

Facility: McGuire		Scenario No.: 1		Op Test No.: N11-1	
Examiners: _____		Operators: _____		(SRO)	
_____		_____		(RO)	
_____		_____		(BOP)	
Initial Conditions:		The plant is at 75% power (MOL), and has been at this power level for 4 days. The crew is expected to raise power to 100% on this shift.			
Turnover:		The following equipment is Out-Of-Service: 1B KG Pump is OOS for motor replacement. 1NIP-5070, ACCUM TK 1B PRESS, failed last shift (IAE is investigating) and MCB Annunciator 1AD-2, D-5, "LOSS OF SUBCOOLING," has alarmed spuriously several times over the last hour, however, subcooling has indicated normal (IAE is investigating).			
Event No.	Malf. No.	Event Type*	Event Description		
1	NA	R-RO N-BOP N-SRO	Power Increase		
2	SM001D	C-RO C-SRO	SG 1D PORV leak		
3	^{XMT} CF008B	I(TS)-SRO	SG 1A Narrow Range Level fails LOW		
4	NC003D	C-BOP C(TS)-SRO	PORV Leakage		
5	EP003C IRE009	C-RO C-BOP C-SRO	Zone 1B Lockout causing Runback/Rods fail to move in AUTO		
6	ISE001C	M-RO M-BOP M-SRO	Inadvertent SI Actuation		
7	IPE001A/B	NA	Auto Reactor Trip fails/manual available		
8	KC001B	C-BOP C-SRO	KC Pump fails to Auto Start		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

McGuire 2011 NRC Scenario #1

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Shortly after taking the watch, the operator will commence a load increase to 100% starting with Step 3.32 of Enclosure 4.1, Power Increase, of OP/1/A/6100/003, "Controlling Procedure for Unit Operation." The operator will dilute the NC System Boron concentration in accordance with Enclosure 4.4, "Alternate Dilute," of OP/1/A/6150/009, "Boron Concentration Control," and raise Turbine load in accordance with OP/1/A/6300/001 A, "Turbine-Generator Load Change."

During the power increase, the 1D Steam Generator PORV will develop a leak through the seat. The operator will respond in accordance with AP/1/A/5500/01, "Steam Leak," and isolate the PORV. The operator may address Technical Specification 3.7.4, "Steam Generator Power Operated Relief Valves (SG PORVs)," and will determine that all SG PORVs are OPERABLE; and may enter 3.4.1, "RCS Pressure, Temperature and Flow Departure from Nucleate Boiling (DNB) Limits."

After this, a Narrow Range Level transmitter on the 1A Steam Generator will fail LOW. The operator will respond in accordance with OP/1/A/6100/010 E, "Annunciator Response for Panel 1AD-4," F1, S/G A LO-LO LEVEL ALERT. The operator will address Technical Specification 3.3.1, "Reactor Trip System (RTS) Instrumentation," 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," and 3.3.3, "Post Accident Monitoring (PAM) Instrumentation."

Next, a B Train PORV (1NC-32B) will fail slightly open. The operator will enter AP/1/A/5500/11, "Pressurizer Pressure Anomalies." The operator will address Technical Specification 3.4.11, "Pressurizer Power Operated Relief Valve (PORVs)," and may enter 3.4.1, "RCS Pressure, Temperature and Flow Departure from Nucleate Boiling (DNB) Limits."

Subsequently, a Zone 1B Lockout causes PCB 11 and 12 to open, as well as the 1B Main Generator Breaker to open and the turbine to automatically runback to 56%. The operator will implement AP/1/A/5500/03, "Load Rejection." During the runback the operator will notice that the rods do not move in auto, and the operator will need to drive rods in manually.

Following this, Train A Safety Injection will spuriously actuate. The Reactor will fail to trip automatically and the operator will need to trip the Reactor manually. On the Safety Injection actuation, the 1A2 KC Pump will fail to automatically start, and the operator will need to manually start this pump. The operator will enter EP/1/A/5000/E-0, "Reactor Trip or Safety Injection," and then transition to step 10 of EP/1/A/5000/ES-1.1, Safety Injection Termination."

Upon entry into EP/1/A/5000/ES-1.1, the operator will stop NI and ND pumps.

The scenario will terminate in EP/1/A/5000/ES-1.1 at Step 12 when the operator determines that Safety Injection is NOT required.

Critical Tasks:

E-0 A

Manually trip the reactor prior to transition to FR-S.1, "Response to Nuclear Generation/ATWS."

Safety Significance: Failure to trip the reactor when required causes a challenge to the Subcriticality Critical Safety Function that otherwise would not exist. This mis-operation by the operator necessitates the crew taking compensating action which complicates the event mitigation strategy and demonstrates an inability by the operator to recognize a failure of the automatic actuation of the RPS.

SS (PT4600/113/E13.6)

Terminate SI by closing NI-9/10 within 15 minutes of SI actuation.

Safety Significance: An inadvertent SI rapidly injects inventory into the NCS causing Pzr Level, and correspondingly, Pzr Pressure to increase. Prolonged recovery unnecessarily challenges the Pzr Code Safety valves. PT/0/A/4600/113, Enclosure 13.6 states that when at NOP/NOT conditions, the FSAR commitment is to have SI terminated within 15 minutes (The Safety Analysis CANNOT credit the cycling of the Pzr PORVs since auto PORV operation can only be assured during LTOP Operation). The Safety Analysis assumes that the Pzr Code Safeties will lift and reseal ONLY if they are cycled for a short time and Pzr liquid temperature remains > 500°F. If this action is not taken, the conclusions of the Safety Analysis are invalid, and violates a License Condition.

PROGRAM: McGuire Operations Training

MODULE: Initial License Operator Training Class 27

TOPIC: NRC Simulator Exam

Scenario N11-1-1

REFERENCES:

1. OP/1/A/6100/003, "Controlling Procedure for Unit Operation." (Rev 168)
2. OP/1/A/6150/009, "Boron Concentration Control." (Rev 110)
3. OP/1/A/6300/001 A, "Turbine-Generator Load Change." (Rev 9)
4. AP/1/A/5500/01, "Steam Leak." (Rev 17)
5. Technical Specification 3.7.4, "Steam Generator Power Operated Relief Valves (SG PORVs)."
6. Technical Specification 3.3.1, "Reactor Trip System (RTS) Instrumentation."
7. OP/1/A/6100/010 E, "Annunciator Response for Panel 1AD-4."
8. Technical Specification 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation."
9. Technical Specification 3.3.3, "Post Accident Monitoring (PAM) Instrumentation."
10. AP/1/A/5500/11, "Pressurizer Pressure Anomalies." (Rev 11)
11. Technical Specification 3.4.11, "Pressurizer Power Operated Relief Valve (PORVs)."
12. Technical Specification 3.4.1, "RCS Pressure, Temperature and Flow Departure from Nucleate Boiling (DNB) Limits."
13. AP/1/A/5500/03, "Load Rejection." (Rev 25)
14. AP/1/A/5500/14, "Rod Control Malfunction." (Rev 14)
15. EP/1/A/5000/E-0, "Reactor Trip or Safety Injection." (Rev 31)
16. EP/1/A/5000/ES-1.1, "Loss of Reactor or Secondary Coolant." (Rev 23)

Author: David Lazarony, Western Technical Services, Inc.

Facility Review: _____

Rev. FINAL

Scenario Event Description

NRC Scenario 1

Facility: McGuire		Scenario No.: 1		Op Test No.: N11-1	
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_____		_____		(RO)	
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6	ISE001C	M-RO M-BOP M-SRO	Inadvertent SI Actuation		
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The scenario will terminate in EP/1/A/5000/ES-1.1 at Step 12 when the operator determines that Safety Injection is NOT required.

Scenario Event Description

NRC Scenario 1

Critical Tasks:

E-0 A

Manually trip the reactor prior to transition to FR-S.1, "Response to Nuclear Generation/ATWS."

Safety Significance: Failure to trip the reactor when required causes a challenge to the Subcriticality Critical Safety Function that otherwise would not exist. This mis-operation by the operator necessitates the crew taking compensating action which complicates the event mitigation strategy and demonstrates an inability by the operator to recognize a failure of the automatic actuation of the RPS.

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Scenario Event Description

NRC Scenario 1

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	Sim. Setup	Rod Step On	
<input type="checkbox"/>		Reset to Temp I/C 158. (IC-37, adjusted LD to 75 gpm, added 60 of dilution water.)	T = 0 Malfunctions: LOA KG006, KG Pump 1B CS = Remote Value (PTL) XMT-CLA-011 = 0 IPE001A, Failure of Auto Rx Trip Train A IPE001B, Failure of Auto Rx Trip Train B KC001B, Failure of KC Pump 1A2 to start = 0 (Auto) ANN-AD11-B05 = ON ANN-AD11-C05 = ON ANN-AD11-E05 = ON ANN-AD11-F05 = ON
<input type="checkbox"/>		RUN Reset all SLIMs	Place Tagout/O-Stick on: 1NIP-5070 (O-stick) MCB Annunciator 1AD-1, E-1 (O-stick) MCB Annunciator 1AD-9, E-2 (O-stick) MCB Annunciator 1AD-2, D-5 (O-stick)
<input type="checkbox"/>		Update Status Board, Setup OAC	NOTE: RMWST DO = <1000 ppb.
<input type="checkbox"/>		Freeze.	
<input type="checkbox"/>		Update Fresh Tech. Spec. Log.	
<input type="checkbox"/>		Fill out the NEO's Available section of Shift Turnover Info.	
<input type="checkbox"/>	Prior to Crew Briefing	RUN	

Scenario Event Description

NRC Scenario 1

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	Crew Briefing <ol style="list-style-type: none"> Assign Crew Positions based on evaluation requirements Review the Shift Turnover Information with the crew. Provide Enclosure 4.1 of OP/1/A/6100/003, marked up as follows: <ul style="list-style-type: none"> Step 2.3 – Initialed. Step 3.1 – Checkbox Checked. Step 3.2 – Initialed. Step 3.3 – Initialed. Step 3.3.1 – Checkbox Checked. Step 3.3.2 – Checkbox Checked. Entry Step: 3.32 Step 3.3.3– Checkbox Checked. Step 3.3.4 – Initialed. Step 3.32.1 – Checkbox Checked. Step 3.32.2 – Checkbox Checked. Step 3.32.3 – Initialed. Person Notified: Monty Champion/_____ Step 3.32.5 – Checkbox Checked. Step 3.32.6.1 – Initialed. Person Notified: Ben Smith/_____ Step 3.32.6.2 – NA/Initialed. Step 3.32.6.3 – NA/Initialed. Step 3.32.7 – Initialed. Step 3.32.7.1– Checkbox Checked. Step 3.32.7.2– Checkbox Checked. Step 3.32.7.3– Checkbox Checked. Step 3.32.7.4– Initialed. Step 3.32.8 – Initialed. Step 3.32.8.1– Checkbox Checked. Step 3.32.8.2– Initialed. Step 3.32.10 – NA/Initialed. Step 3.32.11 – NA/Initialed. Handout a copy of OP/1/A/6150/009, "Boron Concentration Control." (Rev 110), Enclosure 4.4; and OP/1/A/6300/001A, "Turbine-Generator Load Change." (Rev 9) Direct the crew to Review the Control Boards taking note of present conditions, alarms. 		
<input type="checkbox"/>	T-0	Begin Familiarization Period	
<input type="checkbox"/>	At direction of examiner	Event 1	Power Increase
<input type="checkbox"/>	At direction of examiner	Event 2 (MALF) SM001D = 100 Ramp = 10 seconds Trigger #1	SG 1D PORV Controller Failure

Scenario Event Description

NRC Scenario 1

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	At direction of examiner	Event 3 (XMT) CF008 = 0 No Ramp Trigger #3	SG 1A Narrow Range Level fails LOW
<input type="checkbox"/>	At direction of examiner	Event 4 (MALF) NC003D = 5% No Ramp Trigger #5	PORV Leakage Trigger #7 (LOA-NC033 (Racked Out/300 seconds delayed).
<input type="checkbox"/>	At direction of examiner	Event 5 (MALF) EP003C (MALF) IRE009 = 0 (Fail in Auto ONLY) No Ramp Trigger #9	Zone 1B Lockout causing Runback/Rods Fail to move in AUTO
<input type="checkbox"/>	At direction of examiner	Event 6 (MALF) ISE001C Trigger #11	Inadvertent SI Actuation
<input type="checkbox"/>	Post-SI	Event 7 (MALF) IPE001A (T=0) (MALF) IPE001B (T=0)	Auto Reactor Trip fails/manual available NOTE: This malfunction must be removed prior to the operator reset of SI.
<input type="checkbox"/>	Post-SI	Event 8 (MALF) KC001B = 0 (T=0)	KC Pump fails to Auto Start
<input type="checkbox"/>	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N11-1 Scenario # 1 Event # 1 Page 8 of 45Event Description: **Power Increase**

Shortly after taking the watch, the operator will commence a load increase to 100% starting with Step 3.32 of Enclosure 4.1, Power Increase, of OP/1/A/6100/003, "Controlling Procedure for Unit Operation." The operator will dilute the NC System Boron concentration in accordance with Enclosure 4.4, "Alternate Dilute," of OP/1/A/6150/009, "Boron Concentration Control," and raise Turbine load in accordance with OP/1/A/6300/001 A, "Turbine-Generator Load Change."

Booth Operator Instructions: **NA**Indications Available: **NA**

Time	Pos.	Expected Actions/Behavior	Comments
OP/1/A/6100/003, CONTROLLING PROCEDURE FOR UNIT OPERATIONS ENCLOSURE 4.1, POWER INCREASE			
	CRS	(Step 3.32) Increase power to 95% RTP.	
	RO	(Step 3.32.4) IF AT ANY TIME "Power Mismatch%" (Excore/Thermal Power Mismatch) indicates greater than 4% during power increase, perform the following:	
		<ul style="list-style-type: none"> Stop power increase. 	
		<ul style="list-style-type: none"> Have IAE calibrate each Power Range NI Channel to $\pm 1\%$ Power Mismatch (NIs vs BETP). 	
		<ul style="list-style-type: none"> WHEN calibration complete, continue power increase. 	
	RO/ BOP	(Step 3.32.9) WHEN 77-80% RTP, enable, OTDT DCS alarming as follows:	
		<ul style="list-style-type: none"> On DCS graphics, select "MAINTENANCE MENU". 	
		<ul style="list-style-type: none"> Select "TAVG, DELTA T INPUTS & ALARM CHECKING" graphic. 	
		<ul style="list-style-type: none"> Select "ON" for the following: 	
		<ul style="list-style-type: none"> NCAA 5422 	
		<ul style="list-style-type: none"> NCAA 5462 	
		<ul style="list-style-type: none"> NCAA 5502 	

Op Test No.: N11-1 Scenario # 1 Event # 1 Page 9 of 45Event Description: **Power Increase**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> NCAA 5542 	
		<ul style="list-style-type: none"> OTDELTAT-FAIL 	
	CRS	(Step 3.32.12) Continue power increase to 95% RTP.	NOTE: The power increase will be at 2 MWe/minute.
OP/1/A/6150/009, BORON CONCENTRATION CONTROL ENCLOSURE 4.4, ALTERNATE DILUTE			
			NOTE: The BOP may repeat this task as needed during the power increase.
	BOP	(Step 3.6) Determine amount of reactor makeup water needed to obtain desired boron concentration using McGuire Data Book, OAC, Reactor Group Guidance, or plant parameters (T-Ave, Steam Pressure, Xenon worth, etc.).	
		<ul style="list-style-type: none"> Total Reactor Makeup Water: 	
	BOP	(Step 3.7) Ensure the following reset to zero: (R.M.)	
		<ul style="list-style-type: none"> Total Make Up Flow Counter 	
		<ul style="list-style-type: none"> Boric Acid Flow Counter 	
	BOP	(Step 3.8) Set Total Make Up Flow Counter to value determined in Step 3.6. (R.M.)	
	BOP	(Step 3.9) Select "ALTERNATE DILUTE" on "NC Sys M/U Controller".	
	BOP	(Step 3.10) IF desired to makeup only through 1NV-175A (BA Blender to VCT Outlet), select "CLOSED" on 1NV-171A (BA Blender to VCT Inlet).	

Op Test No.: N11-1 Scenario # 1 Event # 1 Page 10 of 45Event Description: **Power Increase**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 3.11) IF AT ANY TIME it is desired to adjust reactor makeup water flow, adjust "rx M/U Water Flow Control" setpoint to achieve desired flowrate.	NOTE: It is NOT desired to adjust reactor makeup water flow.
	BOP	(Step 3.12) IF AT ANY TIME it is desired to manually adjust reactor makeup water flow, perform the following:	
		(Step 3.12.1) Place "Rx M/U Water Flow Control" in manual.	
		(Step 3.12.2) Adjust "Rx M/U Water Flow Control" output to control reactor makeup water flowrate.	
	BOP	(Step 3.13) IF AT ANY TIME it is desired to lower VCT level, perform the following:	
		(Step 3.13.1) Monitor Letdown Pressure.	
		(Step 3.13.2) Select "HUT" on 1NV-137A (NC Filters Otlt 3-Way Control).	NOTE: The BOP may do this at any time to lower VCT level.
		(Step 3.13.3) IF Letdown Pressure increases greater than 20 psig, notify CRS.	
		(Step 3.13.4) AFTER desired level achieved, select "AUTO" on 1NV-137A (NC Filters Otlt 3-Way Control).	
	BOP	(Step 3.14) IF AT ANY TIME plant parameters require termination of dilution, perform the following:	
		(Step 3.14.1) Place "NC System Make Up" to "STOP". (R.M.)	
		(Step 3.14.2) IF 1NV-137A (NC Filters Otlt 3-Way Control) was placed to HUT, place to "AUTO".	
	BOP	(Step 3.15) Momentarily select "START" on "NC System Make Up". (R.M.)	

Op Test No.: N11-1 Scenario # 1 Event # 1 Page 11 of 45Event Description: **Power Increase**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 3.16) Check "NC System Make Up" red light lit.	
	BOP	(Step 3.17) Check 1NV-175A (BA Blender To VCT Outlet) open.	
	BOP	(Step 3.18) Check 1NV-252A (Rx M/U Water To Blender control) open or throttled as required.	
	BOP	(Step 3.19) IF 1NV-171A (BA Blender To VCT Inlet) in "AUTO".....	NOTE: 1NV-171A is NOT in AUTO.
	BOP	(Step 3.20) Check Rx M/U Water Pump starts.	
	BOP	(Step 3.21) Monitor Total Make Up Flow Counter.	
	BOP	(Step 3.22) HOLD until one of the following occurs:	
		<ul style="list-style-type: none"> Amount of reactor makeup water recorded per Step 3.6 added 	
		OR	
		<ul style="list-style-type: none"> Reactor makeup water addition manually terminated 	
	BOP	(Step 3.23) Ensure dilution terminated as follows:	
		(Step 3.23.1) IF in "AUTO", ensure the following off:	
		<ul style="list-style-type: none"> 1A Rx M/U Water Pump 	
		<ul style="list-style-type: none"> 1B Rx M/U Water Pump 	
	BOP	(Step 3.23.2) Ensure the following closed:	

Op Test No.: N11-1 Scenario # 1 Event # 1 Page 12 of 45Event Description: **Power Increase**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> 1NV-175A (BA Blender To VCT Outlet) 	
		<ul style="list-style-type: none"> 1NV-252A (RX M/U Water To Blender Control) 	
		<ul style="list-style-type: none"> 1NV-171A (BA Blender To VCT Inlet) 	
	BOP	(Step 3.24) Ensure 1NV-171A (BA Blender to VCT Inlet) in "AUTO".	
	BOP	(Step 3.25) Ensure "Rx M/U Water Flow Control" in "AUTO". (R.M.)	
	BOP	(Step 3.26) IF "Rx M.U Water Flow Control" adjusted per Step 3.11...	NOTE: The Rx M.U Water Flow Control was NOT adjusted.
	BOP	(Step 3.27) Ensure 1NV-137A (NC Filters Oflt 3-Way Control) in "AUTO".	
	BOP	(Step 3.28) IF desired to flush blender....	NOTE: It is NOT desired to flush the blender.
	BOP	(Step 3.29) Select "AUTO" for "NC Sys M/U Controller".	
	BOP	(Step 3.30) Ensure the following reset to zero: (R.M.)	
		<ul style="list-style-type: none"> Total Make Up Flow Counter 	
		<ul style="list-style-type: none"> Boric Acid Flow Counter 	
	BOP	(Step 3.31) Momentarily select "START" on "NC System Make Up".	
	BOP	(Step 3.32) Check "NC System Make Up" red light lit.	

Op Test No.: N11-1 Scenario # 1 Event # 1 Page 13 of 45Event Description: **Power Increase**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 3.33) Record in Auto Log that final blender content is Rx Makeup Water.	
OP/1/A/6300/001A, TURBINE-GENERATOR STARTUP/SHUTDOWN ENCLOSURE 4.1, TURBINE-GENERATOR LOAD CHANGE			
	RO	(Step 3.5) Changing Turbine Load	
		(Step 3.5.1) IF Turbine in "OPERATOR AUTO", perform the following:	
		(Step 3.5.1.1) Ensure desired change within "Calculated Capability Curve".	
		(Step 3.5.1.2) IF turbine load will increase or decrease more than 10 MWs, notify Dispatcher of expected load change.	
		(Step 3.5.1.3) Depress "LOAD RATE".	
		(Step 3.5.1.4) Enter desired load rate in "VARIABLE DISPLAY".	NOTE: the RO will select 2 MWe/Min loading rate.
		(Step 3.5.1.5) Depress "ENTER".	
		(Step 3.5.1.6) Depress "REFERENCE".	
		(Step 3.5.1.7) Enter desired load in "VARIABLE DISPLAY".	
		(Step 3.5.1.8) Depress "ENTER".	
		(Step 3.5.1.9) Depress "GO"	
		(Step 3.5.1.10) Check load changes at selected rate.	
OP/1/A/6100/003, CONTROLLING PROCEDURE FOR UNIT OPERATIONS ENCLOSURE 4.1, POWER INCREASE			

Op Test No.: N11-1 Scenario # 1 Event # 1 Page 14 of 45Event Description: **Power Increase**

Time	Pos.	Expected Actions/Behavior	Comments
	RO/ BOP	(Step 3.32.13) At greater than 85% steam flow from each S/G, ensure the following valves in auto and open:	
		• 1CF104AB (1A S/G CF Cntrl Vlv Bypass)	
		• 1CF105AB (1B S/G CF Cntrl Vlv Bypass)	
		• 1CF106AB (1C S/G CF Cntrl Vlv Bypass)	
		• 1CF107AB (1D S/G CF Cntrl Vlv Bypass)	
At the discretion of the Lead Examiner move to Event #2.			

Op Test No.: N11-1 Scenario # 1 Event # 2 Page 15 of 45Event Description: **SG 1D PORV leak**

During the power increase, the 1D Steam Generator PORV will develop a leak through the seat. The operator will respond in accordance with AP/1/A/5500/01, "Steam Leak," and isolate the PORV. The operator may address Technical Specification 3.7.4, "Steam Generator Power Operated Relief Valves (SG PORVs)," and will determine that all SG PORVs are OPERABLE; and may enter 3.4.1, "RCS Pressure, Temperature and Flow Departure from Nucleate Boiling (DNB) Limits."

Booth Operator Instructions: **Operate Trigger #1 (SM001D (100))**

Indications Available:

- 1CF-26AB Red status light LIT, Green status light OFF.
- Various OAC alarms (3 associated with open PORV)
- NCS Tavg is lowering.

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: It is likely that the operator will take actions to isolate the 1D SG PORV prior to being directed by the CRS. (Step 13)
AP/1/A/5500/01, STEAM LEAK			
			NOTE: The CRS will likely direct the RO to take the Turbine to HOLD.
	CRS	(Step 1) Monitor Foldout page.	
	RO	(Step 2) Reduce turbine load to maintain the following:	
		<ul style="list-style-type: none"> • Excore NI's – LESS THAN OR EQUAL TO 100%. 	
		<ul style="list-style-type: none"> • NC Loop D/T's – LESS THAN 60°F D/T 	
		<ul style="list-style-type: none"> • T-Avg – AT T-REF. 	
	CRS	(Step 3) Check containment entry – IN PROGRESS.	NOTE: A Containment Entry is NOT in progress.
	CRS	(Step 3 RNO) GO TO Step 5.	

Op Test No.: N11-1 Scenario # 1 Event # 2 Page 16 of 45Event Description: **SG 1D PORV leak**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 5) Check Pzr pressure prior to event – GREATER THAN P-11 (1955 PSIG).	
	BOP	(Step 6) Check Pzr level – STABLE OR GOING UP.	
	BOP	(Step 7) IF AT ANY TIME while in this procedure Pzr level cannot be maintained stable, THEN RETURN TO Step 6.	NOTE: This is a Continuous Action. The CRS will make both board operators aware.
	CRS	(Step 8) GO TO Step 12.	
	CRS	(Step 12) Announce occurrence on paging system.	NOTE: CRS may ask U2 RO to make Plant Announcement. If so, Floor Instructor acknowledge as U2 RO.
	RO	(Step 13) Identify and isolate leak on Unit 1 as follows:	
		<ul style="list-style-type: none"> (Step 13a) Check SM PORVs – CLOSED. 	NOTE: The 1D SG PORV is Open.
	RO	(Step 13a RNO) IF S/G pressure is less than 1092 PSIG, THEN perform the following:	
		<ul style="list-style-type: none"> Close affected S/G SM PORV manual loader. 	NOTE: Closing the Manual Loader will have no effect.
		<ul style="list-style-type: none"> IF SM PORV is still open, THEN perform the following: 	NOTE: The 1D SG PORV Isolation Valve will need to be closed.
		<ul style="list-style-type: none"> Close SM PORV isolation valve. 	
		<ul style="list-style-type: none"> IF SM PORV isolation valve still open..... 	NOTE: The PORV Isolation valve is closed.
	RO	<ul style="list-style-type: none"> (Step 13.b) Check condenser dump valves – CLOSED. 	

Op Test No.: N11-1 Scenario # 1 Event # 2 Page 17 of 45Event Description: **SG 1D PORV leak**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	<ul style="list-style-type: none"> (Step 13.c) Check containment conditions – NORMAL: 	
		<ul style="list-style-type: none"> Containment temperature 	
		<ul style="list-style-type: none"> Containment pressure 	
		<ul style="list-style-type: none"> Containment humidity 	
		<ul style="list-style-type: none"> Containment floor and equipment sump level. 	
	RO / BOP	<ul style="list-style-type: none"> (Step 13.d) Check TD CA pump – OFF. 	
		<ul style="list-style-type: none"> (Step 13.e) Check valves on “STEAM LINE DRAIN VALVES” board (1MC-9) – CLOSED. 	
	CRS	<ul style="list-style-type: none"> (Step 13.f) Check opposite Unit (Unit 2) “STEAM HEADER PRESSURE” – GREATER THAN 200 PSIG. 	<p>NOTE: CRS may ask U2 RO for AS Header pressure.</p> <p>If so, Floor Instructor report as U2 RO that U2 Steam Header pressure is > 200 psig.</p>
		<ul style="list-style-type: none"> (Step 13.g) Dispatch operator to check for leaks. 	<p>NOTE: The CRS may NOT dispatch NEOs to look for leaks because it is understood that the SM PORV opening was the reason that AP-1 was entered.</p>
	BOP	(Step 14) Check UST level – STABLE OR GOING UP.	
	CRS	(Step 15) Evaluate unit shutdown as follows:	
		<ul style="list-style-type: none"> Check unit status – IN MODE 1 OR 2. 	
		<ul style="list-style-type: none"> Determine if unit shutdown or load reduction is warranted based on the following criteria: 	<p>NOTE: CRS may call WCC/Management to address the startup.</p> <p>If so, Booth Instructor acknowledge as WCC. If needed, as Station management direct that the startup be continued.</p>

Op Test No.: N11-1 Scenario # 1 Event # 2 Page 18 of 45Event Description: **SG 1D PORV leak**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Size of leak 	
		<ul style="list-style-type: none"> Location of leak 	
		<ul style="list-style-type: none"> Rate of depletion of secondary inventory 	
		<ul style="list-style-type: none"> IF steam is leaking from a secondary heater relief OR MSR relief valve... 	
		<ul style="list-style-type: none"> IF turbine trip will isolate steam leak (such as feedwater heater leak or MSR leak... 	
		<ul style="list-style-type: none"> Check unit shutdown or load reduction – REQUIRED. 	NOTE: Shutdown/Load Reduction will NOT be required.
	CRS	(Step 15.c RNO) Perform the following:	
		<ul style="list-style-type: none"> Maintain present plant conditions until leak can be isolated or repaired. 	
		<ul style="list-style-type: none"> Exit this procedure. 	
			NOTE: The CRS will likely conduct a Focus Brief.
			NOTE: The CRS may address Tech Specs based on plant response.
TECHNICAL SPECIFICATION 3.4.7, STEAM GENERATOR POWER OPERATED RELIEF VALVES (SG PORVs)			
	CRS	LCO 3.4.7 Three SG PORV lines shall be OPERABLE.	
	CRS	APPLICABILITY: MODES 1, 2, and 3, MODE 4 when steam generator is relied upon for heat removal.	
	CRS	ACTIONS	

Op Test No.: N11-1 Scenario # 1 Event # 2 Page 19 of 45Event Description: **SG 1D PORV leak**

Time	Pos.	Expected Actions/Behavior			Comments
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
					NOTE: After evaluation, the CRS will determine that LCO 3.4.7 is NOT entered.
TECHNICAL SPECIFICATION 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS					
	CRS	LCO 3.4.1 RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified in Table 3.4.1-1.			NOTE: If NC System Pressure drops to < 2216 psig on the failure, then TS 3.4.1 might be entered and exited during the transient.
	CRS	APPLICABILITY: MODE 1.			
	CRS	ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. Pressurizer pressure or RCS average temperature DNB parameters not within limits.	A.1 Restore DNB parameter(s) to within limit.	2 hours	
At the discretion of the Lead Examiner move to Event #3.					

Op Test No.: N11-1 Scenario # 1 Event # 3 Page 20 of 45Event Description: **SG 1A Narrow Range Level fails LOW**

Next, a Narrow Range Level transmitter on the 1A Steam Generator will fail LOW. The operator will respond in accordance with OP/1/A/6100/010 E, "Annunciator Response for Panel 1AD-4," F1, S/G A LO-LO LEVEL ALERT. The operator will address Technical Specification 3.3.1, "Reactor Trip System (RTS) Instrumentation," 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," and 3.3.3, "Post Accident Monitoring (PAM) Instrumentation."

Booth Operator Instructions: **Operate Trigger #3 (XMT-CF008 (0))**

Indications Available:

- MCB Annunciator 1AD-2, E-8, DCS TROUBLE.
- MCB Annunciator 1AD-4, F-1, S/G A LO-LO LEVEL ALERT

Time	Pos.	Expected Actions/Behavior	Comments
OP/1/A/6100/010 E, ANNUNCIATOR RESPONSE FOR PANEL 1AD-4 F-1, S/G A LO-LO LEVEL ALERT			
	CRS/ RO	(IA Step 1) IF Channel in Test.....	NOTE: The Channel is NOT in Test.
	CRS/ RO	(IA Step 2) IF loss of feedwater....	NOTE: There is no loss of feedwater.
	CRS/ RO	(IA Step 3) IF CF Pump speed control failure...	NOTE: A loss of CF Pump Speed Control has NOT occurred.
	RO	(IA Step 4) Control S/G A Levels at program level:	
		<ul style="list-style-type: none"> • Place 1CF-32AB (1A S/G CF Control) or 1CF-104AB (1A S/G CF Control Bypass) in manual. 	NOTE: The RO will place 1CF-32AB in MANUAL.
		<ul style="list-style-type: none"> • Manually control S/G CF valve(s) to restore level. 	
	CRS	(SA Step 1) Refer to Tech Specs	

Op Test No.: N11-1 Scenario # 1 Event # 3 Page 21 of 45Event Description: **SG 1A Narrow Range Level fails LOW**

Time	Pos.	Expected Actions/Behavior			Comments
TECHNICAL SPECIFICATION 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION					
	CRS	LCO 3.3.1 The RTS Instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.			
	CRS	APPLICABILITY: According to Table 3.3.1-1.			
	CRS	ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One or more functions with one or more required channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s).	Immediately	
		E. One channel inoperable.	E.1 Place channel in trip. OR E.2 Be in MODE 3	72 hours 78 hours	NOTE: This Action is associated with Function 13 (SG Water Level Low-Low).
TECHNICAL SPECIFICATION 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION					
	CRS	LCO 3.3.2 The ESFAS Instrumentation for each Function in Table 3.3.2-1 shall be OPERABLE.			
	CRS	APPLICABILITY: According to Table 3.3.2-1.			
	CRS	ACTIONS			

Op Test No.: N11-1 Scenario # 1 Event # 3 Page 22 of 45Event Description: **SG 1A Narrow Range Level fails LOW**

Time	Pos.	Expected Actions/Behavior			Comments
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One or more functions with one or more required channels or trains inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s) or trains(s).	Immediately	
		D. One channel inoperable.	D.1 Place channel in trip. OR D.2.1 Be in MODE 3. AND D.2.2 Be in Mode 4.	72 hours 78 hours 84 hours	NOTE: This Action is associated with Function 6.b (SG Water Level Low-Low).
TECHNICAL SPECIFICATION 3.3.3, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION					
	CRS	LCO 3.3.3 The PAM instrumentation for each Function in Table 3.3.3-1 shall be OPERABLE.			
	CRS	APPLICABILITY: MODES 1, 2, and 3.			
	CRS	ACTIONS			

Op Test No.: N11-1 Scenario # 1 Event # 3 Page 23 of 45Event Description: **SG 1A Narrow Range Level fails LOW**

Time	Pos.	Expected Actions/Behavior			Comments
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One or more functions with one or more required channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.3-1 for the channel(s).	Immediately	
		B. One or more Functions with one required channel inoperable.	B.1 Restore required channel to OPERABLE status.	30 days	NOTE: This Action is associated with Function 12 (Steam Generator Water Level (Narrow Range)).
					NOTE: The CRS may call WCC/IAE to address the valve position. If so, Booth Instructor acknowledge as WCC.
					Booth Instructor: Prior to proceeding on to the next event, call as IAE and state that 1CF-32AB (1A S/G CF Control) can be returned to AUTO .
At the discretion of the Lead Examiner move to Event #4.					

Op Test No.: N11-1 Scenario # 1 Event # 4 Page 24 of 45Event Description: **PORV Leakage**

Next, a B Train PORV (1NC-32B) will fail slightly open. The operator will enter AP/1/A/5500/11, "Pressurizer Pressure Anomalies." The operator will address Technical Specification 3.4.11, "Pressurizer Power Operated Relief Valve (PORVs)," and may enter 3.4.1, "RCS Pressure, Temperature and Flow Departure from Nucleate Boiling (DNB) Limits."

Booth Operator Instructions: **Operate Trigger #5 (NC003D (5%))**

Indications Available:

- 1NC-32B Red and Green Status lights LIT.
- Pzr Relief Line "FLOW" RED Status light LIT.
- MCB Annunciator 1AD-6, F5, 1NC 1, 2 or 3 FLO Detected.
- MCB Annunciator 1AD-6, A9, PZR SAFETY DISCHARGE HI TEMP.

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: It is likely that the operator will take actions to isolate the Pzr PORV prior to being directed by the CRS.
AP/1/A/5500/11, PRESSURIZER PRESSURE ANOMALIES			
	BOP	(Step 1) Check Pzr pressure – HAS GONE DOWN.	Immediate Action
	BOP	(Step 2) Check Pzr PORVs – CLOSED.	Immediate Action
	BOP	(Step 2 RNO) Perform the following:	Immediate Action
		<ul style="list-style-type: none"> • CLOSE PORVs. 	NOTE: 1NC-32B will display dual indication, even after closing the PORV.
		<ul style="list-style-type: none"> • IF PORV will not close, THEN CLOSE PORV isolation valve. 	
	BOP	(Step 3) Check Pzr spray valves – CLOSED.	Immediate Action
	BOP	(Step 4) Check Pzr PORVs – CLOSED.	
	BOP	(Step 4 RNO) Perform the following:	

Op Test No.: N11-1 Scenario # 1 Event # 4 Page 25 of 45Event Description: **PORV Leakage**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> CLOSE associated PORV inlet drain valve as follows: 	
		<ul style="list-style-type: none"> IF 1NC-32B (PZR PORV) failed, THEN CLOSE 1NC-271 (PZR PORV Drn Isol For 1NC-32B). 	
		<ul style="list-style-type: none"> IF 1 NC-34A (PZR PORV) failed... 	
		<ul style="list-style-type: none"> IF 1NC-36B (PZR PORV) failed... 	
	CRS	<ul style="list-style-type: none"> IF PZR PORV isolation valve is closed for failed PZR PORV, THEN GO TO Step 5. 	
	BOP	(Step 5) Check PZR spray valves – CLOSED.	
	CRS	(Step 6) Announce occurrence on page.	NOTE: CRS may ask U2 RO to make Plant Announcement. If so, Floor Instructor acknowledge as U2 RO.
	BOP	(Step 7) Check 1NV-21A (NV Spray To PZR Isol) – CLOSED.	
	BOP	(Step 8) Check the following PZR heaters – ON:	
		<ul style="list-style-type: none"> 1A 	
		<ul style="list-style-type: none"> 1B 	
		<ul style="list-style-type: none"> 1D 	
	BOP	(Step 9) Check 1C PZR heaters – ON.	
		(Step 9 RNO) IF NC pressure below desired pressure...	NOTE: By this time, NC System pressure should be recovering.

Op Test No.: N11-1 Scenario # 1 Event # 4 Page 26 of 45Event Description: **PORV Leakage**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 10) Check "PZR PRESS MASTER" – IN AUTO.	
	BOP	(Step 11) Check "1NC-27 PRESSURIZER SPRAY EMERGENCY CLOSE" switch – SELECTED TO "NORMAL".	
	BOP	(Step 12) Check "1NC-29 PRESSURIZER SPRAY EMERGENCY CLOSE" switch – SELECTED TO "NORMAL".	
	BOP	(Step 13) Check Pzr pressure – GOING UP TO DESIRED PRESSURE.	
	CRS	(Step 14) Exit this procedure.	NOTE: The CRS may call WCC/IAE to address the valve position. If so, Booth Instructor acknowledge as WCC.
			NOTE: The CRS will likely conduct a Focus Brief.
TECHNICAL SPECIFICATION 3.4.11, PRESSURIZER POWER OPERATED RELIEF VALVES (PORVs)			
	CRS	LCO 3.4.11 Each PORV and associated block valve shall be OPERABLE.	
	CRS	APPLICABILITY: MODES 1, 2 AND 3.	
	CRS	ACTIONS	

Op Test No.: N11-1 Scenario # 1 Event # 4 Page 27 of 45Event Description: **PORV Leakage**

Time	Pos.	Expected Actions/Behavior			Comments
		CONDITION	REQUIRED ACTION	COMPLETION TIME	Booth Instructor: Operate Trigger #7 (LOA-NC33 (Racked Out/5 minutes delayed)). After 5 minutes, as NEO report that the breaker for the Block Valve has been Racked Out.
		B. One or two PORVs inoperable and not capable of being manually cycled.	B.1 Close associated block valves.	1 hour	
		AND	B.2 Remove power from associated block valves.	1 hour	
		AND	B.3 Restore one PORV to OPERABLE status if two PORVs are inoperable.	72 hours	
TECHNICAL SPECIFICATION 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS					
	CRS	LCO 3.4.1 RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified in Table 3.4.1-1.			NOTE: If NC System Pressure drops to < 2216 psig on the failure, then TS 3.4.1 might be entered and exited during the transient.
	CRS	APPLICABILITY: MODE 1.			
	CRS	ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. Pressurizer pressure or RCS average temperature DNB parameters not within limits.	A.1 Restore DNB parameter(s) to within limit.	2 hours	
At the discretion of the Lead Examiner move to Event #5.					

Op Test No.: N11-1 Scenario # 1 Event # 5 Page 28 of 45Event Description: **Zone 1B Lockout causing Runback/Rods fail to move in AUTO**

Subsequently, a Zone 1B Lockout causes PCB 11 and 12 to open, as well as the 1B Main Generator Breaker to open and the turbine to automatically runback to 56%. The operator will implement AP/1/A/5500/03, "Load Rejection." During the runback the operator will notice that the rods do not move in manual, and the operator will need to drive rods in manually.

Booth Operator Instructions: **Operate Trigger #9 (EP003, IRE009)**

Indications Available:

- MCB Annunciator 1AD-1, D6, DEH TURBINE RUNBACK, alarms.
- MCB Annunciator 1AD-1, F9, DEH/MSR SYSTEM MALFUNCT, alarms.
- Turbine Generator MWe lowering.
- Tavg-Tref deviation with no Auto Rod motion.
- MCB Annunciator 1AD-11, K3, UNIT 1 LOCKOUT, alarms.
- MCB Annunciator 1AD-11, L3, GEN BKR A OR B FAULT TRIP, alarms.
- 1 of 2 Main Generator Breakers is OPEN.
- PCB-11 and 12 OPEN.

Time	Pos.	Expected Actions/Behavior	Comments
AP/1/A/5500/03, LOAD REJECTION			
	RO	(Step 1) Ensure control rods in auto.	Immediate Action NOTE: While the RO will see that the Control Rods are in AUTO, it will also be observed that Rods are NOT moving, and that they are required to move. The RO will inform the CRS of the situation, and the CRS will direct that the RO control the rods in MANUAL to maintain Tavg-Tref.
	RO	(Step 2) Check Turbine Generator response as follows:	
		<ul style="list-style-type: none"> • Check Generator – TIED TO GRID. 	
		<ul style="list-style-type: none"> • Check Generator output – GOING DOWN AS REQUIRED. 	

Op Test No.: N11-1 Scenario # 1 Event # 5 Page 29 of 45Event Description: **Zone 1B Lockout causing Runback/Rods fail to move in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	RO	(Step 3) Check control rod response as follows:	
		<ul style="list-style-type: none"> Check control banks – MOVING IN AS REQUIRED. 	NOTE: The Control Rods will NOT be moving in as required.
	RO	(Step 3 RNO) IF no rods will move in auto; THEN perform the following:	
		<ul style="list-style-type: none"> Place Control Rods in manual. 	
		<ul style="list-style-type: none"> Insert rods to reduce T-avg equal to programmed T-Ref. 	
		<ul style="list-style-type: none"> If no rods will move, THEN..... 	NOTE: The Control Rods will move in MANUAL.
	RO	<ul style="list-style-type: none"> Check all rods – ALIGNED WITH ASSOCIATED BANK. 	
	BOP	(Step 4) Check CM system response as follows:	
		<ul style="list-style-type: none"> Standby Hotwell and Condensate Booster pumps – RUNNING. 	
		<ul style="list-style-type: none"> 1CM-420 (Unit 1 Generator Load Rejection Bypass control) – OPEN. 	
	RO	(Step 5) IF 50% runback, THEN ensure turbine impulse pressure going down to less than 410 PSIG.	
	CRS	(Step 6) Announce: "UNIT 1 LOAD REJECTION, NON-ESSENTIAL PERSONNEL STAY OUT OF UNIT 1 TURBINE BLDG".	NOTE: CRS may ask U2 RO to make Plant Announcement. If so, Floor Instructor acknowledge as U2 RO.
	RO	(Step 7) Check P/R meters – LESS THAN 20%.	
	CRS / RO	(Step 7 RNO) Perform the following:	

Op Test No.: N11-1 Scenario # 1 Event # 5 Page 30 of 45Event Description: **Zone 1B Lockout causing Runback/Rods fail to move in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Designate an operator to continuously monitor reactor power. 	
		<ul style="list-style-type: none"> IF AT ANY TIME reactor power is less than 20%, THEN perform Step 8 to stabilize reactor power. 	NOTE: This is a Continuous Action. The CRS will designate the RO to observe this action.
	CRS	<ul style="list-style-type: none"> GO TO Step 9. 	
	RO	(Step 9) Check condenser dump valves – MODULATING OPEN.	
	BOP	(Step 10) Check "IPB AIR FLOW TROUBLE" alarm (1AD-11, J-5) – DARK.	
	RO	(Step 10 RNO) within 15 minutes of lockout initiation, restore 1PB cooling as follows:	
		<ul style="list-style-type: none"> IF "MAIN GENERATOR" less than 10,000 amps... 	NOTE: The Main Generator is NOT < 10,000 amps.
	CRS	<ul style="list-style-type: none"> Dispatch operator to check the following areas for signs of fire and notify Control Room of results within 5 minutes: 	NOTE: The CRS will dispatch an NEO.
		<ul style="list-style-type: none"> 1A Main Step Up Transformer 	
		<ul style="list-style-type: none"> 1B Main Step Up Transformer 	
		<ul style="list-style-type: none"> Unit 1 IPB Fan Enclosure area. 	
	CRS	<ul style="list-style-type: none"> Record approximate time lockout occurred. 	
	CRS	<ul style="list-style-type: none"> Do not continue until operator has been given sufficient time (approximately 5 minutes) to complete fire inspection. 	Booth Instructor: Within 3 minutes , as NEO report that there does NOT appear to be a fire around the transformers or IPB Fan area.
	CRS	<ul style="list-style-type: none"> IF operator confirms a fire has occurred... 	

Op Test No.: N11-1 Scenario # 1 Event # 5 Page 31 of 45Event Description: **Zone 1B Lockout causing Runback/Rods fail to move in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	<ul style="list-style-type: none"> IF operator confirms no fire has occurred, THEN dispatch operator to perform the following at the Unit 1 "IPB ALARM PANEL": 	NOTE: The CRS will dispatch an NEO.
		<ul style="list-style-type: none"> Depress "LOCKOUT OVERRIDE" on the fan in "MAN". 	
		<ul style="list-style-type: none"> IF IPB fan in "MAN" cannot be started, THEN depress "LOCKOUT OVERRIDE" on the fan in "AUTO". 	Booth Instructor: Within 3 minutes , as NEO report that the Lockout Override has been pressed , and NEITHER IPB Fan is running .
	CRS	<ul style="list-style-type: none"> IF neither IPB fan can be started, THEN GO TO Enclosure 1 (Load Reduction Following Loss of IPB Cooling). 	NOTE: The CRS will transition to Enclosure 1.
AP/1/A/5500/03, LOAD REJECTION			
ENCLOSURE 1, LOAD REDUCTION FOLLOWING LOSS OF IPB COOLING			
	BOP	(Step 1) Reduce Generator output less than 10,000 amps within 15 minutes of lockout as follows:	NOTE: The BOP will need to take this action since the RO will need to operate the Control Rods in MANUAL.
		<ul style="list-style-type: none"> Check "MW LOOP" – IN SERVICE. 	
	BOP	(Step 1a RNO) Depress "MW IN/OUT" pushbutton.	
		<ul style="list-style-type: none"> Determine load reduction rate based on time since lockout occurred PER the following table: 	NOTE: The load reduction rate will be $\approx 70\text{MW}/\text{minute}$.
		<ul style="list-style-type: none"> Initiate turbine load reduction to approximately 350 MW. 	
		<ul style="list-style-type: none"> Maintain power factor 0.9 to 1.0 lagging during load reduction. 	
		<ul style="list-style-type: none"> WHEN Generator output amps are less than 10,000 amps, THEN stop load reduction. 	

Op Test No.: N11-1 Scenario # 1 Event # 5 Page 32 of 45Event Description: **Zone 1B Lockout causing Runback/Rods fail to move in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 2) GO TO Step 11 in body of this procedure.	
At the discretion of the Lead Examiner move to Events #6-8.			

Op Test No.: N11-1 Scenario # 1 Event # 6, 7 & 8 Page 33 of 45Event Description: **Inadvertent SI Actuation/ Auto Reactor Trip fails/manual available/
KC Pump fails to Auto Start**

Following this, Train A Safety Injection will spuriously actuate. The Reactor will fail to trip automatically and the operator will need to trip the Reactor manually. On the Safety Injection actuation, the 1A2 KC Pump will fail to automatically start, and the operator will need to manually start this pump. The operator will enter EP/1/A/5000/E-0, "Reactor Trip or Safety Injection," and then transition to step 10 of EP/1/A/5000/ES-1.1, Safety Injection Termination." Upon entry into EP/1/A/5000/ES-1.1, the operator will stop NI and ND pumps. The scenario will terminate in EP/1/A/5000/ES-1.1 at Step 12 when the operator determines that Safety Injection is NOT required.

Booth Operator Instructions: Operate Trigger #11 (ISE001C)

Indications Available:

- Train A Safety Injection actuates.
- Reactor does not trip.
- 1A2 KC Pump does NOT start as required on SI actuation.

Time	Pos.	Expected Actions/Behavior	Comments
			Examiner NOTE: Mark Time of Train A SI Actuation (To the Minute): _____
			NOTE: Crew will carry out Immediate Actions of E-0, prior to the CRS addressing the EP.
E-0, REACTOR TRIP OR SAFETY INJECTION			
	CRS	(Step 1) Monitor Foldout page.	
	RO	(Step 2) Check Reactor Trip:	NOTE: Reactor does not trip on SI Actuation as required, and will need to manually tripped.
		<ul style="list-style-type: none"> • All rod bottom lights – LIT 	

Op Test No.: N11-1 Scenario # 1 Event # 6, 7 & 8 Page 34 of 45Event Description: **Inadvertent SI Actuation/ Auto Reactor Trip fails/manual available/
KC Pump fails to Auto Start**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Reactor trip and bypass breakers – OPEN 	NOTE: The Reactor will trip manually.
		<ul style="list-style-type: none"> I/R amps – GOING DOWN. 	
	RO	(Step 2 RNO) Perform the following:	
		<ul style="list-style-type: none"> Trip the reactor. 	
		<ul style="list-style-type: none"> IF reactor will not trip... 	
CRITICAL TASK: (E-0 A) Manually trip the reactor prior to transition to FR-S.1, "Response to Nuclear Generation/ATWS." Safety Significance: Failure to trip the reactor when required causes a challenge to the Subcriticality Critical Safety Function that otherwise would not exist. This mis-operation by the operator necessitates the crew taking compensating action which complicates the event mitigation strategy and demonstrates an inability by the operator to recognize a failure of the automatic actuation of the RPS.			
	BOP	(Step 3) Check Turbine Trip:	
		<ul style="list-style-type: none"> All throttle valves – CLOSED. 	
	BOP	(Step 4) Check 1ETA and 1ETB – ENERGIZED.	
	RO / BOP	(Step 5) Check if S/I is actuated:	
		<ul style="list-style-type: none"> "SAFETY INJECTION ACTUATED" status light (1SI-18) – LIT. 	
		<ul style="list-style-type: none"> Both LOCA Sequencer Actuated status lights (1SI-14) – LIT. 	
	BOP	(Step 5 RNO) Initiate S/I.	NOTE: Train B of SI must be manually initiated.

Op Test No.: N11-1 Scenario # 1 Event # 6, 7 & 8 Page 35 of 45Event Description: **Inadvertent SI Actuation/ Auto Reactor Trip fails/manual available/
KC Pump fails to Auto Start**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 6) Announce "Unit 1 Safety Injection".	NOTE: CRS may ask U2 RO to make Plant Announcement. If so, Floor Instructor acknowledge as U2 RO.
Booth Operator Instructions: Remove Malfunction ISE001C at Step 6 of E-0			
	RO	(Step 7) Check all Feedwater Isolation status lights (1SI-4) - LIT	
	BOP	(Step 8) Check Phase A "RESET" lights – DARK.	
	BOP	(Step 9) Check ESF Monitor Light Panel on energized train(s):	
		• Groups 1,2,5 – DARK.	
		• Group 3 – LIT.	
		• OAC – IN SERVICE.	
		• Group 4, Rows A through F – LIT AS REQUIRED.	
	CRS	• GO TO Step 10.	Booth Operator: As IAE, Call Control Room and report that the Train A SI Actuation was caused inadvertently during maintenance.
	RO / BOP	(Step 10) Check proper CA pump status:	
		• MD CA pumps – ON.	
		• N/R level in at least 3 S/Gs – GREATER THAN 17%.	

Op Test No.: N11-1 Scenario # 1 Event # 6, 7 & 8 Page 36 of 45Event Description: **Inadvertent SI Actuation/ Auto Reactor Trip fails/manual available/
KC Pump fails to Auto Start**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 11) Check all KC pumps – ON.	NOTE: The 1A2 KC Pump has failed to start automatically.
	BOP	(Step 11 RNO) Perform the following:	
		<ul style="list-style-type: none"> Start pumps. 	NOTE: The BOP will manually start the 1A2 KC.
	CRS	<ul style="list-style-type: none"> IF all KC Pumps running, THEN GO TO Step 12. 	
	BOP	(Step 12) Check both RN pumps – ON.	
	CRS	(Step 13) Notify Unit 2 to perform the following:	
		<ul style="list-style-type: none"> Start 2A RN pump. 	
		<ul style="list-style-type: none"> THROTTLE Unit 2 RN flow to minimum for existing plant conditions. 	Floor Instructor: As U2 RO report "2A RN Pump is running."
	RO	(Step 14) Check all S/G pressures – GREATER THAN 775 psig.	
	BOP	(Step 15) Check Containment Pressure – HAS REMAINED LESS THAN 3 PSIG.	NOTE: Containment Pressure is ≈ 0.15 psig.
	BOP	(Step 16) Check S/I flow:	
		<ul style="list-style-type: none"> Check "NV PMPS TO COLD LEG FLOW" gauge – INDICATING FLOW. 	NOTE: NV Flow is ≈ 320 gpm.
		<ul style="list-style-type: none"> Check NC pressures – LESS THAN 1600 PSIG. 	NOTE: NC System pressure is ≈ 2250 psig.
	BOP	(Step 16b RNO) Perform the following:	
		<ul style="list-style-type: none"> Ensure ND pump miniflow valve on running pump(s) open: 	

Op Test No.: N11-1 Scenario # 1 Event # 6, 7 & 8 Page 37 of 45Event Description: **Inadvertent SI Actuation/ Auto Reactor Trip fails/manual available/
KC Pump fails to Auto Start**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> 1ND-68A (1A ND Pump & Hx Mini Flow Isol) 	
		<ul style="list-style-type: none"> 1ND-67B (1B ND Pump & Hx Mini Flow Isol). 	
	CRS	<ul style="list-style-type: none"> IF valve(s) open on all running ND pumps, THEN GO TO Step 17. 	
	CRS	(Step 17) Notify OSM or other SRO to perform EP/1/A/5000/G-1 (Generic Enclosures), Enclosure 22 (OSM actions Following an S/I) within 10 minutes.	NOTE: CRS may ask OSM to address. If so, Floor Instructor acknowledge as OSM.
	RO / BOP	(Step 18) Check CA flow:	
		<ul style="list-style-type: none"> Total CA flow – GREATER THAN 450 GPM. 	
		<ul style="list-style-type: none"> Check VI header pressure – GREATER THAN 60 PSIG. 	
		<ul style="list-style-type: none"> WHEN each S/G N/R level is greater than 11% (32% ACC), THEN control CA flow to maintain that S/G N/R level between 11% (32% ACC) and 50%. 	
	RO	(Step 19) Check NC temperatures:	
		<ul style="list-style-type: none"> IF any NC pump on, THEN check NC T-Avg – STABLE OR TRENDING TO 557°F 	NOTE: All NC Pumps will be ON.
		OR	
		<ul style="list-style-type: none"> IF all NC pumps off, THEN... 	
	BOP	(Step 20) Check Pzr PORV and spray valves:	
		<ul style="list-style-type: none"> All Pzr PORVs – CLOSED. 	NOTE: 1NC-32B has previously failed OPEN.

Op Test No.: N11-1 Scenario # 1 Event # 6, 7 & 8 Page 38 of 45Event Description: **Inadvertent SI Actuation/ Auto Reactor Trip fails/manual available/
KC Pump fails to Auto Start**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 20a RNO) IF Pzr pressure is less than 2315 PSIG, THEN perform the following:	
		• CLOSE Pzr PORV(s).	
		• IF any Pzr PORV cannot be closed, THEN perform the following:	
		• CLOSE its isolation valve.	
		• CLOSE the following valve(s):	
		• IF 1NC-32B (PZR PORV) failed, THEN CLOSE 1NC-271 (PZR PORV Drn Isol For 1NC-32B).	NOTE: 1NC-271 has been previously CLOSED.
		• IF 1NC-34A (PZR PORV) failed...	
		• IF 1NC-36B (PZR PORV) failed...	
		• IF PORV isolation valve cannot be closed...	NOTE: 1NC-31B has been previously CLOSED.
		• IF any Pzr PORV cannot be closed or isolated....	NOTE: 1NC-32B has been previously CLOSED.
	BOP	• Normal Pzr spray valves – CLOSED.	NOTE: depending on NC System pressure the Spray Valve may be OPEN.
	BOP	(Step 20b RNO) IF Pzr pressure is less than 2100 PSIG, THEN perform the following:	
		• CLOSE spray valve(s).	
		• IF spray valve(s) cannot be closed...	
	BOP	• At least one Pzr PORV isolation valve – OPEN.	
	BOP	(Step 21) Check NC subcooling based on core exit T/Cs – GREATER THAN 0°F.	NOTE: NC System Subcooling will be ≈80-90°F.
	RO	(Step 22) Check if main steamlines intact:	

Op Test No.: N11-1 Scenario # 1 Event # 6, 7 & 8 Page 39 of 45Event Description: **Inadvertent SI Actuation/ Auto Reactor Trip fails/manual available/
KC Pump fails to Auto Start**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> All S/G pressure – STABLE OR GOING UP 	NOTE: All SG Pressures are ≈1100psig.
		<ul style="list-style-type: none"> All S/Gs – PRESSURIZED. 	
	BOP	(Step 23) Check if S/G tubes intact:	NOTE: All EMF instrumentation reads normal.
		<ul style="list-style-type: none"> The following secondary EMFs – NORMAL: 	
		<ul style="list-style-type: none"> 1EMF-33 (Condenser Air Ejector Exhaust) 	
		<ul style="list-style-type: none"> 1EMF-34(L) (S/G Sample (Lo Range)) 	
		<ul style="list-style-type: none"> 1EMF-24 (S/G A) 	
		<ul style="list-style-type: none"> 1EMF-25 (S/G B) 	
		<ul style="list-style-type: none"> 1EMF-26 (S/G C) 	
		<ul style="list-style-type: none"> 1EMF-27 (S/G D) 	
		<ul style="list-style-type: none"> S/G levels – STABLE OR GOING UP IN A CONTROLLED MANNER. 	
	BOP	(Step 24) Check if NC System intact:	
		<ul style="list-style-type: none"> Check containment EMFs – NORMAL: 	NOTE: All EMF instrumentation reads normal.
		<ul style="list-style-type: none"> 1EMF-38(L) (Containment Particulate (LR)) 	
		<ul style="list-style-type: none"> 1EMF-39(L) (Containment Gas (Lo Range)) 	
		<ul style="list-style-type: none"> 1EMF-40 (Containment Iodine) 	
		<ul style="list-style-type: none"> Check containment pressure – LESS THAN 1 PSIG 	NOTE: Containment Pressure is ≈0.20 psig.
		<ul style="list-style-type: none"> Check containment sump level – NORMAL. 	
		<ul style="list-style-type: none"> IF offsite power available, THEN check "ICE COND LOWER INLET DOORS OPEN" alarm (1AD-9, A-5) – DARK. 	

Op Test No.: N11-1 Scenario # 1 Event # 6, 7 & 8 Page 40 of 45Event Description: **Inadvertent SI Actuation/ Auto Reactor Trip fails/manual available/
KC Pump fails to Auto Start**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Check all Unit 1 6900V buses – ENERGIZED. 	
	RO / BOP	(Step 25) Check S/I termination criteria:	
		<ul style="list-style-type: none"> NC subcooling based on core exit T/Cs – GREATER THAN 0°F. 	
		<ul style="list-style-type: none"> Secondary heat sink: 	
		<ul style="list-style-type: none"> N/R level in at least one S/G – GREATER THAN 11% 	
		OR	
		<ul style="list-style-type: none"> Total feed flow to S/Gs – GREATER THAN 450 gpm. 	
		<ul style="list-style-type: none"> NC PRESSURE – stable or going up. 	
		<ul style="list-style-type: none"> Pzr level – GREATER THAN 11%. 	
	BOP	(Step 26) Reset the following:	
		<ul style="list-style-type: none"> S/I 	
		<ul style="list-style-type: none"> Sequencers. 	
	BOP	(Step 27) Stop all but one NV pump.	
	BOP	(Step 28) Check NC pressure – STABLE OR GOING UP.	
	BOP	(Step 29) Isolate NV S/I flowpath as follows:	
		<ul style="list-style-type: none"> Check NV pumps miniflow valves – OPEN: 	
		<ul style="list-style-type: none"> 1NV-150B (NV Pumps Recirculation) 	
		<ul style="list-style-type: none"> 1NV-151A (NV Pumps Recirculation). 	
		<ul style="list-style-type: none"> Close the following valves: 	
		<ul style="list-style-type: none"> 1NI-9A (NC Cold Leg Inj From NV) 	

Op Test No.: N11-1 Scenario # 1 Event # 6, 7 & 8 Page 41 of 45Event Description: **Inadvertent SI Actuation/ Auto Reactor Trip fails/manual available/
KC Pump fails to Auto Start**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> 1NI-10B (NC Cold Leg Inj From NV). 	Examiner NOTE: Mark Time of 1NI-9A/10B Closure (To the Minute): _____

CRITICAL TASK:**(SS-4600/113/E13.6)****Terminate SI by closing NI-9/10 within 15 minutes of SI actuation.**

Safety Significance: An inadvertent SI rapidly injects inventory into the NCS causing Pzr Level, and correspondingly, Pzr Pressure to increase. Prolonged recovery unnecessarily challenges the Pzr Code Safety valves. PT/0/A/4600/113, Enclosure 13.6 states that when at NOP/NOT conditions, the FSAR commitment is to have SI terminated within 15 minutes (The Safety Analysis CANNOT credit the cycling of the Pzr PORVs since auto PORV operation can only be assured during LTOP Operation). The Safety Analysis assumes that the Pzr Code Safeties will lift and reseal ONLY if they are cycled for a short time and Pzr liquid temperature remains > 500°F. If this action is not taken, the conclusions of the Safety Analysis are invalid, and violates a License Condition.

	BOP	(Step 30) Establish charging as follows:	
	BOP	<ul style="list-style-type: none"> Check VI header pressure – GREATER THAN 60 PSIG. 	
	BOP	<ul style="list-style-type: none"> THROTTLE 1NV-238 (Charging Line Flow Control) to maintain 6-10 GPM seal injection flow to each NC pump. 	
	BOP	<ul style="list-style-type: none"> Close 1NV-241 (U1 Seal Water Inj Flow Control). 	
	BOP	<ul style="list-style-type: none"> Check one of the following valves – OPEN: 	
		<ul style="list-style-type: none"> 1NV-13B (NV Supply to A NC Loop Isol). 	NOTE: 1NV-13B is OPEN.
		OR	
		<ul style="list-style-type: none"> 1NV-16A (NV Supply to D NC Loop Isol). 	
	BOP	<ul style="list-style-type: none"> Check 1NV-21A (NV Spray to PZR Isol) – CLOSED. 	

Op Test No.: N11-1 Scenario # 1 Event # 6, 7 & 8 Page 42 of 45Event Description: **Inadvertent SI Actuation/ Auto Reactor Trip fails/manual available/
KC Pump fails to Auto Start**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	<ul style="list-style-type: none"> Open the following valves: 	
		<ul style="list-style-type: none"> 1NV-244A (Charging Line Cont Outside Isol) 	
		<ul style="list-style-type: none"> 1NV-245B (Charging Line cont Outside Isol). 	
	CRS	<ul style="list-style-type: none"> WHEN controlling NV flow in subsequent steps, THEN maintain flow within the following limits while THROTTLING charging and seal injection control valves: 	NOTE: This is a Continuous Action. The CRS will make both board operators aware.
		<ul style="list-style-type: none"> Charging flow – LESS THAN 200 GPM. 	
		<ul style="list-style-type: none"> Seal injection flow to each NC pump – 6-10 GPM. 	
	BOP	(Step 31) Control charging flow as follows:	
		<ul style="list-style-type: none"> Control charging flow as required to maintain Pzr level stable. 	
		<ul style="list-style-type: none"> Check Pzr level – STABLE OR GOING UP. 	
	BOP	(Step 32) Reset the following:	
		<ul style="list-style-type: none"> Phase A Isolation 	
		<ul style="list-style-type: none"> Phase B Isolation. 	
	BOP	(Step 33) Establish VI to containment as follows:	
		<ul style="list-style-type: none"> OPEN the following valves: 	
		<ul style="list-style-type: none"> 1VI-129B (VI Supply to A Cont Ess VI Hdr Outside Isol). 	
		<ul style="list-style-type: none"> 1VI-160B (VI Supply to B Cont Ess VI Hdr Outside Isol). 	
		<ul style="list-style-type: none"> 1VI-150B (Lwr Cont Non-Ess Cont Outside Isol). 	

Op Test No.: N11-1 Scenario # 1 Event # 6, 7 & 8 Page 43 of 45Event Description: **Inadvertent SI Actuation/ Auto Reactor Trip fails/manual available/
KC Pump fails to Auto Start**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Check VI header pressure – GREATER THAN 85 PSIG. 	
	CRS	(Step 34) Implement EP/1/A/5000/F-0 (Critical Safety Function Status Trees).	NOTE: The CRS will direct the STA to implement this action. Floor Instructor: As STA, acknowledge.
	CRS	(Step 35) WHEN EP/1/A/5000/ES-1.1 (Safety Injection Termination) is implemented in next step, THEN monitor its Foldout page.	
	CRS	(Step 35) GO TO Step 10 of EP/1/A/5000/ES-1.1 (Safety Injection Termination).	NOTE: The CRS will transition to ES-1.1 Step 10.
ES-1.1, SAFETY INJECTION TERMINATION			
	BOP	(Step 10) Check if NI pumps should be stopped:	Examiner NOTE: After transition to ES-1.1, terminate Exam at Lead Examiner discretion.
		<ul style="list-style-type: none"> Check NC pressure - 	
		<ul style="list-style-type: none"> STABLE OR GOING UP. 	
		<ul style="list-style-type: none"> GREATER THAN 1600 PSIG. 	
	BOP	<ul style="list-style-type: none"> Stop NI pumps. 	
	CRS	<ul style="list-style-type: none"> GO TO Step 11. 	
	BOP	(Step 11) Check if ND pumps should be stopped:	
		<ul style="list-style-type: none"> Check any ND pump – ON. 	
		<ul style="list-style-type: none"> Check running ND pumps suction – ALIGNED TO FWST. 	
		<ul style="list-style-type: none"> Check both NS pumps – OFF. 	

Op Test No.: N11-1 Scenario # 1 Event # 6, 7 & 8 Page 44 of 45Event Description: **Inadvertent SI Actuation/ Auto Reactor Trip fails/manual available/
KC Pump fails to Auto Start**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none">• Stop ND pumps.	
	RO	(Step 12) Check S/I flow not required:	
		<ul style="list-style-type: none">• NC subcooling based on core exit T/Cs – GREATER THAN 0°F.	NOTE: NC System Subcooling will be ≈65-85°F.
	BOP	<ul style="list-style-type: none">• Pzr level – GREATER THAN 11% (29% ACC).	NOTE: Pzr Level will be 60-90%.
At the discretion of the Lead Examiner terminate the exam.			

UNIT 1 STATUS:

Power Level: 75% NCS [B] 1136 ppm Pzr [B]: 1139 ppm Xe: 2369.56 pcm

Power History: The Plant 75% power (MOL), for four days. Core Burnup: 250 EFPDs

CONTROLLING PROCEDURE: OP/1/A/6100/03 Controlling Procedure for Unit Operation

OTHER INFORMATION NEEDED TO ASSUME TO SHIFT:

- The plant is at 75% power (MOL), and has been at this power level for 4 days.
- The crew is expected to raise power to 100% on this shift.
- MCB Annunciators associated with the Main Transformer (1AD-11; B-5, C-5, E-5 and F-5) are LIT, which is expected due to the second set of coolers NOT operating at the present power level.

The following equipment is Out-Of-Service:

- 1B KG Pump is OOS for motor replacement.
- 1NIP-5070, ACCUM TK 1B PRESS, failed last shift (IAE is investigating).
- MCB Annunciator 1AD-2, D-5, "LOSS OF SUBCOOLING," has alarmed spuriously several times over the last hour, however, subcooling has indicated normal (IAE is investigating).

Crew Directions:

- Raise power to 100% starting at Step 3.32 of Enclosure 4.1 of OP/1/A/6100/03, "Controlling Procedure for Unit Operation."
- Use of Alternate Dilute during power ascension in accordance with Enclosure 4.4, "Alternate Dilute," of OP/1/A/6150/009, "Boron Concentration Control," has been approved.
- The Reactor Group has recommended that a Dilution of 200 gallons be made during initial power increase.
- Perform the load increase at 2 MWe/Minute.

Work Control SRO/Offsite Communicator **Jim**

Plant SRO **Joe**

NLO's AVAILABLE**Unit 1**

Aux Bldg. John

Turb Bldg. Bob

5th Rounds. Carol

Extra(s) Bill Ed Wayne Tanya

Unit 2

Aux Bldg. Chris

Turb Bldg. Mike

Facility: McGuire		Scenario No.: 2		Op. Test No.: N11-1	
Examiners: _____		Operators: _____		(SRO)	
_____		_____		(RO)	
_____		_____		(BOP)	
Initial Conditions:		The plant is at 100% power (MOL), and has been at this power level for 250 days.			
Turnover:		The following equipment is Out-Of-Service: 1A DG is OOS for corrective maintenance. 1KFP-5130, Spent Fuel Pool Temperature, failed last shift (IAE is investigating) and MCB Annunciator 1AD-9, D-4, "D COLD LEG ACCUMULATOR ABNORMAL LEVEL," has failed to off (IAE is investigating).			
Event No.	Malf. No.	Event Type*	Event Description		
1	LOA CF007	C-RO C-SRO	High Pressure Heaters Bypass/Overpower		
2	ENB013C	C-BOP C(TS)-SRO	Power Range Failure		
3	KC010D	C-BOP C(TS)-SRO	1B2 KC Pump trip		
4	NA	R-RO N-BOP N-SRO	Rapid Downpower		
5	IRE003A	C-RO C-SRO	Continuous inward Rod Motion		
6	IPE001A/B IPE002A/B DEH001 SM004B	M-RO M-BOP M-SRO	Inadvertent Turbine Trip/ATWS/SG Safety Valve on 1B fails Open		
7	CA005	NA	TD CA Overspeed Trip		
8	CA004A/B	NA	1A/1B MD CA Pumps fails to start in AUTO		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

McGuire 2011 NRC Scenario #2

The plant is at 100% power (MOL), and has been at this power level for 250 days.

The following equipment is Out-Of-Service: 1A DG is OOS for corrective maintenance. 1KFP-5130, Spent Fuel Pool Temperature, failed last shift (IAE is investigating) and MCB Annunciator 1AD-9, D-4, "D COLD LEG ACCUMULATOR ABNORMAL LEVEL," has failed to off (IAE is investigating).

Shortly after taking the watch, the High Pressure Heater Bypass Valve (1CF-75) will inadvertently open. The operator will respond in accordance with OAC Alarm Response Procedure M1L2917, "U1 WATER BYPASSING A&B HEATERS," and the "Control Room Expectation Manual," and immediately reduce Turbine load as needed to maintain Rx power less than pre-transient condition.

After this, Power Range Instrument N42 will drift high. The operator will enter AP/1/A/5500/16, "Malfunction of Nuclear Instrumentation." The operator will address Technical Specification 3.3.1, "Reactor Trip System (RTS) Instrumentation."

Next, the 1B2 KC Pump will trip. The operator will enter AP/1/A/5500/21, "Loss of KC or KC System Leakage." The operator will address Technical Specification 3.7.6, "Component Cooling Water (CCW) System."

Subsequently, the 1B DG will be declared inoperable. The crew will be directed to reduce plant power to Mode 3 within 2 hours. The operator will perform a rapid downpower in accordance with AP/1/A/5500/04, "Rapid Downpower."

During the downpower, the Control Rods will continuously insert. The operator will enter AP/1/A/5500/14, "Rod Control Malfunction," and take manual control of the rods.

Following this, the Turbine will inadvertently trip, and the Reactor will fail to trip automatically and manually. Additionally, one Safety Valve on the 1B Steam Generator will lift and fail Open. The operator will enter EP/1/A/5000/E-0, "Reactor Trip or Safety Injection," and then transition to EP/1/A/5000/FR-S.1, "Response to Nuclear Power Generation/ATWS." During the performance of FR-S.1, the operator will successfully trip the Reactor.

On the Reactor trip, the TD CA will trip on overspeed, and the 1A/1B MD CA Pump will fail to start automatically. The operator will be expected to manually start the MD CA Pumps.

After completion of FR-S.1, the operator will transition back to E-0, and then to EP/1/A/5000/E-2, "Faulted Steam Generator Isolation." After the 1B Steam Generator is isolated, the operator will transition to EP/1/A/5000/ES-1.1, "SI Termination."

The scenario will terminate at Step 7.c of ES-1.1.

Critical Tasks:**FR-S.1 C****Manually drive rods inward before completing the immediate actions of FR-S.1 (Step 2).**

Safety Significance: failure to insert negative reactivity, under the postulated plant conditions, results in an unnecessary situation in which the reactor power remains higher than it otherwise would if the action is not taken. Performance of the critical task would move the reactor power lower to prevent a subsequent unnecessary challenge to reactor core operational limits. A failure to insert negative reactivity constitutes a mis-operation or incorrect crew performance which leads to incorrect reactivity control.

E-0 F**Establish 450 gpm of CA Flow to the Steam Generators before transition out of FR-S.1, unless the transition is made to EP/1/A/5000/FR-H.1, and then before the NCPs are manually tripped to limit heat input to the RCS.**

Safety Significance: Failure to establish a Secondary Heat Sink through the initiation of CA flow unnecessarily challenges both the HEAT SINK and the CORE COOLING Critical Safety Functions. Additionally, the FSAR Safety Analysis results are predicated on the assumption that at least one train of safeguards actuates and delivers a minimum amount of AFW flow to the Steam Generators. Failure to perform this task, when the ability to do so exists, results in a violation of the Facility License Condition and places the plant in an unanalyzed condition.

PROGRAM: McGuire Operations Training

MODULE: Initial License Operator Training Class 27

TOPIC: NRC Simulator Exam

Scenario N11-1-2

REFERENCES:

1. OAC Alarm Response Procedure M1L2917, "U1 WATER BYPASSING A&B HEATERS."
2. Control Room Crew Expectations Manual.
3. AP/1/A/5500/16, "Malfunction of Nuclear Instrumentation." (Rev 12)
4. Technical Specification 3.3.1, "Reactor Trip System (RTS) Instrumentation."
5. AP/1/A/5500/21, "Loss of KC or KC System Leakage." (Rev 9)
6. Technical Specification 3.7.6, "Component Cooling Water (CCW) System."
7. AP/1/A/5500/04, "Rapid Downpower." (Rev 21)
8. AP/1/A/5500/14, "Rod Control Malfunction." (Rev 14)
9. EP/1/A/5000/E-0, "Reactor Trip or Safety Injection." (Rev 31)
10. EP/1/A/5000/FR-S.1, "Response to Nuclear Power Generation/ATWS." (Rev 12)
11. EP/1/A/5000/E-2, "Faulted Steam Generator Isolation." (Rev 9)
12. EP/1/A/5000/ES-1.1, "SI Termination." (Rev 23)

Author: David Lazarony, Western Technical Services, Inc.

Facility Review: _____

Rev. FINAL

Scenario Event Description

NRC Scenario 2

Facility:	McGuire	Scenario No.:	2	Op Test No.:	N11-1
Examiners:	_____	Operators:	_____	(SRO)	
	_____		_____	(RO)	
	_____		_____	(BOP)	
Initial Conditions:		The plant is at 100% power (MOL), and has been at this power level for 250 days.			
Turnover:		The following equipment is Out-Of-Service: 1A DG is OOS for corrective maintenance. 1KFP-5130, Spent Fuel Pool Temperature, failed last shift (IAE is investigating) and MCB Annunciator 1AD-9, D-4, "D COLD LEG ACCUMULATOR ABNORMAL LEVEL," has failed to off (IAE is investigating).			
Event No.	Malf. No.	Event Type*	Event Description		
1	LOA CF007	C-RO C-SRO	High Pressure Heaters Bypass/Overpower		
2	ENB013C	C-BOP C(TS)-SRO	Power Range Failure		
3	KC010D	C-BOP C(TS)-SRO	1B2 KC Pump trip		
4	NA	R-RO N-BOP N-SRO	Rapid Downpower		
5	IRE003A	C-RO C-SRO	Continuous inward Rod Motion		
6	IPE001A/B IPE002A/B DEH001 SM004B	M-RO M-BOP M-SRO	Inadvertent Turbine Trip/ATWS/SG Safety Valve on 1B fails Open		
7	CA005	NA	TD CA Overspeed Trip		
8	CA004A/B	NA	1A/1B MD CA Pumps fails to start in AUTO		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

McGuire 2011 NRC Scenario #2

The plant is at 100% power (MOL), and has been at this power level for 250 days.

The following equipment is Out-Of-Service: 1A DG is OOS for corrective maintenance. 1KFP-5130, Spent Fuel Pool Temperature, failed last shift (IAE is investigating) and MCB Annunciator 1AD-9, D-4, "D COLD LEG ACCUMULATOR ABNORMAL LEVEL," has failed to off (IAE is investigating).

Shortly after taking the watch, the High Pressure Heater Bypass Valve (1CF-75) will inadvertently open. The operator will respond in accordance with OAC Alarm Response Procedure M1L2917, "U1 WATER BYPASSING A&B HEATERS," and the "Control Room Expectation Manual," and immediately reduce Turbine load as needed to maintain Rx power less than pre-transient condition.

After this, Power Range Instrument N42 will drift high. The operator will enter AP/1/A/5500/16, "Malfunction of Nuclear Instrumentation." The operator will address Technical Specification 3.3.1, "Reactor Trip System (RTS) Instrumentation."

Next, the 1B2 KC Pump will trip. The operator will enter AP/1/A/5500/21, "Loss of KC or KC System Leakage." The operator will address Technical Specification 3.7.6, "Component Cooling Water (CCW) System."

Subsequently, the 1B DG will be declared inoperable. The crew will be directed to reduce plant power to Mode 3 within 2 hours. The operator will perform a rapid downpower in accordance with AP/1/A/5500/04, "Rapid Downpower."

During the downpower, the Control Rods will continuously insert. The operator will enter AP/1/A/5500/14, "Rod Control Malfunction," and take manual control of the rods.

Following this, the Turbine will inadvertently trip, and the Reactor will fail to trip automatically and manually. Additionally, one Safety Valve on the 1B Steam Generator will lift and fail Open. The operator will enter EP/1/A/5000/E-0, "Reactor Trip or Safety Injection," and then transition to EP/1/A/5000/FR-S.1, "Response to Nuclear Power Generation/ATWS." During the performance of FR-S.1, the operator will successfully trip the Reactor.

On the Reactor trip, the TD CA will trip on overspeed, and the 1A/1B MD CA Pump will fail to start automatically. The operator will be expected to manually start the MD CA Pumps.

After completion of FR-S.1, the operator will transition back to E-0, and then to EP/1/A/5000/E-2, "Faulted Steam Generator Isolation." After the 1B Steam Generator is isolated, the operator will transition to EP/1/A/5000/ES-1.1, "SI Termination."

The scenario will terminate at Step 7.c of ES-1.1.

Scenario Event Description

NRC Scenario 2

Critical Tasks:

FR-S.1 C

Manually drive rods inward before completing the immediate actions of FR-S.1 (Step 2).

Safety Significance: failure to insert negative reactivity, under the postulated plant conditions, results in an unnecessary situation in which the reactor power remains higher than it otherwise would if the action is not taken. Performance of the critical task would move the reactor power lower to prevent a subsequent unnecessary challenge to reactor core operational limits. A failure to insert negative reactivity constitutes a mis-operation or incorrect crew performance which leads to incorrect reactivity control.

E-0 F

Establish 450 gpm of CA Flow to the Steam Generators before transition out of FR-S.1, unless the transition is made to EP/1/A/5000/FR-H.1, and then before the NCPs are manually tripped to limit heat input to the RCS.

Safety Significance: Failure to establish a Secondary Heat Sink through the initiation of CA flow unnecessarily challenges both the HEAT SINK and the CORE COOLING Critical Safety Functions. Additionally, the FSAR Safety Analysis results are predicated on the assumption that at least one train of safeguards actuates and delivers a minimum amount of AFW flow to the Steam Generators. Failure to perform this task, when the ability to do so exists, results in a violation of the Facility License Condition and places the plant in an unanalyzed condition.

Scenario Event Description

NRC Scenario 2

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	Sim. Setup	Rod Step On	
<input type="checkbox"/>		Reset to Temp I/C 159. (IC-39, Adjust LD to 75 gpm, SD Bank B Group 2 made to be 226)	T = 0 Malfunctions: ANN-AD09-D04 = 1 (OFF) MALF-CA004A = 0 (Fail in AUTO) MALF-CA004B = 0 (Fail in AUTO) MALF-CA005 MALF-EPQ001A MALF IPE001A MALF IPE001B MALF IPE002A MALF IPE002B LOA-DG011 = Racked Out IND-KF002 = 0
<input type="checkbox"/>		RUN Reset all SLIMs	Place Tagout/O-Stick on: 1A DG Breaker (Tagout) 1A DG Control Power (Tagout) IND-KF02 (O-Stick) MCB Annunciator 1AD-9, D-6 (O-stick) MCB Annunciator 1AD-9, D-4 (O-stick)
<input type="checkbox"/>		Update Status Board, Setup OAC	NOTE: RMWST DO = <1000 ppb.
<input type="checkbox"/>		Freeze.	
<input type="checkbox"/>		Update Fresh Tech. Spec. Log.	
<input type="checkbox"/>		Fill out the NEO's Available section of Shift Turnover Info.	
<input type="checkbox"/>	Prior to Crew Briefing	RUN	

Scenario Event Description

NRC Scenario 2

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	Crew Briefing <ol style="list-style-type: none"> 1. Assign Crew Positions based on evaluation requirements 2. Review the Shift Turnover Information with the crew. 3. TSail Sheets for 1A DG. 4. Direct the crew to Review the Control Boards taking note of present conditions, alarms. 		
<input type="checkbox"/>	T-0	Begin Familiarization Period	
<input type="checkbox"/>	At direction of examiner	Event 1 (LOA) CF007 = 1 (OPEN) Ramp = 50 seconds Trigger #1	High Pressure Heaters Bypass/Overpower
<input type="checkbox"/>	At direction of examiner	Event 2 (MALF) ENB013C = 200 (High) Ramp = 20 Seconds Trigger #3	Power Range Failure
<input type="checkbox"/>	At direction of examiner	Event 3 (MALF) KC010D Delay = 10 seconds Trigger #5	1B2 KC Pump trip
<input type="checkbox"/>	At direction of examiner	Event 4	Rapid Downpower NOTE: Trigger #7 (EPQ001B) will be operated at start of event. NOTE: Floor instructor will need to provide the BOP with a copy of OP/1/A/6150/009, Enclosure 4.7, during this event.
<input type="checkbox"/>	Upon recognition of unwarranted Rod Motion	Event 5 (MALF) IRE003A = 0 (IN) Trigger #9	Continuous inward Rod Motion

Scenario Event Description

NRC Scenario 2

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	At direction of examiner	Event 6 (MALF) DEH001 No Delay (MALF) SM004B = 100 Trigger #11	Inadvertent Turbine Trip/ATWS/SG Safety Valve on 1B fails Open NOTE: LOA-SA003 = 0 TD CA Turbine isolation during event. Trigger #13
<input type="checkbox"/>	At direction of examiner	Event 7	TD CA Overspeed Trip
<input type="checkbox"/>	Continued from Event 7	Event 8	1A/1B MD CA Pumps fails to start in AUTO
<input type="checkbox"/>			
<input type="checkbox"/>	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N11-1 Scenario # 2 Event # 1 Page 8 of 53Event Description: **High Pressure Heaters Bypass/ Overpower**

Shortly after taking the watch, the High Pressure Heater Bypass Valve (1CF-75) will inadvertently open. The operator will respond in accordance with OAC Alarm Response Procedure M1L2917, "U1 WATER BYPASSING A&B HEATERS," and the "Control Room Expectation Manual," and immediately reduce Turbine load as needed to maintain Rx power less than pre-transient condition.

Booth Operator Instructions: Operate Trigger #1 (LOA CF007 (1))

Indications Available:

- OAC Alarm M1L2917 (U1 Water Bypassing A&B Heaters).
- TPBE will update over 100%.
- Excore NI's will read in excess of 100%.
- Main Generator MW output will increase.

Time	Pos.	Expected Actions/Behavior	Comments
M1L2917, U1 WATER BYPASSING A&B HEATERS			
	CRS	(Step 1) Dispatch operator to check position of 1CF-75 (HP HTRS Bypass Vlv).	
	CRS	(Step 2) Investigate for leakage through 1CF-75 (HP HTRS Bypass Vlv).	
	CRS	(Step 3) Notify System Engineering.	
CONTROL ROOM CREW EXPECTATIONS MANUAL			
	RO	Immediately reduce 20MWe and then reduce as needed to maintain Rx power less than pre-transient condition.	NOTE: The RO will drop load on the Turbine ≈30-60MWe with the Turbine in MANUAL.
			NOTE: The CRS will dispatch an NEO. If so, Floor/Booth Instructor acknowledge as NEO. Wait 3 minutes of time, and report that 1CF-75 is OPEN.

Op Test No.: N11-1 Scenario # 2 Event # 1 Page 9 of 53Event Description: **High Pressure Heaters Bypass/ Overpower**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS may call WCC/IAE to address the valve position. If so, Booth Instructor acknowledge as WCC. If the CRS directs that the valve be closed, Booth Instructor , as the WCC Supervisor, inform CRS that IAE will investigate prior to operating valve.
			NOTE: The CRS will likely conduct a Focus Brief.
At the discretion of the Lead Examiner move to Event #2.			

Op Test No.: N11-1 Scenario # 2 Event # 2 Page 10 of 53Event Description: **Power Range Failure**

After this, Power Range Instrument N42 will drift high. The operator will enter AP/1/A/5500/16, "Malfunction of Nuclear Instrumentation." The operator will address Technical Specification 3.3.1, "Reactor Trip System (RTS) Instrumentation."

Booth Operator Instructions: **Operate Trigger #3 (ENB013C(200))**

Indications Available:

- MCB Annunciator 1AD-2 B3, P/R CHANNEL DEVIATION
- MCB Annunciator 1AD-2 C8, P/R OVERPOWER ROD STOP
- MCB Annunciator 1AD-2 A8, OTDT RUNBACK/ROD STOP ALERT
- MCB Annunciator 1AD-2 E8, DCS TROUBLE
- MCB PR N42 indicates HIGHER than other Power Range channels
- OAC Alarm, U1 Quad 3 AFD Deviation
- PR N42 Drawer indicates HIGHER than other Power Range drawers
- PR N42 Drawer Upper Detector indicates HIGH.

Time	Pos.	Expected Actions/Behavior	Comments
AP/1/A/5500/16, MALFUNCTION OF NUCLEAR INSTRUMENTATION			
CASE III, POWER RANGE MALFUNCTION			
	RO	(Step 1) Place control rods in manual.	
	RO	(Step 2) Check S/G levels – AT PROGRAMMED LEVEL.	
	CRS	(Step 3) Announce occurrence on paging system.	NOTE: The CRS may ask U2 RO to make Plant Announcement. If so, Floor Instructor acknowledge as U2 RO.
	RO	(Step 4) Check P/R channels – ONLY ONE CHANNEL FAILED.	NOTE: A channel Check will reveal that only the Upper Detector on N42 has failed.
	CRS	(Step 5) Secure any power increase in progress.	

Op Test No.: N11-1 Scenario # 2 Event # 2 Page 11 of 53Event Description: **Power Range Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	RO	(Step 6) Check the following interlocks – IN REQUIRED STATE FOR EXISTING PLANT CONDITIONS:	
		<ul style="list-style-type: none"> P-7 Lo Power Rx Trips Blocked 	
		<ul style="list-style-type: none"> P-8 Hi Pwr Lo Flo Rx Trip Blocked 	
		<ul style="list-style-type: none"> P-10 Nuclear at Power. 	
	BOP	(Step 7) Perform the following actions at the "MISCELLANIOUS CONTROL AND INDICATION PANEL" drawer:	
		<ul style="list-style-type: none"> Place the appropriate "ROD STOP BYPASS" switch to the failed channel position. 	NOTE: The BOP will operate the switch for N42.
		<ul style="list-style-type: none"> Place the "POWER MISMATCH BYPASS" switch to the failed channel position. 	NOTE: The BOP will place the switch in the N42 position.
	BOP	(Step 8) Perform the following actions at the "DETECTOR CURRENT COMPARATOR" drawer:	
		<ul style="list-style-type: none"> Place the "UPPER SECTION" switch to the failed channel position. 	NOTE: The BOP will place the switch in the N42 position.
		<ul style="list-style-type: none"> Check the "CHANNEL DEFEAT" light for the upper section – LIT. 	
		<ul style="list-style-type: none"> Place the "LOWER SECTION" switch to the failed channel position. 	NOTE: The BOP will place the switch in the N42 position.
		<ul style="list-style-type: none"> Check the "CHANNEL DEFEAT" light for the lower section – LIT. 	
	BOP	(Step 9) Perform the following action at the "COMPARATOR AND RATE" drawer:	
		<ul style="list-style-type: none"> Place the "COMPARATOR CHANNEL DEFEAT" switch to the failed channel position. 	NOTE: The BOP will place the switch in the N42 position.
		<ul style="list-style-type: none"> Check the "COMPARATOR DEFEAT" light – LIT. 	

Op Test No.: N11-1 Scenario # 2 Event # 2 Page 12 of 53Event Description: **Power Range Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 10) Trip bistables of failed channel as follows:	
		<ul style="list-style-type: none"> Remove Control Power fuses from "POWER RANGE A" drawer for failed channel. 	NOTE: This action will cause Annunciators to alarm on MCB Panel 1AD-2.
	BOP	<ul style="list-style-type: none"> IF Power Range Cabinet shows evidence of damage ... 	NOTE: There is no such evidence displayed.
	BOP/ RO	(Step 11) Check the following status lights for the failed channel – LIT:	
		<ul style="list-style-type: none"> "NUC OVERPOWER ROD STOP CH I(II, III, IV) BYP" (1SI-19) 	
		<ul style="list-style-type: none"> "P/R HI FLUX LO STPT" (1SI-2) 	
		<ul style="list-style-type: none"> "P/R HI FLUX HI STPT" (1SI-2) 	
		<ul style="list-style-type: none"> "P/R HI FLUX RATE" (1SI-3) 	
	BOP/ RO	(Step 12) Check the following annunciator lights – LIT:	
		<ul style="list-style-type: none"> "P/R HI VOLTAGE FAILURE" (1AD-2, F-3) 	
		<ul style="list-style-type: none"> "P/R HI FLUX HI STPT ALERT" (1AD-2, A-3) 	
		<ul style="list-style-type: none"> "P/R HI FLUX RATE ALERT" (1AD-2, A-1) 	
	BOP/ RO	(Step 13) Check the following status lights on 1SI-18 – LIT:	
		<ul style="list-style-type: none"> "P/R LO SETPOINT TRAIN A TRIP BLOCKED" 	
		<ul style="list-style-type: none"> "P/R LO SETPOINT TRAIN B TRIP BLOCKED" 	
	RO	(Step 14) Check all CF control valves – IN AUTO.	

Op Test No.: N11-1 Scenario # 2 Event # 2 Page 13 of 53Event Description: **Power Range Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	RO	(Step 15) Ensure operable P/R channel selected to record on NIS Recorder.	NOTE: The RO will ensure that N42 is NOT selected to be recorded.
	RO	(Step 16) Adjust control rods to maintain T-Avg at T-Ref.	
	RO	(Step 17) WHEN T-Avg within 1°F of T-Ref AND auto rod control desired, THEN return control rods to auto.	NOTE: The RO may place the Control Rods back in AUTO.
	CRS	(Step 18) Instruct IAE to trip the following bistables associated with failed P/R channel within 72 hours of failure PER IP/1/A/3090/014 (Tripping Inoperable Protection Channels):	NOTE: The CRS may call WCC/IAE to address the switch position. If so, Booth Instructor acknowledge as WCC.
		• OPDT	
		• OTDT	
	CRS	(Step 19) IF AT ANY TIME failed P/R channel is repaired prior to IAE tripping bistables,....	NOTE: The Power Range Channel will NOT be repaired.
	CRS	(Step 20) IF AT ANY TIME IAE completes Step 18....	
	CRS	(Step 21) WHEN malfunctioning P/R channel repaired, THEN perform the following:	
			NOTE: The CRS will likely conduct a Focus Brief.
TECHNICAL SPECIFICATION 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION			
	CRS	LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE (Functions 2a, 2b, 3, 6, 7, 16b, 16c, and 16d).	

Op Test No.: N11-1 Scenario # 2 Event # 2 Page 14 of 53Event Description: **Power Range Failure**

Time	Pos.	Expected Actions/Behavior			Comments
	CRS	APPLICABILITY: According to Table 3.3.1-1			
	CRS	ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: This Action is associated with Functions 2.a and 3 (Hi Flux Hi setpoint and hi positive rate trips).
		A. One or more Functions with one or more required channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s).	Immediately	
		D. One channel inoperable	D.1.1 Perform SR 3.2.4.2	12 hours	
			AND D.1.2 Place channel in trip.	72 hours	
			OR D.2 Be in MODE 3	78 Hours	
		E. One channel inoperable.	E.1 Place channel in trip.	72 hours	
			OR E.2 Be in MODE 3	78 hours	
T. One or more channel(s) inoperable.	T.1 Verify interlock is in required state for existing unit conditions.	1 hour			
	OR T.2 Be in MODE 2	7 hours			
S. One or more channel(s) inoperable.	S.1 Verify interlock is in required state for existing unit conditions.	1 hour			
	OR S.2 Be in MODE 3	7 hours			
At the discretion of the Lead Examiner move to Event #3.					

Op Test No.: N11-1 Scenario # 2 Event # 3 Page 15 of 53Event Description: **1B2 KC Pump trip**

Next, the 1B2 KC Pump will trip. The operator will enter AP/1/A/5500/21, "Loss of KC or KC System Leakage." The operator will address Technical Specification 3.7.6, "Component Cooling Water (CCW) System."

Booth Operator Instructions: Operate Trigger #5 (KC010D)

Indications Available:

- MCB Annunciator 1AD-6, B1 through B4, A (B, C, and D) NC PUMP UPPER MTR BRG LO KC FLO, alarms.
- 1B2 KC Pump Green Status light LIT.
- 1B2 KC Pump amps go to 0.
- MCB Annunciator 1RAD1 1EMF 46A, LOSS OF TRN A KC SAMPLE FLO.
- MCB Annunciator 1RAD1 1EMF 46B, LOSS OF TRN B KC SAMPLE FLO.

Time	Pos.	Expected Actions/Behavior	Comments
			<p>NOTE: The CRS may dispatch an NEO to check out the 1B2 KC Pump.</p> <p>If so, Booth Instructor, wait 3 minutes, and then report that the 1B2 KC Pump Breaker shows a 51/50 Relay has operated, and the pump is NOT running.</p>
			<p>NOTE: The CRS will transition to AP-21.</p>
AP/1/A/5500/21, LOSS OF KC OR KC SYSTEM LEAKAGE			
	BOP	(Step 1) Check any KC pump – ON.	<p>NOTE: The 1B1 KC Pump is ON, and running properly.</p>
	RO/ BOP	(Step 2) Monitor Foldout page.	
	BOP	(Step 3) Secure any dilution in progress.	
	BOP	(Step 4) Check ND – IN RHR MODE.	<p>NOTE: ND is NOT in the RHR Mode.</p>

Op Test No.: N11-1 Scenario # 2 Event # 3 Page 16 of 53Event Description: **1B2 KC Pump trip**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 4 RNO) GO TO Step 7.	
	CRS	(Step 7) Announce occurrence on paging system.	NOTE: The CRS may ask U2 RO to make Plant Announcement. If so, Floor Instructor acknowledge as U2 RO.
	BOP	(Step 8) Check both train's KC Surge Tank level - STABLE OR GOING UP.	
	BOP	(Step 9) Start standby KC train as follows:	
		<ul style="list-style-type: none"> Check standby KC train – AVAILABLE TO START. 	
		<ul style="list-style-type: none"> Check standby KC Surge Tank Level – GREATER THAN 2 FT. 	
		<ul style="list-style-type: none"> Start standby KC train PER one of the following: 	
		<ul style="list-style-type: none"> To start A Train, GO TO Enclosure 4 (Startup of 1A KC Train). 	
AP/1/A/5500/21, LOSS OF KC OR KC SYSTEM LEAKAGE			
ENCLOSURE 4, STARTUP OF 1A KC TRAIN			
	BOP	(Step 1) Check 1KC-56A (KC To A ND HX) – CLOSED.	
	BOP	(Step 2) Check 1KC-81B (KC To B ND HX) – CLOSED.	
	BOP	(Step 3) Check 1B Train KC pumps – OFF.	NOTE: The 1B1 KC Pump is ON, and running properly.
	CRS	(Step 3 RNO) GO TO Step 5.	

Op Test No.: N11-1 Scenario # 2 Event # 3 Page 17 of 53Event Description: **1B2 KC Pump trip**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 5) Check 1A Train KC pumps – OFF.	
	BOP	(Step 6) IF voiding of 1A train KC is suspected....	NOTE: Voiding is NOT suspected.
	BOP	(Step 7) Close the following:	
		<ul style="list-style-type: none"> 1KC-50A (Trn A Aux Bldg Non Ess Sup Isol). 	
		<ul style="list-style-type: none"> 1KC-1A (Trn A Aux Bldg Non Ess Ret Isol). 	
		<ul style="list-style-type: none"> 1KC-230A (Trn A Rx Bldg Non Ess Sup Isol). 	
		<ul style="list-style-type: none"> 1KC-3A (Trn A Rx Bldg Non Ess Ret Isol). 	
	BOP	(Step 8) Start 1A RN pump.	
	BOP	(Step 9) Ensure 1RN-86A (A KC Hx Inlet Isol) opens.	
	BOP	(Step 10) Place control switch for 1KC-51A (Train A Recirc Isol) in the "AUTO".	
	BOP	(Step 11) Ensure 1KC-51A (Train A Recirc Isol) opens.	
	BOP	(Step 12) Start 1A1 KC pump.	
	BOP	(Step 13) Check 1KC-6 (1A1 KC Pump Discharge) – LOCALLY THROTTLED IN STEP 6.	NOTE: 1KC-12 was NOT locally throttled in Step 6.

Op Test No.: N11-1 Scenario # 2 Event # 3 Page 18 of 53Event Description: **1B2 KC Pump trip**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 13 RNO) Perform the following:	NOTE: The CRS/BOP may dispatch an NEO to check out the A Train KC Pumps. If so, Booth Instructor , as NEO report that both pumps are operating normally .
		<ul style="list-style-type: none"> Start 1A2 KC pump. 	
	CRS	<ul style="list-style-type: none"> GO TO Step 17. 	
	BOP	(Step 17) Check ND pumps – ANY ON PRIOR TO ENTERING THIS PROCEDURE.	NOTE: BOTH ND Pumps are and have been OFF.
	CRS	(Step 17 RNO) GO TO Step 20.	
	BOP	(Step 20) Check KC leak – HAS OCCURRED.	NOTE: A KC System Leak has NOT occurred.
	BOP	(Step 20 RNO) Perform the following:	
		<ul style="list-style-type: none"> Limit KC pump flow to 4000 GPM per operating KC pump in next step. 	
		<ul style="list-style-type: none"> Open the following valves: 	
		<ul style="list-style-type: none"> 1KC-3A (Trn A Rx Bldg Non Ess Ret Isol). 	
		<ul style="list-style-type: none"> 1KC-230A (Trn A Rx Bldg Non Ess Sup Isol). 	
		<ul style="list-style-type: none"> Close the following valves: 	
		<ul style="list-style-type: none"> 1KC-228B (Trn B Rx Bldg Non Ess Sup Isol). 	
		<ul style="list-style-type: none"> 1KC-18B (Trn B Rx Bldg Non Ess Ret Isol). 	
		<ul style="list-style-type: none"> Open the following valves: 	
		<ul style="list-style-type: none"> 1KC-1A (Trn A Aux Bldg Non Ess Ret Isol). 	
		<ul style="list-style-type: none"> 1KC-50A (Trn A Aux Bldg Non Ess Sup Isol). 	

Op Test No.: N11-1 Scenario # 2 Event # 3 Page 19 of 53Event Description: **1B2 KC Pump trip**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	• GO TO Step 25.	
	BOP	(Step 25) Check 1B ND pump – OFF.	
	BOP	(Step 26) Check 1KC-81B (KC To B ND HX) – CLOSED.	
	BOP	(Step 27) Place control switch for 1KC-54B (Train B Recirc Isol) in the “CLOSE” position.	
	BOP	(Step 28) Ensure 1KC-54B (Train B Recirc Isol) closes.	
	BOP	(Step 29) Stop 1B1 and 1B2 pumps.	NOTE: The BOP will stop the 1B1 KC Pump.
	BOP	(Step 30) Check KC flow – LESS THAN 4000 GPM PER OPERATING KC PUMP.	
	BOP	(Step 31) Check ND pumps – ANY ON PRIOR TO ENTERING THIS PROCEDURE.	NOTE: BOTH ND Pumps are and have been OFF.
	CRS	(Step 31 RNO) GO TO Step 37.	
	BOP	(Step 37) Check KC System leak – HAS OCCURRED.	NOTE: A KC System Leak has NOT occurred.
	CRS	(Step 37 RNO) GO TO Step 41 in body of this procedure.	
AP/1/A/5500/21, LOSS OF KC OR KC SYSTEM LEAKAGE			
	BOP	(Step 41) Check any letdown path – IN SERVICE.	NOTE: Normal Letdown is in service.

Op Test No.: N11-1 Scenario # 2 Event # 3 Page 20 of 53Event Description: **1B2 KC Pump trip**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 42) Check NC pump thermal barrier valves – OPEN:	
		• 1KC-394A (A NC Pump Therm Bar Otlit)	
		• 1KC-345A (C NC Pump Therm Bar Otlit)	
		• 1KC-364B (B NC Pump Therm Bar Otlit)	
		• 1KC-413B (D NC Pump Therm Bar Otlit).	
	BOP	(Step 43) Check KC to Aux Bldg Non-essential header – ESTABLISHED.	
	BOP	(Step 44) Check NM valves (on 1MC-8) – PREVIOUSLY CLOSED BY THIS PROCEDURE.	NOTE: NM Valves have NOT been previously Closed by this procedure.
	CRS	(Step 44 RNO) GO TO Step 46.	
	CRS	(Step 46) Evaluate KC chemistry requirements as follows:	
		• Notify Primary Chemistry of KC makeup that has occurred or is in progress.	NOTE: KC System makeup has NOT occurred.
		• Evaluate recirculating the KC Surge Tank volume and feed and bleed of KC System PER OP/1/A/6400/005 (Component Cooling Water System).	NOTE: There is NO NEED for KC System Feed and Bleed.
	BOP	(Step 47) Check both trains RN suction – ALIGNED TO LLI.	
	CRS	(Step 48) RETURN TO procedure and step in effect.	
TECHNICAL SPECIFICATION 3.7.6, COMPONENT COOLING WATER SYSTEM			

Op Test No.: N11-1 Scenario # 2 Event # 3 Page 21 of 53Event Description: **1B2 KC Pump trip**

Time	Pos.	Expected Actions/Behavior			Comments
	CRS	LCO 3.7.6 Two CCW trains shall be OPERABLE.			
	CRS	APPLICABILITY: MODES 1, 2, 3, and 4.			
	CRS	ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The CRS will declare the B KC Train inoperable.
		A. One CCW train inoperable.	A.1 Restore CCW train to OPERABLE status.	72 hours	
TECHNICAL SPECIFICATION 3.8.1, AC SOURCES - OPERATING					
	CRS	LCO 3.8.1 The following AC electrical sources shall be OPERABLE:			
		<ul style="list-style-type: none">Two qualified circuits between the offsite transmission network and the Onsite Essential Auxiliary Power System; and			
		<ul style="list-style-type: none">Two diesel generators (DGs) capable of supplying the Onsite Essential Auxiliary Power Systems;			
		AND			
		<ul style="list-style-type: none">The automatic load sequencers for Train A and Train B shall be OPERABLE.			
	CRS	APPLICABILITY: MODES 1, 2, 3, and 4.			
	CRS	ACTIONS			

Op Test No.: N11-1 Scenario # 2 Event # 3 Page 22 of 53Event Description: **1B2 KC Pump trip**

Time	Pos.	Expected Actions/Behavior			Comments
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The CRS will declare the A KC Train inoperable within 4 hours of the B KC Train.
		b. One DG inoperable.	B.2 Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)	
At the discretion of the Lead Examiner move to Event #4.					

Op Test No.: N11-1 Scenario # 2 Event # 4 Page 23 of 53Event Description: **Rapid Downpower**

Subsequently, the 1B DG will be declared inoperable. The crew will be directed to reduce plant power to Mode 3 within 2 hours. The operator will perform a rapid downpower in accordance with AP/1/A/5500/04, "Rapid Downpower."

Booth Operator Instructions:

As WCC Supervisor call Control Room and report that there is a major leak of Lube Oil in the 1B DG Room.

2 minutes later Operate Trigger #7 EPQ001B.

As WCC Supervisor call Control Room and report that Station Management has directed that the plant be placed in Mode 3 within 2 hours.

Indications Available:

- MCB Annunciator 1AD-11, D8, D/G B 125 VDC CONTROL POWER TROUBLE, alarms. (2 minutes delayed)

Time	Pos.	Expected Actions/Behavior	Comments
AP/1/A/5500/04, RAPID DOWNPOWER			
	RO/ BOP	(Step 1) Monitor Foldout page.	
	CRS	(Step 2) Announce occurrence on page.	NOTE: The CRS may ask U2 RO to make Plant Announcement. If so, Floor Instructor acknowledge as U2 RO.
	RO	(Step 3) Check turbine control – IN AUTO.	NOTE: Auto turbine control is available.
	RO	(Step 4) Check "MW LOOP" – IN SERVICE.	
	RO	(Step 4 RNO) Depress "MW IN/MW OUT" pushbutton.	

Op Test No.: N11-1 Scenario # 2 Event # 4 Page 24 of 53Event Description: **Rapid Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 5) Check shutdown to Mode 3 – DESIRED.	
	CRS	(Step 6) Check if “Shutdown Via Reactor Trip from 15% Power” appropriate:	
		<ul style="list-style-type: none"> Shutdown Via Reactor Trip from 15% Power – DESIRED. 	
		<ul style="list-style-type: none"> At least two CA pumps – OPERABLE. 	NOTE: With Both EDGs OOS neither MD CA Pump is OPERABLE.
	RO	(Step 6 RNO) Perform the following:	
		<ul style="list-style-type: none"> IF Mode 3 is time critical AND the reactor will be shutdown by manually inserting control rods..... 	NOTE: The shutdown will not be performed using manual rod control.
	CRS	<ul style="list-style-type: none"> Observe Note prior to Step 8 and GO TO Step 8. 	
	CRS	(Step 8) Determine the required power reduction rate (MW/min).	NOTE: The CRS will reduce load at $\approx 10\text{--}23$ MWe/minute.
	RO	(Step 9) Check control rods – IN AUTO.	
	BOP	(Step 10) Notify SOC of load reduction (red dispatcher phone).	Booth Instructor: as SOC, acknowledge.
	RO	(Step 11) Initiate turbine load reduction to desired load at desired rate.	
	BOP	(Step 12) Borate NC System as follows:	
		<ul style="list-style-type: none"> Energize all backup Pzr heaters. 	
		<ul style="list-style-type: none"> Check unit to be shutdown – VIA REACTOR TRIP FROM 15% POWER. 	
		<ul style="list-style-type: none"> Calculate total power change (%): 	NOTE: The CRS will determine the total power change to be 85%.

Op Test No.: N11-1 Scenario # 2 Event # 4 Page 25 of 53

Event Description: **Rapid Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Determine boration amount based on the following: 	
		<ul style="list-style-type: none"> Power Reduction Rate (MW/min) 	
		<ul style="list-style-type: none"> Present NC System Boron Concentration (ppm) 	
		<ul style="list-style-type: none"> Total Power change (%). 	NOTE: The BOP will determine to inject ≈680-1020 gallons of Boric Acid.
		<ul style="list-style-type: none"> Record calculated boration amount: 	
	RO	<ul style="list-style-type: none"> Check auto or manual rod control – AVAILABLE. 	
	BOP	<ul style="list-style-type: none"> Perform boration in 4 equal additions during load reduction PER OP/1/A/6150/009 (Boron Concentration Control), Enclosure 4.7 (Boration Using 1NV-265B (Boric Acid to NV Pumps)). 	Floor Instructor: When BOP attempts to obtain copy of procedure from NDL, provide copy.
Booth Operator Instructions: Operate Trigger #9 when 1NV-265B is OPEN (IRE003A (0))			
			Examiner NOTE: When RO alerts crew to the fact that the Control Rods are moving uncontrollably, Move to event 5.
	RO	(Step 13) Check control rods – MOVING IN AS REQUIRED TO MAINTAIN T-AVG AT T-REF.	
	RO	(Step 14) Display Rod Insertion Limits on OAC by entering turn on code "RIL".	
	RO	(Step 15) IF AT ANY TIME "CONTROL ROD BANK LO LO LIMIT" alarm (1AD-2, B-9) is lit, THEN perform one of the following to comply with Tech Spec 3.1.6 (Control Bank Insertion Limits):	

Op Test No.: N11-1 Scenario # 2 Event # 4 Page 26 of 53Event Description: **Rapid Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	RO	(Step 16) IF AT ANY TIME during this procedure C-7A is received, THEN ensure Transient Monitor freeze is triggered.	
	CRS	(Step 17) REFER TO the following:	NOTE: The CRS may ask OSM to address. If so, Floor Instructor acknowledge as OSM.
		<ul style="list-style-type: none"> RP/0/A/5700/000 (Classification of Emergency) 	
		<ul style="list-style-type: none"> RP/0/A/5700/010 (NRC Immediate Notification Requirements). 	
	CRS	(Step 18) Notify Reactor Group Duty Engineer of load reduction.	NOTE: The CRS may call WCC/RE to address the switch position. If so, Booth Instructor acknowledge as WCC/RE.
	RO	(Step 19) Check target load – LESS THAN 1000 MW.	
	RO	(Step 20) Check Unit 2 – AVAILABLE TO SUPPLY AUX STEAM (AS) HEADER.	NOTE: The CRS will ask U2 RO to report AS Header pressure. Floor Instructor: As U2 RO report that U2 is available.
	CRS	(Step 21) Dispatch operator to ensure the following valves are OPEN:	NOTE: The CRS will dispatch an NEO. Booth Instructor: Within 5 minutes , as NEO report that Valves are OPEN .
		<ul style="list-style-type: none"> 1AS-74 (Unit 1 & Unit 2 Aux Steam Hdr Cross-Tie Isol) (service bldg, 739+12, room 202, R-27, over B RL Pump) 	

Op Test No.: N11-1 Scenario # 2 Event # 4 Page 27 of 53Event Description: **Rapid Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Unit 2 valve 2AS-74 (Unit 1 & Unit 2 Aux Steam Hdr Cross-Tie Isol) (service bldg, 739+14, room 202, S-27, above RL strainer) 	
		<ul style="list-style-type: none"> 1AS-253 (Unit 1 Aux Steam Hdr Isol) (service bldg, 739+15, P-28, above overhead door to Unit 1 turbine bldg). 	
	RO	(Step 22) Check SM flow on all S/Gs – GREATER THAN 25%.	Examiner NOTE: When RO alerts crew to the fact that the Control Rods are moving uncontrollably, Move to event 5.
	RO	(Step 23) WHEN all SM flows are less than 75%, THEN ensure that following valves ramp CLOSED:	
		<ul style="list-style-type: none"> 1CF-104AB (1A S/G CF Control Bypass) 	
		<ul style="list-style-type: none"> 1CF-105AB (1B S/G CF Control Bypass) 	
		<ul style="list-style-type: none"> 1CF-106AB (1C S/G CF Control Bypass) 	
		<ul style="list-style-type: none"> 1CF-107AB (1D S/G CF Control Bypass) 	
	RO	(Step 24) WHEN P/R instruments indicate less than 48%, THEN check "P-8 HI PWR LO FLO RX TRIP BLOCKED" status light (1SI-18) – LIT.	
	RO	(Step 25) P/R meters indicate reactor power – LESS THAN 40%.	NOTE: It is NOT expected that the crew will be less than 40% at this time.
	CRS	(Step 25 RNO) Perform the following:	
		<ul style="list-style-type: none"> IF target load is less than 40%, THEN perform the following: 	
		<ul style="list-style-type: none"> Do not continue with this procedure until: 	

Op Test No.: N11-1 Scenario # 2 Event # 4 Page 28 of 53Event Description: **Rapid Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none">P/R instruments indicate reactor power is less than 40%.	
		<ul style="list-style-type: none">All CF flows are less than 40%.	
		<ul style="list-style-type: none">Impulse pressure is less than 260 PSIG.	
		<ul style="list-style-type: none">WHEN all parameters above are met, THEN GO TO Step 26.	
			Examiner NOTE: When RO alerts crew to the fact that the Control Rods are moving uncontrollably, Move to event 5.
When the RO diagnoses the unwarranted Continuous Rod movement move to Event #5.			

Op Test No.: N11-1 Scenario # 2 Event # 5 Page 29 of 53

Event Description: **Continuous inward Rod Motion**

During the downpower, the Control Rods will continuously insert. The operator will enter AP/1/A/5500/14, "Rod Control Malfunction," and take manual control of the rods.

Booth Operator Instructions: Operate Trigger #9 (IRE003A (0))

(Previously operated during Event #4 when 1NV-265B was opened)

Indications Available:

- Control Rods are moving inward in AUTO without a proper signal.

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS could go one of two ways at this point. The operator may back-up to Step 9 of AP4 and drive rods inward in MANUAL, or proceed to AP14. BOTH are scripted here.
AP/1/A/5500/4, RAPID DOWNPOWER			
			Examiner NOTE: Upon recognition that the Control Rods are moving uncontrollably, the RO may take the Control Rods to MANUAL If NOT, move forward to Page 29 .
	CRS	(Step 9) Check control rods – IN AUTO	
	RO	(step 9 RNO) Perform the following:	
		<ul style="list-style-type: none"> IF auto control available.... 	NOTE: AUTO rod control is NOT available.
		<ul style="list-style-type: none"> IF manual control available, THEN move rods as required to maintain T-Avg at T-Ref. 	
		<ul style="list-style-type: none"> IF rods cannot be moved in auto or manual... 	NOTE: MANUAL rod control is available.
AP/1/A/5500/14, ROD CONTROL MALFUNCTION			

Op Test No.: N11-1 Scenario # 2 Event # 5 Page 30 of 53Event Description: **Continuous inward Rod Motion**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: Upon recognition that the Control Rods are moving uncontrollably, the CRS may enter AP14.
	RO	(Step 1) IF more than one rod dropped, THEN perform the following:	Immediate Action NOTE: No Rods have dropped in this event.
	RO	(Step 2) Place control rods in manual.	Immediate Action NOTE: The RO will place the rods in MANUAL.
	RO	(Step 3) Check rod movement – STOPPED.	Immediate Action NOTE: When the RO places the Rods to MANUAL, continual inward Rod Motion will stop.
	RO	(Step 4) Check all rods – ALIGNED WITH ASSOCIATED BANK.	
	RO	(Step 5) Check “ROD CONTROL URGENT FAILURE” alarm (1AD-2, A-10) – DARK.	
	RO	(Step 6) Check “T-AVG/T-REF FAILURE ROD STOP” alarm (1AD-2, B-7) – DARK.	
	CRS	(Step 7) IF this AP entered due to unwarranted rod insertion or withdrawal, THEN GO TO Enclosure 3 (Response To Continuous Rod Movement).	NOTE: The CRS will transition to Enclosure 3 of AP-14.
ROD CONTROL MALFUNCTION			
ENCLOSURE 3 – RESPONSE TO CONTINUOUS ROD MOVEMENT			

Op Test No.: N11-1 Scenario # 2 Event # 5 Page 31 of 53Event Description: **Continuous inward Rod Motion**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 1) Announce occurrence on paging system.	NOTE: CRS may ask U2 RO to make Plant Announcement. If so, Floor Instructor acknowledge as U2 RO.
	CRS	(Step 2) Notify IAE to investigate problem.	NOTE: The CRS may call WCC/IAE to address the switch position. If so, Booth Instructor acknowledge as WCC.
	CRS	(Step 3) Evaluate the following prior to any control rod withdrawal:	
		<ul style="list-style-type: none"> Ensure no inadvertent mode change will occur. 	
		<ul style="list-style-type: none"> Ensure control rods are withdrawn in a deliberate manner, while closely monitoring the reactor's response. 	
	RO	(Step 4) Check T-Ref indication - NORMAL	
	CRS/ RO	(Step 5) Do not move rods until IAE determines rod motion in permissible.	Booth Instructor: after 2 minutes , as IAE , report that MANUAL rod control only is permissible.
	RO	(Step 6) Maintain T-Avg within 1°F of programmed T-Ref as follows:	
		<ul style="list-style-type: none"> Adjust Turbine load 	
		OR	
		<ul style="list-style-type: none"> Borate/dilute NC System. 	
	RO	(Step 7) IF AT ANY TIME a runback occurs while in this procedure, THEN observe the following guidance:	NOTE: This is a Continuous Action. The CRS will make both board operators aware.

Op Test No.: N11-1 Scenario # 2 Event # 5 Page 32 of 53Event Description: **Continuous inward Rod Motion**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> IF IAE has determined that it is permissible to move rods, THEN respond to the runback PER AP/1/A/5500/03 (Load Rejection). 	
		<ul style="list-style-type: none"> For all other circumstances, assume rod control is not available and respond to the runback as follows: 	
		<ul style="list-style-type: none"> Trip Reactor 	
		<ul style="list-style-type: none"> GO TO EP/1/A/5000/E-0 (Reactor Trip or Safety Injection). 	
	RO/ BOP	(Step 8) IF AT ANY TIME while in this procedure a unit shutdown is required AND rods cannot be moved, THEN perform the following:	NOTE: This is a Continuous Action. The CRS will make both board operators aware.
		<ul style="list-style-type: none"> Borate as required during shutdown to maintain T-Avg at T-Ref. 	
		<ul style="list-style-type: none"> Monitor AFD during load reduction. 	
		<ul style="list-style-type: none"> IF AT ANY TIME AFD reaches Tech Spec limit AND reactor power is greater than 50%, THEN perform the following: 	
		<ul style="list-style-type: none"> Trip Reactor 	
		<ul style="list-style-type: none"> GO TO EP/1/A/5000/E-0 (Reactor Trip or Safety Injection). 	
		<ul style="list-style-type: none"> IF entry into Mode 3 is desired... 	
	CRS	(Step 9) WHEN problem is repaired, THEN perform the following:	
		<ul style="list-style-type: none"> Ensure T-Avg at T-Ref $\pm 1^{\circ}\text{F}$. 	NOTE: The RO can move rods in MANUAL.
		<ul style="list-style-type: none"> IF auto rod control desired, THEN place rods in auto. 	
	CRS	(Step 10) Exit this procedure.	NOTE: The CRS will likely conduct a Focus Brief.
At the discretion of the Lead Examiner move to Events #6-8.			

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 33 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Following this, the Turbine will inadvertently trip, and the Reactor will fail to trip automatically and manually. Additionally, one Safety Valve on the 1B Steam Generator will lift and fail Open. The operator will enter EP/1/A/5000/E-0, "Reactor Trip or Safety Injection," and then transition to EP/1/A/5000/FR-S.1, "Response to Nuclear Power Generation/ATWS." During the performance of FR-S.1, the operator will successfully trip the Reactor. On the Reactor trip, the TD CA will trip on overspeed, and the 1A/1B MD CA Pump will fail to start automatically. The operator will be expected to manually start the MD CA Pumps. After completion of FR-S.1, the operator will transition back to E-0, and then to EP/1/A/5000/E-2, "Faulted Steam Generator Isolation." After the 1B Steam Generator is isolated, the operator will transition to EP/1/A/5000/ES-1.1, "SI Termination." The scenario will terminate at Step 7.c of ES-1.1.

Booth Operator Instructions: Operate Trigger #11 (DEH001, SM004D(100))

Indications Available:

- MCB Annunciator 1FO-1 F5, TURB TRIP CAUSES RX TRIP
- MWe drops immediately to 0
- Both Main Generator Breaker GREEN Status lights are LIT.
- Reactor Trip breakers RED Status lights are LIT.
- DRPI indicates that Control Rods have NOT tripped.
- Pzr Pressure rises
- All three Pzr PORVs indicate OPEN.

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: Crew will carry out Immediate Actions of E-0, prior to the CRS addressing the EP.
EP/1/A/5000/E-0, REACTOR TRIP OR SAFETY INJECTION			
	RO/ BOP	(Step 1) Monitor Foldout page.	
	RO	(Step 2) Check Reactor trip:	Immediate Action
		<ul style="list-style-type: none"> • All rod bottom lights – LIT 	
		<ul style="list-style-type: none"> • Reactor trip and bypass breakers - OPEN 	
		<ul style="list-style-type: none"> • I/R amps – GOING DOWN. 	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 34 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
	RO	(Step 2 RNO) Perform the following:	Immediate Action
		<ul style="list-style-type: none"> • Trip reactor. 	
	RO	<ul style="list-style-type: none"> • IF reactor will not trip, THEN perform the following: 	<p>NOTE: The CRS may dispatch an NEO to locally trip the reactor.</p> <p>If so, Booth Instructor After 30 seconds delete MALF IPE001A/B, and report that the Reactor Trip Breakers have been opened.</p>
		<ul style="list-style-type: none"> • Implement EP/1/A/5000/F-0 (Critical Safety Function Status Trees). 	
	CRS	<ul style="list-style-type: none"> • GO TO EP/1/A/5000/FR-S.1 (Response To Nuclear Power Generation/ATWS). 	NOTE: The CRS will transition to FR-S.1.
EP/1/A/5000/FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS			
	RO	(Step 1) Check Reactor Trip:	Immediate Action
		<ul style="list-style-type: none"> • All rod bottom lights - LIT 	
		<ul style="list-style-type: none"> • Reactor trip and bypass breakers - OPEN 	
		<ul style="list-style-type: none"> • I/R amps – GOING DOWN. 	
	RO	(Step 1 RNO) Perform the following:	Immediate Action
		<ul style="list-style-type: none"> • Trip the reactor. 	
		<ul style="list-style-type: none"> • IF reactor will not trip, THEN manually insert rods. 	NOTE: The RO will manually drive Rods inward.

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 35 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
CRITICAL TASK:			
FR-S.1 C			
Manually drive rods inward before completing the immediate actions of FR-S.1 (Step 2).			
Safety Significance: failure to insert negative reactivity, under the postulated plant conditions, results in an unnecessary situation in which the reactor power remains higher than it otherwise would if the action is not taken. Performance of the critical task would move the reactor power lower to prevent a subsequent unnecessary challenge to reactor core operational limits. A failure to insert negative reactivity constitutes a mis-operation or incorrect crew performance which leads to incorrect reactivity control.			
	BOP	(Step 2) Check Turbine Trip:	
		<ul style="list-style-type: none"> All throttle valves – CLOSED. 	
	RO/ BOP	(Step 3) Monitor Foldout page.	
	BOP	(Step 4) Check proper CA pump status:	
		<ul style="list-style-type: none"> MD CA pumps – ON. 	NOTE: The 1A/1B CA Pumps have failed to AUTO start, and the TD CA Pump has tripped on overspeed.
	BOP	(Step 4.a RNO) Start pumps.	NOTE: The BOP will start both MD CA Pumps.
	BOP	<ul style="list-style-type: none"> Check N/R Level in at least 3 S/Gs – GREATER THAN 17%. 	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 36 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
CRITICAL TASK:			
(E-0 F) Establish 450 gpm of CA Flow to the Steam Generators before transition out of FR-S.1, unless the transition is made to EP/1/A/5000/FR-H.1, and then before the NCPs are manually tripped to limit heat input to the RCS.			
Safety Significance: Failure to establish a Secondary Heat Sink through the initiation of CA flow unnecessarily challenges both the HEAT SINK and the CORE COOLING Critical Safety Functions. Additionally, the FSAR Safety Analysis results are predicated on the assumption that at least one train of safeguards actuates and delivers a minimum amount of AFW flow to the Steam Generators. Failure to perform this task, when the ability to do so exists, results in a violation of the Facility License Condition and places the plant in an unanalyzed condition.			
	BOP	(Step 5) Initiate emergency boration of NC System as follows:	
		<ul style="list-style-type: none"> Ensure one NV pump - ON 	
		<ul style="list-style-type: none"> Align boration flowpath as follows: 	
		<ul style="list-style-type: none"> Open 1NV-265B (Boric Acid To NV Pumps). 	
		<ul style="list-style-type: none"> Start both boric acid transfer pumps. 	
		<ul style="list-style-type: none"> Check emergency boration flow – GREATER THAN 30 GPM. 	
		(Step 5b.3 RNO) IF NV pump suction is aligned to VCT...	NOTE: The NV Pump suction is NOT aligned to the VCT.
	BOP	<ul style="list-style-type: none"> Check if NV flowpath aligned to NC System: 	
		<ul style="list-style-type: none"> 1NV-244A (Charging Line Cont Outside Isol) – OPEN. 	
		<ul style="list-style-type: none"> 1NV-245B (Charging Line Cont Outside Isol) – OPEN. 	
		(Step 5c RNO) Perform the following:	
		<ul style="list-style-type: none"> IF NV pump suction is aligned to VCT... 	NOTE: The NV Pump suction is NOT aligned to the VCT.
		<ul style="list-style-type: none"> Open the following valves: 	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 37 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> 1NI-9A (NC Cold Leg Inj From NV). 	
		<ul style="list-style-type: none"> 1NI-10B (NC Cold Leg Inj From NV). 	
	CRS	<ul style="list-style-type: none"> GO TO Step 5e. 	
	BOP	<ul style="list-style-type: none"> Check Pzr pressure – LESS THAN 2335 PSIG. 	
	BOP	(Step 6) Close the following VQ valves:	
		<ul style="list-style-type: none"> 1VQ-1A (U1 Cont Air Release Inside Isol) 	
		<ul style="list-style-type: none"> 1VQ-6A (U1 Cont Air Addition Inside Isol) 	
		<ul style="list-style-type: none"> 1VQ-2B (U1 Cont Air Release Outside Isol) 	
		<ul style="list-style-type: none"> 1VQ-5B (U1 Cont Air Addition Outside Isol) 	
	BOP	(Step 7) IF AT ANY TIME while in this procedure an S/I signal exists or occurs, THEN perform the following:	
		<ul style="list-style-type: none"> Have another Licensed Operator check S/I equipment PER Enclosure 3 (Subsequent S/I Actions). 	<p>Examiner NOTE: SI may or may NOT have occurred at this point.</p> <p>If it has, or when it does, the CRS will hand Enclosure 3 off to the BOP.</p> <p>Examiner following the BOP, continue with the Enclosure 3 scripted steps below.</p> <p>Examiners following the CRS/RO proceed to FR-S.1 Steps on Page 39.</p>
	CRS	<ul style="list-style-type: none"> Continue with this procedure. 	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 38 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
EP/1/A/5000/FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS ENCLOSURE 3, SUBSEQUENT S/I ACTIONS			
	BOP	(Step 1) Check 1ETA and 1ETB – ENERGIZED.	
	BOP	(Step 2) Check both LOCA Sequencer Actuated status lights (1SI-14) – LIT.	
	BOP	(Step 3) Check ESF Monitor Light Panel on energized train(s):	
		• Groups 1, 2, 5 – DARK.	
		• Group 3 – LIT.	
		• OAC – IN SERVICE.	
		• Group 4, Rows A through F – LIT AS REQUIRED.	
		• GO TO Step 4.	
	BOP	(Step 4) Check proper CA pump status:	
		• MD CA pumps - ON	NOTE: Both MD CA Pumps should be RUNNING.
		• N/R level in at least 3 S/Gs – GREATER THAN 17%.	
	BOP	(Step 5) Check all KC pumps – ON.	
	BOP	(Step 5.a RNO) Start pumps.	NOTE: The 1B2 KC Pump has previously failed.
	BOP	(Step 6) Check both RN pumps – ON.	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 39 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 7) Notify Unit 2 to start 2A RN pump.	NOTE: The BOP will direct the U2 BOP to start the 2A RN Pump. Floor Instructor: As U2 RO report "2A RN Pump is running."
	BOP	(Step 8) Check all S/G pressures – GREATER THAN 775 PSIG.	NOTE: The BOP will determine that the 1B SG is depressurizing.
	BOP	(Step 8a RNO) Perform the following:	
		• Check the following valves closed:	
		• All MSIVs	
		• All MSIV bypass valves	
		• All SM PORVs.	
		• IF valves open...	NOTE: All 1B SG Valves are Closed.
	BOP	(Step 9) Check Containment Pressure – HAS REMAINED LESS THAN 3 PSIG.	
	BOP	(Step 10) IF AT ANY TIME while in this procedure containment pressure goes above 3 PSIG, THEN perform Step 9).	
	BOP	(Step 11) Notify OSM or other SRO to perform EP/1/A/5000/G-1 (Generic Enclosures), Enclosure 22 (OSM Actions Following an S/I).	NOTE: The BOP may ask OSM to address. If so, Floor Instructor acknowledge as OSM.
			NOTE: The BOP will report that Enclosure 3 has been completed to the CRS.
EP/1/A/5000/FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS			
			Examiner NOTE: Examiners following the CRS/RO continue HERE .

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 40 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS may dispatch an NEO.
	RO	(Step 9) Check reactor subcritical:	
		<ul style="list-style-type: none"> P/R channels – LESS THAN 5% 	
		<ul style="list-style-type: none"> W/R Neutron Flux – LESS THAN 5% 	
		<ul style="list-style-type: none"> I/R SUR – NEGATIVE. 	
	CRS	(Step 10) GO TO Step 17.	
	RO	(Step 17) Ensure adequate shutdown margin as follows:	
		<ul style="list-style-type: none"> Obtain current NC boron concentration from Primary Chemistry. 	NOTE: The CRS/RO may call Chemistry. If so, Booth Instructor acknowledge as Chemistry.
		<ul style="list-style-type: none"> WHEN current NC boron concentration is obtained, THEN perform shutdown margin calculation PER OP/0/A/6100/006 (Reactivity Balance Calculation). 	NOTE: The CRS may ask the U2 RO to perform this action. If so, Floor Instructor acknowledge as U2 RO.
		<ul style="list-style-type: none"> WHEN following conditions satisfied, THEN NC System boration may be stopped: 	NOTE: This is a Continuous Action. The CRS will make both board operators aware.
		<ul style="list-style-type: none"> Adequate shutdown margin is obtained. 	
		<ul style="list-style-type: none"> Uncontrolled cooldown has been stopped. 	
	CRS	(Step 18) REFER TO RP/0/A/5700/000 (Classification of Emergency).	NOTE: The CRS may ask OSM to address. If so, Floor Instructor acknowledge as OSM.
	CRS	(Step 19) RETURN TO procedure and step in effect.	NOTE: The CRS will transition back to E-0.

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 41 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
EP/1/A/5000/E-0, REACTOR TRIP OR SAFETY INJECTION			
	RO/ BOP	(Step 1) Monitor Foldout page.	
	RO	(Step 2) Check Reactor trip:	Immediate Action
		<ul style="list-style-type: none"> All rod bottom lights – LIT 	
		<ul style="list-style-type: none"> Reactor trip and bypass breakers – OPEN 	
		<ul style="list-style-type: none"> I/R amps – GOING DOWN. 	
	RO	(Step 3) Check Turbine Trip:	Immediate Action
		<ul style="list-style-type: none"> All throttle valves – CLOSED. 	
	BOP	(Step 4) Check 1ETA and 1ETB – ENERGIZED.	Immediate Action
	RO/ BOP	(Step 5) Check if S/I is actuated:	Immediate Action
		<ul style="list-style-type: none"> “A SAFETY INJECTION ACTUATED” status light (1SI-18) – LIT. 	NOTE: It is expected that SI will either be actuated already, or REQUIRED by this time.
		<ul style="list-style-type: none"> Both LOCA Sequencer Actuated status lights (1SI-14) – LIT. 	
	CRS	(Step 6) Announce “Unit 1 Safety Injection”.	NOTE: The CRS may ask U2 RO to make Plant Announcement. If so, Floor Instructor acknowledge as U2 RO.
	BOP	(Step 7) Check all Feedwater Isolation status lights (1SI-4) – LIT.	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 42 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 8) Check Phase A "RESET" lights – DARK.	
	BOP	(Step 9) Check ESF Monitor Light Panel on energized train(s):	
		• Groups 1, 2, 5 – DARK.	
		• Group 3 – LIT.	
		• OAC – IN SERVICE.	
		• Group 4, Rows A through F – LIT AS REQUIRED.	
	CRS	• GO TO Step 10.	
	BOP	(Step 10) Check proper CA pump status:	
		• MD CA pumps - ON	NOTE: Both MD CA Pumps should be RUNNING.
		• N/R level is at least 3 S/Gs – GREATER THAN 17%.	
	BOP	(Step 11) Check all KC pumps – ON.	NOTE: The 1B2 KC Pump has previously failed.
		(Step 11 RNO) Perform the following:	NOTE: The BOP will NOT attempt to start the 1B2 KC Pump.
		• Start pumps.	
		• IF all KC pumps running...	NOTE: The 1B2 KC Pump is NOT running.
		• IF any NC pump KC low flow annunciator lit on 1AD-6, ...	NOTE: No KC System flow annunciators are LIT.
	BOP	(Step 12) Check both RN pumps – ON.	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 43 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 13) Notify Unit 2 to perform the following:	NOTE: The CRS will direct the U2 BOP to start the 2A RN Pump. Floor Instructor: As U2 RO report "2A RN Pump is running."
		<ul style="list-style-type: none"> Start 2A RN pump. 	
		<ul style="list-style-type: none"> THROTTLE Unit 2 RN flow to minimum for existing plant conditions. 	
	RO	(Step 14) Check all S/G pressures – GREATER THAN 775 PSIG.	NOTE: The 1B SG is depressurizing.
	RO	(Step 14 RNO) Perform the following:	
		<ul style="list-style-type: none"> Check the following closed: 	
		<ul style="list-style-type: none"> All MSIVs 	
		<ul style="list-style-type: none"> All MSIV bypass valves 	
		<ul style="list-style-type: none"> All SM PORVs. 	
		<ul style="list-style-type: none"> IF any valve open, ... 	NOTE: All 1B SG Valves are Closed.
	RO/ BOP	(Step 15) Check Containment Pressure – HAS REMAINED LESS THAN 3 PSIG.	NOTE: Containment Pressure is normal.
	BOP	(Step 16) Check S/I flow:	
		<ul style="list-style-type: none"> Check "NV PMPS TO COLD LEG FLOW" gauge – INDICATING FLOW. 	
		<ul style="list-style-type: none"> Check NC pressure – LESS THAN 1600 PSIG. 	NOTE: NC Pressure is >1600 psig.
	BOP	(Step 16.b RNO) Perform the following:	
		<ul style="list-style-type: none"> Ensure ND pump miniflow valve on running pump(s) OPEN: 	
		<ul style="list-style-type: none"> 1ND-68A (1A ND Pump & Hx Mini Flow Isol) 	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 44 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> 1ND-67B (1B ND Pump & Hx Mini Flow Isol). 	
	CRS	<ul style="list-style-type: none"> IF valve(s) open on all running ND pumps, THEN GO TO Step 17. 	
	CRS	(Step 17) Notify OSM or other SRO to perform EP/1/A/5000/G-1 (Generic Enclosures), Enclosure 22 (OSM Actions Following an S/I) within 10 minutes.	NOTE: The CRS may ask OSM to address. If so, Floor Instructor acknowledge as OSM.
	RO/ BOP	(Step 18) Check CA flow:	
		<ul style="list-style-type: none"> Total CA flow – GREATER THAN 450 GPM. 	
	BOP	<ul style="list-style-type: none"> Check VI header pressure – GREATER THAN 60 PSIG. 	
	RO	<ul style="list-style-type: none"> WHEN N/R level in any S/G greater than 11% (32% ACC), THEN control CA flow to maintain that S/G N/R level between 11% (32% ACC) and 50%. 	
	RO	(Step 19) Check NC temperatures:	
		<ul style="list-style-type: none"> IF any NC pump on, THEN check NC T-Avg– STABLE OR TRENDING TO 557°F. 	NOTE: All NC Pumps will be ON
	CRS	(Step 17 RNO) Perform the following based on plant conditions:	NOTE: The CRS may assign the RO to perform this action. If so, RO(BOP) Examiner follow actions of Enclosure 3 . Examiners following the CRS/BOP (RO) should move ahead to Page 46 to continue in E-0.
		<ul style="list-style-type: none"> IF temperature less than 557°F AND going down, THEN attempt to stop cooldown PER Enclosure 3 (Uncontrolled NC System Cooldown). 	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 45 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
E-0, REACTOR TRIP OR SAFETY INJECTION ENCLOSURE 3, UNCONTROLLED NC SYSTEM COOLDOWN			
	RO (BOP)	(Step 1) Check steam dump valves – CLOSED.	Examiner NOTE: Follow the actions associated with Enclosure 3 if RO is assigned by CRS to perform.
	RO (BOP)	(Step 2) Check all SM PORVs – CLOSED.	
	RO (BOP)	(Step 3) Check MSR "RESET" light – LIT.	
	RO (BOP)	(Step 4) Check any NC pump – ON.	
	RO (BOP)	(Step 5) Check NC T-Avg – GOING DOWN.	
	RO (BOP)	(Step 6) Control feed flow as follows:	
		<ul style="list-style-type: none"> IF S/G N/R level is less than 11% (32% ACC) in all S/Gs... 	NOTE: NR levels are > 11%.
		<ul style="list-style-type: none"> WHEN N/R level is greater than 11% (32% ACC) in at least one S/G, THEN throttle feed flow further to: 	
		<ul style="list-style-type: none"> Minimize cooldown 	
		<ul style="list-style-type: none"> Maintain at least one S/G N/R level greater than 11% (32% ACC). 	
	RO (BOP)	(Step 7) Check MSIVs – ANY OPEN.	NOTE: All MSIVs are Closed.

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 46 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
		(Step 7 RNO) Perform the following:	
		<ul style="list-style-type: none"> Close MSIV bypass valves. 	
		<ul style="list-style-type: none"> Exit this enclosure. 	
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner NOTE: Examiners following the CRS/BOP(RO) continue HERE .
	BOP (RO)	(Step 20) Check Pzr PORV and spray valves:	
		<ul style="list-style-type: none"> All Pzr PORVs – CLOSED. 	
		<ul style="list-style-type: none"> Normal Pzr spray valves – CLOSED. 	
		<ul style="list-style-type: none"> At least one Pzr PORV isolation valve – OPEN. 	
	BOP (RO)	(Step 21) Check NC subcooling based on core exit T/Cs – GREATER THAN 0°F.	
	BOP (RO)	(Step 22) Check if main steamlines intact:	
		<ul style="list-style-type: none"> All S/G pressures – STABLE OR GOING UP 	NOTE: One 1B SG Safety Valve is stuck OPEN.
		<ul style="list-style-type: none"> All S/Gs – PRESSURIZED. 	
	CRS	(Step 22 RNO) IF any S/G is faulted, THEN perform the following:	
		<ul style="list-style-type: none"> IF AT ANY TIME both of the following conditions exist, THEN start one train of VX PER Enclosure 4 (VX Manual Start): 	
		<ul style="list-style-type: none"> Containment pressure is between 1 PSIG and 3 PSIG. 	
		<ul style="list-style-type: none"> Containment pressure has remained less than 3 PSIG. 	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 47 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	<ul style="list-style-type: none"> Implement EP/1/A/5000/F-0 (Critical Safety Function Status Trees). 	NOTE: Since N42 has previously failed high, an invalid Red Path will exist on Subcriticality.
	CRS	<ul style="list-style-type: none"> GO TO EP/1/A/5000/E-2 (Faulted Steam Generator Isolation), 	NOTE: The CRS will transition to E-2.
EP/1/A/5000/E-2, FAULTED STEAM GENERATOR ISOLATION			
	RO/ BOP	(Step 1) Monitor Foldout page.	
	CRS	(Step 2) Maintain any faulted S/G or secondary break isolated during subsequent recovery actions unless needed for NC System cooldown.	NOTE: This is a Continuous Action. The CRS will make both board operators aware.
	RO/ BOP	(Step 3) Check the following valves – CLOSED:	
		<ul style="list-style-type: none"> All MSIVs 	
		<ul style="list-style-type: none"> All MSIV bypass valves. 	
	RO/ BOP	(Step 4) Check at least one S/G pressure – STABLE OR GOING UP.	NOTE: Although all SG pressures may be decreasing slowly, the operator will report stable based on plant conditions (i.e. faulted SG). Otherwise a transition to ECA-2.1 will be made.
	RO/ BOP	(Step 5) Identify faulted S/G(s):	NOTE: The 1B SG is Faulted.
		<ul style="list-style-type: none"> Any S/G pressure – GOING DOWN IN AN UNCONTROLLED MANNER 	
		OR	
		<ul style="list-style-type: none"> Any S/G – DEPRESSURIZED. 	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 48 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
	RO/ BOP	(Step 6) Maintain at least on S/G available for NC System cooldown in subsequent steps.	
	RO/ BOP	(Step 7) Check faulted S/G(s) SM PORV – CLOSED.	
	BOP	(Step 8) Reset CA modulating valves.	
	RO/ BOP	(Step 9) Isolate faulted S/G(s) as follows:	
	RO/ BOP	<ul style="list-style-type: none"> For 1B S/G: 	
		<ul style="list-style-type: none"> Check “S/G B FDW ISOLATED” status light (1SI-4) – LIT. 	
		<ul style="list-style-type: none"> Close 1CA-54A (U1 TD CA Pump Disch To 1BS/G Isol). 	
		<ul style="list-style-type: none"> Close 1CA-58A (1A CA Pump Disch To 1B S/G Isol). 	
	RO/ BOP	<ul style="list-style-type: none"> Check at least on MD CA pump – RUNNING. 	
		<ul style="list-style-type: none"> Dispatch operator to unlock and CLOSE the following valves: 	
		<ul style="list-style-type: none"> 1SA-2 (1B S/G SM Supply to Unit 1 TD CA Pump Turb Maint Isol) (Unit 1 interior doghouse, 767+12, FF-53) 	Booth Instructor: Operate Trigger #13 (LOA-SA003. After 3 minutes , as NEO report that the 1SA-2 and 1SA-78 are CLOSED.
		<ul style="list-style-type: none"> 1SA-78 (1B S/G SM Supply to Unit 1 TD CA Pump Turb Loop Seal Isol) (Unit 1 interior doghouse, 767+10, FF-53). 	
		<ul style="list-style-type: none"> Check BB valves – CLOSED: 	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 49 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> 1BB-2B (1B S/G Blowdown Cont Outside Isol Control) 	
		<ul style="list-style-type: none"> 1BB-6A (1B S/G BB Cont Inside Isol). 	
		<ul style="list-style-type: none"> Close 1SM-89 (1B SM Line Drain Isol). 	
	RO	(Step 10) Close 1AS-12 U1 SM To AS Hdr Control Inlet Isol).	
	BOP	(Step 11) Check if S/G tubes intact as follows:	
		<ul style="list-style-type: none"> Check the following EMF's – NORMAL: 	
		<ul style="list-style-type: none"> 1EMF-33 (Condenser Air Ejector Exhaust) 	
		<ul style="list-style-type: none"> 1EMF-24 (S/G A) 	
		<ul style="list-style-type: none"> 1EMF-25 (S/G B) 	
		<ul style="list-style-type: none"> 1EMF-26 (S/G C) 	
		<ul style="list-style-type: none"> 1EMF-27 (S/G D). 	
		<ul style="list-style-type: none"> IF any S/G has previously been identified as ruptured... 	NOTE: There is no previously known SGTL.
	CRS	<ul style="list-style-type: none"> Notify RP to perform the following: 	NOTE: The CRS may call WCC/RP to request Radiation Surveys. If so, Booth Instructor acknowledge as WCC/RP.
		<ul style="list-style-type: none"> If S/G(s) fault known to be outside containment, THEN monitor area of steam fault for radiation. 	
		<ul style="list-style-type: none"> Frisk all Unit 1 S/G cation columns to determine if activity level is significantly higher for any S/G. 	
		<ul style="list-style-type: none"> Notify Control Room of any abnormal radiation conditions. 	
		<ul style="list-style-type: none"> WHEN activity results reported, THEN notify station management to evaluate S/G activity. 	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 50 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
	RO/ BOP	(Step 12) Check S/I termination criteria:	
		<ul style="list-style-type: none"> NC subcooling based on core exit T/Cs – GREATER THAN 0°F. 	
		<ul style="list-style-type: none"> Secondary heat sink: 	
		<ul style="list-style-type: none"> N/R level in at least on intact S/G – GREATER THAN 11% (32% ACC) 	
		OR	
		<ul style="list-style-type: none"> Total feed flow to intact S/Gs – GREATER THAN 450 GPM. 	
		<ul style="list-style-type: none"> NC pressure – STABLE OR GOING UP. 	
		<ul style="list-style-type: none"> Pzr level – GREATER THAN 11% (29% ACC). 	
	CRS	<ul style="list-style-type: none"> GO TO EP/1/A/5000/ES-1.1 (Safety Injection Termination). 	NOTE: Since N42 has previously failed high, an invalid Red Path will exist on Subcriticality.
			NOTE: The CRS will transition to ES-1.1.
EP/1/A/5000/ES-1.1			
SAFETY INJECTION TERMINATION			
	RO/ BOP	(Step 1) Monitor Foldout page.	
	BOP	(Step 2) Reset the following:	
		<ul style="list-style-type: none"> S/I 	
		<ul style="list-style-type: none"> Sequencers 	
		<ul style="list-style-type: none"> Phase A Isolation. 	
		<ul style="list-style-type: none"> Phase B Isolation. 	
		<ul style="list-style-type: none"> IF AT ANY TIME a B/O signal occurs, THEN restart S/I equipment previously on. 	NOTE: This is a Continuous Action. The CRS will make both board operators aware.

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 51 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 3) Establish VI to containment as follows:	
		<ul style="list-style-type: none"> OPEN the following valves: 	
		<ul style="list-style-type: none"> 1VI-129B (VI Supply to A Cont Ess VI Hdr Outside Isol) 	
		<ul style="list-style-type: none"> 1VI-160B (VI Supply to B Cont Ess VI Hdr Outside Isol) 	
		<ul style="list-style-type: none"> 1VI-150B (Lwr Cont Non-Ess Cont Outside Isol). 	
		<ul style="list-style-type: none"> Check VI header pressure – GREATER THAN 85 PSIG. 	
	BOP	(Step 4) Check is NS pumps should be stopped:	
		<ul style="list-style-type: none"> Any NS pump – ON. 	
		(Step 4 RNO) Perform the following:	
	BOP	<ul style="list-style-type: none"> IF AT ANY TIME while in this procedure an NS pump starts, THEN perform Step 4. 	NOTE: This is a Continuous Action. The CRS will make both board operators aware.
	CRS	<ul style="list-style-type: none"> GO TO Step 5. 	
	BOP	(Step 5) Stop all but one NV pump.	
	RO/ BOP	(Step 6) Check NC pressure – STABLE OR GOING UP.	
	BOP	(Step 7) Isolate NV S/I flowpath as follows:	
		<ul style="list-style-type: none"> Check the following valves – OPEN: 	
		<ul style="list-style-type: none"> 1NV-221A (NV Pumps Suct From FWST) 	
		<ul style="list-style-type: none"> 1NV-222B (NV Pumps Suct From FWST). 	

Op Test No.: N11-1 Scenario # 2 Event # 6, 7 & 8 Page 52 of 53Event Description: **Inadvertent Turbine Trip/ATWS/SG 1B Safety Valve fails Open**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none">• Check the following valves - OPEN:	
		<ul style="list-style-type: none">• 1NV-150B (NV Pumps Recirculation)	
		<ul style="list-style-type: none">• 1NV-151A (NV Pumps Recirculation).	
		<ul style="list-style-type: none">• CLOSE the following valves:	
		<ul style="list-style-type: none">• 1NI-9A (NC Cold Leg Inj From NV)	
		<ul style="list-style-type: none">• 1NI-10B (NC Cold Leg Inj From NV).	
At the discretion of the Lead Examiner terminate the exam.			

UNIT 1 STATUS:

Power Level: 100% NCS [B] 1035 ppm Pzr [B]: 1036 ppm Xe: Per OAC

Power History: The Plant is at 100% power (MOL), Core Burnup: 250 EFPDs
for 250 days.

CONTROLLING PROCEDURE: OP/1/A/6100/03 Controlling Procedure for Unit Operation

OTHER INFORMATION NEEDED TO ASSUME TO SHIFT:

- None

The following equipment is Out-Of-Service:

- 1A DG is OOS for corrective maintenance.
- 1KFP-5130, Spent Fuel Pool Temperature, failed last shift (IAE is investigating).
- MCB Annunciator 1AD-9, D-4, "D COLD LEG ACCUMULATOR ABNORMAL LEVEL," has failed to off (IAE is investigating).

Crew Directions:

- Maintain present plant power level.

Work Control SRO/Offsite Communicator

Jim

Plant SRO

Joe

NLO's AVAILABLE**Unit 1**

Aux Bldg. John

Turb Bldg. Bob

5th Rounds. Carol

Extra(s) Bill Ed Wayne Tanya

Unit 2

Aux Bldg. Chris

Turb Bldg. Mike

Facility:	McGuire	Scenario No.:	3	Op Test No.:	N11-1
Examiners:	_____	Operators:	_____		(SRO)
	_____		_____		(RO)
	_____		_____		(BOP)
Initial Conditions:		Unit 1 is at 1×10^{-8} amps in accordance with OP/1/A/6100/003, "Controlling Procedure for Unit Operation," Enclosure 4.1, "Power Increase." It is intended to raise power on this shift. The CF&E Sump level is high, and the crew will need to pump the contents of the sump to the Floor Drains Tank.			
Turnover:		The following equipment is Out-Of-Service: 1A KR Pump is OOS for motor replacement. 1CAP-5610, CAST LEVEL CH 1, failed last shift (IAE is investigating). MCB Annunciator 1AD-4, A-5, "BB BLOWOFF TANK LO LEVEL," has been in constant alarm over the last hour (IAE is investigating).			
Event No.	Malf. No.	Event Type*	Event Description		
1	NA	N-BOP N-SRO	Pump CF&E Sump		
2	NA	R-RO N-SRO	Raise power to 2-3%		
3	ENB007A	C-RO C-BOP C(TS)-SRO	Intermediate Range Channel failure		
4	KC005A	C-BOP C(TS)-SRO	KC System leak		
5	IRE006H8 IRE006D4	C-RO C-SRO	Sequentially Dropped Control Rods		
6	^{ANN} AD13E07 SM008A	M-RO M-BOP M-SRO	Seismic Event/Steam Line Break		
7	EP001	NA	Loss of Offsite Power		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

McGuire 2011 NRC Scenario #3

Unit 1 is at 1×10^{-8} amps in accordance with OP/1/A/6100/003, "Controlling Procedure for Unit Operation," Enclosure 4.1, "Power Increase." It is intended to raise power on this shift. The CF&E Sump level is high, and the crew will need to pump the contents of the sump to the Floor Drains Tank.

The following equipment is Out-Of-Service: 1A KR Pump is OOS for motor replacement. 1CAP-5610, CAST LEVEL CH 1, failed last shift (IAE is investigating). MCB Annunciator 1AD-4, A-5, "BB BLOWOFF TANK LO LEVEL," has been in constant alarm over the last hour (IAE is investigating).

Upon shift turnover, before the operator initiates the power increase, the operator will pump the Containment Floor and Equipment (CF&E) Sump in accordance with Section 3.3 of Enclosure 4.2, "Containment Floor and Equipment Sump and Incore Instrument Room Sump Operation," of OP/1/A/6500/001, "Liquid Waste System."

Following this, the operator will raise power in accordance with Step 3.15 of Enclosure 4.1, Power Increase, of OP/1/A/6100/003, "Controlling Procedure for Unit Operation."

After this, the Compensating Voltage for Intermediate Range Channel N35 will fail. The operator will enter AP/1/A/5500/16, "Malfunction of Nuclear Instrumentation," and perform Case II, "Intermediate Range Malfunction." The operator will address Technical Specification 3.3.1, "Reactor Trip Instrumentation."

Subsequently, a leak will develop in the KC System. The operator will enter AP/1/A/5500/21, "Loss of KC or KC System Leakage." The operator will address Technical Specification 3.7.6, "Component Cooling Water System."

Next, one Control Bank D Control Rod will drop into the core. The operator will respond in accordance with ARP1AD-2/D-9, "RPI at Bottom Rod Drop" and will implement AP/1/A/5500/14, "Rod Control Malfunction." 30 seconds later a second Control Rod will drop requiring that the operator manually trip the reactor. The crew will enter EP/1/A/5000/E-0, "Reactor Trip or Safety Injection."

On the reactor trip, the O.B.E. Exceeded annunciator will alarm, indicating that an earthquake has occurred. Within seconds a large Steam Rupture will occur outside Containment on the A Steam Generator, and ultimately Safety Injection will be actuated. Simultaneously, a Loss of Offsite Power will occur. Both Emergency Diesel Generators will start and load onto the Emergency Busses, and all SI loads will sequence on as designed.

Upon completion of E-0, the operator will transition to EP/1/A/5000/E-2, "Faulted Steam Generator Isolation." Upon completion of E-2, the operator will transition to either EP/1/A/5000/E-1, "Response to Loss of Primary or Secondary Coolant," or EP/1/A/5000/ES-1.1, "SI Termination."

The scenario will terminate this transition is made.

Critical Tasks:**SS****Trip the reactor upon recognition of the second dropped rod (4600/113/E13.19)**

Safety Significance: Multiple dropped control rods are a significant reactivity transient that can have a serious effect on plant parameters under certain operating conditions, and may result in power distribution limits being exceeded. The guidance to trip the reactor is a conservative action to prevent the plant from challenging the Pzr low pressure trip setpoint, etc.; and is consistent with the conservative nature of the industry. PT/0/A/4600/113, Enclosure 13.19 states that it is a management expectation that the operator trip the reactor within 30 seconds of a second dropped rod.

E-2 A**Isolate the Faulted Steam Generator before transitioning out of E-2.**

Safety Significance: Failure to isolate a Faulted SG that can be isolated causes challenges to the Critical Safety Functions that would not otherwise occur. Failure to isolate flow could result in an unwarranted Orange or Red Path condition on NC Integrity and/or Subcriticality (if cooldown is allowed to continue uncontrollably).

NOTE: This scenario will require the assignment of a Surrogate Licensed Operator to monitor/control Steam Generator level, Steam Dumps, Tavg, Tcold and the operating CF Pump during this scenario. This is based on Step 3.1.2 of Enclosure 4.8 of OP/1/A/6100/003 which requires the assignment of this operator during reactor startup. The surrogate may be released after event 2.

PROGRAM: McGuire Operations Training

MODULE: Initial License Operator Training Class 27

TOPIC: NRC Simulator Exam

Scenario N11-1-3

REFERENCES:

1. OP/1/A/6500/001, "Liquid Waste System." (Rev 76)
2. OP/1/A/6100/003, "Controlling Procedure for Unit Operation." (Rev 168)
3. AP/1/A/5500/16, "Malfunction of Nuclear Instrumentation." (Rev 12)
4. Technical Specification 3.3.1, "Reactor Trip Instrumentation."
5. AP/1/A/5500/21, "Loss of KC or KC System Leakage." (Rev 9)
6. Technical Specification 3.7.6, "Component Cooling Water System."
7. AP/1/A/5500/14, "Rod Control Malfunction." (Rev 14)
8. EP/1/A/5000/E-0, "Reactor Trip or Safety Injection." (Rev 31)
9. EP/1/A/5000/E-2, "Faulted Steam Generator Isolation." (Rev 9)
10. EP/1/A/5000/E-1, "Response to Loss of Primary or Secondary Coolant." (Rev 13)
11. EP/1/A/5000/ES-1.1, "SI Termination." (Rev 23)

Author: David Lazarony, Western Technical Services, Inc.

Facility Review: _____

Rev. FINAL

Scenario Event Description

NRC Scenario 3

Facility:	McGuire	Scenario No.:	3	Op Test No.:	N11-1
Examiners:	_____	Operators:	_____	(SRO)	
	_____		_____	(RO)	
	_____		_____	(BOP)	
Initial Conditions:	Unit 1 is at 1×10^{-8} amps in accordance with OP/1/A/6100/003, "Controlling Procedure for Unit Operation," Enclosure 4.1, "Power Increase." It is intended to raise power on this shift. The CF&E Sump level is high, and the crew will need to pump the contents of the sump to the Floor Drains Tank.				
Turnover:	The following equipment is Out-Of-Service: 1A KR Pump is OOS for motor replacement. 1CAP-5610, CAST LEVEL CH 1, failed last shift (IAE is investigating). MCB Annunciator 1AD-4, A-5, "BB BLOWOFF TANK LO LEVEL," has been in constant alarm over the last hour (IAE is investigating).				
Event No.	Malf. No.	Event Type*	Event Description		
1	NA	N-BOP N-SRO	Pump CF&E Sump		
2	NA	R-RO N-SRO	Raise power to 2-3%		
3	ENB007A	C-RO C-BOP C(TS)-SRO	Intermediate Range Channel failure		
4	KC005A	C-BOP C(TS)-SRO	KC System leak		
5	IRE006H8 IRE006D4	C-RO C-SRO	Sequentially Dropped Control Rods		
6	^{ANN} AD13E07 SM008A	M-RO M-BOP M-SRO	Seismic Event/Steam Line Break		
7	EP001	NA	Loss of Offsite Power		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Scenario Event Description

NRC Scenario 3

McGuire 2011 NRC Scenario #3

Unit 1 is at 1×10^{-8} amps in accordance with OP/1/A/6100/003, "Controlling Procedure for Unit Operation," Enclosure 4.1, "Power Increase." It is intended to raise power on this shift. The CF&E Sump level is high, and the crew will need to pump the contents of the sump to the Floor Drains Tank.

The following equipment is Out-Of-Service: 1A KR Pump is OOS for motor replacement. 1CAP-5610, CAST LEVEL CH 1, failed last shift (IAE is investigating). MCB Annunciator 1AD-4, A-5, "BB BLOWOFF TANK LO LEVEL," has been in constant alarm over the last hour (IAE is investigating).

Upon shift turnover, before the operator initiates the power increase, the operator will pump the Containment Floor and Equipment (CF&E) Sump in accordance with Section 3.3 of Enclosure 4.2, "Containment Floor and Equipment Sump and Incore Instrument Room Sump Operation," of OP/1/A/6500/001, "Liquid Waste System."

Following this, the operator will raise power in accordance with Step 3.15 of Enclosure 4.1, Power Increase, of OP/1/A/6100/003, "Controlling Procedure for Unit Operation."

After this, the Compensating Voltage for Intermediate Range Channel N35 will fail. The operator will enter AP/1/A/5500/16, "Malfunction of Nuclear Instrumentation," and perform Case II, "Intermediate Range Malfunction" The operator will address Technical Specification 3.3.1, "Reactor Trip Instrumentation."

Subsequently, a leak will develop in the KC System. The operator will enter AP/1/A/5500/21, "Loss of KC or KC System Leakage." The operator will address Technical Specification 3.7.6, "Component Cooling Water System."

Next, one Control Bank D Control Rod will drop into the core. The operator will respond in accordance with ARP1AD-2/D-9, "RPI at Bottom Rod Drop" and will implement AP/1/A/5500/14, "Rod Control Malfunction." 30 seconds later a second Control Rod will drop requiring that the operator manually trip the reactor. The crew will enter EP/1/A/5000/E-0, "Reactor Trip or Safety Injection."

On the reactor trip, the O.B.E. Exceeded annunciator will alarm, indicating that an earthquake has occurred. Within seconds a large Steam Rupture will occur outside Containment on the A Steam Generator, and ultimately Safety Injection will be actuated. Simultaneously, a Loss of Offsite Power will occur. Both Emergency Diesel Generators will start and load onto the Emergency Busses, and all SI loads will sequence on as designed.

Upon completion of E-0, the operator will transition to EP/1/A/5000/E-2, "Faulted Steam Generator Isolation." Upon completion of E-2, the operator will transition to either EP/1/A/5000/E-1, "Response to Loss of Primary or Secondary Coolant," or EP/1/A/5000/ES-1.1, "SI Termination."

The scenario will terminate this transition is made.

Scenario Event Description

NRC Scenario 3

Critical Tasks:

SS

Trip the reactor upon recognition of the second dropped rod (4600/113/E13.19)

Safety Significance: Multiple dropped control rods are a significant reactivity transient that can have a serious effect on plant parameters under certain operating conditions, and may result in power distribution limits being exceeded. The guidance to trip the reactor is a conservative action to prevent the plant from challenging the Pzr low pressure trip setpoint, etc.; and is consistent with the conservative nature of the industry. PT/0/A/4600/113, Enclosure 13.19 states that it is a management expectation that the operator trip the reactor within 30 seconds of a second dropped rod.

E-2 A

Isolate the Faulted Steam Generator before transitioning out of E-2.

Safety Significance: Failure to isolate a Faulted SG that can be isolated causes challenges to the Critical Safety Functions that would not otherwise occur. Failure to isolate flow could result in an unwarranted Orange or Red Path condition on NC Integrity and/or Subcriticality (if cooldown is allowed to continue uncontrollably).

NOTE: This scenario will require the assignment of a Surrogate Licensed Operator to monitor/control Steam Generator level, Steam Dumps, Tavg, Tcold and the operating CF Pump during this scenario. This is based on Step 3.1.2 of Enclosure 4.8 of OP/1/A/6100/003 which requires the assignment of this operator during reactor startup. The surrogate may be released after event 2.

Scenario Event Description

NRC Scenario 3

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	Sim. Setup	Rod Step On	
<input type="checkbox"/>		Reset to Temp I/C 160. (IC-9, Close 1WL-65B, entered MALF-PLP025= 30 gpm and raise Sump 1A to 13", When there, inset a value of 0.0 to MALF-PLP025. When the sump has stopped filling, delete MALF-PLP026.)	T = 0 Malfunctions: LOA-KR004 = Racked Out XMT-CA051 = 32 ANN-AD04-A05 = 0 (ON)
<input type="checkbox"/>		RUN Reset all SLIMs	Place Tagout/O-Stick on: 1A KR Pump (Tagout) 1CAP-5610 (O-Stick) MCB Annunciator 1AD-9, D-6 (O-stick)
<input type="checkbox"/>		Update Status Board, Setup OAC	NOTE: RMWST DO = <1000 ppb.
<input type="checkbox"/>		Freeze.	
<input type="checkbox"/>		Update Fresh Tech. Spec. Log.	
<input type="checkbox"/>		Fill out the NEO's Available section of Shift Turnover Info.	
<input type="checkbox"/>	Prior to Crew Briefing	RUN	

Scenario Event Description

NRC Scenario 3

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>		Crew Briefing	
		1. Assign Crew Positions based on evaluation requirements	
		2. Review the Shift Turnover Information with the crew.	
		3. Provide Enclosure 4.1 of OP/1/A/6100/003, marked up as follows:	
		<ul style="list-style-type: none"> • Step 2.1 – Initialed. • Step 3.1 – Checkbox checked. • Step 3.2 – Initialed. • Step 3.3 – NA/Initialed. • Step 3.4 – NA/Initialed. • Step 3.5 – Initialed. • Step 3.6 – Checkbox checked. • Step 3.7 – Initialed. • Step 3.8 – Initialed. (Four Sub-Bullets) • Step 3.9.1 – Initialed. • Step 3.9.2 – Initialed. • Step 3.9.3 – Checkbox checked. • Step 3.9.4 – Initialed. • Step 3.9.5 – Initialed. • Step 3.10.1 – Checkbox checked. • Step 3.10.2 – Checkbox checked. • Step 3.10.3 – Checkbox checked. • Step 3.11 – NA/Initialed. • Step 3.12 – Initialed. (Management Designee: John Williams, Evolution Coordinator: Pam Smith) • Step 3.13.1 – Initialed twice. • Step 3.13.2 – Checkbox checked. • Step 3.13.3 – Checkbox checked. • Step 3.13.4.1 – Checkbox checked. • Step 3.13.4.2 – Checkbox checked. • Step 3.13.4.3 – Checkbox checked. • Step 3.13.4.4 – Checkbox checked. • Step 3.13.5 – Initialed twice. • Step 3.13.6 – 2nd Checkbox checked. • Step 3.13.7 – Initialed. • Step 3.13.8 – Initialed. 	

Scenario Event Description

NRC Scenario 3

	Bench Mark	ACTIVITY	DESCRIPTION
		Crew Briefing (Cont'd)	
		<ul style="list-style-type: none"> • Step 3.13.9 – 2nd Checkbox checked. • Step 3.13.10 – NA/Initialed. • Step 3.13.11 – Initialed. • Step 3.13.12 – Checkbox checked. • Step 3.13.13 – Initialed. • Step 3.13.13.1 – Checkbox checked. • Step 3.13.13.2 – Initialed. • Step 3.13.13.3 – Both Checkboxes checked. • Step 3.13.13.4 – Initialed. • Step 3.13.13.14 – Checkbox checked. • Step 3.13.15 – Checkbox checked. <ul style="list-style-type: none"> • Rod Position Bank: D Steps: 123 • Tavg: 557.5 • Boron Concentration: 1847 • Time: 0600 • Xenon Worth: 0 • Samarium Difference from equilibrium: -98.95 • Step 3.13.16 - Checkbox checked. • Step 3.13.17 - Initialed. • Step 3.13.18 – NA/Initialed. • Step 3.13.19 - Initialed. • Step 3.14 – Initialed. 	
		<p>4. Provide Enclosure 4.8 of OP/1/A/6100/003, marked up as follows:</p> <ul style="list-style-type: none"> • Step 3.1 – Initialed. • Step 3.1.1 – Initialed. Reactor Operator: Enter Candidate's Name on Exam Day • Step 3.1.2 – Initialed. Reactor Operator: Enter Candidate's Name on Exam Day • Step 3.1.3 – Initialed. Reactor Operator: Enter Candidate's Name on Exam Day • Step 3.1.4 – Initialed. • Step 3.2.1 – Checkbox checked. • Maneuvering Fuel Limit: No rate restriction 0-50% • Control Rod Withdrawal Limits: None • Step 3.2.2 – Initialed, Person Notified: John Doe/ _____ • Step 3.2.3 – Initialed. • Step 3.2.4 – NA/Initialed. • Step 3.2.5 – Checkbox checked. <p>5. Provide operators with a reactivity plan that includes the information that the reactor power increase will be accomplished using Control Rods ONLY.</p> <p>6. Provide a copy of Enclosure 4.14 (Reactor Power/Expected Tavg), Table 4.14-1 (Reactor Power/Expected Tavg) of OP/1/A/6100/003, (Controlling Procedure for Unit Operation).</p> <p>7. Direct the crew to Review the Control Boards taking note of present conditions, alarms.</p>	

Scenario Event Description

NRC Scenario 3

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	T-0	Begin Familiarization Period	
<input type="checkbox"/>	At direction of examiner	Event 1	Pump CF&E Sump
<input type="checkbox"/>	At direction of examiner	Event 2	Raise power to 2-3%
<input type="checkbox"/>	At direction of examiner	Event 3 (MALF) ENB007A = 0 No Ramp/Delay Trigger #1	Intermediate Range Channel failure
<input type="checkbox"/>	At direction of examiner	Event 4 (MALF) KC005A = 5 No Ramp/Delay Trigger #3	KC System leak LOA-KC011 = 0.6 (OPEN) (120 second Delay) LOA-KC012 = 0.6 (OPEN) (120 second Delay) Trigger #5 LOA-KC023 = 0.1 (OPEN) Trigger #7 LOA-KC024 = 0.1 (OPEN) Trigger #9
<input type="checkbox"/>	At direction of examiner	Event 5 (MALF) IRE006H8 = 1 No Delay (MALF) IRE006D4 = 1 Delay = 30 seconds Trigger #11	Sequentially Dropped Control Rods

Scenario Event Description

NRC Scenario 3

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	Upon Reactor Trip	Event 6 ANN-AD13-E7 = ON Trigger #13 (MALF) SM008A = 4.125 E+6 Ramp = 20 Seconds Delay = 5 Seconds Trigger #13	Seismic Event/Steam Line Break NOTE: Trigger 13 is tied to the Rx trip.
<input type="checkbox"/>	Post-Trip	Event 7 (MALF) EP001 Delay = 5 Seconds Trigger #13	Loss of Offsite Power
<input type="checkbox"/>	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N11-1 Scenario # 3 Event # 1 Page 10 of 42Event Description: **Pump CF&E Sump**

Upon shift turnover, before the operator initiates the power increase, the operator will pump the Containment Floor and Equipment (CF&E) Sump in accordance with Section 3.3 of Enclosure 4.2, "Containment Floor and Equipment Sump and Incore Instrument Room Sump Operation," of OP/1/A/6500/001, "Liquid Waste System."

Booth Operator Instructions: **NA**Indications Available: **NA**

Time	Pos.	Expected Actions/Behavior	Comments
OP/1/A/6500/001, LIQUID WASTE SYSTEM ENCLOSURE 4.2, CONTAINMENT FLOOR AND EQUIPMENT SUMP AND INCORE INSTRUMENT ROOM SUMP OPERATION			
	BOP	(Step 3.1) Evaluate all outstanding R&Rs that may impact performance of this procedure.	
	BOP	(Step 3.2) Perform the following sections, as applicable:	
		<ul style="list-style-type: none"> Section 3.3, Pumping Containment Floor and Equipment Sump(s) 	
	BOP	(Step 3.3) Pumping Containment Floor and Equipment Sump(s)	
		<ul style="list-style-type: none"> IF time allows... 	
		<ul style="list-style-type: none"> IF in Modes 1, 2, 3, or 4, perform the following: 	
		<ul style="list-style-type: none"> Declare Containment Floor and Equipment Sump Level Monitoring System inoperable. 	
		OR	
		<ul style="list-style-type: none"> Ensure Containment Floor and Equipment Sump pump-out duration is less than 30 minutes. 	
		<ul style="list-style-type: none"> Check CFAE Sump(s) to be pumped greater than 8 inches. 	

Op Test No.: N11-1 Scenario # 3 Event # 1 Page 11 of 42Event Description: **Pump CF&E Sump**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	<ul style="list-style-type: none"> Record Containment Floor and Equipment Sump level(s) to be pumped. 	
		<ul style="list-style-type: none"> A CFAE Level – 7 inches = _____ inches to be pumped 	NOTE: The operator will record \approx 13 inches.
		<ul style="list-style-type: none"> Estimate and record gallons to be pumped (total inches to be pumped x 36 gallons per inch): _____ gallons 	NOTE: The operator will record \approx 216 gallons.
		Notify Radwaste Chemistry of estimated gallons of water to be pumped form Floor and Equipment Sump(s).	
		<ul style="list-style-type: none"> Ensure the following open: 	
		<ul style="list-style-type: none"> 1WL-65B (RB Sump Pumps Disch Cont Outside Isol) 	NOTE: The BOP will open this valve.
		<ul style="list-style-type: none"> 1WL-64A (Unit 1 Rx Bldg Sump Pumps Disch Cont Inside Isol) 	
		<ul style="list-style-type: none"> Start desired CFAE pump(s): 	NOTE: The operator will start both pumps.
		<ul style="list-style-type: none"> 1A1 CFAE Pump 	
		<ul style="list-style-type: none"> 1A2 CFAE Pump 	
		<ul style="list-style-type: none"> HOLD until desired to secure pumping CFAE, THEN perform the following: 	
		<ul style="list-style-type: none"> Ensure off: 	
		<ul style="list-style-type: none"> 1A1 CFAE Pump 	
		<ul style="list-style-type: none"> 1A2 CFAE Pump 	
		<ul style="list-style-type: none"> Perform one of the following: 	
		<ul style="list-style-type: none"> IF power available to 1WL-65B (Rx Bldg Sump Pumps Disch Cont Outside Isol), close 1WL-65B. 	NOTE: The BOP will close this valve.
		<ul style="list-style-type: none"> Evaluate Containment Floor and Equipment Sump Level Monitoring System operability. 	
		<ul style="list-style-type: none"> Record final Containment Floor and Equipment Sump level(s): 	
		<ul style="list-style-type: none"> A CFAE Level _____ inches 	NOTE: The BOP will record 7 inches.

Op Test No.: N11-1 Scenario # 3 Event # 1 Page 12 of 42Event Description: **Pump CF&E Sump**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none">Multiply total level decrease (inches) by 36 (gallons per inch) and record gallons discharged in Autolog.	
		IF total gallons pumped is different from estimated gallons provided to Radwaste Chemistry in Step 3.3.6, notify Radwaste Chemistry of actual amount pumped.	
At the discretion of the Lead Examiner move to Event #2.			

Op Test No.: N11-1 Scenario # 3 Event # 2 Page 13 of 42
 Event Description: **Raise power to 2-3%**

Following this, the operator will raise power in accordance with Step 3.15 of Enclosure 4.1, Power Increase, of OP/1/A/6100/003, "Controlling Procedure for Unit Operation."

Booth Operator Instructions: NA

Indications Available: NA

Time	Pos.	Expected Actions/Behavior	Comments
OP/1/A/6100/003, CONTROLLING PROCEDURE FOR UNIT OPERATION ENCLOSURE 4.1, POWER INCREASE			
	RO	(Step 3.15) Perform the following to control NC System temperature until Turbine Generator is paralleled to the grid:	
		<ul style="list-style-type: none"> Maintain the following by adjusting setpoint on "STM PRESS CONTROLLER": 	
		<ul style="list-style-type: none"> Tcold 557-559°F 	
		<ul style="list-style-type: none"> SM Pressure 1060-1110 psig 	
	RO	<ul style="list-style-type: none"> Refer to Enclosure 4.14 (Reactor Power/Expected Tavg), Table 4.14-1 (Reactor Power/Expected Tavg) for expected Tavg for a given Reactor Power level. 	
	CRS	(Step 3.16) IF feedwater flow is aligned to CA nozzles, perform the following:	NOTE: CF flow is NOT aligned to CA Nozzles.
		<ul style="list-style-type: none"> Ensure Reactor Power will remain less than 20% RTP. 	
		<ul style="list-style-type: none"> Evaluate swapping to CF nozzles per OP/1/A/6250/001 (Condensate and Feedwater System) 	
	BOP	(Step 3.17) Ensure in service CF Pump Turbine "LP GOV CNTRL" and "HP GOV CNTRL" in auto.	NOTE: 1A CF Pump is aligned as needed.

Op Test No.: N11-1 Scenario # 3 Event # 2 Page 14 of 42Event Description: **Raise power to 2-3%**

Time	Pos.	Expected Actions/Behavior	Comments
	RO/ BOP	(Step 3.18) IF AT ANY TIME S/G N/R Level decreases to 28% OR exceeds 52%, perform the following.....	NOTE: This is a Continuous Action. The CRS will make both board operators aware.
	RO	(Step 3.19) Increase Reactor Power to 2% RTP (2.0-2.5%).	NOTE: The RO will pull rods to raise power.
At the discretion of the Lead Examiner move to Event #3.			

Op Test No.: N11-1 Scenario # 3 Event # 3 Page 15 of 42Event Description: **Intermediate Range Channel failure**

After this, the Compensating Voltage for Intermediate Range Channel N35 will fail. The operator will enter AP/1/A/5500/16, "Malfunction of Nuclear Instrumentation," and perform Case II, "Intermediate Range Malfunction" The operator will address Technical Specification 3.3.1, "Reactor Trip Instrumentation."

Booth Operator Instructions: Operate Trigger #1 (ENB007A(0))

Indications Available:

- MCB Annunciator 1AD-2, C-2, I/R COMPENSATING VOLT FAILURE
- COMP VOLT status light on NI-35 Drawer is LIT.

Time	Pos.	Expected Actions/Behavior	Comments
AP/1/A/5500/16, MALFUNCTION OF NUCLEAR INSTRUMENTATION CASE II, INTERMEDIATE RANGE MALFUNCTION			
	RO	(Step 1) Check one I/R channel – OPERABLE.	
	CRS	(Step 2) Announce occurrence on paging system.	NOTE: CRS may ask U2 RO to make Plant Announcement. If so, Floor Instructor acknowledge as U2 RO.
	BOP	(Step 3) Place failed or channel "LEVEL TRIP" switch on I/R Drawer to "BYPASS".	
	BOP	(Step 4) Check the following – LIT:	
		<ul style="list-style-type: none"> • "LEVEL TRIP BYPASS" indicating light on failed I/R drawer. 	
		<ul style="list-style-type: none"> • "S/R OR I/R TRIP BYPASS" alarm (1AD-2, E-2). 	
		<ul style="list-style-type: none"> • The failed channel's status light on 1SI-19: 	
		<ul style="list-style-type: none"> • "1/N-35A I/R CHANNEL I TRIP BYPASS" 	
		OR	

Op Test No.: N11-1 Scenario # 3 Event # 3 Page 16 of 42Event Description: **Intermediate Range Channel failure**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> "1/N-36A I/R CHANNEL II TRIP BYPASS". 	
	RO	(Step 5) Place operable I/R channel to record on NIS Recorder.	
	CRS/ RO/ BOP	(Step 6) IF AT ANY TIME I/R fuses are pulled above P-10, THEN they should be inserted prior to lowering power below P-10 (to prevent a reactor trip).	
	RO	(Step 7) Check I/R channel – FAILED LOW.	
	RO	(Step 7 RNO) WHEN reactor less than P-6 during any subsequent shutdown (with failed IR channel), THEN place SOURCE RANGE SELECT switches to RESET to energize S/R detectors.	NOTE: The RO will need to take this action later in the scenario.
	CRS	(Step 8) WHEN malfunctioning I/R channel repaired, THEN....	NOTE: The channel will remain OOS.
			NOTE: The CRS may call WCC/IAE to address the malfunction. If so, Booth Instructor acknowledge as WCC.
			NOTE: The CRS will likely conduct a Focus Brief.
Booth Operator Instructions: WHEN the CRS checks the Technical Specifications, Operate Trigger #3 (KC005A (4)) (NOTE: This action is needed to set up for Event 4, and the Malfunction will require 5 minutes before observable effects are seen)			

Op Test No.: N11-1 Scenario # 3 Event # 3 Page 17 of 42Event Description: **Intermediate Range Channel failure**

Time	Pos.	Expected Actions/Behavior			Comments
TECHNICAL SPECIFICATION 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION					
	CRS	LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.			
	CRS	APPLICABILITY: According to Table 3.3.1-1			
	CRS	ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One or more Functions with one or more required channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s).	IMMEDIATELY	
		F. THERMAL POWER >P-6 and <P-10, one Intermediate Range Neutron Flux channel inoperable	F.1 Reduce THERMAL POWER to <P-6. OR F.2 Increase THERMAL POWER to >P-10.	24 hours 24 hours	NOTE: The CRS will determine that power must be raised or lowered within 24 hours. NOTE: This Action is associated with Function 4 (IR Neutron Flux).
At the discretion of the Lead Examiner move to Event #4.					

Op Test No.: N11-1 Scenario # 3 Event # 4 Page 18 of 42Event Description: **KC System leak**

Subsequently, a leak will develop in the KC System. The operator will enter AP/1/A/5500/21, "Loss of KC or KC System Leakage." The operator will address Technical Specification 3.7.6, "Component Cooling Water System."

Booth Operator Instructions: Operate Trigger #3 (KC005A (4))
(NOTE: Operated as part of Event 3)

Indications Available: (NOTE: This Malfunction will require 5 minutes before observable effects are seen)

- MCB Annunciator 1AD13, C-1, ND & NS ROOM SUMP HI-HI LEVEL, alarms.
- OAC Alarm – U1 KC Surge Tank Compartment A Level.
- KC Surge Tank Level 1A is lowering.

Time	Pos.	Expected Actions/Behavior	Comments
AP/1/A/5500/21, LOSS OF KC OR KC SYSTEM LEAKAGE			
	BOP	(Step 1) Check any KC pump – ON.	
	RO/ BOP	(Step 2) Monitor Foldout page.	
	BOP	(Step 3) Secure any dilution in progress.	
	CRS	(Step 4) Check ND – IN RHR MODE.	
	CRS	(Step 4 RNO) GO TO Step 7.	
	CRS	(Step 7) Announce occurrence on paging system.	NOTE: CRS may ask U2 RO to make Plant Announcement. If so, Floor Instructor acknowledge as U2 RO.
	BOP	(Step 8) Check both train's KC Surge Tank level – STABLE OR GOING UP.	

Op Test No.: N11-1 Scenario # 3 Event # 4 Page 19 of 42Event Description: **KC System leak**

Time	Pos.	Expected Actions/Behavior	Comments
		(Step 8 RNO) IF Surge Tank level trend indicates a KC System leak, THEN GO TO Step 11.	NOTE: 1A KC Surge Tank level is lowering.
	CRS/ BOP	(Step 11) Initiate YM makeup to KC Surge Tank as follows:	
		<ul style="list-style-type: none"> Immediately dispatch operator to open the following valves as required to maintain KC Surge Tank level: 	NOTE: The CRS/BOP will dispatch an NEO. Booth Instructor: Operate Trigger #5 (LOA-KC011/12 (Open)). Within 2 minutes , as NEO report that YM is being added to the KC Surge Tank. (NOTE: This may need to be closed later)
		<ul style="list-style-type: none"> To makeup to 1A KC Surge Tank, unlock and open 1KC-107 (1A KC Surge Tank Compartment YM Supply Isol) (aux bldg, 767+2, JJ-57, under grating, between KC surge tanks) 	
		<ul style="list-style-type: none"> To makeup to 1B KC Surge tank, unlock and open 1KC-111 (1B KC Surge Tank Compartment YM Supply Isol) (aux bldg, 767+2, JJ-58, under grating, between KC surge tanks). 	NOTE: The 1B KC Surge Tank level may be lowering by this time.
		<ul style="list-style-type: none"> Adjust makeup rate as required to prevent overflow of KC Surge Tank (approximately 8.5 ft.). 	
	CRS/ BOP	(Step 12) Dispatch operators to locate leak.	NOTE: The CRS will dispatch an NEO, or NEOs. Booth Instructor: Within 3 minutes , as NEO , report that piping downstream of 1A1 KC Pump has a leak.

Op Test No.: N11-1 Scenario # 3 Event # 4 Page 20 of 42Event Description: **KC System leak**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 13) Check KC drain tank pump – OFF.	
	CRS/ BOP	(Step 14) IF AT ANY TIME it is determined that YM makeup is inadequate to restore or stabilize KC surge tank level, THEN immediately align RN Makeup to KC PER Enclosure 3 (Aligning RN Makeup to KC Surge Tank) as required.	<p>NOTE: The CRS will take this action later.</p> <p>When this is done:</p> <p>Booth Instructor:</p> <p>DO NOT INITIATE RN MAKEUP UNTIL 1A KC SURGE TANK LEVEL IS LESS THAN 2 FEET.</p> <p>Operate Trigger #7 (LOA-KC023 (Open).</p> <p>IF 1B KC SURGE TANK LEVEL IS INCREASING DO NOT INITIATE RN MAKEUP TO 1B KC SURGE TANK.</p> <p>Operate Trigger #9 (LOA-KC024 (Open).</p> <p>Within 2 minutes, as NEO report that RN is being added to the KC Surge Tank.</p> <p>(NOTE: This may need to be closed later)</p>
	BOP	(Step 15) Check both train's KC surge tank level – GREATER THAN 3 FT.	<p>Examiner NOTE: Level may be greater or less than 3 feet. Either way, the CRS will ultimately arrive at Step 20.</p> <p>If needed. Move forward to Step 20 below.</p>
	BOP	(Step 16) Check sum of both train's KC surge tank level drops – LESS THAN OR EQUAL TO 0.10 FT/MIN.	
	CRS	(Step 16 RNO) IF level is dropping faster than 0.10 ft/min, THEN GO TO Step 20.	<p>NOTE: The level is lowering at .3 ft/minute.</p>

Op Test No.: N11-1 Scenario # 3 Event # 4 Page 21 of 42Event Description: **KC System leak**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 20) Isolate 1A KC Train from 1B KC Train as follows:	Examiner NOTE: The crew may implement Enclosure 2 at any time based on Foldout Page Criteria. If so, move forward to actions on Page 21 .
		• Check any 1A KC Train pump – RUNNING.	
		• Check the following valves – OPEN:	
		• 1KC-3A (Trn A Rx Bldg Non Ess Ret Isol)	
		• 1KC-230A (Trn A Rx Bldg Non Ess Sup Isol).	
		• Close the following valves:	
		• 1KC-53B (Trn B Aux Bldg Non Ess Sup Isol).	
		• 1KC-2B (Trn B Aux Bldg Non Ess Ret Isol).	
		• 1KC-228B (Trn B Rx Bldg Non Ess Sup Isol).	
		• 1KC-18B (Trn B Rx Bldg Non Ess Ret Isol).	
		• WHEN valves in Step 20c are closed, THEN check 1A KC Surge Tank level – GOING DOWN.	
	CRS	• GO TO Step 21.	
	BOP	(Step 21) Check Unit 2 KC Surge Tank level – STABLE.	
			Examiner NOTE: it is assumed that the crew will have been directed to implement Enclosure 2 by this point. If NOT, the crew will continue in AP21, and implement this Enclosure shortly.

Op Test No.: N11-1 Scenario # 3 Event # 4 Page 22 of 42
 Event Description: **KC System leak**

Time	Pos.	Expected Actions/Behavior	Comments
API/1/A/5500/21, LOSS OF KC OR KC SYSTEM LEAKAGE			
ENCLOSURE 2, ISOLATION OF NON-ESSENTIAL HEADERS			
	BOP	(Step 1) Ensure normal letdown is isolated.	NOTE: The BOP will close 1NV-35.
	BOP	(Step 2) Ensure 1NV-121 (ND Letdown Control) is closed.	
	BOP	(Step 3) Ensure recirc valve(s) on operating KC pumps in "AUTO".	
		• 1KC-51A (Train A Recirc Isol)	
		• 1KC-54B (Train B Recirc Isol).	
	BOP	(Step 4) Isolate Aux Bldg Non-essential header from affected train:	
		• IF 1A KC Surge Tank is less than 2 ft, OR 1A KC pumps tripped due to low surge tank level, THEN close:	
		• 1KC-50A (Trn A Aux Bldg Non Ess Sup Isol)	
		• 1KC-1A (Trn A Aux Bldg Non Ess Ret Isol).	
		• IF 1B KC Surge Tank is less than 2 ft, OR 1A KC pumps tripped due to low surge tank level,....	NOTE: The 1B Surge Tank level is ≈2.25 feet.
	BOP	(Step 5) Ensure all NM valves located on 1MC-8 (vertical board) – CLOSED.	
	CRS	(Step 6) Check ND letdown – ISOLATED PRIOR TO EVENT.	

Op Test No.: N11-1 Scenario # 3 Event # 4 Page 23 of 42Event Description: **KC System leak**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 7) Check both trains of KC surge tank level:	NOTE: The level will be lowering in 1A Surge Tank, and rising in the 1B Surge tank.
		<ul style="list-style-type: none"> Level – STABLE OR GOING UP 	
		<ul style="list-style-type: none"> Level – ON SCALE 	
	CRS/ BOP	(Step 7 RNO) Perform the following:	
		<ul style="list-style-type: none"> IF surge tank level is less than 1 ft, OR KC pumps were tripped due to low surge tank level, THEN GO TO Step 9. 	NOTE: This condition will most likely be met.
	BOP	(Step 9) Isolate Reactor Bldg Non-essential header from affected train as follows:	
		<ul style="list-style-type: none"> IF 1A KC Surge Tank is less than 1 ft, OR 1A KC pumps were tripped due to low surge tank level, THEN close: 	
		<ul style="list-style-type: none"> 1KC-230A (Trn A Rx Bldg Non Ess Sup Isol). 	
		<ul style="list-style-type: none"> 1KC-3A (Trn A Rs Bldg Non Ess Ret Isol). 	
		<ul style="list-style-type: none"> IF 1B KC Surge Tank is less than 1 ft... 	NOTE: It is likely that the 1B KC Surge Tank level is > 1 foot.
		<ul style="list-style-type: none"> Ensure NC pump trip criteria on Foldout page is monitored. 	
	BOP	(Step 10) Check either KC train surge tank level – GREATER THAN 2 FT.	NOTE: The crew may stop makeup to the Surge Tank at this point.
	CRS	(Step 11) Swap KC to train with surge tank level greater than 2 ft as follows:	
		<ul style="list-style-type: none"> To start 1A Train, GO TO Enclosure 4 (Startup of 1A KC Train) 	
		OR	

Op Test No.: N11-1 Scenario # 3 Event # 4 Page 24 of 42Event Description: **KC System leak**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> To start 1B Train, GO TO Enclosure 5 (Startup of 1B KC Train). 	
			NOTE: The CRS will go to Enclosure 5.
API/1/A/5500/21, LOSS OF KC OR KC SYSTEM LEAKAGE ENCLOSURE 5, STARTUP OF 1B KC TRAIN			
	BOP	(Step 1) Check 1KC-81B (KC to B ND HX) - CLOSED.	
	BOP	(Step 2) Check 1KC-56A (KC To A ND HX) - CLOSED.	
	BOP	(Step 3) Check 1A Train KC pumps - OFF.	NOTE: The A Train KC Pumps may be running.
	BOP	(Step 4) Select "CLOSED" on 1KC-51A (Train A Recirc Isol).	
	BOP	(Step 5) Check 1B Train KC pumps - OFF.	NOTE: The B Train KC Pumps are expected to be OFF. If NOT, Move forward to Step 17 on Page 24 .
	BOP	(Step 6) IF voiding of 1B train KC is suspected, ...	NOTE: Voiding is NOT suspected.
	BOP	(Step 7) Close the following:	
		<ul style="list-style-type: none"> 1KC-53B (Trn B Aux Bldg Non Ess Sup Isol). 	
		<ul style="list-style-type: none"> 1KC-2B (Trn B Aux Bldg Non Ess Ret Isol). 	
		<ul style="list-style-type: none"> 1KC-228B (Trn B Rs Bldg Non Ess Sup Isol). 	

Op Test No.: N11-1 Scenario # 3 Event # 4 Page 25 of 42Event Description: **KC System leak**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> 1KC-18B (Trn B Rx Bldg Non Ess Ret Isol). 	
	BOP	(Step 8) Start 1B RN pump.	
	BOP	(Step 9) Ensure 1RN-187B (B KC Hx Inlet Isol) opens.	
	BOP	(Step 10) Place control switch for 1KC-54B (Train B Recirc Isol) in the "AUTO" position.	
	BOP	(Step 11) Ensure 1KC-54B (Train B Recirc Isol) opens.	
	BOP	(Step 12) Start 1B1 KC pump.	
	BOP	(Step 13) Check 1KC-12 (1B1 KC Pump Discharge) – LOCALLY THROTTLED IN STEP 6.	NOTE: 1KC-12 was NOT previously throttled.
	BOP	(Step 13 RNO) Perform the following: <ul style="list-style-type: none"> Start 1B2 KC pump. 	
	CRS	<ul style="list-style-type: none"> GO TO Step 17. 	
	CRS	(Step 17) Check ND pumps – ANY ON PRIOR TO ENTERING THIS PROCEDURE.	NOTE: No ND Pumps were on prior to entering this procedure.
	CRS	(Step 17 RNO) GO TO Step 20.	
	BOP	(Step 20) Check KC leak – HAS OCCURRED.	NOTE: A KC leak has occurred.

Op Test No.: N11-1 Scenario # 3 Event # 4 Page 26 of 42Event Description: **KC System leak**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 21) Check KC header with leak – HAS BEEN IDENTIFIED.	NOTE: A KC leak has been identified downstream of KC Pump 1A1.
	CRS	(Step 22) GO TO Step 24.	
	BOP	(Step 24) Align KC as follows:	
		<ul style="list-style-type: none"> Monitor the following KC pump parameters while aligning KC in this step: 	
		<ul style="list-style-type: none"> Pump flow and amps 	
		<ul style="list-style-type: none"> KC surge tank level. 	
		<ul style="list-style-type: none"> Limit KC pump flow to 4000 GPM per operating KC pump in next step. 	
		<ul style="list-style-type: none"> Check – LEAK IDENTIFIED ON 1A KC TRAIN ESSENTIAL HEADER. 	
		<ul style="list-style-type: none"> Close the following valves: 	
	BOP	<ul style="list-style-type: none"> 1KC-230A (Trn A Rx Bldg Non Ess Sup Isol). 	
	BOP	<ul style="list-style-type: none"> 1KC-3A (Trn A Rx Bldg Non Ess Ret Isol). 	
		<ul style="list-style-type: none"> Open the following valves: 	
		<ul style="list-style-type: none"> 1KC-18B (Trn B Rx Bldg Non Ess Ret Isol). 	
		<ul style="list-style-type: none"> 1KC-228B (Trn B Rx Bldg non Ess Sup Isol). 	
		<ul style="list-style-type: none"> Close the following valves: 	
		<ul style="list-style-type: none"> 1KC-50A (Trn A Aux Bldg Non Ess Sup Isol). 	
		<ul style="list-style-type: none"> 1KC-1A (Trn A Aux Bldg Non Ess Ret Isol). 	
		<ul style="list-style-type: none"> Open the following valves: 	
		<ul style="list-style-type: none"> 1KC-2B (Trn B Aux Bldg Non Ess Ret Isol). 	
		<ul style="list-style-type: none"> 1KC-53B (Trn B Aux Bldg Non Ess Sup Isol). 	

Op Test No.: N11-1 Scenario # 3 Event # 4 Page 27 of 42Event Description: **KC System leak**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 25) Check 1A ND pump – OFF.	
	BOP	(Step 26) Check 1KC-56A (KC To A ND HX) – CLOSED.	
	BOP	(Step 27) Place control switch for 1KC-51A (Train A Recirc Isol) in the "CLOSE" position.	
	BOP	(Step 28) Ensure 1KC-51A (Train A Recirc Isol) closes.	
	BOP	(Step 29) Stop 1A1 and 1A2 pumps.	NOTE: It is likely that the A Train KC Pumps are OFF (Manually tripped earlier on Foldout Page criteria).
	BOP	(Step 30) Check KC flow – LESS THAN 4000 GPM PER OPERATING KC PUMP.	
	BOP	(Step 31) Check ND pumps – ANY ON PRIOR TO ENTERING THIS PROCEDURE.	NOTE: No ND Pumps were on prior to entering this procedure.
	CRS	(Step 31 RNO) GO TO Step 37.	
	BOP	(Step 37) Check KC System leak – HAS OCCURRED.	NOTE: A KC leak has occurred.
	CRS	(Step 38) GO TO Step 39 in boy of this procedure.	
AP/1/A/5500/21, LOSS OF KC OR KC SYSTEM LEAKAGE			

Op Test No.: N11-1 Scenario # 3 Event # 4 Page 28 of 42Event Description: **KC System leak**

Time	Pos.	Expected Actions/Behavior			Comments
	CRS	(Step 39) Continue attempts to identify and isolate leak.			Examiner NOTE: The CRS may address Technical Specifications at this time. If NOT, address this Technical Specification evaluation at the end of the scenario.
TECHNICAL SPECIFICATION 3.7.6, COMPONENT COOLING WATER SYSTEM					
	CRS	LCO 3.7.6 Two CCW trains shall be OPERABLE.			
	CRS	APPLICABILITY: MODE 1, 2, 3, and 4.			
	CRS	ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One CCW train inoperable	A.1 Restore CCW train to OPERABLE status.	72 hours	
At the discretion of the Lead Examiner move to Event #5.					

Op Test No.: N11-1 Scenario # 3 Event # 5 Page 29 of 42Event Description: **Sequentially Dropped Control Rods**

Next, one Control Bank D Control Rod will drop into the core. The operator will respond in accordance with ARP1AD-2/D-9, "RPI at Bottom Rod Drop" and will implement AP/1/A/5500/14, "Rod Control Malfunction." 30 seconds later a second Control Rod will drop requiring that the operator manually trip the reactor. The crew will enter EP/1/A/5000/E-0, "Reactor Trip or Safety Injection."

Booth Operator Instructions: Operate Trigger #11 (IRE006H8 (1), IRE006D4 (1), 30 seconds delayed)

Indications Available:

- MCB Annunciator 1AD-2, A-10, ROD CONTROL URGENT FAILURE, alarms.
- MCB Annunciator 1AD-2, D-9, RPI AT BOTTOM ROD DROP, alarms.
- MCB Annunciator 1AD-2, D-10, RPI URGENT FAILURE, alarms.
- DRPI indication that Control Rod H8 is on the bottom.

30 seconds later:

- MCB Annunciator 1AD-2, E-9, RPI AT BOTTOM >1 ROD DROPPED, alarms.
- DRPI indication that Control Rod D4 is on the bottom.

Time	Pos.	Expected Actions/Behavior	Comments
AP/1/A/5500/14, ROD CONTROL MALFUNCTION			
	RO	(Step 1) IF more than one rod dropped, THEN perform the following:	Immediate Action
		<ul style="list-style-type: none"> • Trip Reactor. 	NOTE: The rods will drop sequentially so the action of tripping the reactor will be delayed, but Immediate upon observation.
		<ul style="list-style-type: none"> • GO TO EP/1/A/5000/E-0 (Reactor Trip or Safety Injection). 	
	RO	(Step 2) Place control rods in manual.	Immediate Action
	RO	(Step 3) Check rod movement – STOPPED.	Immediate Action

Op Test No.: N11-1 Scenario # 3 Event # 5 Page 30 of 42Event Description: **Sequentially Dropped Control Rods**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: Upon recognition of the dropped rod, the RO will perform Step 1 which now applies.
	RO	(Step 1) IF more than one rod dropped, THEN perform the following:	Immediate Action
		<ul style="list-style-type: none"> • Trip Reactor. 	NOTE: The rods will drop sequentially so the action of tripping the reactor will be delayed, but Immediate upon observation.

CRITICAL TASK:**(SS) Trip the reactor upon recognition of the second dropped rod (4600/113/E13.19)**

Safety Significance: Multiple dropped control rods are a significant reactivity transient that can have a serious effect on plant parameters under certain operating conditions, and may result in power distribution limits being exceeded. The guidance to trip the reactor is a conservative action to prevent the plant from challenging the Pzr low pressure trip setpoint, etc.; and is consistent with the conservative nature of the industry. PT/0/A/4600/113, Enclosure 13.19 states that it is a management expectation that the operator trip the reactor within 30 seconds of a second dropped rod.

When the reactor is tripped move to Events #6-7.			

Op Test No.: N11-1 Scenario # 3 Event # 6 & 7 Page 31 of 42Event Description: **Seismic Event/Steam Line Break/Loss of Offsite Power**

Shortly after entry into EP/1/A/5000/ES-0.1, the O.B.E. Exceeded annunciator will alarm, indicating that an earthquake has occurred. Within seconds a large Steam Rupture will occur outside Containment on the A Steam Generator. The operator will actuate Safety Injection, and return to EP/1/A/5000/E-0, "Reactor Trip or Safety Injection." Simultaneously, a Loss of Offsite Power will occur. Both Emergency Diesel Generators will start and load onto the Emergency Busses, and all SI loads will sequence on as designed. Upon completion of E-0, the operator will transition to EP/1/A/5000/E-2, "Faulted Steam Generator Isolation." Upon completion of E-2, the operator will transition to either EP/1/A/5000/E-1, "Response to Loss of Primary or Secondary Coolant," or EP/1/A/5000/ES-1.1, "SI Termination." The scenario will terminate this transition is made.

Booth Operator Instructions: Ensure Trigger #13 has operated (ANN-AD13-E7 (ON), SM008A(4.125 E+6) and EP001)

Indications Available:

- MCB Annunciator 1AD13 E-7, OBE EXCEEDED, alarms.
- Control Room lights dim.
- A EDG starts and loads onto Bus 1ETA.
- B EDG starts and loads onto Bus 1ETB.
- DRPI Panels de-energize.
- Control Room lights return to normal after ESF Busses re-energize.
- 1A SG pressure starts to lower.
- RCS pressure starts to lower.
- SI actuates.

	Pos.	Expected Actions/Behavior	Comments
			NOTE: The RO will need to manually re-energize the S/R Channels due to a previous malfunction.
EP/1/A/5000/E-0, REACTOR TRIP OR SAFETY INJECTION			
	SRO	(Step 1) Monitor Foldout page.	
	RO	(Step 2) Check Reactor Trip:	Immediate Action
		<ul style="list-style-type: none"> • All rod bottom lights – LIT 	NOTE: DRPI indication is no longer available.
		<ul style="list-style-type: none"> • Reactor trip and bypass breakers – OPEN 	

Op Test No.: N11-1 Scenario # 3 Event # 6 & 7 Page 32 of 42Event Description: **Seismic Event/Steam Line Break/Loss of Offsite Power**

	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> I/R amps – GOING DOWN. 	
		(Step 2 RNO) Perform the following:	Immediate Action
		<ul style="list-style-type: none"> Trip reactor. 	
		<ul style="list-style-type: none"> IF reactor will not trip... 	
	BOP	(Step 3) Check Turbine Trip:	Immediate Action
		<ul style="list-style-type: none"> All throttle valves – CLOSED. 	
	BOP	(Step 4) Check 1ETA and 1ETB – ENERGIZED.	Immediate Action NOTE: An LOP has occurred and the Diesels will start re-energizing these busses.
	RO / BOP	(Step 5) Check if S/I is actuated:	Immediate Action
		<ul style="list-style-type: none"> “SAFETY INJECTION ACTUATED” status light (1SI-18) – LIT. 	
		<ul style="list-style-type: none"> Both LOCA Sequencer Actuated status lights (1SI-14) – LIT. 	
	SRO	(Step 6) Announce “Unit 1 Safety Injection”.	NOTE: CRS may ask U2 RO to make Plant Announcement. If so, Floor Instructor acknowledge as U2 RO.
		(Step 7) Check all Feedwater Isolation status lights (1SI-4) - LIT	
	BOP	(Step 8) Check Phase A “RESET” lights – DARK.	
	BOP	(Step 9) Check ESF Monitor Light Panel on energized train(s):	
		<ul style="list-style-type: none"> Groups 1, 2, 5 – DARK. 	

Op Test No.: N11-1 Scenario # 3 Event # 6 & 7 Page 33 of 42Event Description: **Seismic Event/Steam Line Break/Loss of Offsite Power**

	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Group 3 – LIT. 	
		<ul style="list-style-type: none"> OAC – IN SERVICE. 	
		<ul style="list-style-type: none"> Group 4, Rows A through F – LIT AS REQUIRED. 	
	CRS	<ul style="list-style-type: none"> GO TO Step 10. 	
	RO / BOP	(Step 10) Check proper CA pump status:	
		<ul style="list-style-type: none"> MD CA pumps – ON. 	
		<ul style="list-style-type: none"> N/R level in at least 3 S/Gs – GREATER THAN 17%. 	
	BOP	(Step 11) Check all KC pumps – ON.	NOTE: The Train A KC Pumps will re-start upon actuation of SI.
	BOP	(Step 12) Check both RN pumps – ON.	
	CRS	(Step 13) Notify Unit 2 to perform the following:	Floor Instructor: As U2 RO report "2A RN Pump is running."
		<ul style="list-style-type: none"> Start 2A RN pump. 	
		<ul style="list-style-type: none"> THROTTLE Unit 2 RN flow to minimum for existing plant conditions. 	
	RO	(Step 14) Check all S/G pressures – GREATER THAN 775 psig.	NOTE: The 1A SG is depressurizing.
	RO	(Step 14 RNO) Perform the following:	
		<ul style="list-style-type: none"> Check the following valves closed: 	
		<ul style="list-style-type: none"> All MSIVs 	
		<ul style="list-style-type: none"> All MSIV bypass valves 	
		<ul style="list-style-type: none"> All SM PORVs. 	
		<ul style="list-style-type: none"> IF any valve open.... 	

Op Test No.: N11-1 Scenario # 3 Event # 6 & 7 Page 34 of 42Event Description: **Seismic Event/Steam Line Break/Loss of Offsite Power**

	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 15) Check Containment Pressure – HAS REMAINED LESS THAN 3 PSIG.	NOTE: Containment Pressure is 0 psig.
	BOP	(Step 16) Check S/I flow:	
		<ul style="list-style-type: none"> Check "NV PMPS TO COLD LEG FLOW" gauge – INDICATING FLOW. 	NOTE: NV Flow is ≈320 gpm.
		<ul style="list-style-type: none"> Check NC pressures – LESS THAN 1600 PSIG. 	
		<ul style="list-style-type: none"> Check NI pumps – INDICATING FLOW. 	
		<ul style="list-style-type: none"> Check NC pressure – LESS THAN 275 PSIG. 	
	BOP	(Step 16d RNO) Perform the following:	
		<ul style="list-style-type: none"> Ensure ND pump miniflow valve on running pump(s) open: 	
		<ul style="list-style-type: none"> 1ND-68A (1A ND Pump & Hx Mini Flow Isol) 	
		<ul style="list-style-type: none"> 1ND-67B (1B ND Pump & Hx Mini Flow Isol). 	
	CRS	<ul style="list-style-type: none"> IF valve(s) open on all running ND pumps, THEN GO TO Step 17. 	
	CRS	(Step 17) Notify OSM or other SRO to perform EP/1/A/5000/G-1 (Generic Enclosures), Enclosure 22 (OSM actions Following an S/I) within 10 minutes.	NOTE: CRS may ask OSM to address. If so, Floor Instructor acknowledge as OSM.
	RO / BOP	(Step 18) Check CA flow:	
		<ul style="list-style-type: none"> Total CA flow – GREATER THAN 450 GPM. 	
		<ul style="list-style-type: none"> Check VI header pressure – GREATER THAN 60 PSIG. 	

Op Test No.: N11-1 Scenario # 3 Event # 6 & 7 Page 35 of 42Event Description: **Seismic Event/Steam Line Break/Loss of Offsite Power**

	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> WHEN each S/G N/R level is greater than 11% (32% ACC), THEN control CA flow to maintain that S/G N/R level between 11% (32% ACC) and 50%. 	
	RO	(Step 19) Check NC temperatures:	
		<ul style="list-style-type: none"> IF any NC pump on, THEN check NC T-Avg – STABLE OR TRENDING TO 557°F 	NOTE: All NC Pumps will be ON.
		OR	
		<ul style="list-style-type: none"> IF all NC pumps off, THEN check NC T-Colds – STABLE OR TRENDING TO 557°F. 	
		(Step 19 RNO) Perform the following based on plant conditions:	
		<ul style="list-style-type: none"> IF temperature less than 557°F AND going down, THEN attempt to stop cooldown PER Enclosure 3 (Uncontrolled NC System Cooldown). 	NOTE: The CRS may assign the RO to perform this action. If so, RO Examiner follow actions of Enclosure 3. Other Examiners follow E-0 Actions, Step 20 , on Page 36 .
E-0, REACTOR TRIP OR SAFETY INJECTION ENCLOSURE 3, UNCONTROLLED NC SYSTEM COOLDOWN			
	RO	(Step 1) Check steam dump valves – CLOSED.	Examiner NOTE: Follow the actions associated with Enclosure 3 if RO is assigned by CRS to perform.
	RO	(Step 2) Check all SM PORVs – CLOSED.	
	RO	(Step 3) Check MSR “RESET” light – LIT.	
	RO	(Step 4) Check any NC pump – ON.	

Op Test No.: N11-1 Scenario # 3 Event # 6 & 7 Page 36 of 42Event Description: **Seismic Event/Steam Line Break/Loss of Offsite Power**

	Pos.	Expected Actions/Behavior	Comments
	RO	(Step 4 RNO) Perform the following:	
		<ul style="list-style-type: none"> IF any NC T-Cold is still going down, THEN GO TO Step 6. 	
	RO	(Step 6) Control feed flow as follows:	
		<ul style="list-style-type: none"> IF S/G N/R level is less than 11% (32% ACC) in all S/Gs... 	
		<ul style="list-style-type: none"> WHEN N/R level is greater than 11% (32% ACC) in at least one S/G, THEN throttle feed flow further to: 	
		<ul style="list-style-type: none"> Minimize cooldown 	
		<ul style="list-style-type: none"> Maintain at least one S/G N/R level greater than 11% (32% ACC). 	
	RO	(Step 7) Check MSIVs – ANY OPEN.	NOTE: All MSIVs are Closed.
		(Step 7 RNO) Perform the following:	
		<ul style="list-style-type: none"> Close MSIV bypass valves. 	
		<ul style="list-style-type: none"> Exit this enclosure. 	
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner NOTE: Examiners following the CRS/BOP continue HERE .
	BOP	(Step 20) Check Pzr PORV and spray valves:	
		<ul style="list-style-type: none"> All Pzr PORVs – CLOSED. 	
		<ul style="list-style-type: none"> Normal Pzr spray valves – CLOSED. 	
		<ul style="list-style-type: none"> At least one Pzr PORV isolation valve – OPEN. 	
	BOP	(Step 21) Check NC subcooling based on core exit T/Cs – GREATER THAN 0°F.	

Op Test No.: N11-1 Scenario # 3 Event # 6 & 7 Page 37 of 42Event Description: **Seismic Event/Steam Line Break/Loss of Offsite Power**

	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 22) Check if main steamlines intact:	
		<ul style="list-style-type: none"> All S/G pressures – STABLE OR GOING UP. 	NOTE: The 1A SG is depressurizing.
		<ul style="list-style-type: none"> All S/Gs – PRESSURIZED. 	
	CRS	(Step 22 RNO) IF any S/G is faulted, THEN perform the following:	
		<ul style="list-style-type: none"> IF AT ANY TIME both of the following conditions exist, THEN start one train of VX PER Enclosure 4 (VX Manual Start): 	
		<ul style="list-style-type: none"> Containment pressure is between 1 PSIG and 3 PSIG. 	NOTE: The Containment pressure is < 1 psig.
		<ul style="list-style-type: none"> Containment pressure has remained less than 3 PSIG. 	
	CRS	<ul style="list-style-type: none"> Implement EP/1/A/5000/F-0 (Critical Safety Function Status Trees). 	
	CRS	<ul style="list-style-type: none"> GO TO EP/1/A/5000/E-2 (Faulted Steam Generator Isolation), 	NOTE: The CRS will transition to E-2.
EP/1/A/5000/E-2, FAULTED STEAM GENERATOR ISOLATION			
	RO/ BOP	(Step 1) Monitor Foldout page.	
	CRS	(Step 2) Maintain any faulted S/G or secondary break isolated during subsequent recovery actions unless needed for NC System cooldown.	
	RO	(Step 3) Check the following valves – CLOSED:	
		<ul style="list-style-type: none"> All MSIVs 	
		<ul style="list-style-type: none"> All MSIV bypass valves. 	

Op Test No.: N11-1 Scenario # 3 Event # 6 & 7 Page 38 of 42Event Description: **Seismic Event/Steam Line Break/Loss of Offsite Power**

	Pos.	Expected Actions/Behavior	Comments
	RO	(Step 4) Check at least one S/G pressure – STABLE OR GOING UP.	NOTE: Although all SG pressures may be decreasing slowly, the operator will report stable based on plant conditions (i.e. faulted SG). Otherwise a transition to ECA-2.1 will be made.
	RO/ BOP	(Step 5) Identify faulted S/G(s):	NOTE: The 1A SG is Faulted.
		<ul style="list-style-type: none"> Any S/G pressure – GOING DOWN IN AN UNCONTROLLED MANNER. 	
		OR	
		<ul style="list-style-type: none"> Any S/G – DEPRESSURIZED. 	
		(Step 6) Maintain at least one S/G available for NC System cooldown in subsequent steps.	
	RO	(Step 7) Check faulted S/G(s) SM PORV – CLOSED.	
	BOP	(Step 8) Reset CA modulating valves.	
	RO/ BOP	(Step 9) Isolate faulted S/G(s) as follows:	
	RO/ BOP	<ul style="list-style-type: none"> For 1A S/G: 	
		<ul style="list-style-type: none"> Check "S/G A FDW ISOLATED" status light (1SI-4) – LIT. 	
		<ul style="list-style-type: none"> Close 1CA-66A (U1 TD CA Pump Disch To 1A S/G Isol). 	
		<ul style="list-style-type: none"> Close 1CA-62A (1A CA Pump Disch To 1A S/G Isol). 	
		<ul style="list-style-type: none"> Check BB valves – CLOSED: 	

Op Test No.: N11-1 Scenario # 3 Event # 6 & 7 Page 39 of 42Event Description: **Seismic Event/Steam Line Break/Loss of Offsite Power**

	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> 1BB-1B (1A S/G Blowdown Cont Outside Isol Control) 	
		<ul style="list-style-type: none"> 1BB-5A (A S/G BB Cont Inside Isol). 	
		<ul style="list-style-type: none"> Close 1SM-83 (A SM Line Drain Isol). 	
E-2 A			
Isolate the Faulted Steam Generator before transitioning out of E-2.			
Safety Significance: Failure to isolate a Faulted SG that can be isolated causes challenges to the Critical Safety Functions that would not otherwise occur. Failure to isolate flow could result in an unwarranted Orange or Red Path condition on NC Integrity and/or Subcriticality (if cooldown is allowed to continue uncontrollably).			
	RO	(Step 10) Close 1AS-12 (U1 SM To AS Hdr Control Inlet Isol).	
		(Step 10 RNO) IF 1AS-12 will not close, THEN perform the following:	
		<ul style="list-style-type: none"> IF controller for 1AS-11 (Unit 1 Main Steam TO Aux Steam Hdr Control) (Unit 1 turbine bldg, 739, on column 1F-34) is accessible, THEN dispatch operator to CLOSE 1AS-11 PER EP/1/A/5000/G-1 (Generic Enclosure). Enclosure 4 (Closing 1AS-11 Using Local Controller), Step 2. 	
		<ul style="list-style-type: none"> IF controller for 1AS-11 is not accessible.... 	NOTE: The controller for 1AS-11 is accessible.
	BOP	(Step 11) Check if S/G tubes intact as follows:	
		<ul style="list-style-type: none"> Check the following EMF's – NORMAL: 	
		<ul style="list-style-type: none"> 1EMF-33 (Condenser Air Ejector Exhaust) 	
		<ul style="list-style-type: none"> 1EMF-24 (S/G A) 	

Op Test No.: N11-1 Scenario # 3 Event # 6 & 7 Page 40 of 42Event Description: **Seismic Event/Steam Line Break/Loss of Offsite Power**

	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> 1EMF-25 (S/G B) 	
		<ul style="list-style-type: none"> 1EMF-26 (S/G C) 	
		<ul style="list-style-type: none"> 1EMF-27 (S/G D). 	
		<ul style="list-style-type: none"> IF any S/G has previously been identified as ruptured... 	NOTE: There is no previously known SGTL.
		<ul style="list-style-type: none"> Notify RP to perform the following: 	NOTE: The CRS may call WCC/IAE to address the switch position. If so, Booth Instructor acknowledge as WCC.
		<ul style="list-style-type: none"> If S/G(s) fault known to be outside containment, THEN monitor area of steam fault for radiation. 	
		<ul style="list-style-type: none"> Frisk all Unit 1 S/G cation columns to determine if activity level is significantly higher for any S/G. 	
		<ul style="list-style-type: none"> Notify Control Room of any abnormal radiation conditions. 	
		<ul style="list-style-type: none"> WHEN activity results reported, THEN notify station management to evaluate S/G activity. 	
	RO/ BOP	(Step 12) Check S/I termination criteria:	
		<ul style="list-style-type: none"> NC subcooling based on core exit T/Cs – GREATER THAN 0°F. 	
		<ul style="list-style-type: none"> Secondary heat sink: 	
		<ul style="list-style-type: none"> N/R level in at least on intact S/G – GREATER THAN 11% (32% ACC) 	
		OR	
		<ul style="list-style-type: none"> Total feed flow to intact S/Gs – GREATER THAN 450 GPM. 	
		<ul style="list-style-type: none"> NC pressure – STABLE OR GOING UP. 	
		<ul style="list-style-type: none"> Pzr level – GREATER THAN 11% (29% ACC). 	
		<ul style="list-style-type: none"> GO TO EP/1/A/5000/ES-1.1 (Safety Injection Termination). 	

UNIT 1 STATUS:

Power Level: 1×10^{-8} amps NCS [B] 1847 ppm Pzr [B]: 1856 ppm Xe: Per OAC

Power History: The reactor has just been started up three days after a trip from 100% power. Core Burnup: 12 EFPDs

CONTROLLING PROCEDURE: OP/1/A/6100/03 Controlling Procedure for Unit Operation

OTHER INFORMATION NEEDED TO ASSUME TO SHIFT:

- Unit 1 is at 1×10^{-8} amps in accordance with OP/1/A/6100/003, "Controlling Procedure for Unit Operation," Enclosure 4.1, "Power Increase."
- It is intended to raise power on this shift.
- The CF&E Sump level is high, and the crew will need to pump the contents of the sump to the Floor Drains Tank.

The following equipment is Out-Of-Service:

- 1A KR Pump is OOS for motor replacement.
- 1CAP-5610, CAST LEVEL CH 1, failed last shift (IAE is investigating).
- MCB Annunciator 1AD-4, A-5, "BB BLOWOFF TANK LO LEVEL," has been in constant alarm over the last hour (IAE is investigating).

Crew Directions:

- Pump the CF&E Sump using OP/1/A/6500/001, "Liquid Waste System."
- Raise reactor power to 2-3% and Hold in accordance with Enclosure 4.1 of OP/1/A/6100/03 Controlling Procedure for Unit Operation

Work Control SRO/Offsite Communicator

Jim

Plant SRO

Joe

NLO's AVAILABLE

Unit 1

Aux Bldg. John

Turb Bldg. Bob

5th Rounds. Carol

Extra(s) Bill Ed Wayne Tanya

Unit 2

Aux Bldg. Chris

Turb Bldg. Mike