBLE"
		(P603-239)
		Enters 34AR-603-210-2S for "APRM/OPRM TRIP"
	CBO	Confirms on APRM/OPRM ODA on 2H11-P603
		• 2A APRM INOP is indicated
		Confirms on APRM/OPRM ODA on 2H11-P608
		• 2A APRM INOP is indicated
		• CPU FAILURE is indicated
		Reports that 2B31-R614, Recirc Drive Flow recorder on 2H11-P602
		Is indicating downscale

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

Event Description: "A" APRM fails INOP

Time	Position	Applicant's Actions or Behavior
	SRO	Directs CBO to bypass "A" APRM with bypass switch on 2H11-P603.
	CBO	Places APRM bypass switch on 2H11-P603 to the "A" position, Reports to the SRO that "A" APRM has been bypassed.
		NOTE: Alarms (210) and (238) clear when A APRM is bypassed.
		Alarm (239) does not clear due to RWM
	SRO	Contacts Maintenance personnel to investigate cause of "A" APRM inoperability.
	SRO	Enters Tech Specs and TRM to determine applicable RAS for inoperability of "A" APRM.
		• T. S. Table 3.3.1.1-1 Item (2)
		• TRM Table 3.3.2-1 Item (3)

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

Event Description: 2A Drywell Chiller Compressor Failure.

Time	Position	Applicant's Actions or Behavior
	BOP	Recognizes running Drywell Chiller has tripped by the following:
		<ul style="list-style-type: none"> Alarm "PANEL 2H11-P700 SYSTEM TROUBLE" (P650-225)
		<ul style="list-style-type: none"> At Panel 2H11-P700, acknowledges alarm "DRWL CHILLED
		WTR B006A SAFETY S/D" (P700-105) and observes by
		light indication that chillers are not operating
	BOP	Reports to SRO that Drywell Chillers are not operating and
		dispatches SO to attempt local chiller start
	Crew	Recognize increasing Drywell temperature and pressure trend by:
		SPDS and recorder trends and the following alarms:
		<ul style="list-style-type: none"> "PRIMARY CNMT PRESSURE HIGH" (P603-115)
		<ul style="list-style-type: none"> "PANEL 2H11-P654 SYSTEM TROUBLE" (P650-214)
		<ul style="list-style-type: none"> "PANEL 2H11-P657 SYSTEM TROUBLE" (P650-224)
		<ul style="list-style-type: none"> "DRYWELL TEMP HIGH" (P654-066)
		<ul style="list-style-type: none"> "DRYWELL TEMP HIGH" (P657-043)
		<ul style="list-style-type: none"> Numerous alarms on P654 indicating Drywell Cooling Unit
		Discharge Air Temp High

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

Event Description: 2A Drywell Chiller Compressor Failure.

Time	Position	Applicant's Actions or Behavior
	SRO	Directs BOP to initiate venting of the drywell per 34SO-T48-002-2S
		utilizing the CAD System
	BOP	Initiates drywell venting by:
		• OPENS 2T46-F003A(B) AND/OR 2T46-F001A(B)
		• PLACES SBGT A(B) in RUN position
		• CONFIRMS 2T46-F002A(B) OPENS
		• CONFIRMS SBGT A(B) HTR Red Light ILLUMINATES
		• CONFIRMS SBGT Flow increases to 1500-4000 SCFM
		• OPENS 2T48-F334A(B)
		• OPENS 2T48-F335A(B)
		• OPENS 2T48-F336A(B)

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

Event Description: 2A Drywell Chiller Compressor Failure.

Time	Position	Applicant's Actions or Behavior
	CREW	Recognizes Drywell pressure is increasing with venting in progress
	SRO	<ul style="list-style-type: none"> • Directs BOP to initiate fast venting per 34SO-T48-002-2S
		<ul style="list-style-type: none"> • Directs Maintenance to Drywell Chiller room to assist in
		restart of a Drywell Chiller
		<ul style="list-style-type: none"> • Directs BOP to enter 34AB-T47-001-2S, Loss of DW Cooling
	BOP	Initiates fast venting by performing the following:
		<ul style="list-style-type: none"> • OPENS 2T48-F319
		<ul style="list-style-type: none"> • OPENS 2T48-F320
		NOTE: With fast venting in progress, drywell pressure is
		decreasing, but drywell temperature is increasing
		REPORT: SO reports that the 2B Drywell Chiller has been started
		and investigation will continue into cause of 2A trip
	SRO	Enters EOP flow charts PC-1 and PC-2 if entry conditions are met
		due to increasing drywell temperature and/or pressure
	SRO	Directs BOP to place H2O2 analyzers into service when Drywell
		Temperature reaches 150 degrees F

Op-Test No.: _____ Scenario No.: 3 Event No.: 5 Page 1 of 2

Event Description: "2A" Recirc Pump high vibration. Operator will trip.

Time	Position	Applicant's Actions or Behavior
	CBO	Acknowledges and announces Annunciator alarm "PUMP
		MOTOR A VIBRATION HIGH" (P602-104)
	SRO	Directs CBO to terminate power ascension
	CBO	Enters 34AR-602-104-2S
		<ul style="list-style-type: none"> • Depresses vibration A/B Reset Pushbutton
		<ul style="list-style-type: none"> • Reports to SRO that alarm does not reset.
		<ul style="list-style-type: none"> • Informs SRO of requirement to reduce the speed of 2A
		and 2B together per 34GO-OPS-005-2S
	SRO	Directs CBO to commence power reduction until vibration alarm
		can be reset or Recirc pumps are at minimum speed.
	CBO	Commences power reduction per 34GO-OPS-005-2S and
		34SO-B31-001-2S.
	CBO	Reduces Recirc pump speed with Master Flow Controller to
		45% speed. Transfers to individual M/A stations in manual and
		reduces speed of pumps together to minimum.
	CBO	Depresses vibration reset pushbutton periodically during
		speed/power reduction.

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

Event Description: "2A" Recirc Pump high vibration. Operator will trip.

Time	Position	Applicant's Actions or Behavior
	CBO	Reports to SRO that Recirc is at minimum speed and vibration
		alarm has not reset.
	SRO	Directs CBO to secure the 2A Recirc pump per 34SO-B31-001-2S.
	CBO	Places 2A Recirc M/G set control switch to trip.
		Closes 2A Recirc pump discharge valve.
	SRO	Directs CBO to enter 34AB-B31-001-2, "Reactor Recirculation
		Pump(s) trip, or Recirc Loops Flow Mismatch."
	CBO	Enters 34AB-B31-001-2 and performs the following:
		<ul style="list-style-type: none"> • With assistance from STA determine location on the
		Power/Flow map
		<ul style="list-style-type: none"> • Inform SRO of proximity to RPI
		<ul style="list-style-type: none"> • Throttle open 2A Recirc pump discharge valve
	SRO	Enter Tech Specs and determine applicable RAS for single loop
		operation of the Recirc system. (3.4.1)
	SRO	Directs CBO to prepare to insert control rods to exit RPI, if
		operating in the region
		Notify Management of unit status

Op-Test No.: _____ Scenario No.: 3 Event No.: 6 Page 1 of 3

Event Description: LOSP due to storm. 2A EDG output breaker fails to auto close.
RCIC and HPCI fail to auto start, 2G11-F019 and 2G11-F020 fail to close on isolation signal.

Time	Position	Applicant's Actions or Behavior
	TEAM	Recognize LOSP / Reactor Scram
	SRO	Enters RC flow chart and directs:
		<ul style="list-style-type: none"> • CBO to perform RC1 and enter 34AB-C71-001-2S
		<ul style="list-style-type: none"> • BOP to perform RC2 & RC3
		<ul style="list-style-type: none"> • CBO verify automatic actions for LOSP
	CBO	Reports:
		<ul style="list-style-type: none"> • All control rods inserted
		<ul style="list-style-type: none"> • All EDGs have started.
		<ul style="list-style-type: none"> • 2E 4160 VAC bus is not energized
		<ul style="list-style-type: none"> • 2G 4160 VAC bus is powered from 2C EDG
	SRO	Directs BOP to enter:
		<ul style="list-style-type: none"> • 34AB-R43-001-2S, "Diesel Generator Recovery"
		<ul style="list-style-type: none"> • 34AB-R22-002-2S, "Loss of 4160V Emergency Buses"
		<ul style="list-style-type: none"> • 34AB-R22-003-2S, "Station Blackout"
	BOP	Reports to SRO that:
		<ul style="list-style-type: none"> • HPCI and RCIC have failed to start
		<ul style="list-style-type: none"> • LLS has initiated and is controlling reactor pressure.
		<ul style="list-style-type: none"> • SO & Maint. to be contacted for HPCI & RCIC recovery
		<ul style="list-style-type: none"> • 2B RHR & 2B Core Spray pumps are running

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

Event Description: LOSP due to storm. 2A EDG output breaker fails to auto close. RCIC and HPCI fail to auto start, 2G11-F019 and 2G11-F020 fail to close on isolation signal.

Time	Position	Applicant's Actions or Behavior
	BOP	Per 34AB-R43-001-2S, "Diesel Generator Recovery"
		• With 2A EDG Speed Adjust lowers frequency to 57 hz
		• With 2A EDG Speed Adjust raises frequency to 60 hz
		• Confirms 2A EDG output break closes energizing
		2E 4160 VAC bus
		• Reports to SRO that 2E 4160 bus is now energized.
		• Reports 2A RHR & 2A Core Spray pumps are running
	SRO	• Directs BOP to continue efforts to restore electrical loads.
		• Requests control of 1B EDG from Unit 1
		NOTE: 1B EDG will auto tie to 2F 4160V bus on transfer
	BOP	Dispatches SO locally to:
		• Restore 125/250 VDC battery chargers
		• Restart RPS M/G sets
		• Reset breaker for SSAC
	TEAM	Monitors Primary Containment for EOP entry conditions
	SRO	Enters EOP flow charts PC-1 and PC-2 when entry conditions are met. (Initial entry on high drywell temperature)
	SRO	Directs BOP to place RHR in Torus spray mode when primary containment pressure exceeds 1.85 psig

Op-Test No.: _____ Scenario No.: 3 Event No.: 6 Page 3 of 3

Event Description: LOSP due to storm. 2A EDG output breaker fails to auto close.
RCIC and HPCI fail to auto start, 2G11-F019 and 2G11-F020 fail to close on isolation signal.

Time	Position	Applicant's Actions or Behavior
	BOP	Places RHR into Torus spray mode of operation by:
		<ul style="list-style-type: none"> PLACES 2E11-S17A(B), Containment Spray Vlv Control.
		switch in the MANUAL position
		<ul style="list-style-type: none"> Confirms RHR pump(s) running in selected loop
		<ul style="list-style-type: none"> Confirms 2E11-F017A(B) CLOSED
		<ul style="list-style-type: none"> Confirms 2E11-F024A(B) CLOSED
		<ul style="list-style-type: none"> OPENS 2E11-F028A(B), Torus Spray OR Test Vlv.
		<ul style="list-style-type: none"> Throttles OPEN 2E11-F027A(B), Torus Spray Vlv.
		<ul style="list-style-type: none"> Reports to SRO that RHR is in the Torus spray mode
	CBO	While performing 34AB-C71-001-2S, attachment 1 for Group
		Isolations, observes and reports:
		<ul style="list-style-type: none"> 2G11-F019 and 2G11-F020 have failed to isolate
		<ul style="list-style-type: none"> 2G11-F019 and 2G11-F020 will not close with switch
		<ul style="list-style-type: none"> SO to be dispatched locally to attempt closure
	CBO/BOP	Attempts to restore CRD by performing the following:
		<ul style="list-style-type: none"> Depresses Pump A and/or Pump B LOCA reset PB
		<ul style="list-style-type: none"> Starts 2A or 2B CRD pump
		<ul style="list-style-type: none"> Enters 34SO-C11-005-2S, section 7.3.7 and dispatches
		SO to CRD equipment area to increase CRD flow
		<ul style="list-style-type: none"> Starts standby CRD pump

Op-Test No.: _____ Scenario No.: 3 Event No.: 7 Page 1 of 4

Event Description: Recirc suction pipe leaking. Small enough that crew can control parameters for loss of all high pressure feed.

Time	Position	Applicant's Actions or Behavior
	TEAM	Recognizes leak in primary containment by the any of the following:
		<ul style="list-style-type: none"> • Primary Containment pressure and temperature rate of change has increased significantly.
		<ul style="list-style-type: none"> • RWL has begun to trend downward at a higher rate.
	SRO	Directs BOP to place RHR into Drywell spray mode when the following conditions are met:
		<ul style="list-style-type: none"> • Torus pressure above 11 psig
		<ul style="list-style-type: none"> • Torus water level < 215"
		<ul style="list-style-type: none"> • In safe area of DWSIL curve
		NOTE: Drywell sprays may not be initiated at this time if,
		Adequate core cooling is threatened.
	BOP	If directed by SRO to spray the Drywell will:
		<ul style="list-style-type: none"> • Verify Recirc pumps are shutdown
		<ul style="list-style-type: none"> • Shutdown Drywell cooling fans
		<ul style="list-style-type: none"> • Confirm safe area of the DWSIL curve
		<ul style="list-style-type: none"> • Secure Torus sprays in loop selected for Drywell sprays
		<ul style="list-style-type: none"> • Open 2E11-F021A(B)
		<ul style="list-style-type: none"> • Throttle open 2E11-F016A(B)
		<ul style="list-style-type: none"> • Confirm Drywell pressure is decreasing

Op-Test No.: _____ Scenario No.: 3 Event No.: 7 Page 2 of 4

Event Description: Recirc suction pipe leaking. Small enough that crew can control parameters for loss of all high pressure feed.

Time	Position	Applicant's Actions or Behavior
	SRO	Determine from RWL trend and injection systems status that RWL cannot be maintained above -155"
	SRO	Transitions from RC/L to CP-1 Alternate Level Control for RWL control
	SRO	Directs the following:
		<ul style="list-style-type: none"> • CBO to Inhibit ADS
		<ul style="list-style-type: none"> • BOP to align and operate all available table 8 and 2A systems for injection. RHR pumps operating in Torus and/or Drywell Spray mode are to be aligned in LPCI mode.
	CBO	Inhibits ADS by:
		<ul style="list-style-type: none"> • Placing ADS Logic Inhibit switches to INHIBIT position
		<ul style="list-style-type: none"> • Verify white inhibit lights illuminate
	BOP	Aligns table 8 and table 2A system for injection by:
		<ul style="list-style-type: none"> • Confirming 2A and 2B Core Spray Pumps operating
		<ul style="list-style-type: none"> • Confirming 2A and 2B RHR pumps are operating
		NOTE: At this time if, RHR pumps are operating in Torus and/or Drywell spray modes, the BOP will align for LPCI injection mode by closing containment spray valves.

Op-Test No.: _____ Scenario No.: 3 Event No.: 7 Page 3 of 4

Event Description: Recirc suction pipe leaking. Small enough that crew can control parameters for loss of all high pressure feed.

Time	Position	Applicant's Actions or Behavior
	BOP	Will report the following systems aligned and operating:
		<ul style="list-style-type: none"> • 4 table 8 systems
		<ul style="list-style-type: none"> • 1 table 2A system
	SRO	Wait until RWL drops to below -155" and:
		<ul style="list-style-type: none"> • Determine that RWL cannot be maintained >-185"
		<ul style="list-style-type: none"> • Determine that 4 table 8 systems are aligned and operating
		<ul style="list-style-type: none"> • Before RWL drops to -185" transition to point G for
		Emergency Depress
	SRO	Before RWL drops to -185" SRO will:
		<ul style="list-style-type: none"> • Determine all control rods are inserted beyond 02
		<ul style="list-style-type: none"> • Determine that Torus water level is >57.5"
		<ul style="list-style-type: none"> • Direct CBO to OPEN 7 ADS valves
	CBO	Open 7 ADS by performing the following at 2H11-P602:
		<ul style="list-style-type: none"> • Place control switches for 7 ADS valves to OPEN
		<ul style="list-style-type: none"> • Verify all valves open by amber lights and SPDS
		<ul style="list-style-type: none"> • Verify reactor pressure is decreasing
		(Critical Task-First valve open prior to reaching -185" RWL)
	SRO	Direct BOP to confirm low pressure systems injection upon reactor
		pressure reduction below shutoff head of pumps

Op-Test No.: _____ Scenario No.: 3 Event No.: 7 Page 4 of 4

Event Description: Recirc suction pipe leaking. Small enough that crew can control parameters for loss of all high pressure feed.

Time	Position	Applicant's Actions or Behavior
	BOP	Restores RWL to above TAF by:
		• Confirming injection valves open
		• Confirming RHR and Core Spray system flow increasing
		• Observing a positive RWL indication on redundant indicators
		(Critical Task)
	BOP	Reports RWL above TAF and trending upward.
	SRO	Directs BOP to throttle injection as RWL approaches 0" to restore and maintain RWL +5" to +50"
	BOP	May request EOP-114 actions performed by SSS to allow throttling of RHR injection valves
		Scenario ends with Emergency Depressurization and level restored above TAF.
		EAL Classification - Alert based on > 50 gpm leakage.

Facility: E.I.Hatch Scenario No.: 4 (Spare) Op-Test No.: _____

Examiners: _____

Operator _____

Initial Conditions: Unit at 100% RTP making preparations to S/D for a refueling outage.
2D PSW Pump OOS, 2B Stator Cooling Pump OOS. Severe weather is predicted for the
upcoming shift.

Turnover: Swap EHC pumps to even out run times per System Engineer. When complete
then initiate Reactor S/D for Refueling Outage.

Event No.	Malf. No.	Event Type*	Event Description
1		N (BOP)	Swap EHC Pumps from "A" to "B" per 34SO-N32-001-2S, EHC Hydraulic System.
2		R (CBO)	Commence a normal unit S/D for Refueling Outage.
3	C51_17A	I(CBO)	RBM "A" failure.
4	R25_185	C(BOP)	120/208 VAC Inst Bus 2A fault.
5	N21_87B	C(ALL)	2B RFP Trip.
6	E41_213	I(BOP)	HPCI Torus Level sensor fails high and suction valves remain open to cause Torus high level.

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

Op-Test No.: _____ Scenario No.: 4 Event No.: 1 Page 1 of 1

Event Description: Swap EHC Pumps from "A" to "B" per 34SO-N32-001-2S, EHC HYDRAULIC SYSTEM.

Time	Position	Applicant's Actions or Behavior
	SRO	Direct BOP to place 2B EHC pump into service and remove 2A
		EHC Pump from service per 34SO-N32-001-2S, EHC Hydraulic
		System
	BOP	Reviews Precautions and Limitations in 34SO-N32-001-2S
	BOP	Dispatches SO locally to monitor and report EHC system operation
	BOP	At panel 2H11-P650:
		<ul style="list-style-type: none"> Establishes communications with SO locally
		<ul style="list-style-type: none"> Places control switch 2B EHC pump to START
		<ul style="list-style-type: none"> Directs SO verify discharge pressure locally
		<ul style="list-style-type: none"> Places 2A EHC pump control switch to TRIP
		<ul style="list-style-type: none"> Places 2A EHC pump control switch to PULL AUTO START
		<ul style="list-style-type: none"> Verifies EHC system pressure 1600 to 1800 PSIG
		<ul style="list-style-type: none"> Verifies 2B pump motor amps <67.5
		<ul style="list-style-type: none"> Reports to SRO that EHC pumps have been swapped

Event Description: 120/208 VAC Instrument Bus 2A Trip.

Time	Position	Applicant's Actions or Behavior
	TEAM	<ul style="list-style-type: none"> Recognize/Diagnose loss of 2A Instrument Bus
		<ul style="list-style-type: none"> Dispatch SO to 2A Instrument Bus to investigate loss
	SRO	<ul style="list-style-type: none"> Direct BOP to enter 34AB-R25-002-2S, LOSS OF
		INSTRUMENT BUSES
		<ul style="list-style-type: none"> Contact Maintenance for support in restoration of 2A
		Instrument Bus
		<ul style="list-style-type: none"> Determine Tech Specs for:
		Loss of 2A Instrument Bus (TS 3.8.7)
		Loss of Recirc Loop (TS 3.4.1)
	BOP	<ul style="list-style-type: none"> Verify automatic actions per 34AB-R25-002-2S
		<ul style="list-style-type: none"> Maintain condenser vacuum, if necessary, by:
		Reducing speed of 2A Recirc locally (scoop tube locked)
		Reducing speed of 2B Recirc at M/A station in MANUAL
	SRO	When informed that breaker 27 on 2A Essential Cabinet was
		tripped open during labeling activities, directs SO to reclose breaker

Event Description: 2B RFPT Trip.

Time	Position	Applicant's Actions or Behavior
	CREW	Recognizes trip of 2B RFPT by one of more of the following:
		• Annunciator alarm "RFPT 2B TRIP" (P650-326)
		• Decreasing RWL
		• Decreasing RFPT speed
	BOP	If 2A RFPT control has not been restored to M/A AUTO, BOP
		will control 2A RFPT with speed setter to maintain RWL
	BOP	If 2A RFPT control has been restored to M/A AUTO, BOP will
		verify speed of 2A RFPT is increasing to maintain RWL
	CBO	If RWL decreases to 32" with TMR RFPT trip:
		• Verify Recirc runback
		• Unlock 2A Recirc scoop tube, if locked and 2A instrument
		is energized
		• Reduce power with Recirc to allow 2A RFPT to provide
		makeup at < 7.5 Mlbm/hr feed flow
	BOP	• Enter 34AB-650-326-2S
		• Dispatch SO to 2B RFPT room to investigate trip
		• Attempt reset of 2B RFPT
	SRO	Direct CBO to manually scram reactor if RWL not stabilized >3"

Event Description: HPCI Torus Level sensor fails high and suction valves remain open to cause Torus high level.

Time	Position	Applicant's Actions or Behavior
	BOP	Acknowledges and reports annunciator alarm "TORUS LEVEL
		HIGH" (P601-127)
	BOP	<ul style="list-style-type: none"> Enters 34AR-601-127-2S
		<ul style="list-style-type: none"> Verifies HPCI suction valve realignment
		<ul style="list-style-type: none"> Reports torus water level normal
	BOP	Reports loss of indication on 2E41-F004 as valve was stroking
		closed
	TEAM	<ul style="list-style-type: none"> Recognizes torus water level is increasing
		<ul style="list-style-type: none"> Dispatches SO to reset 2E41-F004 breaker
		<ul style="list-style-type: none"> Directs SO to close 2E41-F004 with handwheel
		<ul style="list-style-type: none"> Determines instrument failure cause of initial torus
		water level alarm
		<ul style="list-style-type: none"> Contacts I & C Maintenance to assist in diagnosis and repair
	SRO	Evaluates Tech Specs for inop level transmitter (3.3.5.1)
	SRO	Enters EOP charts PC-1/PC-2 on high torus water level of 150"
		<ul style="list-style-type: none"> Directs BOP place H2O2 analyzers into service
		<ul style="list-style-type: none"> Directs BOP to override HPCI & RCIC high torus level
		suction swap per EOP 100

Event Description: HPCI Torus Level sensor fails high and suction valves remain open to cause Torus high level.

Time	Position	Applicant's Actions or Behavior
	TEAM	Tracks and reports increasing torus water level
	SRO	Directs STA to monitor graph 6 (SRVTPLL)
	SRO	Orders reactor scrammed when determined that torus water level cannot be maintained below the SRVTPLL
	CBO	<ul style="list-style-type: none"> • Inserts manual scram with scram push buttons
		<ul style="list-style-type: none"> • Places mode switch to SHUTDOWN
		<ul style="list-style-type: none"> • Performs RC-1 actions
		<ul style="list-style-type: none"> • Enters 34AB-C71-001-2S, SCRAM PROCEDURE
	BOP	Perform actions of RC-2 and RC-3 after Reactor SCRAM.
		<ul style="list-style-type: none"> • Place RFPT controller in Auto controlling +3 to +15".
		<ul style="list-style-type: none"> • Place SU/LCV controller in Auto controlling +3 to +15".
		<ul style="list-style-type: none"> • Place FWLC Select Switch in Single Element.
		<ul style="list-style-type: none"> • If not needed for level control, THEN: Trip 1 RFPT, OPEN 2N21-F125 and CLOSE 2N21-F110.
		<ul style="list-style-type: none"> • Monitor Reactor Pressure and maintain 800 -1080 psig.

Op-Test No.: _____ Scenario No.: 4 Event No.: 6 Page 3 of 4

Event Description: HPCI Torus Level sensor fails high and suction valves remain open to cause Torus high level.

Time	Position	Applicant's Actions or Behavior
	SRO	Directs BOP to maintain reactor pressure below 900 psig
		(Safe area of graph 6 until torus water level reaches 193")
	BOP	Lowers EHC pressure set to maintain reactor pressure <900 psig
	SRO	Orders termination of injection from sources external to primary
		containment except for systems required for adequate core cooling
		CRD and boron when determined torus water level and reactor
		pressure cannot be maintained below SRVTPLL (graph 6)
	SRO	Directs CBO to open 7 ADS valves when determined
		that torus water level and reactor pressure cannot be
		restored and maintained below the SRVTPLL or maintained
		in 'Safe Region" of the HCTL or PSP (graphs 2 & 7)
	CBO	Places control switches for all 7 ADS valves to open and verifies by
		multiple indication that valves have opened.
	SRO	Directs BOP to restore RWL to +3" to +50" utilizing available
		injection systems

