Facility: **Oconee** Scenario No.: **1** Op-Test No.: 1

Examiners: _____ Operators: _____**SRO**

_____ _____**OATC**

_____ _____**BOP**

Initial Conditions:
- Reactor Power = 100% Unit 2: 100%, Unit 3: 100%

Turnover:
- Reactor power at 100%
- Pressurize LDST with Hydrogen
- SASS in Manual

Event No.	Malfunction No.	Event Type*	Event Description
0a	Override		SASS in Manual
0b	Override`		1HP-24 failed closed
1	Override	C: BOP, SRO **(TS)**	Pressurize LDST with H2 (1H-1 will fail open requiring LDST vent to return to acceptable LDST pressure)
2	Override	C, BOP, SRO	HPSW Jockey Pump trips
3	MPI 281, 68%	I: OATC, SRO	ΔTc Controller Fails HIGH ('A' Loop Hot)
4	MPS061, 10	C, BOP, SRO	1A Letdown Cooler Leak
5	MSI070 MSI261	I: OATC, SRO	1A SG Outlet Pressure Fails HIGH
6	MPS010,1.3	R: OATC, SRO (**TS**)	60 gpm leak in 1A SG requiring a manual power reduction
7	MSS010 MSS020 MSS260 MSS270 MSS330	M: ALL	Loss of Main and Emergency Feedwater LOHT Tab CBP feed
8	Override	ALL	CBPs trip requiring HPI Forced cooling 1HP-24 will not open Transfer to HPI CD Tab

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

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **1** Page 1 of 3

Event Description: **Pressurize LDST with Hydrogen (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO SRO/BOP	**Crew response:** • Direct the BOP to add H2 to the LDST using OP/1/A/1106/017 (Hydrogen System) Enclosure 4.5 (Unit 1 LDST H2 Addition). • Enclosure 4.5 (Unit 1 LDST H2 Addition) will: 2.1 Notify Chemistry of hydrogen addition prior to adding hydrogen. **NOTE:** • OP/0/A/1108/001 (Curves And General Information) and computer may be referred to for LDST Pressure vs. Level curve. • LDST Maximum Pressure vs Indicated Level Curve should **NOT** be exceeded when pressurizing LDST. 2.2 Immediately prior to pressurization determine lowest reading of diverse LDST level indications: **85.2** inches. 2.3 For existing LDST level determine LDST Pressure allowable per LDST Pressure vs. Level curve: **42** psig. 2.4 Notify Operator at H2 Cage to pressurize primary hydrogen. **NOTE:** Operator should be in constant communication with CR to close 1H-26 if 1H-1 fails open. ***BOOTH CUE: When directed to open 1H-26, use Manual Valves and position 1H-93 approximately 20% open*** 2.5 Direct Operator to open 1H-26 (LDST Block). 2.6 Direct Operator in field to monitor explosive detector. 2.7 Cycle 1H-1 (LDST SUPPLY) as required to pressurize LDST per LDST Pressure vs Level curve. ***Examiner Booth Note: Once LDST pressure is being increased, 1H-1 (LDST SUPPLY) will fail open.*** 2.8 **WHEN** Hydrogen addition complete, ensure closed 1H-1(LDST SUPPLY).

This event is complete when LDST pressure has been returned to the acceptable range and the SRO has made the Tech Spec determination OR as directed by lead examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **1** Page 2 of 3

Event Description: **Pressurize LDST with Hydrogen (TS)**

Time	Position	Applicant's Actions or Behavior
		Plant response: • LDST pressure will continue to increase. • 1SA-02/D-2, HP Approaching LDST Operating Limits, actuates
	SRO/BOP	**Crew response:** • BOP should determine that 1H-1 has failed open and direct the NLO to close 1H-26. ***Examiner Note: 1H-26 will not be closed until LDST pressure is outside acceptable range.***
	SRO	• Refer to the ARG. • Verify LDST pressure/level are within the acceptable operating region of the LDST PRESSURE vs. LEVEL enclosure in OP/0/A/1108/001 (Curves and General Information). **IF necessary**, vent LDST to GWD per OP/1/A/1104/002 (HPI System).

	SRO/BOP	• LDST PRESSURE vs. LEVEL enclosure in OP/0/A/1108/001 (Curves and General Information) directs the following: (**See curve on page 34**)
		  • If LDST Pressure vs. Level is above and to the left of Curve 1, then declare **BOTH** trains of HPI INOPERABLE.
		  o Immediately depressurize LDST below Curve 1.
		  o Refer to TS 3.0.3 for shutdown requirements.
		  o Make notifications as required by OMP 1-14 (Notifications).

	SRO	**Applicable Tech Specs:** **3.5.2 Condition C (Action C.3) 72 hour completion time** **3.5.2 Condition H (Action H.1) Enter 3.0.3 Immediately** **LCO 3.0.3 requires Mode 3 within 12 hours.**

		• Direct the ROs to vent LDST to GWD per OP/1/A/1104/002 (HPI System), Encl. 4.16, (Lowering LDST Pressure)
		  • Review Limits and Precautions
		  3.1 Direct Operator to Close 1GWD-20 (LDST Vent Blk).
		  3,2 Open 1GWD-19 (LDST VENT).
		  3.3 Direct Operator to throttle open 1GWD-20 (LDST Vent Blk) until LDST pressure begins to slowly decrease <u>and</u> GWD system can maintain vent header.

		Note: 1SA-9/C-12 (GWD VENT HEADER PRESSURE HIGH/LOW) may actuate. 1SA-9/C-12 ARG: • Check setpoint on 1GWD-1 (Vent Header Pressure Control) • Adjust setpoint to maintain 0" H2O pressure on vent header • Determine and correct cause of alarm

This event is complete when LDST pressure has been returned to the acceptable range and the SRO has made the Tech Spec determination OR as directed by lead examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **1** Page 3 of 3

Event Description: **Pressurize LDST with Hydrogen (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	3.4 IF required, start Standby GWD Compressor per OP/1-2/A/1104/018 (GWD System). **(See below)** 3.5 **WHEN** desired LDST pressure obtained, close 1GWD-19 (LDST VENT) 3.6 If started, stop Standby GWD Compressor 3.7 Throttle 1/4 turn open 1GWD-20. **OP/1-2/A/1104/018 (GWD System) Enclosure 4.1** **1. Initial Conditions** None **2. Procedure** 2.1 **IF** desired to start 'A' GWD Compressor, perform the following: 2.1.1 Begin monitoring Vent Header pressure. 2.1.2 Open DW-140 ('A' GWD COMP DW MAKEUP). 2.1.3 Start 'A' GWD COMPRESSOR. 2.1.4 Place DW-140 ('A' GWD COMP DW MAKEUP) in "AUTO". 2.1.5 Verify GWD-8 ('A' SEPARATOR TANK DRAIN) closed. 2.2 **IF** desired to start 'B' GWD Compressor, perform the following: 2.2.1 Open DW-142 ('B' GWD COMP DW MAKEUP). 2.2.2 Start 'B' GWD COMPRESSOR. 2.2.3 Place DW-142 ('B' GWD COMP DW MAKEUP) in "AUTO". 2.2.4 Verify GWD-9 ('B' SEPARATOR TANK DRAIN) closed. 2.3 **IF** desired to stop 'A' GWD Compressor, perform the following: 2.3.1 Ensure another compressor is carrying the header. 2.3.2 Stop 'A' GWD COMPRESSOR. 2.4 **IF** desired to stop 'B' GWD Compressor, perform the following: 2.4.1 Ensure another compressor is carrying the header. 2.4.2 Stop 'B' GWD COMPRESSOR.

This event is complete when LDST pressure has been returned to the acceptable range and the SRO has made the Tech Spec determination OR as directed by lead examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **2** Page 1 of 1

Event Description: **HPSW Jockey Pump trips**

Time	Position	Applicant's Actions or Behavior
	BOP	**Plant Response:** • 1SA-9/A-8 HPSW Header A/B PRESS LOW • 1SA-9/D-8 HPSW JOCKEY PUMP OFF • OAC Alarm – O1D2146 (HPSW Jockey Pump) OFF • HPSW header pressure decreases due to Jockey Pump trip **Crew Response:** Refer to ARG 1SA-9/D-8 3.1 Verify automatic actions until jockey pump is restarted 3.2 **IF** there is **NO** evidence of breaker and/or pump motor problem, attempt to restart jockey pump one time. If restart is unsuccessful, notify Maintenance Department. ***Booth Cue: If the crew dispatches a AO to determine if a problem exists with HPSW Jockey Pump motor/breaker, as SPOC, use TIME COMPRESSION and inform the RO that no problem was found with the Jockey Pump motor or breaker*** The crew may refer to ARG 1SA-9/A-8 3.1 Verify proper jockey pump operation 3.2 Refer to SLC 16.9.8a 3.3 Verify HPSW pumps start (start manually if **NOT** already in operation per OP/0/A/1104/011) when preset levels in EWST are reached 3.4 **IF** both HPSW Pumps **NOT** available, Go To EP/1/A/1800/001 Enclosure 5.31 for method of back charging the HPSW system. **3.5 IF** HPSW Header Pressure continues to decrease **AND** Elevated Storage Tank Level is **NOT** dropping; i.e., altitude valve stuck closed and jockey pump not providing adequate supply, manually start a HPSW Pump. • Refer to OP/0/A/1104/011 (High Pressure Service Water). 3.6 Refer to AP/1-2/A/1700/030 (Aux Building Flood) 3.7 Investigate and correct reason for excessive HPSW usage 3.8 Verify BASE and STANDBY HPSW Pumps stop at 80,000 gals 3.9 **IF** manually started, return HPSW Pumps when **NO** longer needed The crew may refer to the ARG for O1D2146 (HPSW Jockey Pump) 1) IF there is NO evidence of breaker and/or pump motor problem, THEN attempt to restart jockey pump one time. If restart is unsuccessful, contact SPOC. 2) Refer to OP/0/A/1104/011 (High Pressure Service Water)

This event is complete when the Jockey Pump has been restarted, or as directed by the Lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **3** Page 1 of 3

Event Description: **ΔT_C Controller Fails HIGH ('A' Loop Hot)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**Plant Response:** • FDW flow will ratio incorrectly based on the failure • "A" FDW flow will increase causing "A" loop T_C to decrease. • "B" FDW flow will decrease causing "B" loop T_C to increase. • This will cause actual ΔT_C to increase (become more negative). Failure to adjust FDW flow will result in QPT. • 1SA-02/B-5, RC Cold Leg Diff. Temperature High, will actuate if actual ΔT_C increases to ± 5°F • 1SA-02/B-9 MS STM GEN 'A' LEVEL High/Low will actuate when SG Operating Level is ≥ 86% **Crew Response:** • Crew should perform Plant Transient Response (PTR) • Diagnose the ΔT_C failure by observing the ΔT_C meter on 1UB1. It should return to zero but is staying at + 3.5 degrees. • OATC reports to the SRO reactor power level and direction of movement. • Take the Diamond and Feedwater Masters to MANUAL and re-ratio feedwater using the Loop T_C meters and/or OAC (RCS01) to return actual ΔT_C to near zero. • BOP reports no valid runback. • SRO should direct the BOP to reference Statalarm 1SA-02/B-5 (**may not get if ICS taken to manual quickly**) • SRO will refer to AP/28 (ICS Instrument Failures) 4.1 Provide control bands as required (per OMP 1-18 Attach I) • NI Power ± 1% not to exceed the pre-transient or allowable power • Current T_{ave} ± 2°F • Current SG Outlet Pressure ± 10 PSIG • Delta T_c 0°F ± 2°F

This event is complete when the SRO reaches the WHEN step (4) in Section 4F, or as directed by the Lead Evaluator.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **3** Page 2 of 3

Event Description: **ΔT_C Controller Fails HIGH ('A' Loop Hot)**

Time	Position	Applicant's Actions or Behavior

4.2 Initiate notification of the following:

__ OSM to reference OMP 1-14 and Emergency Plan

__ STA

4.3 Verify a power transient ≥ 5% has occurred

4.4 Notify Rx Engineering and discuss the need for a maneuvering plan

4.5 Use the following , as necessary, to determine the applicable section from table in Step 4.6

- OAC alarm video, OAC display points, Control Board indications, SPOC assistance

4.6 **GO TO** the applicable section per the following table:

√	Section	Failure
	4F	Delta T_C

AP/28 Section 4F

NOTE

- This section applies to Delta T_C controller failures. T_C input signal failures are addressed in Section 4A

The following may occur when an ICS Delta T_C controller fails:

- Delta T_C controller may re-ratio loop FDW flows
- Possible ICS RUNBACK

1. Ensure the following in HAND:

__ 1A and 1B FDW MASTERS

__ DELTA T_C

CAUTION

Total feedwater flow should be maintained constant while individual loop flows are adjusted to establish the desired ΔTc. Maintaining total FDW flow constant will prevent unwanted changes in reactor power.

This event is complete when the SRO reaches the WHEN step (4) in Section 4F, or as directed by the Lead Evaluator.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **3** Page 3 of 3

Event Description: **ΔT_C Controller Fails HIGH ('A' Loop Hot)**

Time	Position	Applicant's Actions or Behavior
		2. Re-ratio feedwater flow, as required, to establish desired DELTA T_C while maintaining total feedwater flow constant 3. Notify SPOC to perform the following: __ Investigate and repair the failed Delta T_C controller ***Booth Cue: When notified to investigate and repair the failed ΔT_C controller, respond as SPOC and state that the ΔT_C controller will be repaired as soon as possible.*** 4. **WHEN** notified by SPOC that DELTA T_C controller has been repaired, **THEN GO TO** OP/1/A/1102/004 A Encl (Placing ICS Stations To Auto) **NOTE: ICS will remain in manual for the remainder of the scenario.**

This event is complete when the SRO reaches the WHEN step (4) in Section 4F, or as directed by the Lead Evaluator.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **4** Page 1 of 4

Event Description: **1A Letdown Cooler Leak**

Time	Position	Applicant's Actions or Behavior
		Plant Response: **Statalarms:** • 1SA-08/B-9 (PROCESS MONITOR RADIATION HIGH) **Crew Response:**
	SRO/ BOP	**1SA-08/B-9** 3.1 Determine radiation monitors in alarm. 3.1.1 **IF** VIEW node **OR** either SCADA node is **NOT** in service, refer to OP/1/A/1103/026, (Loss of Sorrento Radiation Monitor).
		NOTE TO EXAMINER: Steps 3.2 through 3.10 are IF statements for which RIA is in alarm. In this case, the crew determines the radiation monitor alarming is 1RIA-50, so step 3.9 applies.
		3.9 **IF** any of the following RIAs have valid alarms, **GO TO** AP/18 (Abnormal Release of Radioactivity).

✓	RIA
	RIA-31
	1RIA-32
	1RIA-35
	1RIA-39
	1RIA-41
	1RIA-42
	1RIA-45, 46
	1RIA-47, 48, 49, 49A
	1RIA-50
	1RIA-54

	SRO/BOP	**AP/18 (Can be performed by Unit 2 if AP/2 has been entered)** 4.1 Perform the following: At the discretion of the CR SRO, make a PA announcement of the event including any necessary precautions to be observed. Notify OSM to reference the following: ▪ ☐RP/0/B/1000/001 (Emergency Classification). ▪ ☐NSD 202 (Reportability) ▪ ☐OMP 1-14 (Notifications)

This event is complete when 1A Letdown cooler has been isolated or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **4** Page 2 of 4

Event Description: **1A Letdown Cooler Leak**

Time	Position	Applicant's Actions or Behavior
	SRO /BOP	**AP/18 (cont)** 4.2 **GO TO** appropriate sections for any monitors in High or Alert alarm: **NOTE TO EXAMINER:** Crew should go to Section 4I for 1RIA-50. 4I 1RIA-50 **Section 4I** 1 Verify either of the following: • CC SURGE TANK increasing ≥ 5 "/hour • CC SURGE TANK off-scale high 2. __ Initiate AP/2 (Excessive RCS Leakage). **Note: Crew may enter AP/2 directly because the following entry condition is met: "*Reactor Coolant leakage into CC system at ≥ 5"/hour on CC Surge Tank (≈ 0.65 gpm) or CC Surge Tank level off-scale high*"**
	SRO /BOP	**AP/2** **Immediate Actions** 3.1 Verify HPI operating. 3.2 **IAAT** RC makeup flow is > 100 gpm, **AND** Pzr level is decreasing, **THEN** close 1HP-5. 3.3 **IAAT** all the following exist: • HPI flow is > NORMAL MAKEUP CAPABILITY (≅160 gpm) with letdown isolated • Pzr level decreasing • SG Tube Leakage **NOT** indicated • LPI DHR **NOT** providing core cooling **THEN** perform the following: A. Ensure Rx is tripped. B. Initiate Unit 1 EOP. **Subsequent Actions** **NOTE** Other than a SGTR, 1HP-26 should NOT need be open with the Rx critical. 4.1 Initiate Pzr and LDST level makeup using Unit 1 EOP Encl 5.5 (Pzr and LDST Level Control), as necessary. 4.2 Announce AP entry using the PA system. 4.3 **IAAT** LPI DHR in service, **AND** RCS leakage > LDST makeup capability (≈ 50 gpm), **THEN GO TO** AP/26 (Loss of Decay Heat Removal).

This event is complete when 1A Letdown cooler has been isolated or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **4** Page 3 of 4

Event Description: **1A Letdown Cooler Leak**

Time	Position	Applicant's Actions or Behavior
	SRO /BOP	**AP/2 (Cont)** 4.4 Initiate the following notifications: __ OSM to reference the following: • RP/0/B/1000/001 (Emergency Classification) • OMP 1-14 (Notifications) • Encl 5.9 (Oversight Guidelines) __ STA __ RP 4.5 Monitor the following trends to determine leak area (AB or RB) and trend for degradation: • "T6 AP02" • "T6 WASTE" • **RIAs** 4.6 Verify specific leak location is identified. 4.7 Initiate Encl 5.1 (Leak Rate Determination). **(This will calculate RCS leakage based on CC surge tank level increase and is a very gross calculation since there is no OAC point for CC surge tank level and therefore control room gage must be used.)** 4.8 **WHEN** leak area/failure is identified, **THEN GO TO** applicable step that best fits leak area/failure: CC System ↑ 1RIA-50 ↑ CC Surge Tank level 4.16 4.16 Verify all of the following: • CC Surge Tank level increasing at ≧0.65 gpm) or level is off-scale high • 1RIA-50 in alarm or increasing 4.17 **IAAT** CC Surge Tank level is off-scale high, **THEN** notify Radwaste that the CC Surge Tank has overflowed to the LAWT. 4.18 **IAAT** RCS leakage is flashing the CC system, **OR** threatens to overflow the LAWT, **THEN** perform the following: **N/A at this time** 4.19 Verify leakage indicated by change in RCP cooler outlet temperatures (Turn-on code "GD AP02"): (**No leakage indicated)** **RNO GO TO** Step 4.24

This event is complete when 1A Letdown cooler has been isolated or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **4** Page 4 of 4

Event Description: **1A Letdown Cooler Leak**

Time	Position	Applicant's Actions or Behavior
	SRO /BOP	**AP/2 (cont)**

NOTE

RCS leakage to CC in the letdown coolers may be indicated by a cooler outlet temperature increasing more than the other cooler. Due to CC system setup, letdown cooler CC outlet temperatures may be different. A historical OAC temperature trend may be required to determine if leakage exists and if actions taken are successful in leak isolation. If leaking cooler **CANNOT** be identified, the coolers will be isolated one at a time starting with the 1A Letdown Cooler.

4.24 Monitor letdown cooler outlet temperatures to determine which cooler is leaking (Turn-on code "GD AP02"):

- O1A0065 (LETDOWN COOLER 1A CC OUTLET TEMP)
- O1A0066 (LETDOWN COOLER 1B CC OUTLET TEMP)

4.25 **GO TO** the appropriate step to isolate affected cooler:

NOTE TO EXAMINER: According to the Note above and the table below, the crew ends up in the same place whether they have diagnosed which cooler is leaking or not. Either path is acceptable and ends up with the 1A cooler isolated.

✓	Letdown Cooler to be Isolated	GO TO Step
	1A	4.26
	1B	4.33
	Unknown	4.26

4.26 Verify 1B Letdown Cooler is isolated.

RNO: 1 Isolate the 1A Letdown Cooler by performing the following:
A. Close 1CC-1/1HP-1.
B. Close 1HP-3.
2. **GO TO** Step 4.31.

Examiner note: 1SA-2/C-1 (HP Letdown Temp High) will actuate, expected alarm.

4.31 Verify the leak isolation was successful:

- CC Surge Tank level stable if 1CC-7 and 1CC-8 open
- Decrease in RCS leakage

This event is complete when 1A Letdown cooler has been isolated or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **5** Page 1 of 3

Event Description: **1A SG Outlet Pressure Fails High**

Time	Position	Applicant's Actions or Behavior
	OATC	**Plant Response:** • 1A TBVs open • Main Turbine Control valves close to control THP at setpoint. • Generated Megawatts decrease. • OAC Alarms: ➢ SG 1A Outlet Press Mismatch ➢ AFIS1A SG 1A Outlet Press Deviation • Reactor power increases initially but returns to pre-transient values. • RCS temperature and pressure change initially but return to pre-transient values. **Crew Response:** • The OATC should recognize a transient is in progress, and then perform PTR. o OATC reports to the SRO reactor power level and direction of movement. o OATC takes the Diamond and Feedwater Masters to MANUAL and stabilizes the plant. o BOP reports no valid runback. • **SRO will refer to AP/28 (ICS Instrument Failures)** 4.1 Provide control bands as required (per OMP 1-18 Attach I) • NI Power ± 1% not to exceed the pre-transient or allowable power • Current T_{ave} ± 2°F • Current SG Outlet Pressure ± 10 PSIG • Delta T_c 0°F ± 2°F 4.2 Initiate notification of the following: __ OSM to reference OMP 1-14 and Emergency Plan __ STA 4.3 Verify a power transient ≥ 5% has occurred. **GO TO** Step 4.5 4.4 Notify Rx Engineering and discuss the need for a maneuvering plan 4.5 Use the following , as necessary, to determine the applicable section from table in Step 4.6 • OAC alarm video, OAC display points, Control Board indications, SPOC assistance
This event is complete when the "A" TBVs have been closed, or as directed by the Lead Examiner.		

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **5** Page 2 of 3

Event Description: **1A SG Outlet Pressure Fails High**

Time	Position	Applicant's Actions or Behavior
	OATC	**Crew Response:** 4.6 **GO TO** the applicable section per the following table: | √ | **Section** | **Failure** | | | 4N | SG Outlet Pressure | | | 4P | TBV Failure | **Note: Either section of AP/28 above will mitigate this event. Both sections are shown below.** AP/28 Section 4N (SG Outlet Pressure) 1. Ensure the affected TBVs in HAND and closed: • 1A TURBINE BYPASS VALVES and 1B TURBINE BYPASS VALVES 2. Notify SPOC to perform the following: • Select a valid SG Outlet Pressure input to ICS per AM/1/A/0326/020 (Control of Unit 1 Star Module Signal Selection Function). • Investigate and repair the failed SG Outlet Pressure instrumentation. 3. **WHEN** notified by SPOC that a valid SG Outlet Pressure input has been restored to ICS, **THEN GO TO** OP/1/A/1102/004 A Encl (Placing ICS Stations To Auto). AP/28 Section 4P (TBV Failure) 1. **GO TO** the first applicable step per the following table: | √ | **Failure** | **Step** | | | 1A TURBINE BYPASS VALVES fail open any amount. | 2 | 2. Verify the TURBINE MASTER IN Automatic. 3. **IAAT** it is desired to close 1A TURBINE BYPASS VALVES, **THEN** perform the following: A. Place 1A TURBINE BYPASS VALVES in HAND B. Close 1A TURBINE BYPASS VALVES

This event is complete when the "A" TBVs have been closed, or as directed by the Lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **5** Page 3 of 3

Event Description: **1A SG Outlet Pressure Fails High**

Time	Position	Applicant's Actions or Behavior
	OATC	**Crew Response:** 4. Verify ICS responds as expected. 5. **IAAT** 1MS-17 must be closed to isolate the 1A TBVs **THEN** close 1MS-17. 6. Verify ICS responds as expected 7. Verify 1A TBVs or 1MS-17 closed. 8. IAAT the 1B TBVs have failed open… (**does not apply**) 9. Notify SPOC to investigate and repair any failed TBVs. 10. **WHEN** notified by SPOC that TBVs have been repaired **THEN** continue.

This event is complete when the "A" TBVs have been closed, or as directed by the Lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **6** Page 1 of 3

Event Description: **60 gpm leak in 1A SG Requiring a manual power reduction (TS)**

Time	Position	Applicant's Actions or Behavior
		Plant response: • 1SA8/A9 (RM AREA MONITOR RADIATION HIGH) • 1SA8/E10 (N-16 RM PRIMARY TO SECONDARY TUBE LEAK) • 1SA8/D10 (RM CSAE EXHAUST RADIATION HIGH) • 1SA8/B9 (RM PROCESS MONITOR RADIATION HIGH) • 1RIA-40 in alarm • 1RIA 59 in alarm and indicating ≅ 60 gpm. **Crew response:** ***EXAMINER NOTE: Direct entry into the SGTR Tab is SGTL ≥ 25 gpm.*** **EOP SGTR TAB** **EOP Parallel Actions**
	SRO	• Announce plant conditions using PA system. • Notify OSM to reference the Emergency Plan and NSD 202 (Reportability). • Notify plant staff that Emergency Dose Limits are in affect using PA system.
	SRO/BOP/ OATC	1. Verify Rx tripped. **RNO:** 1. Maintain Pzr level 220″ - 260″ by initiating Encl 5.5 (Pzr and LDST Level Control). **(page 26)** 2. **GO TO** Step 9. 9 **IAAT** Pzr level decreasing with all available HPI, **AND** Rx power is > 18%, **THEN** perform the following: A. Trip the Rx. B. GO TO IMA tab. 10. Verify all: • Rx power > 40% • 1RIA-59 operable • 1RIA-60 operable ***EXAMINER NOTE: Crew determines that SGTL rate is ≅ 60 gpm. EDLs are in effect*** 11. Determine leak rate using: • 1RIA-59 • 1RIA-60

This event is completed when > 10% power reduction has occurred and auxiliaries have been transfered or when directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **6** Page 2 of 3

Event Description: **60 gpm leak in 1A SG Requiring a manual power reduction (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**EOP SGTR TAB (continued)** 12. Notify OSM of SGTR leak rate. 13. Verify ICS capable of power reduction in AUTO. **RNO:** 1. Initiate manual power reduction to < 15%. 2. **GO TO** Step 15.
	SRO/BOP	**NOTE** Encl 5.19 (Control of Plant Equipment During Shutdown for SGTR) will swap auxiliaries. 15 Initiate Encl 5.19 (Control of Plant Equipment During Shutdown for SGTR). **(See next page)** 16. **WHEN** both exist: • Reactor power is ≈ 15% FP • Unit auxiliaries have been transferred **THEN** continue. ***EXAMINER NOTE: The Tech Spec for this SGTR is TS 3.4.13 for leakage >150 gpd. Condition B applies (Mode 3 within 12 hours and Mode 5 within 36 hours)*** ***BOOTH CUE: Ensure the OATC has reduced Reactor Power >10% AND the BOP has transferred auxiliaries prior to initiating the next event (Timer 7)***
This event is completed when > 10% power reduction has occurred and auxiliaries have been transfered or when directed by the lead examiner.		

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **6** Page 3 of 3

Event Description: **60 gpm leak in 1A SG Requiring a manual power reduction (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	**Encl 5.19 (Control of Plant Equipment During Shutdown for SGTR)** 1. Perform the following: A. Monitor RIAs to identify all SGs with a tube rupture: • 1RIA-16 • 1RIA-17 • 1RIA-59 when Rx power > 40% • 1RIA-60 when Rx power > 40% B. Inform CR SRO of results. 2. Place 1TA AUTO/MAN transfer switch in MAN. 3. Place 1TB AUTO/MAN transfer switch in MAN. 4. Close 1TA SU 6.9 KV FDR. 5. Close 1TB SU 6.9 KV FDR. 6. Place MFB1 AUTO/MAN transfer switch in MAN. 7. Place MFB2 AUTO/MAN transfer switch in MAN. 8. Close $E1_1$ MFB1 STARTUP FDR. 9. Close $E2_1$ MFB2 STARTUP FDR. 10. Notify CR SRO that unit auxiliaries have been transferred. 11. Start: • TURBINE TURNING GEAR OIL PUMP • 1A through 1E TURBINE BRNG OIL LIFT PUMPs • TURBINE MOTOR SUCTION PUMP 12. Start: • A OUTSIDE AIR BOOSTER FAN • B OUTSIDE AIR BOOSTER FAN 13. Notify Unit 3 to start: • 3A OUTSIDE AIR BOOSTER FAN • 3B OUTSIDE AIR BOOSTER FAN

This event is completed when > 10% power reduction has occurred and auxiliaries have been transfered or when directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **7** Page 1 of 4

Event Description: **Loss of Main and Emergency Feedwater - LOHT Tab - CBP feed**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**Plant Response**: When directed by the Lead Examiner, a Loss of Main and Emergency Feedwater will occur. **Crew Response**: Perform Immediate Manual Actions (IMAs) 3.1 Depress REACTOR TRIP pushbutton. 3.2 Verify reactor power < 5% FP and decreasing. 3.3 Depress turbine TRIP pushbutton. 3.4 Verify all turbine stop valves closed. 3.5 Verify RCP seal injection available. BOP will perform a Symptom Check and **initiate Rule 3** (Loss of Main and / or Emergency Feedwater) SRO will transfer to the Loss Of Heat Transfer Tab based on Parallel Actions page.

This event is complete when RCS temperature is stabilized on Condensate Booster Pump feed or as directed by the lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **7** Page 2 of 4

Event Description: **Loss of Main and Emergency Feedwater - LOHT Tab - CBP feed**

Time	Position	Applicant's Actions or Behavior
	BOP/OATC	**Rule 3** 1. Verify loss of Main FDW/EFDW is due to Turbine Building Flooding. **RNO: GO TO** Step 3. 3. **IAAT NO** SGs can be fed with FDW (Main/CBP/Emergency), **AND** any of the following exist: • RCS pressure reaches 2300 psig **OR** NDT limit • Pzr level reaches 375″ [340″ acc] **THEN PERFORM** Rule 4 (Initiation of HPI Forced Cooling). Start EFDW pumps to feed all intact SGs. 4. Start operable EFDW pumps, as required, to feed all intact SGs. 5. Verify any EFDW pump operating. **RNO: GO TO** Step 7. 7. Place the following in MANUAL and close: • 1FDW-315 • 1FDW-316 8. Verify both of the following: • Any CBP operating • TBVs available on an intact SG 9. Select OFF for both digital channels on AFIS HEADER A. 10. Select OFF for both digital channels on AFIS HEADER B. 11. Place 1FDW-33 and 1FDW-42 control switches in OPEN 12. SimultaAOusly position Startup Control valves (1FDW-35 1FDW-44) 10 - 20% open on all intact SGs 13. Perform the following: • Place 1FDW-31 switch in CLOSE. • Place 1FDW-40 switch in CLOSE. • Close 1FDW-32. • Close 1FDW-41.

This event is complete when RCS temperature is stabilized on Condensate Booster Pump feed or as directed by the lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **7** Page 3 of 4

Event Description: **Loss of Main and Emergency Feedwater - LOHT Tab - CBP feed**

Time	Position	Applicant's Actions or Behavior
	BOP/OATC	**Rule 3** (Continued) 14. Verify Rule 4 (Initiation of HPI Forced Cooling) in progress. **RNO: (CT-11, Control SG Pressure to Maintain RC Temperature Constant)** **Examiner note: To meet the CT, the candidate must show the ability to stop the RCS temperature increase and then maintain RCS temperature stable or slightly decreasing.** 1. Lower SG pressure in available SGs to ≈ 500 psig. 2. Control FDW flow to stabilize RCS P/T by throttling the Startup Control valves and TBVs as necessary: 3. Notify CR SRO that CBP feed is in progress 4. Place 1FDW-38 and 1FDW-47 switches to OPEN 5. Place 1FDW-36 and 1FDW-45 switches to CLOSE 6. GO TO step 16 16. Verify 1 TD EFDW PUMP is operable and available for manual start. 17. Dispatch an operator to perform Encl 5.26 (Manual Start of TDEFDWP). 18. Verify cross-tie with Unit 2 is desired. 19. Dispatch an operator to open 2FDW-313 and 2FDW-314 20. Dispatch an operator to 1FDW-313 and have them notify the CR when in position. 21. Notify Unit 2 to: • Manually Close 2FDW-315 & 316. • Start their U2 TDEFWP 22. **WHEN**, either of the following exists: 1FDW-313 Operator in position **OR** Unit 1 TDEFWP has been manually started; **THEN** continue.

This event is complete when RCS temperature is stabilized on Condensate Booster Pump feed or as directed by the lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **7** Page 4 of 4

Event Description: **Loss of Main and Emergency Feedwater - LOHT Tab - CBP feed**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP/ OATC	Loss Of Heat Transfer Tab 1. Ensure Rule 3 in progress or complete. **NOTE:** Transfer to LOSCM tab is **NOT** required if RCS heats to the point where core SCM = 0°F. 2. **IAAT** the RCS heats to the point where core SCM = 0°F, **THEN GO TO** Step 4. 3. **IAAT NO** SGs can be fed with FDW (Main/CBP/Emergency), **AND** any of the following exist: • RCS pressure reaches 2300 psig **OR** NDT limit • Pzr level reaches 375″ [340″ acc] **THEN PERFORM** Rule 4 (Initiation of HPI Forced Cooling). **RNO:** **NOTE:** 1A1 RCP provides the best Pzr spray. 1. Reduce operating RCPs to one pump/loop. 2. **WHEN** any of the following exists: • EFDW flow has been re-established by existing Rules/Enclosures • EFDW aligned from another unit • Operator performing Rule 3 (Loss of Main or Emergency FDW) or Encl 5.27 (Alternate Methods for Controlling EFDW Flow) reports EFDW available **THEN GO TO Step 48** **Examiner Note:** The SRO will wait at the **WHEN** step until one of the bullets are met or until an outstanding **IAAT** is met. The crew may initiate EOP Encl 5.5 for inventory control. These steps are included beginning on page 23. To initiate Event 8, IAAT step 3 will be met by tripping the CBP's. The EOP path for Event 8 continues on Page 20.
This event is complete when RCS temperature is stabilized on Condensate Booster Pump feed or as directed by the lead Examiner.		

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **8** Page 1 of 3

Event Description: **CBPs trip requiring HPI Forced cooling, 1HP-24 will not open, Transfer to HPI CD Tab**

Time	Position	Applicant's Actions or Behavior
		Loss of CBP's **Plant Response**: • CBPs trip • Feedwater flow decreases • RCS temperature increases **Crew Response**:
	SRO	SRO may direct RO to re-perform Rule 3 however there are no EFDWP's available and all required actions will already have been performed during the initial performance of Rule 3. At 2300 psig RCS pressure, direct performance of **Rule 4** (HPI Forced Cooling).
	BOP/OATC	**Rule 4 (CT-14 Initiate HPI Forced Cooling Within 5 minutes of meeting criteria)** **Examiner note: HPI F/C criteria met:** **Start _____** **Stop _____** 1. Verify any HPI pump can be operated. 2. Open 1HP-24 and 1HP-25. **Examiner Note**: 1HP-24 will NOT open requiring the RNO actions. **RNO: IF** only one BWST suction valve (1HP-24 or 1HP-25) is open, **THEN** perform the following: A. **IF** three HPI pumps are operating, **THEN** secure 1B HPI PUMP. B. **IF** < 2 HPI pumps operating, **THEN** start HPI pumps to obtain two HPI pump operation, preferably in opposite headers. C. **GO TO** Step 4. **Examiner Note:** When 1HP-26 is opened, the standby HPI pump may start due to low seal injection flow. If so, the student should stop one of the HPI pumps because only 1 BWST suction valve is open (1HP-24 would not open). The guidance to do this is contained in **Rule 6**. 4. Open 1HP-26 and 1HP-27

This event is complete when the SRO transfers to the HPI CD tab or as directed by the lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **8** Page 2 of 3

Event Description: **CBPs trip requiring HPI Forced cooling, 1HP-24 will not open, Transfer to HPI CD Tab**

Time	Position	Applicant's Actions or Behavior
		Rule 4 (Cont.)
	BOP/OATC	5. Open 1RC-4. 6. Verify flow exists in <u>any</u> HPI header. 7. Open PORV. (**Switch to OPEN, depress OPEN permit**) 8. Verify <u>at least</u> two HPI pumps operating.9. Verify flow in both HPI headers is in the acceptable region of Figure 10. Verify flow exists in any HPI header 11. Open PORV. (PORV will already be opened from performing step 7) 12. Verify > one RCP operating. 13. Stop all but one RCP. (note: prefer leaving 1A1 RCP running) 14. **IAAT** the following limits are exceeded, • 1 HPIP - 475 gpm (incl. SI) • 1A & 1B HPIP with 1HP-409 open - 950 gpm (incl. SI) **THEN** throttle HPI to maximize flow ≤ flow limit. 15. De-energize all Pzr heaters. 16. Close 1HP-5. 17. Close TBVs, 1FDW-35 and 1FDW-44. 18. **IAAT** all HPI is lost, stop all RCP's and close the PORV 19. **WHEN** directed by CR SRO, **THEN EXIT** this rule. **Booth Cue: If the crew requests that Unit 2 handle AP/18 due to RIA alarms, reply that Unit 2 WILL handle AP/18.**

This event is complete when the SRO transfers to the HPI CD tab or as directed by the lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **1** Event No.: **8** Page 3 of 3

Event Description: **CBPs trip requiring HPI Forced cooling, 1HP-24 will not open, Transfer to HPI CD Tab**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC/ BOP	**LOHT tab** Determine that IAAT step 3 is met: 4. **PERFORM** Rule 4 (Initiation of HPI Forced Cooling). 5. Verify all the following: • At least two HPI pumps operating • Acceptable HPI flow exists in both HPI headers per Rule 4 • PORV open • 1RC-4 open 6. **GO TO** HPI CD tab.
	SRO/OATC/ BOP	**HPI CD tab** 1. **IAAT** BWST level is ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES). 2. **IAAT** either of the following exists: • LPI FLOW TRAIN A plus LPI FLOW TRAIN B ≥ 3400 gpm • Only one LPI header in operation with header flow ≥ 2900 gpm **THEN GO TO** LOCA CD tab. 3. Verify all of the following exist: • PORV open • 1RC-4 open • Two HPI trains injecting • CETCs ≤ 640 4. Perform the following: • Ensure all RBCUs in low speed. • Open 1LPSW-18, 1LPSW-21 and 1LPSW-24. 5. Initiate Encl 5.35 (Containment Isolation)
This event is complete when the SRO transfers to the HPI CD tab or as directed by the lead Examiner.		

EXAMINER NOTE

At any time during this scenario the operator may choose to use Enclosure 5.5 to maintain RCS inventory control. See excerpt below.

ENCLOSURE 5.5

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
NOTE Maintaining Pzr level >100″ [180″ acc] will ensure Pzr heater bundles remain covered.	
1. Utilize the following as necessary to maintain desired Pzr level: • 1A HPI Pump • 1B HPI Pump • 1HP-26 • 1HP-7 • 1HP-120 setpoint or valve demand • 1HP-5	__ **IF** 1HP-26 will **NOT** open, **THEN** throttle 1HP-410 to maintain desired Pzr level.
2. **IAAT** makeup to the LDST is desired, **THEN** makeup from 1A BHUT.	
3. **IAAT** it is desired to secure makeup to LDST, **THEN** secure makeup from 1A BHUT.	
4. **IAAT** it is desired to bleed letdown flow to 1A BHUT, **THEN** perform the following: A. Open: __ 1CS-26 __ 1CS-41 B. Position 1HP-14 to BLEED. C. Notify SRO.	
5. **IAAT** letdown bleed is **NO** longer desired, **THEN** position 1HP-14 to NORMAL.	

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6. I**AAT** 1C HPI PUMP is required, **THEN** perform Steps 7 - 9.	__ **GO TO** Step 10.
7. Open: • 1HP-24 • 1HP-25	1. __ **IF** both BWST suction valves (1HP-24 and 1HP-25) are closed, **THEN** perform the following: A. __ Start 1A LPI PUMP. B. __ Start 1B LPI PUMP. C. Open: __ 1LP-15 __ 1LP-16 __ 1LP-9 __ 1LP-10 __ 1LP-6 __ 1LP-7 D. __ **IF** two LPI Pumps are running only to provide HPI pump suction, **THEN** secure one LPI pump. E. __ Dispatch an operator to open 1HP-363 (Letdown Line To LPI Pump Suction Block) (A-1-119, U1 LPI Hatch Rm, N end). F. __ **GO TO** Step 8. 2. __ **IF** only one BWST suction valve (1HP-24 or 1HP-25) is open, **THEN** perform the following: A. __ **IF** three HPI pumps are operating, **THEN** secure 1B HPI PUMP. B. __ **IF** < 2 HPI pumps are operating, **THEN** start HPI pumps to obtain two HPI pump operation, preferably in opposite headers. C. __ **GO TO** Step 9.

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8. Start 1C HPI PUMP.	__ **IF** at least two HPI pumps are operating, **THEN** throttle 1HP-409 to maintain desired Pzr level.
9. Throttle the following as required to maintain desired Pzr level: • 1HP-26 • 1HP-27	1. __ **IF** at least two HPI pumps are operating, **AND** 1HP-26 will **NOT** open, **THEN** throttle 1HP-410 to maintain desired Pzr level. 2. __ **IF** 1A HPI PUMP and 1B HPI PUMP are operating, **AND** 1HP-27 will **NOT** open, **THEN** throttle 1HP-409 to maintain desired Pzr level.

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10. **IAAT** LDST level **CANNOT** be maintained, **THEN** perform Step 11.	__ **GO TO** Step 12.
11. Perform the following: • Open 1HP-24. • Open 1HP-25. • Close 1HP-16.	1. __ **IF** both BWST suction valves (1HP-24 and 1HP-25) are closed, **THEN** perform the following: A. __ Start 1A LPI PUMP. B. __ Start 1B LPI PUMP. C. Open: __ 1LP-15 __ 1LP-16 __ 1LP-9 __ 1LP-10 __ 1LP-6 __ 1LP-7 D. __ **IF** two LPI Pumps are running only to provide HPI pump suction, **THEN** secure one LPI pump. E. __ Dispatch an operator to open 1HP-363 (Letdown Line To LPI Pump Suction Block) (A-1-119, U1 LPI Hatch Rm, N end). F. __ **GO TO** Step 12. 2. __ **IF** only one BWST suction valve (1HP-24 or 1HP-25) is open, **AND** three HPI pumps are operating, **THEN** secure 1B HPI PUMP.

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE		RESPONSE NOT OBTAINED
12.	**IAAT** additional makeup flow to LDST is desired, **AND** 1A BLEED TRANSFER PUMP is operating, **THEN** dispatch an operator to close 1CS-48 (1A BHUT Recirc) (A-1-107, Unit 1 RC Bleed Transfer Pump Rm.).	
13.	**IAAT** <u>two</u> Letdown Filters are desired, **THEN** perform the following: • Open 1HP-17. • Open 1HP-18	
14.	**IAAT** <u>all</u> of the following exist: • Letdown isolated • LPSW available • Letdown restoration desired **THEN** perform Steps 15 - 33. {41}	__ **GO TO** Step 34.
15.	Open: • 1CC-7 • 1CC-8	1. __ Notify CR SRO that letdown **CANNOT** be restored due to inability to restart the CC system. 2. __ **GO TO** Step 34.
16.	Ensure only one CC pump running.	
17.	Place the non-running CC pump in AUTO.	
18.	Verify <u>both</u> are open: • 1HP-1 • 1HP-2	1. __ **IF** 1HP-1 is closed due to 1HP-3 failing to close, **THEN GO TO** Step 20. 2. __ **IF** 1HP-2 is closed due to 1HP-4 failing to close, **THEN GO TO** Step 20.
19.	**GO TO** Step 22.	

<u>NOTE</u>
Verification of leakage requires visual observation of East Penetration Room.

20.	Verify letdown line leak in East Penetration Room has occurred.	__ **GO TO** Step 22.
21.	**GO TO** Step 34.	

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE		RESPONSE NOT OBTAINED
22.	Monitor for unexpected conditions while restoring letdown.	
23.	Verify <u>both</u> letdown coolers to be placed in service.	1. __ **IF** 1A letdown cooler is to be placed in service, **THEN** open: __1HP-1 __1HP-3 2. __ **IF** 1B letdown cooler is to be placed in service, **THEN** open: __1HP-2 __1HP-4 3. __ **GO TO** Step 25.
24.	Open: • 1HP-1 • 1HP-2 • 1HP-3 • 1HP-4	
25.	Verify <u>at least one</u> letdown cooler is aligned.	Perform the following: A. __ Notify CR SRO of problem. B. __ **GO TO** Step 34.
26.	Close 1HP-6.	
27.	Close 1HP-7.	
28.	Verify letdown temperature < 125°F.	1. __ Open 1HP-13. 2. Close: __1HP-8 __1HP-9&11 3. __ **IF** <u>any</u> deborating IX is in service, **THEN** perform the following: A. __Select 1HP-14 to NORMAL. B. __Close 1HP-16. 4. __ Select LETDOWN HI TEMP INTLK BYP switch to BYPASS.

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE		RESPONSE NOT OBTAINED
29.	Open 1HP-5.	
30.	Adjust 1HP-7 for ≈ 20 gpm letdown.	
31.	**WHEN** letdown temperature is < 125°F, **THEN** place LETDOWN HI TEMP INTLK BYP switch to NORMAL.	
32.	Open 1HP-6.	
33.	Adjust 1HP-7 to control desired letdown flow.	
	NOTE AP/32 (Loss of Letdown) provides direction to cool down the RCS to offset increasing pressurizer level.	
34.	**IAAT** it is determined that letdown is unavailable due to equipment failures or letdown system leakage, **THEN** notify CR SRO to initiate AP/32 (Loss of Letdown).	
35.	**IAAT** > 1 HPI pump is operating, **AND** additional HPI pumps are **NO** longer needed, **THEN** perform the following: A. Obtain SRO concurrence to reduce running HPI pumps. B. Secure the desired HPI pumps. C. Place secured HPI pump switch in AUTO, if desired.	
36.	**IAAT** all the following conditions exist: • Makeup from BWST **NOT** required • LDST level > 55″ • All control rods inserted • Cooldown Plateau **NOT** being used **THEN** close: • 1HP-24 • 1HP-25	

ENCLOSURE 5.5 (cont.)

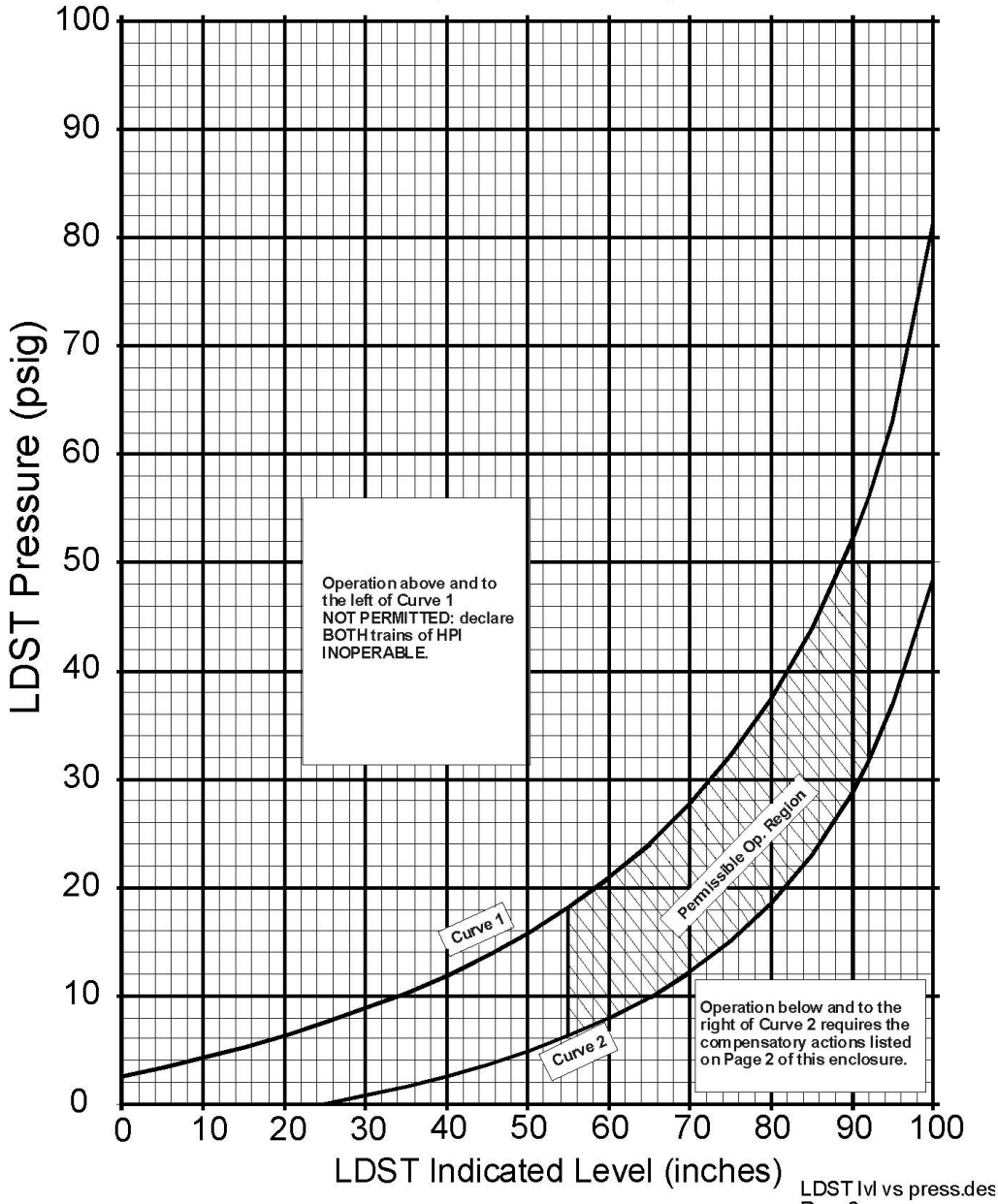
ACTION/EXPECTED RESPONSE		RESPONSE NOT OBTAINED
37.	Verify 1CS-48 (1A BHUT Recirc) has been closed to provide additional makeup flow to LDST.	__ **GO TO** Step 39.
38.	**WHEN** 1CS-48 (1A BHUT Recirc) is **NO** longer needed to provide additional makeup flow to LDST, **THEN** perform the following: A. Stop 1A BLEED TRANSFER PUMP. B. Locally position 1CS-48 (1A BHUT Recirc) one turn open (A-1-107, Unit 1 RC Bleed Transfer Pump Rm.). C. Close 1CS-46. D. Start 1A BLEED TRANSFER PUMP. E. Locally throttle 1CS-48 (1A BHUT Recirc) to obtain 90 - 110 psig discharge pressure. F. Stop 1A BLEED TRANSFER PUMP.	
39.	Verify two Letdown Filters in service, **AND** only one Letdown filter is desired.	__ **GO TO** Step 41.
40.	Perform one of the following: • Place 1HP-17 switch to CLOSE. • Place 1HP-18 switch to CLOSE.	
41.	**WHEN** directed by CR SRO, **THEN EXIT** this enclosure.	

• • • END •

Enclosure 4.39

OP/**0**/A/1108/001
Page 1 of 2

LDST Pressure Vs. Level (All Units)
(Instrument Error Included)



LDST lvl vs press.des
Rev. 6
RTR 3/01/05

CRITICAL TASKS

1. CT-11, Control SG Pressure to Maintain RC Temperature Constant. **page 18**
2. CT-14 Initiate HPI Forced Cooling. **page 20**

SAFETY: Take a Minute

UNIT 0 (SM)

SSF Operable: Yes	KHU's Operable: U1 - OH, U2 - UG	LCTs Operable: 2	Fuel Handling: No

UNIT STATUS (CRS)

Unit 1 Simulator	Other Units	
Mode: 1	**Unit 2**	**Unit 3**
Reactor Power: 100%	Mode: 1	Mode: 1
Gross MWE: 897	100% Power	100% Power
RCS Leakage: .024 gpm	EFDW Backup: Yes	EFDW Backup: Yes
RBNS Rate: .01 gpm		

Technical Specifications/SLC Items (CRS)

Component/Train	OOS Date/Time	Restoration Required Date/Time	TS/SLC #

Shift Turnover Items (CRS)

Primary

- SASS in Manual for I&E
- LDST needs Hydrogen addition. Direct the BOP to add H2 to the LDST using OP/1/A/1106/017 (Hydrogen System) Enclosure 4.5 (Unit 1 LDST H2 Addition).

Secondary

- 1SSH-1, 1SSH-3, 1SD-2, 1SD-5, 1SD-140, 1SD-303, 1SD-355, 1SD-356 and 1SD-358 are closed with power supply breakers open per the Startup Procedure for SSF Overcooling Event.

Reactivity Management (CRS)

RCS Boron: 6 ppmB	Gp 7 Rod Position: 91%	

Human Performance Emphasis (SM)

Procedure Use and Adherence

Facility: **Oconee** Scenario No.: **2** Op-Test No.: 1

Examiners: _____ Operators: _____**SRO**

_____ _____**OATC**

_____ _____**BOP**

Initial Conditions:
- Reactor Power = 75% Unit 2: 100%, Unit 3: 100%

Turnover:
- 1B FDWP on Handjack
- SASS in manual for I&E
- Voltage Regulator is in MANUAL for I&E
- Reduce VARs to 150 ± 10 MVARs IAW OP/1/A/1106/001, Enclosure 4.8 (Changing Generator MVAR)

Event No.	Malfunction No.	Event Type*	Event Description
0a	Override		SASS in Manual
0b	Override		AFIS Disabled
1		N: BOP, SRO	Place Voltage Regulator Mode in AUTO and decrease VARs.
2	MPS250	C: BOP, SRO	1B2 RCP seal failure
3	MSS470	C: BOP, SRO **(TS)**	Re-occurring Hi Vibration on 1C RBCU degrades to Cooler Rupture
4	Overrides	C: OATC, SRO	1HP-120 (RC Volume Control) Fails OPEN
5	MCR021	C: OATC, SRO **(TS)**	Dropped control rod with failure of auto runback circuit (requires 1B FDWP adjustment)
6	MEL220	C: OATC, SRO	1TB 6900v lockout trips 2nd RCP (1A2) requiring manual Rx trip
7	MSS390, 14%	M: ALL	1B MSLB outside the reactor building (EHT tab) with Auto AFIS actuation blocked
8	Override	ALL	1FDW-315 fails open

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

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **1** Page 1 of 1

Event Description: **Place Voltage Regulator Mode in AUTO and Decrease VARs**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** The SRO will direct the BOP to reduce Generator MVARs to 150 ± 10 MVARs in accordance with OP/1/A/1106/001, enclosure 4.8. **OP/1/A/1106/001 Enclosure 4.8** **CAUTION** Do **NOT** exceed limits as shown on Enclosure 4.5 (Capability Curve). **NOTE** Minimum of 18.05 Generator kV must be maintained. Operation with leading PF is acceptable.
	SRO/BOP	2.1. Notify other online units of VAR change. 2.2. Select VARS on WATT/VAR TRANSFER Switch. 2.3. Ensure MVARS are indicated on MWATT/MVAR meter. 2.4. **IF** VOLTAGE REGULATOR MODE will be swapped between AUTO & MANUAL, notify System Operating Center (SOC) that VOLTAGE REGULATOR MODE will be swapped. 2.5. **IF** AUTO adjustment is required, perform the following: **NOTE:** VOLTAGE REGULATOR MODE Ready Light (Amber light) should be ON. CRD AC Power Fault 'A' and/or 'B' alarms along with CRD Global System Fault may be received during generator voltage changes. 2.5.1. Ensure VOLTAGE REGULATOR MODE in AUTO. 2.5.2. Use VOLTAGE ADJUST to slowly modify Generator voltage to increase/decrease MVARS. 2.6. **IF** MANUAL adjustment is required, perform the following: **N/A**

This event is completed when MVARs have been adjusted to 150 ± 10 MVARs, or when directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **2** Page 1 of 4

Event Description: **1B2 RCP lower seal failure**

Time	Position	Applicant's Actions or Behavior
	BOP	**Plant response:** • 1SA-06/D-5, RC PUMP 1B2 SEAL CAVITY PRESS HI/LOW • OAC Alarm RCP 1B2 LOWER SEAL CAVITY PRESSURE HI HI • OAC Alarm RCP 1B2 UPPER SEAL CAVITY PRESSURE HI HI **Crew response:** Refer to the ARGs 3.1 Upper/Lower Seal Cavity Pressure High 3.1.1 Go To AP/1/A/1700/016, Abnormal RCP Operation, for limits and required action 3.2 Upper/Lower Seal Cavity Pressure Low 3.2.1 **IF** in Mode 1 or 2, Go To AP/1/A/1700/016, Abnormal RCP Operation, for limits and required action
	SRO	Refer to **AP/1/A/1700/016** (Abnormal RCP Operation) 4.1 **IAAT** any RCP meets immediate trip criteria of Encl 5.1 (RCP Immediate Trip Criteria), **THEN** perform Steps 4.2 - 4.11. **RNO: GO TO** Step 4.12. 4.12 **IAAT** either of the following apply: • Any RCP approaching immediate trip criteria of Encl 5.1 (RCP Immediate Trip Criteria) • It is desired to secure a RCP **THEN** perform Steps 4.13 - 4.15. **RNO: GO TO** Step 4.16 **(next page**) ***EXAMINER Note: It is acceptable for the SRO to take either procedure path to secure the 1B2 RCP. Step 4.16 is on the next page.*** 4.13 Verify Rx Power > 70% 4.14 Initiate Encl 5.2 (Rapid Power Reduction) (**see page 6**) 4.15 **WHEN** Rx Power is ≤ 70%, **THEN GO TO** Step 4.2 4.2 Verify MODE 1 or 2 4.3 Verify Rx power is ≤ 70% as indicated on all NIs 4.4 Verify three RCPs will remain operating after affected RCP is tripped 4.5 Verify any SG on Low Level Limits **RNO: GO TO** Step 4.8 4.8 Verify FDW masters in Auto 4.9 Stop affected RCP 4.10 Verify ICS re-ratios feed water to establish desired ΔT_C

This event is complete when Rx power is reduced to ≤ 70% and the 1B2 RCP is secured, or as directed by the Lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **2** Page 2 of 4

Event Description: **1B2 RCP lower seal failure**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew response:** AP/1/A/1700/016 (Abnormal RCP Operation) 4.16 Announce AP entry using the PA system 4.17 Notify OSM to request evaluation by RCP Component Engineer 4.18 **IAAT** the failure is identified, **THEN GO TO** the applicable section per the following table:

√	Section	Failure
	4A	**Seal Failure**
	4B	Abnormal Vibration
	4C	High or Low Oil Pot Level
	4D	Loss of Seal Return
	4E	Abnormal RCP Temper□tures

SRO	**AP/1/A/1700/016 Section 4A**, RCP Seal Failure 1. **IAAT** <u>any</u> RCP meets immediate trip criteria of Encl 5.1, **THEN** perform Steps 2-11 **RNO: GO TO** Step 12 12. **IAAT** <u>any</u> of the following indicate external RCP seal leakage: • RB RIAs increasing <u>or</u> in alarm • RCS Tave constant with LDST level decreasing more than normal • Quench Tank level rate increasing • RB Normal Sump rate increasing • Visual confirmation **THEN** initiate AP/02 (Excessive RCS Leakage) 13. Verify the following are open: • 1HP-20 • 1HP-21 14. Verify the following is open for the <u>affected</u> RCP: • 1HP-230 (1B2 RCP)

This event is complete when Rx power is reduced to ≤ 70% and the 1B2 RCP is secured, or as directed by the Lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **2** Page 3 of 4

Event Description: **1B2 RCP lower seal failure**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew response:** **AP/1/A/1700/016 Section 4A**, RCP Seal Failure 15. **IAAT** either of the following conditions apply to an operating RCP:

√	RCS Pressure	ΔP across any seal
	> 1000 psig	**≤ 100 psid**
	≤ 1000 psig	≤ 35 psid

THEN GO TO Step 16 to shut down the affected RCP since shut down of the RCP is desired due to a seal failure.

16 **IAAT** shut down of an RCP is desired,
THEN perform Steps 17-27

17. Verify MODE 1 or 2
18. Verify three RCPs will remain operating after affected RCP is tripped
19. Verify Rx power is ≤ 70% as indicated on all NIs

RNO: 1. Direct an RO to initiate Encl 5.2 (Rapid Power Reduction) (next page)

OATC

2. **WHEN** Rx power is ≤ 70% on all NIs,
THEN continue this procedure

20. Verify any SG on Low Level Limits

RNO: GO TO Step 23

23. Verify FDW masters in Auto
24. Stop affected RCP
25. Verify ICS re-ratios feedwater to establish desired ΔT_C
26. Initiate Encl. 4.3 (Special Instructions for < 4 RCP Operation) of OP/1/A/1102/004 (Operation at Power).

OP/1/A/1102/004 Encl. 4.3 (Special Instructions for < 4 RCP Operation)

2.1 **IF** conditions permit, log the current quadrant power tilt and the position of the ΔTC controller prior to securing a RCP during power operations.

NOTE: Instructions for performing OAC trends are located in Working With Trends enclosure of OP/0/A/1103/020 A (Operator Aid Computer Use).
Only the first 6 points will be displayed initially; press "Page Down" key to see second 6 points.

2.2 Using turn-on code T6 3RCP, digitally trend the following data at one minute intervals…

2.3 After steady state conditions are attained, check NI calibration.

This event is complete when Rx power is reduced to ≤ 70% and the 1B2 RCP is secured, or as directed by the Lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **2** Page 4 of 4

Event Description: **1B2 RCP lower seal failure**

Time	Position	Applicant's Actions or Behavior
	SRO OATC BOP	**Crew response:** **AP/16 Enclosure 5.2**, Rapid Power Reduction 1. Verify ICS in AUTO 2. Initiate MAXIMUM RUNBACK to ≤ 70% as indicated by <u>all</u> NIs 3. **WHEN** Rx Power is ≤ 70% as indicated by <u>all</u> NIs, **THEN** press MAXIMUM RUNBACK to stop runback 4. Notify CR SRO that Rx Power is ≤ 70% 5. Adjust CTPD SET to match CTP DEMAND 6. Stop the following pumps: __ 1E1 HTR DRN PUMP __ 1E2 HTR DRN PUMP 7. Verify Rx Power was reduced ≥ 15% within a 1 hour period 8. Notify Primary Chemistry to perform Tech Spec SR 3.4.11.2 as required 9. **EXIT** this enclosure

This event is complete when Rx power is reduced to ≤ 70% and the 1B2 RCP is secured, or as directed by the Lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **3** Page 1 of 4

Event Description: **Re-occurring Hi Vibration on 1C RBCU Degrades to Cooler Rupture (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Plant response:** • OAC alarm O1D1363, RBCU Fan 1C Vib **Crew response**: • BOP will pull up the OAC alarm response guide ***BOOTH CUE: The first time the high vibration timer is fired, Timer 15 will automatically fire 5 seconds later to allow the Hi Vib alarm to be reset by the operator. Three minutes after the initial Hi Vib alarm, a second Hi Vib alarm will occur that cannot be reset.*** **OAC Alarm Response for O1D1363 (RBCU FAN 1C VIB)** 1 Depress the RBCU OAC Vibration Alarm Reset Pushbutton. 2 If the alarm does not clear, STOP the RBCU ***EXAMINER NOTE: The first time this OAC alarm comes in, it will reset and clear when the alarm reset pushbutton is depressed. 3 minutes after the initial alarm, there will be another HIgh Vibration alarm. The second time it will not clear when reset.*** 3 Notify Engineering for an evaluation. ***BOOTH CUE: Using time compression, Engineering requests the crew to start the 1B RBCU in HIGH speed in accordance with OP/1/A/1104/015, Reactor Building Cooling System, Enclosure 4.3 Section 4 (Starting RBCUs)*** **OP/1/A/1104/015, Enclosure 4.3, Section 4** **NOTE:** When starting RBCUs or changing LPSW flows, RB pressure will change as RB temperature changes. {8} 4.1 Verify RB pressure within limits of PT/1/A/0600/001 (Periodic Instrument Surveillance). 4.2 Begin monitoring RB absolute pressure. (OAC Turn On Code: 1RBPA) 4.3 **IF** personnel inside containment, announce over plant page that starting RBCU 1B. **NOTE:** Starting RBCUs can affect the following: RBCU bearing temperatures, RBCU vibration, RBNS level, 1RIA-47 level, RB pressure/temperature.

This event is complete when the 1C RBCU rupture is isolated, or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **3** Page 2 of 4

Event Description: **Re-occurring Hi Vibration on 1C RBCU Degrades to Cooler Rupture (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**OP/1/A/1104/015, Enclosure 4.3, Section 4 (continued)** 4.4. Place desired switch to **"HIGH"** or "LOW": • 1A RBCU • **1B RBCU** • 1C RBCU **NOTE:** When changing LPSW flows, RB pressure will change as RB temperature changes. Each RBCU must have ≥ 550 gpm Inlet Flow or ≥ 750 gpm Outlet Flow to meet flow requirements of SLC 16.9.12. 4.5 Position valves as required for RB cooling: • 1LPSW-18 (1A RBCU OUTLET) • **1LPSW-21 (1B RBCU OUTLET)** • 1LPSW-24 (1C RBCU OUTLET) ***Examiner/Booth Note: When the 1C RBCU is stopped, Timer 15 will automatically fire and insert a 1C RBCU cooler rupture. See page 9 for actions related to the 1C RBCU cooler rupture)***

This event is complete when the 1C RBCU rupture is isolated, or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **3** Page 3 of 4

Event Description: **Re-occurring Hi Vibration on 1C RBCU Degrades to Cooler Rupture (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Plant Response:** • 1SA-9/D-9, LPSW RBCU C Cooler Rupture • 1SA-9/A-6, RB Normal Sump Level High/Low • RB normal sump level will increase • 1C RBCU LPSW flow indicator indicates low on VB2 **Crew Response:** <u>ARG for 1SA-9/D-9 (Manual Actions)</u> 3.1 Verify alarm is valid by checking RBCU 1C Inlet Flow and RBCU 1C delta flow. 3.2 Verify 1LPSW-24 (RBCU 1C Outlet) open 3.3 Verify adequate LPSW flow is available; check LPSW pump operation 3.3.1 Verify 1LPSW-22 (1C RBCU INLET) is open. 3.3.2 **IF** 1LPSW-22 (1C RBCU INLET) is **NOT** open, refer to Technical Specifications and Selected Licensee Commitments 3.4 Monitor RBNS Level for any unexplained increase 3.5 **IF** RBNS Level is increasing **AND** ES has actuated, notify Chemistry to sample RBNS for boron to determine if a cooler rupture has occurred. 3.6 **IF** RBCU 1C Cooler rupture or line break is indicated, then:
		NOTE: This sequence prevents having to call LPSW and Containment inoperable per SLC 16.9.12.
	SRO/BOP	***EXAMINER/BOOTH CUE: As BOP performs step 3.6.1, fire timer #4 to initiate PZR Level #1 failure (1HP-120 fails OPEN).*** 3.6.1 Isolate the 1C RBCU Cooler as follows: A. Close 1LPSW-22 (1C RBCU INLET). B. Close 1LPSW-24 (RBCU 1C OUTLET). **(may already be closed)** C. Perform TS 3.6.3 Condition C (C.1 = 4 hrs & C.2 = 31 days) for closed containment system (as required). D. Enter TS 3.6.5 Condition B (7 days and 14 days from discovery of failure to meet LCO) for RBCU inoperable. E. Continue to monitor RBNS level for increase. F. **IF** RBNS level is still increasing, notify TSC to evaluate further isolation of 1C RBCU.

This event is complete when the 1C RBCU rupture is isolated, or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **3** Page 4 of 4

Event Description: **Re-occurring Hi Vibration on 1C RBCU Degrades to Cooler Rupture (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO SRO/BOP	**Crew Response (cont.):** ***EXAMINER NOTE: The crew may decide to pump the RB Normal Sump. If so, see the steps below from OP/1/A/1104/007 LWD System, Enclosure 4.1 Pumping RBNS to ≥ 6"*** 3.6.2 Refer to Technical Specifications 3.6.3 Refer to SLC 16.9.12 OP/1/A/1104/007 Enclosure 4.1 3.1 Verify MWHUT level adequate to receive waste volume. 3.2 Position the following: • Ensure open 1LWD-1 (RB NORMAL SUMP ISOLATION) • Ensure open 1LWD-2 (RB NORMAL SUMP ISOLATION) 3.3 Start **one** or **both** of the following: • 1A RB NORM SUMP PUMP • 1B RB NORM SUMP PUMP **NOTE: •** Changes in LAWT levels may occur during pumping. RIA Alarms may be indicative of gas leakage. If RBNS level was above 14" when pumps were started, a level increase following securing the RBNS pumps may occur. {7} 3.4 **WHEN** RBNS is at desired level **OR** at 6" (low level alarm), ensure the following: • 1A RB NORMAL SUMP PUMP "OFF". • 1B RB NORMAL SUMP PUMP "OFF". 3.5 **IF** required to close the valves, position the following: • Close 1LWD-1 (RB NORMAL SUMP ISOLATION) • Close 1LWD-2 (RB NORMAL SUMP ISOLATION) ***EXAMINER NOTE: The SRO should identify that the inoperability of the 1C RBCU results in entry into TS 3.6.5 Condition B (7 days and 14 days from discovery of failure to meet LCO). Also, as required, the crew may need to perform the required actions for TS 3.6.3 Condition C (C.1 = 4 hrs & C.2 = 31 days). SRO refers to SLC 16.9.12, but it is not entered because of the sequence by which step 3.6.1 above was performed.***

This event is complete when the 1C RBCU rupture is isolated, or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **4** Page 1 of 1

Event Description: **1HP-120 (RC Volume Control) Fails OPEN**

Time	Position	Applicant's Actions or Behavior
		Plant Response: • OAC alarm for O1E2175 (ICS PZR Level Setpoint) Hi • PZR level will increase on all channels • LDST level will decrease • OAC alarms for all 4 RCP seal injection flow low • 1SA-2/C-3 (Pressurizer Level HIGH/LOW)
	BOP	**Crew Response:**
	SRO	**EXAMINER NOTE: The crew may notice the increase in PZR level prior to receiving statalarm 1SA-2/C-3. If so, they may (IAW OMP 1-18) take manual control of 1HP-120 to restore PZR level to the desired band. If not, they will use the direction of the ARG below to restore PZR level. Either is acceptable.** **Alarm Response Guide 1SA-2/C-3** (Pressurizer Level HIGH/LOW)) 3.1 Check alternate PZR level indications. 3.2 Check for proper Makeup/Letdown flows and adjust to restore proper level. 3.3 Refer to the following procedures as required: • AP/1/A/1700/002 (Excessive RCS Leakage) • AP/1/A/1700/014 (Loss of Normal HPI Makeup and/or RCP Seal Injection) • AP/1/A/1700/032 (Loss of Letdown). **EXAMINER NOTE : Above statalarm is at 260". If action is not taken until the statalarm actuates, TS 3.4.9 Condition A would be entered with a 1 hour completion time to restore level to within limit (because this 260" indicated is equivalent to the 285" TS limit).** 3.4 Refer to Technical Specification 3.4.9. (see above examiner note) 3.5 Refer to Technical Specification 3.3.8.**(N/A)** 3.6 Refer to OP/1/A/1105/014 (Control Room Instrumentation Operation And Information)
This event is complete when Pressurizer Level has been restored to its normal band, or as directed by the lead examiner.		

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **5** Page 1 of 5

Event Description: **Dropped control rod with failure of auto runback circuit (TS)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP/ OATC	**Plant Response**: • Group 2 Rod 6 drops into the core • Statalarm 1SA-2/A-10 (CRD GLOBAL TROUBLE) • Statalarm 1SA-2/B-10 (CRD ASYMMETRIC ROD POSITION ERROR) • Statalarm 1SA-2/D-9 (CRD OUT INHIBIT) • Statalarm 1SA-4/C-1 (QUADRANT POWER TILT) (**in at ≈ 2 minutes**) • Statalarm 1SA-5/A-5 (1A RPS TROUBLE) • Statalarm 1SA-5/B-5 (1B RPS TROUBLE) • Statalarm 1SA-5/D-5 (1D RPS TROUBLE) **Crew Response**: Crew should perform Plant Transient Response (PTR) • OATC reports to the SRO reactor power level and direction of movement. • The BOP reports expected AUTO Runback did not occur, and monitors RCS pressure and inventory and inserts Control Rods as needed. • The OATC will adjust FDW and/or control rods as necessary to restore reactor power to the desired control band. SRO should enter AP/1/A/1700/001 (Unit Runback) **AP/1/A/1700/001** 4.1 **GO TO** the most limiting section per the following table: √ | **Section** | **Runback** | 4H | Asymmetric Control Rod (1%/min to 55%power) **Section 4H** 1 **IAAT** a more limiting runback occurs, **THEN GO TO** Subsequent Actions Step 4.1. 2 **IAAT** more than one control rod is dropped or misaligned ≥ 6.5% (9″) from the group average, **THEN** trip the Rx. **NOTE** NIs should **NOT** be calibrated per guidelines contained in OP/1/A/1102/004 (Operation at Power) due to actual power re-distribution within the core as a result of a dropped/misaligned rod. 3 Verify Rx is critical. 4. Verify power > 55% when the rod was dropped or misaligned.

This event is complete when Rx Power has decreased at least 10% and FWP suction has been adjusted, or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **5** Page 2 of 5

Event Description: **Dropped control rod with failure of auto runback circuit (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**AP/1/A/1700/001 Section 4H (continued)** ***EXAMINER NOTE: Malfunction set to fail Auto runback. Candidate will proceed to RNO*** 5 Verify Rx runback to 55% core thermal power in progress. • CTPD set at 55% • ASYMETRIC RODS Runback Light lit • CTP Demand decreasing • Reactor power will decrease when the runback catches up with the initial power decrease from the dropped rod. **RNO:** 1. Initiate power reduction to ≤ 55% core thermal power at ≥ 1%/min. 2. **IF** control rods will not insert manually, **THEN** perform the following: A. Trip reactor. B. **GO TO** Unit 1 EOP. 6 Initiate Encl 5.1 (Control of Plant Equipment During Shutdown). **(see page 15)**
		NOTE The following actions should be performed as quickly as possible due to the complexity of resetting RPS trip setpoints and Tech Spec time limits.
	SRO	7 Notify SPOC to perform the following: • Investigate cause of dropped or misaligned control rod. • Prepare to reduce the following trip setpoints: o RPS Flux/Flow-Imbalance o RPS High Flux 8 Notify the OSM to ensure the requirements of the following Tech Specs are met: • TS 3.1.4 (Control Rod Group Alignment Limits) • TS 3.1.5 (Safety Rod Position Limits) • TS 3.2.3 (Quadrant Power Tilt) ***Booth Cue: When OSM is contacted, inform the team that the OSM is occupied on Unit 3 and cannot verify TS requirements at this time.***

This event is complete when Rx Power has decreased at least 10% and FWP suction has been adjusted, or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **5** Page 3 of 5

Event Description: **Dropped control rod with failure of auto runback circuit (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC/ BOP	**AP/1/A/1700/001 Section 4H (continued)** 9 Notify OSM to make notifications as required per OMP 1-14 (Notifications). 10 Verify > 1% SDM with allowance for the inoperable control rod per PT/1/A/1103/015 (Enclosure 13.18, Reactivity Balance Calculation) within one hour. 11 Reduce core thermal power ≤ the following limits, based on the number of RCPs operating, within two hours:

RCPs	Allowable Thermal Power (% FP)
3	**45**
4	60

NOTE:
The following ensures adequate margin in preparation for resetting RPS trip setpoints.

12 **IAAT** the power decrease is complete,
AND any NI is > the following:

RCPs	Maximum NI Power (% FP)
3	**40**
4	55

THEN reduce power until all NIs are ≤ the Maximum NI Power limit for the operating RCP combination per Encl 5.4 (Power Reduction).

This event is complete when Rx Power has decreased at least 10% and FWP suction has been adjusted, or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **5** Page 4 of 5

Event Description: **Dropped control rod with failure of auto runback circuit (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**AP/1/A/1700/001 Enclosure 5.1** 1 **IAAT** SRO determines all appropriate actions have been taken, **AND** the runback is complete, **THEN EXIT** this Enclosure. 2 Notify the WCC SRO to initiate Enclosure 5.2 (WCC SRO Support During Unit Runback; ***EXAMINER NOTE: This scenario begins at 75% so steps 3 &4 have already been accomplished.*** 3 Start the following pumps: • 1A FDWP SEAL INJECTION PUMP • 1A FDWP AUXILIARY OIL PUMP • 1B FDWP AUXILIARY OIL PUMP • 1B FDWP SEAL INJECTION PUMP. 4 **WHEN** CTP is $\leq$ 80%, **THEN** stop the following pumps • 1E1 HTR DRN PUMP • 1E2 HTR DRN PUMP 5 **WHEN** CTP $\leq$ 65%, **THEN** continue this Enclosure. 6 Place the following in MANUAL and close: • 1FDW-53 • 1FDW-65 **NOTE:** 1B FDWP is the preferred pump to shut down first. 7 Verify both Main FDWPs operating. 8 Verify 1B FDWP to be shut down first. 9 Adjust the FWP bias counter-clockwise to lower 1B FWP suction flow $\approx$ 1 x 10^6 lb/hr < 1A FWP suction flow. 10 **GO TO** Step 12.

This event is complete when Rx Power has decreased at least 10% and FWP suction has been adjusted, or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **5** Page 5 of 5

Event Description: **Dropped control rod with failure of auto runback circuit (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**AP/1/A/1700/001 Enclosure 5.1 (continued)** 12 **IAAT** both Main FDW pumps running, **AND** both of the following exist: • 1B Main FDW pump is first pump to be shut down • Any of the following alarms occur: o 1SA-16/A-3 (FWP B FLOW MINIMUM) o 1SA-16/A-4 (FWP B FLOW BELOW MIN), **THEN** trip 1B Main FDW Pump. 13 **IAAT** both Main FDW pumps running, **AND** both of the following exist: • 1A Main FDW pump is first pump to be shut down • Any of the following alarms occur: o 1SA-16/A-1 (FWP A FLOW MINIMUM) o 1SA-16/A-2 (FWP A FLOW BELOW MIN), **THEN** trip 1A Main FDW Pump. 14 **IAAT** the operating FDWP suction flow < 1.5 x 10^6 lb/hr, **THEN** slowly throttle the associated recirc control valve to establish 2300 - 6000 gpm total Condensate flow: • 1FDW-53 • 1FDW-65 15 Maintain Pzr level between 220" ± 250". ***EXAMINER NOTE: The SRO should refer to Tech Specs and make the following determinations:*** • ***TS 3.1.4 (Control Rod Group Alignment Limits), Condition A applies.*** • ***TS 3.1.5 (Safety Rod Position Limits), Condition A applies (Safety rods are in Groups 1 – 4)*** • ***TS 3.2.3 (Quadrant Power Tilt), Condition A applies (due to misaligned control rod) (If the highest Incore QPT exceeds +7.11 then Condition B would apply)***

This event is complete when Rx Power has decreased at least 10% and FWP suction has been adjusted, or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **6** Page 1 of 1

Event Description: **1TB 6900v lockout trips 2nd RCP (1A2) requiring manual Rx trip**

Time	Position	Applicant's Actions or Behavior
	OATC	**Plant Response:** 1TB lockout will occur. This will cause a loss of 6900V power to the 1A2 and 1B2 RCP (1B2 already tripped). RPS alarms will occur indicating that the Reactor should have tripped, but it will remain at power. **Crew Response**: Recognizes the reactor should have tripped (< 3 RCP's operating with Reactor power >2%. (OMP 1-18 Att. A), therefore manually trips the Reactor and then perform Immediate Manual Actions of the EOP. 3.1 Depress REACTOR TRIP pushbutton. 3.2 Verify reactor power < 5% FP and decreasing. 3.3 Depress turbine TRIP pushbutton. 3.4 Verify all turbine stop valves closed. 3.5 Verify RCP seal injection available.
		EXAMINER NOTE: The steam line break is automatically fired when the rods hit the bottom from the manual Rx trip. With an Excessive Heat Transfer in progress the SRO should not get an opportunity to take any of the Subsequent actions in the SA Tab.
	BOP	• The BOP will perform a symptom check. See Event #7 (**next page)** for expected results of symptom check.

This event is complete when an operator has manually tripped the Reactor and the IMAs have been performed, or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 1 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
	SROBOP	**Plant response:** • 1SA-1/A-1, B-1, C-1, D-1, RP Channel Trip • 1SA-2/D-3, RC Press High/Low • 1SA-02/A-9 (MS PRESS HIGH/LOW) • ES Channels 1& 2 will actuate **Crew response**: BOP will perform a Symptoms Check (per OMP 1-18 Attachment C) • Reactivity Control o Power Range NIs < 5% and decreasing • ICC/Loss of Subcooling Margin (SCM) o If any SCM ≤ 0°F, perform Rule 2 • Loss of Heat Transfer (LOHT) o Loss of Main and Emergency FDW (including unsuccessful manual initiation of EFDW) • Excessive Heat Transfer (EHT) o **Uncontrolled Main Steam Line(s) pressure decrease** • Steam Generator Tube Rupture o CSAE off-gas alarms, process RIAs (RIA-40, 59, 60), area RIAs (RIA-16/17)
	OATC/BOP	Perform **Rule #5** (Main Steam Line Break) after receiving concurrence from the SRO **(details on page 22)** If SCM reaches 0°F at the beginning of the MSLB, **Rule #2** will be performed **(details on page 19)** SRO will direct performance of EOP Enclosure 5.1 (ES Actuation) **(details begin on page 27)** SRO refers to "Parallel Actions" page of the Subsequent Actions Tab and • if SCM > 0°F transfers to the Excessive Heat Transfer Tab **(page 31)** • if SCM = 0°F transfers to LOSCM tab **(page 30)** The SRO will direct an RO to make a PA announcement and notify the OSM to reference the Emergency Plan and NSD-202

This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 2 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**BOOTH CUE: Notify the NRC is SCM is lost.** **EOP Rule 2** 1. **IAAT** all exist: • Any SCM ≤ 0°F • Rx power ≤ 1% • ≤ 2 minutes elapsed since loss of SCM **THEN** perform Steps 2 and 3 2. Stop all RCPs **(CT-1) (Within 2 minutes of LOSCM)** 3. Notify CR SRO of RCP status 4. Verify Blackout exists **RNO: GO TO** Step 6 6. Open 1HP-24 and 1HP-25 7. Start all available HPI pumps 8. **GO TO** Step 13 13. Open 1HP-26 and 1HP-27 14. Verify at least two HPI pumps are operating using two diverse indications 15. **IAAT** ≥ 2 HPI pumps operating, **AND** HPI flow in any header is in the Unacceptable Region of Figure 1 **THEN** perform Steps 16 – 21. **RNO: GO TO** Step 17 17. **IAAT** flow limits are exceeded **Pump Operation** / **Limit** 1 HPI pump/hdr — 475 gpm (incl. seal injection for A hdr) 1A & 1B HPI pumps operating with 1HP-409 open — Total flow of 950 gpm (incl. seal injection) **THEN** perform Steps 18 - 20 **RNO: GO TO** Step 21
This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner		

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 3 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
		Rule 2 (cont.)
	OATC/BOP	21. Notify CR SRO of HPI status. 22. Verify RCS pressure > 550 psig. 23. **IAAT** either exists: • LPI FLOW TRAIN A plus LPI FLOW TRAIN B ≥ 3400 gpm • Only one LPI header in operation with header flow ≥ 2900 gpm **THEN GO TO** Step 24 **RNO: GO TO** Step 35 35. **IAAT** TBV's are unavailable, **THEN** A Dispatch two operators to perform Encl 5.24 (Operation of ADVs) B Notify CR SRO the ADVs are being aligned for use. 36. Verify 1SA-2/C-8 (AFIS HEADER A INITIATED) lit. **RNO:** Select OFF for both digital channels on AFIS HEADER A. 37. Verify 1SA-2/D-8 (AFIS HEADER B INITIATED) lit. **RNO:** Select OFF for both digital channels on AFIS HEADER B. 38. Verify any EFDW pump operating. 39. Start MD EFDW pumps on all intact SGs: • 1A MD EFDWP 40. Verify any EFDW pump operating. 41. Verify both SGs intact **RNO:** Establish 450 gpm EFDW flow to the intact SG **GO TO** step 43 43. Verify both MD EFDWPs operating. **RNO:** If 1 TDEFWP is operating, OR NO Main FDW Pumps are operating THEN GO TO step 45. 45. Trip both Main FDW pumps.
This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner		

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 4 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Rule 2 (cont.)** 46. Place FDW block valve switches in CLOSE: • 1FDW-33 • 1FDW-31 • 1FDW-42 • 1FDW-40 **NOTE** SG levels must continue to increase until SG Lvl Control Point is reached. If Main FDW is feeding any SG, Rule 7 provides a different SG Level Control Point. TS cooldown rates are ≤ 50°F/½ hr when T_{cold} > 280°F and ≤ 25°F/½ hr when T_{cold} ≤ 280°F. 47. Begin feeding all intact SGs to the appropriate SG Level Control Point in Rule 7 (SG Feed Control) using available feed sources; 48. **IAAT** SG Level Control Point is reached, **Then** maintain SG Level Control Point by feeding and steaming as necessary. 49. Notify CR SRO of SG feed status. **CAUTION** If 1 TD EFDW PUMP is being used for SG feed and Unit 1 is supplying the Auxiliary Steam header, reducing SG pressure below ≈ 250 psig can result in reduced pumping capability. 50. **IAAT** SG pressure is > RCS pressure, **THEN** reduce SG pressure < RCS pressure using either: • TBVs • Dispatch two operators to perform Encl 5.24 (operation of the ADVs) 51. Verify any Main FDW pump operating. **RNO: GO TO** Step 58. 58. Ensure Rule 3 (Loss of Main or Emergency FDW) is in progress or complete. 59. **WHEN** directed by CR SRO, **THEN EXIT** this rule.
This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner		

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 5 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**EOP Rule 5** 1. Perform the following on affected headers: ***EXAMINER NOTE: AFIS did not auto actuate because a malfunction is preventing it, but the manual initiation below does work.*** • Initiate AFIS 1B SG Digital Channels 1 and 2 **(CT-17)** • Select OFF for 1B MDEFDW Pump ***EXAMINER NOTE: Overcooling must be stopped prior to violating NDT limits. The critical task is to stop feeding the affected SG.*** • Trip both Main FDW pumps • Close 1FDW-316, 1FDW-42, and 1FDW-40 ***EXAMINER NOTE: TD EFDW Pump tripped by AFIS and 1A MD EFDWP did not start and will not manually start.*** 2. Verify 1 TD EFDW PUMP operating. **RNO:** 1. **IF** MD EFDWP for the intact SG is operating, **THEN GO TO** Step 5 2. Start 1 TD EFDW Pump 3. Verify 1 TD EFDW Pump is feeding affected SG. **RNO: GO TO** Step 5 5. Verify 1B SG is an affected SG. 6. Open 1AS-40 while closing 1MS-47. 7. **WHEN** overcooling is stopped, **THEN** adjust steaming of unaffected SG to maintain CETCs constant using either: • TBVs • Send two operators to perform Encl 5.24 (Operation of ADV's)
This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner		

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 6 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**EOP Rule 5 (continued)** **CAUTION** Thermal shock conditions may develop if HPI is **NOT** throttled and RCS pressure **NOT** controlled. 8. **WHEN** all of the following exist: • Core SCM >0° F • Rx Pwr ≤ 1% • Pzr Level increasing, **THEN** continue 9. Verify ES HPI actuated 10. Place Diverse HPI in BYPASS 11. Place ES CH 1 and ES CH 2 in MANUAL 12. Perform the following to stabilize RCS P/T: • Throttle HPI • Reduce 1HP-120 setpoint to > 100” (180” ACC) • Adjust steaming of unaffected SG (1A SG) to maintain CETCs constant 13. **WHEN** CETCs have stabilized, **THEN** resume use of T_c for RCS temperature control 14. Ensure Rule 3 (Loss of Main or Emergency FDW) is in progress or complete (**see next page**) 15. Ensure Rule 8 (Pressurized Thermal Shock (PTS)) is in progress or complete **(see page 26)** 16. **WHEN** directed by CR SRO, **THEN EXIT** this rule

This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 7 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**EOP Rule 3 (as directed by Rule 5)** 1. Verify loss of Main FDW/EFDW is due to Turbine Building Flooding. **RNO: GO TO** Step 3 3. **IAAT NO** SGs can be fed with FDW (Main/CBP/Emergency), **AND** any of the following exist: • RCS pressure reaches 2300 psig **OR** NDT limit • Pzr level reaches 375″ [340″ acc] **THEN PERFORM** Rule 4 (Initiation of HPI Forced Cooling). 4. Start operable EFDW pumps as required to feed all intact SGs 5. Verify any EFDW pump operating. 6. **GO TO** Step 37. 37. **IAAT** an EFDW valve **CANNOT** control in AUTO, **OR** manual operation of EFDW valve is desired to control flow/level, **THEN** perform Steps 38-42. **RNO: GO TO** Step 43 43. Verify any SCM ≤ 0°F. **RNO: IF** overcooling, **OR** exceeding limits in Rule 7 (SG Feed Control), **THEN** throttle EFDW, as necessary. 44. **IAAT** Unit 1 EFDW is in operation, **THEN** initiate Encl 5.9 (Extended EFDW Operation). **(see next page)** 45. **WHEN** directed by CR SRO, **THEN EXIT** this rule.

This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 8 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Encl 5.9 (Extended EFDW Operation) as directed by Rule 3** 1. Monitor EFDW parameters on EFW graphic display. 2. **IAAT** UST level is < 4', **THEN GO TO** Step 120 3. **IAAT** feeding <u>both</u> SGs with one MD EFDWP is desired, **THEN** perform Steps 4-7 **RNO: GO TO** Step 8 8. Perform the following as required to maintain UST level > 7.5': • Makeup with demin water. • Place CST pumps in AUTO. 9. **IAAT** <u>all</u> the following exist: • Rapid cooldown **NOT** in progress • MD EFDWP operating for each <u>available</u> SG • EFDW flow in <u>each</u> header < 600 gpm **THEN** place 1 TD EFDW PUMP switch in PULL TO LOCK. 10. Verify 1 TD EFDW PUMP operating. 11. Start TD EFDWP BEARING OIL COOLING PUMP. **<u>NOTE</u>** • Loss of the condensate system for ≥ 25 minutes results in cooling down to LPI using the ADVs. If **NO** HWPs are operating, continuing this enclosure to restore the condensate system is a priority <u>unless</u> the CR SRO deems EOP activities higher priority. The 25 minute criterion is satisfied when a HWP is started and 1C-10 is 10% open. • If the condensate system is operating, the remaining guidance establishes FDW recirc, monitors and maintains UST, and transfers EFDW suction to the hotwell if required. 12. Notify CR SRO to set priority based on the NOTE above <u>and</u> EOP activities.

This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 9 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior

	OATC/BOP	**Rule 8 (as directed by Rule 5)**
		
		EXAMINER NOTE: Neither of the criteria in the note below are met so no actions are required in Rule 8. If the crew pulls Rule 8 as directed by Rule 5, they should immediately EXIT back out based on the note at the beginning.
		
		NOTE
		This rule is invoked under either of the following conditions:
		• A cooldown below 400°F T_c at > 100 °F/hr has occurred.
		• HPI has injected through an open or throttled open 1HP-26, 27, 409, 410 with all RCPs OFF.
		
		• SCM must be minimized. The following methods may be used at the discretion of the CR SRO:
		  • Throttling HPI per Rule 6 (HPI)
		  • De-energizing Pzr heaters
		  • Using Pzr normal spray
		  • Using Pzr aux spray
		  • Using PORV
		  • Throttling LPI {22}
		• Once RCS temperature is stable, a 1-hour hold of RCS temperature must be performed unless a LOCA or SGTR is in progress. Use T_c in loop with an operating RCP or use CETCs if **NO** RCPs are operating.
		• Once invoked, SCM shall remain minimized until Engineering has performed an evaluation and determined that PTS restrictions **NO** longer apply. Starting RCPs and/or restoring cool down rates to normal values do **NOT** negate the need for this evaluation.

This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner		

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 10 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**EOP Enclosure 5.1 (ES Actuation)** 1. Determine all ES channels that should have actuated based on RCS pressure and RB pressure. • RCS 1600 psig: Channels 1, 2 2. Verify all ES digital channels associated with actuation setpoints have actuated. 3. **IAAT** additional ES actuation setpoints are exceeded, **THEN** perform Steps 1-2. 4. Place Diverse HPI in BYPASS 5. Place ES CH 1 and ES CH 2 in MANUAL 6. Verify Rule 2 in progress or complete. **RNO: GO TO** Step 73 73. Open 1HP-24 and 1HP-25 74. Ensure at least two HPI pumps are operating 75. Verify 1HP-26 and 1HP-27 are open ***NOTE TO EXAMINER: Conditions not met to require opening 1HP-410 or 1HP-409. No operator action required at this time by step 76.*** 76. **IAAT** at least two HPI pumps are operating, **AND** HPI flow in any header that has **NOT** been intentionally throttled is in the Unacceptable Region of Figure 1, **THEN** open the following in the affected header: | √ | **1A Header** | √ | **1B Header** | | | 1HP-410 | | 1HP-409 | 77. Verify any RCP operating 78. Open 1HP-20 and 1HP-21 79. **IAAT** all exist: • Voter associated with ES channel is in OVERRIDE • An ES channel is manually actuated • Components on that channel required manipulation **THEN** depress RESET on the required channel

This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 11 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**EOP Enclosure 5.1 (ES Actuation) (continued)** 80. **IAAT** any RCP is operating, **AND** ES Channels 5 and 6 actuate, **THEN** perform Steps 81 - 84 **RNO: GO TO** Step 85 85. **IAAT** ES Channels 3 & 4 are actuated, **THEN GO TO** Step 86 **RNO: GO TO** Step 123. 123. Start A & B Outside Air Booster Fans. 124. Notify Unit 3 to Start 3A & 3B Outside Air Booster Fans. 125. Verify open 1CF-1 and 1CF-2. 126. Verify 1HP-410 closed. 127. Secure makeup to the LDST. 128. Verify all ES channel 1 & 2 components are in the ES position. 129. Verify Unit 2 turbine tripped. **RNO: GO TO** Step 132 132. Close 1LPSW-139. 133. Place in FAIL OPEN: • 1LPSW-251 FAIL SWITCH • 1LPSW-252 FAIL SWITCH 134. Start all available LPSW pumps. 135. Verify either: • Three LPSW pumps operating • Two LPSW pumps operating when Tech Specs only requires two operable 136. Open 1LPSW-4 and 1LPSW-5 137. **IAAT** BWST level ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES). 138. Dispatch an operator to perform Encl 5.2 (Placing RB Hydrogen Analyzers In Service).
This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner		

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 12 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**EOP Enclosure 5.1 (ES Actuation) (continued)** 139. Notify U2 CR SRO that SSF is inoperable due to OTS1-1 open. 140. Ensure <u>any</u> turnover sheet compensatory measures for ES actuation are complete as necessary. 141. **IAAT** conditions causing ES actuation have cleared, **THEN** initiate Encl 5.41 (ES Recovery). 142. **WHEN** CR SRO approves, **THEN EXIT**.

This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 13 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
	SRO	**EOP LOSCM tab** The SRO will direct an RO to make a PA announcement and notify the OSM to reference the Emergency Plan and NSD-202 1. Ensure Rule 2 in progress or complete 2. Verify Station ASW feeding SG **(it is not).** **RNO:** GO TO step 4 4. Verify LOSCM caused by Excessive Heat Transfer 5. Verify EHT tab has been performed **(it has not been).** **RNO:** GO TO EHT tab **(details begin on next page)**

This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 14 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
	SRO	**EOP Excessive Heat Transfer Tab (EHT)** The SRO will direct an RO to make a PA announcement and notify the OSM to reference the Emergency Plan and NSD-202 1. Verify any SG pressure < 550 psig 2. Ensure Rule 5 (Main Steam Line Break) in progress or complete 3. Place the following in HAND and decrease demand to zero on all affected SGs: • 1FDW-41 and 1FDW-44(for 1B SG) 4. Close the following on all affected SGs: • 1FDW-382, 1MS-26, 1MS-76, 1MS-36, 1MS-84, 1FDW-369 5. Verify level in both SGs < 96% O.R. 6. **IAAT** core SCM is > 0°F, **THEN** perform Steps 7 and 8 7. Throttle HPI per Rule 6 (HPI) **(CT-5)** ***Note: HPI flow must be throttled and RCS temperature controlled to prevent a solid Pzr and subsequent operation of the PORV.*** 8. Verify letdown in service. **RNO: IF** desired to restore letdown, **THEN** initiate Encl 5.5 (Pzr and LDST Level Control) (**see page 37**) 9. Verify any SG has an intact secondary boundary (intact SG) **NOTE** If only one SG is intact and has been isolated for SGTR, the following steps will unisolate and use it for heat removal. 10. Open the following on all intact SGs • 1FDW-372, 1FDW-368, and 1MS-17 11. Start MDEFDWP associated with all intact SGs • 1A MD EFDWP **RNO: Start TDEFDWP** 12. Feed and steam all intact SGs to stabilize RCS P/T using either of the following: • TBVs • Dispatch two operators to perform Encl 5.24 (Operation of the ADVs)

This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **7** Page 15 of 15

Event Description: **1B MSLB outside the reactor building**

Time	Position	Applicant's Actions or Behavior
	SRO	**EHT Tab (continued)** 13. **GO TO** Step 32 32. Verify <u>any</u> of the following: • HPI has operated in the injection mode while **NO** RCPs were operating • A cooldown below 400°F at > 100°F/hr has occurred **RNO: GO TO** Step 34 ***BOOTH CUE: Fire Timer 8 after step 11 to fail 1FDW-315 OPEN.*** 34. Verify 1MS-24 and 1MS-33 are closed 35. Open 1AS-8 36. Close 1SSH-9 37. Perform the following notifications: • Notify Chemistry to determine RCS boron concentration and to sample RBES for boron. • Notify Secondary Chemistry to check for indications of SGTR • Notify RP to check for indications of a SGTR

This event is complete when step 11 complete in EHT Tab or as directed by the lead examiner

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **8** Page 1 of 2

Event Description: **1FDW-315 fails OPEN**

Time	Position	Applicant's Actions or Behavior
	ALL	**Plant response:** • 1FDW-315 will indicate full open • 1A SG level will increase above the setpoint (30 inches XSUR) **Crew response**: The crew should determine that 1FDW-315 is open and perform Rule 3 IAAT step 37 or may re-perform Rule 3. **Rule 3 will:** 1. Verify loss of Main FDW/EFDW is due to Turbine Building Flooding. **RNO: GO TO** Step 3 3. **IAAT NO** SGs can be fed with FDW (Main/CBP/Emergency), **AND** any of the following exist: • RCS pressure reaches 2300 psig **OR** NDT limit • Pzr level reaches 375″ [340″ acc] **THEN PERFORM** Rule 4 (Initiation of HPI Forced Cooling). 4. Start operable EFDW pumps as required to feed all intact SGs 5. Verify any EFDW pump operating. 6. **GO TO** Step 37. 37. **IAAT** an EFDW valve **CANNOT** control in AUTO, **OR** manual operation of EFDW valve is desired to control flow/level, **THEN** perform Steps 38-42. 38. Place EFDW valve in MANUAL. 39. Control EFDW flow with EFDW valve in MANUAL. (**will not work**) **RNO**: GO TO Step 41 41. Notify CR SRO that Encl 5.27 (Alternate Methods for Controlling EFDW Flow) is being initiated.

This event is complete when EFDW flow has been established to the 1A SG via the startup control valves or as directed by the lead examiner.

Op-Test No.: **ILT44** Scenario No.: **2** Event No.: **8** Page 2 of 2

Event Description: **1FDW-315 fails OPEN**

Time	Position	Applicant's Actions or Behavior
	ALL	**EOP Encl 5.27 (Alternate Methods for Controlling EFDW Flow)** 1. Identify the failure: 1FDW-315 failed OPEN. **GO TO** Step 16. 16. Verify 1A MD EFDWP operating. 17. Stop 1A MD EFDWP. 18. Place 1TD EFDW PUMP in PUMP TO LOCK. 19. Place 1FDW-35 in HAND and set demand to 0%. 20. Close 1FDW-33. 21. Verify 1A MD EFDWP will be used. 22. Perform the following: • Close 1FDW-372 • Open 1FDW-374 23. Verify the following: • 1FDW-36 closed • 1FDW-38 open 24. Start 1A MD EFDWP 25. Verify either of the following exists: • HP Forced Cooling is maintaining core cooling • CBP feed providing SG feed 25. **RNO** 1. **IF** any SG is being fed… (**no SG is being fed**) 2. **IF** NO SG is being fed, **AND** Tc > 550ºF, **THEN** perform the following: A. Throttle 1FDW-35 to establish a maximum of 100 gpm. B. Initiate cooldown to ≤ 550ºF by feeding with 1FDW-35 and steaming intact SGs at a rate that prevents RCS saturation. 3. **IF** NO SG is being fed, **AND** Tc ≤ 550ºF, **THEN** perform the following: A. Throttle 1FDW-35 to establish a maximum of 100 gpm. B. Feed with 1FDW-35 and steam intact SGs to stabilize Tc to ≤ 550ºF.

This event is complete when EFDW flow has been established to the 1A SG via the startup control valves or as directed by the lead examiner.

EXAMINER NOTE

At any time during this scenario the operator may choose to use Enclosure 5.5 to maintain RCS inventory control. See excerpt below.

ENCLOSURE 5.5

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
NOTE Maintaining Pzr level >100″ [180″ acc] will ensure Pzr heater bundles remain covered.	
1. Utilize the following as necessary to maintain desired Pzr level: • 1A HPI Pump • 1B HPI Pump • 1HP-26 • 1HP-7 • 1HP-120 setpoint or valve demand • 1HP-5	__ **IF** 1HP-26 will **NOT** open, **THEN** throttle 1HP-410 to maintain desired Pzr level.
2. **IAAT** makeup to the LDST is desired, **THEN** makeup from 1A BHUT.	
3. **IAAT** it is desired to secure makeup to LDST, **THEN** secure makeup from 1A BHUT.	
4. **IAAT** it is desired to bleed letdown flow to 1A BHUT, **THEN** perform the following: A. Open: __ 1CS-26 __ 1CS-41 B. Position 1HP-14 to BLEED. C. Notify SRO.	
5. **IAAT** letdown bleed is **NO** longer desired, **THEN** position 1HP-14 to NORMAL.	

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6. I**AAT** 1C HPI PUMP is required, **THEN** perform Steps 7 - 9.	__ **GO TO** Step 10.
7. Open: • 1HP-24 • 1HP-25	1. __ **IF** both BWST suction valves (1HP-24 and 1HP-25) are closed, **THEN** perform the following: A. __ Start 1A LPI PUMP. B. __ Start 1B LPI PUMP. C. Open: __ 1LP-15 __ 1LP-16 __ 1LP-9 __ 1LP-10 __ 1LP-6 __ 1LP-7 D. __ **IF** two LPI Pumps are running only to provide HPI pump suction, **THEN** secure one LPI pump. E. __ Dispatch an operator to open 1HP-363 (Letdown Line To LPI Pump Suction Block) (A-1-119, U1 LPI Hatch Rm, N end). F. __ **GO TO** Step 8. 2. __ **IF** only one BWST suction valve (1HP-24 or 1HP-25) is open, **THEN** perform the following: A. __ **IF** three HPI pumps are operating, **THEN** secure 1B HPI PUMP. B. __ **IF** < 2 HPI pumps are operating, **THEN** start HPI pumps to obtain two HPI pump operation, preferably in opposite headers. C. __ **GO TO** Step 9.

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8. Start 1C HPI PUMP.	__ **IF** at least two HPI pumps are operating, **THEN** throttle 1HP-409 to maintain desired Pzr level.
9. Throttle the following as required to maintain desired Pzr level: • 1HP-26 • 1HP-27	1. __ **IF** at least two HPI pumps are operating, **AND** 1HP-26 will **NOT** open, **THEN** throttle 1HP-410 to maintain desired Pzr level. 2. __ **IF** 1A HPI PUMP and 1B HPI PUMP are operating, **AND** 1HP-27 will **NOT** open, **THEN** throttle 1HP-409 to maintain desired Pzr level.

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10. **IAAT** LDST level **CANNOT** be maintained, **THEN** perform Step 11.	__ **GO TO** Step 12.
11. Perform the following: • Open 1HP-24. • Open 1HP-25. • Close 1HP-16.	1. __ **IF** both BWST suction valves (1HP-24 and 1HP-25) are closed, **THEN** perform the following: A. __ Start 1A LPI PUMP. B. __ Start 1B LPI PUMP. C. Open: __ 1LP-15 __ 1LP-16 __ 1LP-9 __ 1LP-10 __ 1LP-6 __ 1LP-7 D. __ **IF** two LPI Pumps are running only to provide HPI pump suction, **THEN** secure one LPI pump. E. __ Dispatch an operator to open 1HP-363 (Letdown Line To LPI Pump Suction Block) (A-1-119, U1 LPI Hatch Rm, N end). F. __ **GO TO** Step 12. 2. __ **IF** only one BWST suction valve (1HP-24 or 1HP-25) is open, **AND** three HPI pumps are operating, **THEN** secure 1B HPI PUMP.

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE		RESPONSE NOT OBTAINED
12.	**IAAT** additional makeup flow to LDST is desired, **AND** 1A BLEED TRANSFER PUMP is operating, **THEN** dispatch an operator to close 1CS-48 (1A BHUT Recirc) (A-1-107, Unit 1 RC Bleed Transfer Pump Rm.).	
13.	**IAAT** <u>two</u> Letdown Filters are desired, **THEN** perform the following: • Open 1HP-17. • Open 1HP-18	
14.	**IAAT** <u>all</u> of the following exist: • Letdown isolated • LPSW available • Letdown restoration desired **THEN** perform Steps 15 - 33. {41}	__ **GO TO** Step 34.
15.	Open: • 1CC-7 • 1CC-8	1. __ Notify CR SRO that letdown **CANNOT** be restored due to inability to restart the CC system. 2. __ **GO TO** Step 34.
16.	Ensure only one CC pump running.	
17.	Place the non-running CC pump in AUTO.	
18.	Verify <u>both</u> are open: • 1HP-1 • 1HP-2	1. __ **IF** 1HP-1 is closed due to 1HP-3 failing to close, **THEN GO TO** Step 20. 2. __ **IF** 1HP-2 is closed due to 1HP-4 failing to close, **THEN GO TO** Step 20.
19.	**GO TO** Step 22.	

<u>NOTE</u>
Verification of leakage requires visual observation of East Penetration Room.

20.	Verify letdown line leak in East Penetration Room has occurred.	__ **GO TO** Step 22.
21.	**GO TO** Step 34.	

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE		RESPONSE NOT OBTAINED
22.	Monitor for unexpected conditions while restoring letdown.	
23.	Verify <u>both</u> letdown coolers to be placed in service.	1. __ **IF** 1A letdown cooler is to be placed in service, **THEN** open: __1HP-1 __1HP-3 2. __ **IF** 1B letdown cooler is to be placed in service, **THEN** open: __1HP-2 __1HP-4 3. __ **GO TO** Step 25.
24.	Open: • 1HP-1 • 1HP-2 • 1HP-3 • 1HP-4	
25.	Verify <u>at least one</u> letdown cooler is aligned.	Perform the following: A. __ Notify CR SRO of problem. B. __ **GO TO** Step 34.
26.	Close 1HP-6.	
27.	Close 1HP-7.	
28.	Verify letdown temperature < 125°F.	1. __ Open 1HP-13. 2. Close: __1HP-8 __1HP-9&11 3. __ **IF** <u>any</u> deborating IX is in service, **THEN** perform the following: A. __Select 1HP-14 to NORMAL. B. __Close 1HP-16. 4. __ Select LETDOWN HI TEMP INTLK BYP switch to BYPASS.

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE		RESPONSE NOT OBTAINED
29.	Open 1HP-5.	
30.	Adjust 1HP-7 for ≈ 20 gpm letdown.	
31.	**WHEN** letdown temperature is < 125°F, **THEN** place LETDOWN HI TEMP INTLK BYP switch to NORMAL.	
32.	Open 1HP-6.	
33.	Adjust 1HP-7 to control desired letdown flow.	
NOTE AP/32 (Loss of Letdown) provides direction to cool down the RCS to offset increasing pressurizer level.		
34.	**IAAT** it is determined that letdown is unavailable due to equipment failures or letdown system leakage, **THEN** notify CR SRO to initiate AP/32 (Loss of Letdown).	
35.	**IAAT** > 1 HPI pump is operating, **AND** additional HPI pumps are **NO** longer needed, **THEN** perform the following: A. Obtain SRO concurrence to reduce running HPI pumps. B. Secure the desired HPI pumps. C. Place secured HPI pump switch in AUTO, if desired.	
36.	**IAAT** all the following conditions exist: • Makeup from BWST **NOT** required • LDST level > 55″ • All control rods inserted • Cooldown Plateau **NOT** being used **THEN** close: • 1HP-24 • 1HP-25	

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE		RESPONSE NOT OBTAINED
37.	Verify 1CS-48 (1A BHUT Recirc) has been closed to provide additional makeup flow to LDST.	__ **GO TO** Step 39.
38.	**WHEN** 1CS-48 (1A BHUT Recirc) is **NO** longer needed to provide additional makeup flow to LDST, **THEN** perform the following: A. Stop 1A BLEED TRANSFER PUMP. B. Locally position 1CS-48 (1A BHUT Recirc) one turn open (A-1-107, Unit 1 RC Bleed Transfer Pump Rm.). C. Close 1CS-46. D. Start 1A BLEED TRANSFER PUMP. E. Locally throttle 1CS-48 (1A BHUT Recirc) to obtain 90 - 110 psig discharge pressure. F. Stop 1A BLEED TRANSFER PUMP.	
39.	Verify two Letdown Filters in service, **AND** only one Letdown filter is desired.	__ **GO TO** Step 41.
40.	Perform one of the following: • Place 1HP-17 switch to CLOSE. • Place 1HP-18 switch to CLOSE.	
41.	**WHEN** directed by CR SRO, **THEN EXIT** this enclosure.	

• • • END •

CRITICAL TASKS

1. CT-1, Stop all RCPs (Within 2 minutes of LOSCM). **page 19** (contingent on LOSCM due to overcooling)

2. CT-17, Initiate AFIS to stop overcooling on MSLB. **page 22**

3. CT-5, Throttle HPI per Rule 6. **page 31**

SAFETY: Take a Minute

UNIT 0 (OSM)

SSF Operable: Yes	KHU's Operable: U1 - OH, U2 - UG	LCTs Operable: 2	Fuel Handling: No

UNIT STATUS (CR SRO)

Unit 1 Simulator	Other Units	
Mode: 1	**Unit 2**	**Unit 3**
Reactor Power: 75%	Mode: 1	Mode: 1
Gross MWE: 702	100% Power	100% Power
RCS Leakage: .024 gpm	EFDW Backup: Yes	EFDW Backup: Yes
RBNS Rate: .01 gpm		

Technical Specifications/SLC Items (CR SRO)

Component/Train	OOS Date/Time	Restoration Required Date/Time	TS/SLC #
SSF	Today 0000	7 Days	TS 3.10.1 A B C D E

Shift Turnover Items (CR SRO)

Primary

- SASS in Manual for I&E

Secondary

- 1SSH-1, 1SSH-3, 1SD-2, 1SD-5, 1SD-140, 1SD-303, 1SD-355, 1SD-356 and 1SD-358 are closed with power supply breakers open per the Startup Procedure for SSF Overcooling Event.
- Holding power at 75% to facilitate work on 1B FDWP.
- 1B FWPT on Handjack
- Voltage Regulator in Manual for maintenance. I&E ready to return it to Auto and reduce VARs to approximately 150 (± 10) using OP/1/A/1106/001, Encl 4.8 (Changing Generator MVAR) to verify proper operation. SOC is already notified the Voltage Regulator will be swapped to AUTO

Reactivity Management (CR SRO)

RCS Boron: 86 ppmB	Gp 7 Rod Position: 75%	R2 Reactivity management controls established in the Control Room per SOMP 01-02

Human Performance Emphasis (OSM)

Procedure Use and Adherence

Facility: **Oconee** Scenario No.: **3** Op-Test No.: 1

Examiners: _____ Operators: _____**SRO**

_____ _____**OATC**

_____ _____**BOP**

Initial Conditions:

- Reactor power = 0.02%; below POAH Unit 2: 100%, Unit 3: 100%

Turnover:

- Unit 1 Startup in progress; BOL; not after refueling
- Startup procedure at step 3.36 (OP/1/A/1102/001 Encl 4.7)
- Increase Reactor power to 6 -7%

Event No.	Malfunction No.	Event Type*	Event Description
0a		Override	Auto start of HPIP on low seal injection flow is blocked
0b		Override	1HP-26 failed CLOSED
0c			
1		R, OATC, SRO	Increase reactor power to 6 -7%
2	Override	C: BOP, SRO(**TS**)	Inadvertent ES Channel 7 actuation
3	MPS270,1	C: BOP, SRO	High Oil Level on 1A2 RCP
4	Override	C: BOP, SRO **(TS)**	1A HPI pump trips and standby HPI pump fails to auto start
5	Override	C: OATC, SRO,	PZR Spray Valve (1RC-1) Fails OPEN
6	Override	C: OATC, SRO	Operating Main FDW Pump trip and ATWS
7	MEL170 MEL180	M: ALL	Blackout Requiring Manual Alignment From CT-4 CT-1 Lockout KHU-2 Emergency Lockout
8	MSS330		TDEFWP trips

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

Op-Test No.: **ILT44** Scenario No.: **3** Event No.: **1** Page 1 of 1

Event Description: **Increase reactor power to 6 - 7%**

Time	Position	Applicant's Actions or Behavior
	OATC/SRO	**Crew response:** OP/1/A/1102/001 (Controlling Procedure for Unit Startup) **NOTE:** POAH is normally achieved from 0.05 to 0.15% power on Wide Range Indications. When POAH is achieved: TBVs will begin to open, 1HP-120 will begin to close, TAVE will increase, & SUR will decrease with negative Moderator Temperature Coefficient. Wide Range indications are used since Source Range NIs saturate. 3.36 Begin reactor power increase to 0.5 - 1.0% at ≤ 0.5 DPM SUR. 3.37 **WHEN** above POAH, begin reactor power increase to 2.5 -3.5%. 3.38 **WHILE** power increases, begin increasing 1HP-120 (RC VOLUME CONTROL) setpoint to establish 215" to 225" PZR Level **NOTE:** TAVE error is blocked when on Low Level Limit and TAVE is < setpoint. Core reactivity effects are minimized with Rx in automatic. (R.M.) 3.39 **WHEN** at 2.5% - 3.5% Power, perform the following: • Place REACTOR MASTER to "AUTO". • Place DIAMOND to "AUTO". • Ensure TURBINE MASTER Setpoint to ≈ 880 - 890 psig. 3.40– 3.42 already completed 3.43 **WHILE** power change is in progress, monitor the following indications: • Appropriate ranged Nis • Neutron error • RCS Loop ΔT and FDW Flow • OAC Point O1E2129 and O1E2130 3.44 Begin power increase to 6% - 7% per Encl. 4.16 (CTP Adjustments) (**See page 39**)

Event is complete when ICS is placed in AUTO and CTP is 6-7% or when directed by the Lead Examiner.

Event Description: **Inadvertent ES Channel 7 actuation (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**Plant Response:** • 1SA-1/C11 (ES 7 TRIP) actuates • 1A RBS pump will start • 1BS-1 will open • 1SA-9/A6 (RB Normal Sump Level High/Low) (**BS water in RB sump**) **Crew Response:** The SRO will initiate **AP/1/A/1700/042 Inadvertent ES Actuation** 4.1 Verify any of the following have inadvertently actuated: __ Diverse HPI (**not actuated**) __ ES Channel 1 (**not actuated**) __ ES Channel 2 (**not actuated**) **RNO: GO TO** step 4.4 4.4 Verify any of the following have inadvertently actuated: __ ES Channel 5 (**not actuated**) __ ES Channel 6 (**not actuated**) **RNO:** 1. **IF** ES Channel 1, ES Channel 2, or Diverse HPI have inadvertently actuated, **AND** it is desired to restore letdown, **THEN** initiate AP/42 Encl 5.2 (Letdown Restoration) 2. **GO TO** Step 4.10 4.10 Close 1HP-24 and 1HP-25 **NOTE** If personnel are available, progression should continue while Encl 5.1 (Required Operator Actions) is in progress. 4.11 Ensure AP/42 Encl 5.1 (Required Operator Actions) is in progress (**see page 5**) 4.12 Verify any of the following have inadvertently actuated: __ Diverse LPI __ ES Channel 3 __ ES Channel 4 **RNO: GO TO** Step 4.17

This event is complete when the SRO has referred to TS at step 4.25, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**AP/42 (continued)** 4.17 Verify the Rx is critical **CAUTION** Do **NOT** add demin water to counter the boration until RCS boron concentration stabilizes to prevent a positive reactivity event. **NOTE** ICS in Auto means ICS is in control of Tave and Rx power. 4.18 Verify ICS in Auto ***Examiner Note: Rods will not go outside the desired control band since there is no reactivity event associated with ES-7 actuation.*** 4.19 Verify control rods are outside the desired control band **RNO: GO TO Step 4.21** 4.21 Verify <u>any</u> of the following have <u>inadvertently actuated</u>: __ ES Channel 1 __ Diverse HPI **RNO: GO TO** Step 4.24 4.24 Notify SPOC to investigate <u>and</u> repair the cause of the inadvertent ES actuation, as necessary 4.25 Initiate logging TS/SLC Entry/Exit, as applicable, IAW Encl 5.4 (TS/SLC Requirements) **EXAMINER NOTE: TS 3.3.7 (Engineered Safeguards Protective System (ESPS) Digital Automatic Actuation Logic Channels) due to the automatic actuation logic being blocked if any ES channel is in MANUAL or ES Voters in OVERRIDE.** **Enter TS 3.3.7. The required action is to place the component in ES configuration within 1 hour. The RBS pump will be stopped due to pumping water into the RB. This will require declaring the RBS pump inoperable within 1 hour and entering TS 3.6.5 Condition A.** 4.26 **WHEN** <u>all</u> of the following exist: __ Reason for inadvertent ES Channel <u>or</u> Diverse HPI/LPI actuation has been resolved __ ES Channel <u>or</u> Diverse HPI/LPI reset is desired __ OSM concurs **THEN** continue

This event is complete when the SRO has referred to TS at step 4.25, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Crew Response:** **AP/1/A/1700/042 Enclosure 5.1 Required Operator Actions** 1 Initiate announcement of AP entry using the PA system 2 Verify any of the following have inadvertently actuated: __ Diverse HPI (not actuated) __ ES Channel 1 (not actuated) __ ES Channel 2 3 Open the following: __ 1HP-20 __ 1HP-21 4 Open the following for operating RCPs: __ 1HP-228 (1A1) __ 1HP-226 (1A2) __ 1HP-232 (1B1) __ 1HP-230 (1B2) 5 Verify any of the following have inadvertently actuated: __ ES Channel 7 (not actuated) __ ES Channel 8 (not actuated) 6 Perform the following on all inadvertently actuated channel(s): __ Ensure ES CH-7 is in MANUAL __ Ensure ES CH-8 is in MANUAL 7 Stop the following: __ 1A RBS PUMP __ 1B RBS PUMP 8 Close the following: __ 1BS-1 __ 1BS-2 9 Perform the following: A. Open the following to restore RB RIAs: __ 1PR-7 __ 1PR-8 __ 1PR-9 __ 1PR-10 B. From the ENABLE CONTROLS screen on the RIA View Node, perform the following: 1. Select OFF for RB RIA sample pump 2. Start the RB RIA sample pump
This event is complete when the SRO has referred to TS at step 4.25, or as directed by the Lead Examiner.		

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**AP/42 Encl. 5.1 (Cont.)** 10. Verify <u>any</u> of the following have <u>inadvertently actuated</u>: __ Diverse HPI __ ES Channel 1 **RNO: GO TO** Step 12 12. **EXIT** this enclosure

This event is complete when the SRO has referred to TS at step 4.25, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Plant Response:** • OAC alarm C (RCP 1A2 MTR LOWER OIL POT LEVEL) **Crew Response:** Refer to Alarm Response Guide for V (RCP 1A2 MTR LOWER OIL POT LEVEL) 1) If RCP operating GO TO AP/1/A/1700/016 (Abnormal Reactor Coolant Pump Operation) 2) Evaluate the need to initiate action (WR, PIP, ETC) **AP/1/A/1700/016, Abnormal RCP Operation** 4.1 **IAAT** any RCP meets immediate trip criteria of Encl 5.1 (RCP Immediate Trip Criteria), **THEN** perform Steps 4.2 - 4.11. **RNO: GO TO** Step 4.12 ***EXAMINER NOTE: In step 4.12, the crew may conservatively decide to secure the RCP because the oil pot level is threatening to go offscale high. If so, they will proceed to step 4.13 and will not end up in Section 4C. This path is on page 8. This path or the path below are acceptable*** 4.12 **IAAT** either of the following apply: • Any RCP approaching immediate trip criteria of Encl 5.1 (RCP Immediate Trip Criteria) • It is desired to secure a RCP **THEN** perform Steps 4.13 - 4.15. **RNO: GO TO** Step 4.16 4.16 Announce AP entry using the PA system. 4.17 Notify OSM to request evaluation by RCP Component Engineer. 4.18 **IAAT** the failure is identified, **THEN GO TO** the applicable section per the following table:

	Section	Failure
	4A	Seal Failure
	4B	Abnormal Vibration
	4C	**High or Low Oil Pot Level**
	4D	Loss of Seal Return
	4E	Abnormal RCP Temperatures

This event is complete when actions to secure the 1A2 RCP are completed, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**AP/1/A/1700/016, Section 4C** 1 **IAAT** any RCP meets immediate trip criteria of Encl 5.1 (RCP Immediate Trip Criteria), **THEN** perform Steps 2 - 11. **RNO: GO TO** Step 12 12 Start trending RCP oil pot levels. (Turn-on Code "unitpump"RCPT3, example 1A2RCPT3) **NOTE** • RCP oil pot level indication range is +1.5 to -1.5 inches. • RCP motor oil pot temperatures and RCP motor guide bearing temperatures may be used to validate low oil pot level. {4} 13 **IAAT** oil pot level threatens to go off scale high or low for an operating RCP, **THEN** perform Steps 14 - 24. 14 Verify MODE 1 or 2. 15 Verify three RCPs will remain operating after affected RCP is tripped. 16 Verify Rx power is ≤70% as indicated on <u>all</u> NIs. 17 Verify any SG on Low Level Limits. ***EXAMINER NOTE: STATALARMS 1SA-07/D-8 (1A2 RCPMP Trip), 1SA-02/A-3 (RC Loop A Flow Low), & 1SA-02/A-5 (RC Total Flow Low) will alarm when the 1A2 RCP is stopped.*** 18 Stop the affected RCP. 19 **GO TO** Step 23. 23 Initiate Encl 4.3 (Special Instructions for < 4 RCP Operation) of OP/1/A/1102/004 (Operation at Power). **NOTE: Just requires monitoring parameters.** 24 Make the following notifications: • Notify OSM to make required notifications of OMP 1-14 (Notifications). • Notify Rx Engineering and request a power maneuver plan, if needed. • Notify SOC if load reduction was required. • Notify Chemistry to take RCS boron samples on a 1 hour frequency.

This event is complete when actions to secure the 1A2 RCP are completed, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**AP/1/A/1700/016, Section 4C (continued)** 25 **IAAT** an RB fire exists, **THEN** perform Steps 26 - 29. **RNO: GO TO** Step 30 30 **IAAT** either of the following conditions is met: • a RCP with low oil level has been shut down for ≥ 3 hours, {9} • **a RCP with high oil level has been shut down** **THEN** close the associated RCP motor cooler inlet/outlet valve: • 1LPSW-7&8 (1A1 RCP) • 1LPSW-9&10 (1B1 RCP) • **1LPSW-13&14 (1A2 RCP)** • 1LPSW-11&12 (1B2 RCP) 31 **IAAT** a RCP has been tripped due to exceeding Immediate Trip Criteria on a RCP motor, **THEN** contact RCP engineer prior to restart. {8} 32 **WHEN** conditions permit, **THEN EXIT** this procedure.

This event is complete when actions to secure the 1A2 RCP are completed, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**AP/1/A/1700/016, (continued)** 4.13 Verify Rx Power > 70%. **RNO: GO TO** Step 4.15 4.15 **WHEN** Rx Power is ≤□70%, **THEN GO TO** Step 4.2. 4.2 Verify MODE 1 or 2. 4.3 Verify Rx power is ≤□70% as indicated on all NIs. 4.4 Verify three RCPs will remain operating after affected RCP is tripped. 4.5 Verify any SG on Low Level Limits. 4.6 Stop the affected RCP. 4.7 **GO TO** Step 4.26. 4.26 Initiate Encl 4.3 (Special Instructions for < 4 RCP Operation) of OP/1/A/1102/004 (Operation at Power). 4.27 **IAAT** an RCP has been shut down for ≥ 3 hours, {9} **THEN** close the associated RCP motor cooler inlet/outlet valves: • 1LPSW-7&8 (1A1 RCP) • 1LPSW-9&10 (1B1 RCP) • 1LPSW-13&14 (1A2 RCP) • 1LPSW-11&12 (1B2 RCP)

This event is complete when actions to secure the 1A2 RCP are completed, or as directed by the Lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **3** Event No.: **4** Page 1 of 3

Event Description: **1A HPI pump trips and standby HPI pump fails to auto start (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**Plant response:** Statalarms: • 1SA-2/B-2 (HP RCP Seal Injection Flow High/Low) • 1SA-2/C-2 (HP Injection Pump Disch. Header Pressure High/Low) Board indications: • RC Makeup Flow = ~0 gpm • RCP SI flow = ~0 gpm • 1A HPI Pump amps low = 0 amps PZR level will begin to decrease and LDST level will begin to increase. **Crew response:** Refer to ARGs: Refer to AP/14 **AP/1/A/1700/014, Loss of Normal HPI Makeup and/or RCP Seal Injection** 3.1 **IAAT** RCP seal injection flow is lost, **AND** Component Cooling is lost, **THEN** perform the following: A. Trip the Rx. B. Stop all RCPs. C. Initiate AP/25 (SSF EOP). 3.2 **IAAT** loss of suction to operating HPI pumps is indicated: • Motor amps low or cycling • Discharge pressure low or cycling • Abnormal LDST level trend **THEN GO TO** Step 3.3. **RNO: GO TO** Step 4.7 4.7 Announce AP entry using PA System. 4.8 Verify any HPI pump operating. **RNO** 1. Close 1HP-5 2. Place 1HP-120 in HAND and closed 3. Place 1HP-31 in HAND and closed 4. Attempt to start the Standby HPIP (1B HPIP starts) 5. **IF** standby HPI pump started, **THEN GO TO** Step 4.111.
This event is complete when 1HP-31 is placed in AUTO, or as directed by the Lead Examiner.		

Op-Test No.: **ILT44** Scenario No.: **3** Event No.: **4** Page 2 of 3

Event Description: **1A HPI pump trips and standby HPI pump fails to auto start (TS)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection (continued)** 4.111 Place 1HP-31 in HAND 4.112 Slowly open 1HP-31 until ≈ 8 gpm/RCP is achieved. 4.113 Re-establish normal makeup through 1HP120. 4.114 Ensure proper operation of the Component Cooling System. 4.115 Reduce 1HP-7 demand to 0%. 4.116 Close 1HP-6 4.117 Open the following: ➢ 1HP-1 ➢ 1HP-2 ➢ 1HP-3 ➢ 1HP-4 ***BOOTH NOTE: Crew may direct AO to open & rack out the 1A HPIP breaker. (Use Quick Strike to remove fuses)*** 4.118 Open 1HP-5 4.119 Throttle open 1HP-7 for ≈ 20 gpm letdown flow. 4.120 Open 1HP-6 4.121 Adjust 1HP-7 for desired letdown flow. 4.122 Open the following:1HP-228, 1HP-226,1HP-232, 1HP-230 4.123 Open 1HP-21. 4.124 **IAAT** SEAL INLET HDR FLOW≈ 32 gpm, **THEN** place 1HP-31 in AUTO 4.125 Monitor RCP seal parameters. 4.126 Maintain RCP seal injection flows as required. 4.127 Log thermal cycle of 1A HPI header. 4.128 **WHEN** conditions permit, **THEN EXIT** this procedure. **Note: Crew may enter AP/16 (Abnormal RCP Operation) as a result of high seal return temperatures. Steps are on the next page.**

This event is complete when 1HP-31 is placed in AUTO, or as directed by the Lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **3** Event No.: **4** Page 3 of 3

Event Description: **1A HPI pump trips and standby HPI pump fails to auto start (TS)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**AP/16 (Abnormal RCP Operation)** 4.1 **IAAT** any RCP meets immediate trip criteria… (does not) **RNO: GO TO** Step 4.12 4.12 **IAAT** all of the following apply: • Any RCP approaching immediate trip criteria of Encl 5.1. • It is desired to secure a RCP **THEN** perform Steps 4.13 – 4.15: **RNO: GO TO** Step 4.16 4.16 Announce AP entry using the PA system. 4.17 Notify OSM to request evaluation by RCP Component Engineer. 4.18 **IAAT** the failure is identified, **THEN GO TO** the applicable section per the following table: **4D Loss of Seal Return** **AP/16 (Abnormal RCP Operation) Section 4D** 1. **IAAT** any RCP meets immediate trip criteria… (does not) **RNO: GO TO** Step 12 12. Monitor RCP parameters for abnormalities (Turn on Code "RCP"). 13. Open 1HP-20 and 1HP-21 14. Open1HP-228, 1HP-226, 1HP-232, and 1HP-230 15. Verify either of the following… (not met) **RNO GO TO** Step 17. 17. Verify RCP seal return low flow alarms off. **RNO**: Request that RCP Component Engineer provide the following: • Immediate evaluation • Additional monitoring requirements ***EXAMINER CUE: If candidate attempts to monitor the Loose part Monitor, indicate that the noise is normal.*** ***EXAMINER NOTE: Due to sequence of events, SRO may not review the TS during the scenario. Follow-up questions may be required to ensure knowledge of this competency. Tech Spec 3.5.2 High Pressure Injection*** • Condition "A" • Required Action: Restore HPI pump to OPERABLE status • Completion Time: 72 hours

This event is complete when 1HP-31 is placed in AUTO, or as directed by the Lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **3** Event No.: **5** Page 1 of 3

Event Description: **PZR Spray Valve (1RC-1) Fails OPEN**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**Booth Cue: Call control room as Secondary Chemist and request position of 1AS-35 (Stm to E Heaters) and steam flow to E heaters. While BOP is at vertical boards, fire Timer 5 to initiate event.** **Plant Response:** • RCS pressure will decrease • 1SA-2/D-3 (RC PRESS HIGH/LOW) **Crew Response:** ***EXAMINER NOTE: The crew may perform Plant Transient Response (PTR)*** Refer to Alarm Response Guide 1SA-2/D-3 (RC PRESS HIGH/LOW) 3.2 Low Alarm 3.2.1 Refer to AP/1/A/1700/044 (Abnormal Pressurizer Pressure Control) **AP/1/A/1700/044** (Abnormal Pressurizer Pressure Control) 3. Immediate Manual Actions 3.1 **IAAT** PORV is open, and RC pressure is < setpoint (2400 psig (HIGH) or 480 psig (LOW)), **THEN** close 1RC-4 3.2 **IAAT** RC pressure <2155 psig, **AND** 1RC-1 indicates open, **THEN** select 1RC-1 to CLOSE ***EXAMINER NOTE: The crew may perform Immediate Manual Action Step 3.3 from memory prior to the SRO entering AP/44.*** 3.3 **IAAT** all the following conditions exist: __ RC pressure < 2155 psig __ RC pressure decreasing without a corresponding decrease in PZR level **THEN** close 1RC-3 ***EXAMINER NOTE: If the block valve (1RC-3) is not closed, the Reactor will trip on variable low pressure and ES actuation will occur*** . ***EXAMINER NOTE: If they fail to close 1RC-3, then closing 1RC-3 will be a critical task.***

This event is complete when 1RC-3 is closed, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**AP/1/A/1700/044 (Abnormal Pressurizer Pressure Control) (continued)** 4.1 Announce AP entry using the PA system 4.2 **GO TO** the applicable step per the following table:

√	**Failure Caused RCS Pressure**	**Step**
	Decrease	**4.3**
	Increase	4.18

4.3 Verify 1RC-4 is closed.

RNO: IF PORV is open, AND 1RC-4 has failed to close....

4.4 Verify 1RC-3 is closed

NOTE
1RC-3 must **NOT** be allowed to be closed for ≥ 36 minutes at a time to avoid a thermal transient in piping between 1RC-3 and the PZR spray nozzle.

4.5 Position 1RC-3 as required to maintain RC pressure within desired band.

4.6 **GO TO** Step 4.13

4.13 Verify PZR heaters maintaining RCS pressure within desired band

4.14 Notify SPOC to repair malfunctioning component

SRO

4.15 Ensure requirements of following are met: (**no TS should apply**)

- TS 3.4.1 (RCS Pressure, Temperature, and Flow DNB Limits)
- TS 3.4.9 (Pressurizer)
- TS 3.4.12 (LTOP System)
- SLC 16.5.1 (RCS Vents)

Examiner note: If unit trips on low RCS pressure, Main FDW pumps will trip and the ATWS will occur.

This event is complete when 1RC-3 is closed, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**AP/1/A/1700/044 (Abnormal Pressurizer Pressure Control) (continued)** 4.16 **WHEN** repairs complete, **THEN** place the following components in desired position for current plant conditions as determined by CR SRO. • **1RC-1** • **1RC-3** • 1RC-4 • PZR heater bank #1 • PZR heater bank #2 • PZR heater bank #3 • PZR heater bank #4 4.17 **WHEN** directed by the CR SRO, **THEN EXIT** this procedure.

This event is complete when 1RC-3 is closed, or as directed by the Lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **3** Event No.: **6** Page 1 of 3

Event Description: **Operating Main FDW Pump trip and ATWS**

Time	Position	Applicant's Actions or Behavior
	OATC	**Plant Response:** An automatic RX trip should have occurred due to the Main Feedwater pump trip **Crew Response:** The SRO will direct the OATC to perform EOP Immediate Manual Actions The SRO will direct the BOP to perform a Symptoms Check EOP Immediate Manual Actions: 3.1 Depress REACTOR TRIP pushbutton. 3.2 Verify reactor power < 5% FP and decreasing. **(Power will not be decreasing)** **RNO: GO TO** Rule 1 (ATWS/Unanticipated Nuclear Power Production)
	OATC	EOP **Rule 1 (CT-24)** 1. Verify any Power Range NI ≥ 5% FP **RNO: IF** in MODE 1 or 2 THEN GO TO Step 2 2. Initiate manual control rod insertion to the IN LIMIT 3. Notify CR SRO to **GO TO** UNPP tab (**see next page**) 4. Open 1HP-24 and 1HP-25 5. Ensure only one of the following operating: • 1A HPI PUMP • 1B HPI PUMP 6. Start 1C HPI PUMP 7. Open 1HP-26 and 1HP-27 (**Note: 1HP-26 will Not OPEN**) **RNO** IF 1HP-26 will NOT open, Then open 1HP-410 8. Dispatch one operator without wearing Arc Flash PPE to open 600V CRD breakers on the following: • 1X9-5C (Unit 1 CRD Norm Fdr Bkr) • 2X1-5B (Unit 1 CRD Alternate Fdr Bkr) ***Booth Cue: When contacted to open CRD breakers, FIRE TIMER 14 to Trip CRD breakers (4 minutes timer)*** 9. Verify only two HPI pumps operating **RNO: IF** all HPI pumps operating, **THEN** perform the following: (**does not apply**) 10. **EXIT** this rule
This event is complete when Control Rods insert, or as directed by the Lead Examiner.		

Event Description: **Operating Main FDW Pump trip and ATWS**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** EOP UNPP tab: 1. Ensure Rule 1 is in progress or complete 2. Verify Main FDW is operating and in AUTO **RNO: IF** MFDW is operating in MAN, **THEN** adjust MFDW flow, as necessary, to control RCS temperature 3. **IAAT** Main FDW is **NOT** operating, **THEN** perform the following: A. Trip the turbine-generator B. Start all available EFDW pumps C. Ensure Rule 3 is in progress or complete **(See Page 20)** 4. **IAAT** all power range Nis are < 5% FP, **THEN** perform Steps 5-6 **RNO: GO TO** Step 7 5. Depress turbine TRIP pushbutton 6. Verify all turbine stop valves closed 7. Verify any wide range NI > 1% FP **RNO: GO TO** Step 16 8. Open 1RC-4 9. Verify1HP-5 open 10. Maximize letdown 11. Verify Main FDW available **RNO: GO TO** Step 13 12. Adjust Main FDW flow as necessary to control RCS temperature 13. Verify overcooling in progress **RNO: GO TO** Step 16 16. Secure makeup to LDST **Examiner Note: Control will drop into the core 4 minutes after the call to de-energize the CRDs.** 17. **WHEN** all Wide Range Nis are ≤ 1% FP, **AND** decreasing, **THEN** continue 18. Control RCS temperature using the following methods: __ Tave ≤ 555°F – Adjust SG pressure as necessary to stabilize RCS temperature using either of the following: • TBVs • Dispatch two operators to perform Encl 5.24 __ Tave > 555°F – Utilize Rule 7 (SG Feed Control) to control SG feed rate as necessary to maintain cooldown rate within Tech Spec limits during the approach to the SG Level Control Point 19. Throttle HPI per Rule 6 (HPI)
This event is complete when Control Rods insert, or as directed by the Lead Examiner.		

Event Description: **Operating Main FDW Pump trip and ATWS**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** 20. **WHEN** RCS pressure < 2300 psig, **THEN** continue 21. Verify PORV closed 22. Adjust letdown flow as desired 23. Verify RCP seal injection available 24. **GO TO** Subsequent Actions tab **EOP Subsequent Actions tab:** 4.1 Verify <u>all</u> control rods in Groups 1-7 fully inserted 4.2 Verify Main FDW in operation 4.3 Verify <u>either</u> of the following: __ Main FDW overfeeding causing excessive temperature decrease __ Main FDW underfeeding causing SG level decrease below setpoint **RNO:** **GO TO** Step 4.5 4.5 **IAAT** Main FDW is operating, **AND** level in <u>any</u> SG is > 96% on the Operating Range, **THEN** perform Steps 4.6 – 4.8 **RNO:** **GO TO** Step 4.9 4.9 **IAAT** TBVs **CANNOT** control SG pressure at desired setpoint, **THEN** manually control pressure in <u>affected</u> SG using <u>either</u> of the following: __ TBVs __ Dispatch two operators to perform Encl 5.24 (Operation of the ADVs) (**PS**) 4.10 Verify 1RIA-40 operable with CSAE OFF-GAS BLOWER operating 4.11 **GO TO** Step 4.14 4.14 Dispatch operator with Encl 5.29 (MSRV Locations) to verify <u>all</u> MSRVs have reseated 4.15 Verify ES is required **RNO:** 1. Initiate Encl 5.5 (Pzr and LDST Level Control) **(Page 31)** 2. **GO TO** Step 4.17

This event is complete when Control Rods insert, or as directed by the Lead Examiner.

Event Description: **Operating Main FDW Pump trip and ATWS**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP/ OATC	**EOP Rule 3** 1. Verify loss of Main FDW/EFDW is due to Turbine Building Flooding **RNO: GO TO** Step 3 3. **IAAT NO** SGs can be fed with FDW (Main/CBP/Emergency) **AND** any of the following exist: • RCS pressure reaches 2300 psig **OR** NDT limit • Pzr level reaches 375" [340" acc] **THEN PERFORM** Rule 4 (Initiation of HPI Forced Cooling) 4. Start operable EFDW pumps, as required, to feed all intact SGs 5. Verify any EFDW pump operating 6. **GO TO** Step 37 37. **IAAT** an EFDW valve **CANNOT** control in AUTO, **OR** manual operation of EFDW valve is desired to control flow/level, **THEN** perform Steps 38-42 **RNO: GO TO** Step 43 43. Verify any SCM ≤ 0°F **RNO: IF** overcooling, **OR** exceeding limits in Rule 7 (SG Geed Control), **THEN** throttle EFDW, as necessary 44. **IAAT** Unit 1 EFDW is in operation, **THEN** initiate Encl 5.9 (Extended EFDW Operation) **(page 25)** 45. **WHEN** directed by CR SRO, **THEN EXIT** this rule **Examiner note: HPI should be throttled per Rule 6 (HPI) before the Pzr is solid. If not a CT will be created.**
This event is complete when Control Rods insert, or as directed by the Lead Examiner.		

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**Examiners note: This event will begin when Control Rods insert.** **Plant Response** • Reactor will trip (if not already tripped) • MFBs will de-energize • CT-1 Lockout • KHU-2 Emergency Lockout (Aligned to underground) **Crew Response:** SRO directs OATC to perform Immediate Manual Actions (IMAs): • Depress REACTOR TRIP pushbutton • Verify Reactor Power < 5% FP and decreasing • Depress turbine TRIP pushbutton • Verify <u>all</u> turbine stop valves closed • Verify RCP seal injection available ***EXAMINER NOTE: The OATC should determine that RCP Seal Injection and CC are not available and inform the SRO to initiate AP/25. The SRO will then direct an RO to initiate AP/25. When the RO attempts to leave the Control Room, inform him/her that a Unit 2 RO will perform AP/25 actions at the SSF.***

	SRO/BOP	SRO directs BOP to perform Symptoms Check:
		• Power Range NIs < 5% and/or decreasing
		• Any SCM ≤ 0°F
		• Loss of Main and Emergency FDW (including unsuccessful manual initiation of EFDW)
		• Uncontrolled Main Steam Line(s) pressure decrease
		• Steam Generator Tube Rupture
		  ○ CSAE Offgas alarms
		  ○ Process Monitor alarms (RIA-40)
		  ○ Area monitor alarms (RIA-16/17)

This event is complete once the SRO transitions back to Subsequent Actions, or as directed by the Lead Examiner.		

Time	Position	Applicant's Actions or Behavior
		Crew Response: SRO will transfer to Subsequent Actions Tab of the EOP after documenting IMAs and will refer to the Parallel Actions Page which will require a transfer to the Blackout Tab due to ALL 4160V switchgear being de-energized. **Blackout Tab**
	SRO/OATC/ BOP	**EOP Parallel Actions** • IF SSF available, THEN initiate AP/25 (SSF EOP) • Announce plant conditions using PA system. • Notify OSM to reference the Emergency Plan and NSD 202 (Reportability).
	SRO/BOP	1. Ensure Rule 3 (Loss of Main or Emergency FDW) is in progress or complete. **(page 24)** 2. Verify <u>two</u> ROs available to perform Control Room actions
	SRO/OATC	**<u>NOTE:</u>** During performance of Encl 5.38 (Restoration of Power), progression through the Blackout Tab should continue.
		3. Notify <u>one</u> RO to perform Encl 5.38 (Restoration of Power) **(see page 26)** 4. Verify both: • Any SG being fed • SSF is available 5. Verify <u>any</u> MD EFDWP operating using diverse indication. **RNO:** Position to OFF: • 1A MD EFDWP • 1B MD EFDWP 6. Verify either: • Blackout occurred during Mode 3 and <540 degrees F • Blackout occurred while in mode 4 with SGs removing decay heat. **RNO:** 1. **IF** SSF is **NOT** available **THEN GO TO** Step 7 2. Feed and steam available SGs as necessary to stabilize RCS P/T in bands prescribed by Rule 7 (SG Feed Control) 3. **GO TO** step 8.

This event is complete once the SRO transitions back to Subsequent Actions, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**Blackout Tab (continued)** **NOTE:** Feeding SGs with EFDW is desired over HPI Forced cooling. Step 8 should be performed prior to re-performing Rule 3. 100 gpm could cause overcooling if decay heat levels do NOT exist. 8. **IAAT NO** SGs are being fed, **AND** any source of EFDW (Unit 1 or another unit) becomes available, **THEN** perform steps 9 – 11. **RNO: GO TO** step 12 12. **IAAT** EFDW from any source is insufficient to maintain stable RCS P/T, **THEN** notify SSF operator that feeding SGs with SSF ASW is required. 13. **IAAT** power is restored to any of the following: __ 1TC __ 1TD __ 1TE **THEN GO TO** Step 14 **RNO: GO TO** Step 19 19. Verify Encl 5.38 (Restoration of Power) in progress or complete ***EXAMINER NOTE: When power is restored using Encl 5.38, return to Blackout Tab here.*** 13. **IAAT** power is restored to any of the following: • 1TC • 1TD • 1TE **THEN GO TO** Step 14 14. Ensure Step 8 dispositioned appropriately. 15. Verify SSF activated. **RNO: GO TO** Step 17 **NOTE** AP/11 (Recovery From Loss of Power) will transition seal injection from SSF to HPI. 16. Communicate status of SG feed and seal injection to SSF operator using x-2766, radio, or plant page. 17. Initiate AP/11 (Recovery from Loss of Power) **(see page 28)** 18. **GO TO** Subsequence Actions Tab.

This event is complete once the SRO transitions back to Subsequent Actions, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/BOP/ OATC	**EOP Rule 3** 1. Verify loss of Main FDW/EFDW is due to Turbine Building Flooding **RNO: GO TO** Step 3 3. **IAAT NO** SGs can be fed with FDW (Main/CBP/Emergency) **AND** any of the following exist: • RCS pressure reaches 2300 psig **OR** NDT limit • Pzr level reaches 375" [340" acc] **THEN PERFORM** Rule 4 (Initiation of HPI Forced Cooling) 4. Start operable EFDW pumps, as required, to feed all intact SGs 5. Verify any EFDW pump operating 6. **GO TO** Step 37 37. **IAAT** an EFDW valve **CANNOT** control in AUTO, **OR** manual operation of EFDW valve is desired to control flow/level, **THEN** perform Steps 38-42 **RNO: GO TO** Step 43 43. Verify any SCM ≤ 0°F **RNO: IF** overcooling, **OR** exceeding limits in Rule 7 (SG Feed Control), **THEN** throttle EFDW, as necessary 44. **IAAT** Unit 1 EFDW is in operation, **THEN** initiate Encl 5.9 (Extended EFDW Operation) **(see next page)** 45. **WHEN** directed by CR SRO, **THEN EXIT** this rule

This event is complete once the SRO transitions back to Subsequent Actions, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/BOP/ OATC	**Encl 5.9 (Extended EFDW Operation) as directed by Rule 3** 1. Monitor EFDW parameters on EFW graphic display. 2. **IAAT** UST level is < 4', **THEN GO TO** Step 120 3. **IAAT** feeding both SGs with one MD EFDWP is desired, **THEN** perform Steps 4-7 **RNO: GO TO** Step 8 8. Perform the following as required to maintain UST level > 7.5': • Makeup with demin water. • Place CST pumps in AUTO. 9. **IAAT** all the following exist: • Rapid cooldown **NOT** in progress • MD EFDWP operating for each available SG • EFDW flow in each header < 600 gpm **THEN** place 1 TD EFDW PUMP switch in PULL TO LOCK. 10. Verify 1 TD EFDW PUMP operating. 11. Start TD EFDWP BEARING OIL COOLING PUMP. **NOTE** • Loss of the condensate system for ≥ 25 minutes results in cooling down to LPI using the ADVs. If **NO** HWPs are operating, continuing this enclosure to restore the condensate system is a priority unless the CR SRO deems EOP activities higher priority. The 25 minute criterion is satisfied when a HWP is started and 1C-10 is 10% open. • If the condensate system is operating, the remaining guidance establishes FDW recirc, monitors and maintains UST, and transfers EFDW suction to the hotwell if required. 12. Notify CR SRO to set priority based on the NOTE above and EOP activities.

This event is complete once the SRO transitions back to Subsequent Actions, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/BOP/ OATC	**EOP Enclosure 5.38** (Restoration of Power) 1. Verify power has been restored **RNO**: **GO TO** Step 3 3. Place 1 HP-31 in HAND and reduce demand to 0 4. Close 1HP-21 5. Verify any of the following energized: __ MFB1 __ MFB2 **RNO**: **GO TO** Step 8 8. Verify CT-1 indicates ≈ 4160 volts **RNO: GO TO** Step 18 18. Verify both Standby Bus #1 and Standby Bus #2 are de-energized 19. Verify both Keowee units operating **RNO:** 1. Emergency Start Keowee units: __ KEOWEE EMER START CHANNEL A __ KEOWEE EMER START CHANNEL B 2. **IF NO** Keowee units are operating, **THEN GO TO** Step 36 20. Verify both Keowee units in Oconee Control (statalarms on): • UNIT 1 OCONEE CONTROL (2SA-17/E-1) • UNIT 2 OCONEE CONTROL (2SA-18/E-1). **RNO:** Notify Keowee Operator to place <u>both</u> Keowee units Master Transfer switches to remote

This event is complete once the SRO transitions back to Subsequent Actions, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/BOP/ OATC	**EOP Enclosure 5.38 (continued)** 21. Verify both Keowee units operating. **RNO:** **1. IF** UNIT 1 EMER FDR ACB 3 is closed, **AND** Unit 1 Keowee is **NOT** operating, **THEN** open UNIT 1 EMER FDR ACB 3. **2. IF** UNIT 2 EMER FDR ACB 4 is closed, **AND** Unit 2 Keowee is **NOT** operating, **THEN** open UNIT 2 EMER FDR ACB 4. ***EXAMINER NOTE: When power is restored to 1TC, 1TD, or 1TE, IAAT Step 13 (B/O Tab) will apply. Return to the Blackout Tab on page 22 for further actions.*** 22. Ensure one of the following is closed for an operating Keowee unit: • UNIT 1 EMER FDR ACB 3 **(CT-8)** **Examiner note: Will fail CT if power not restored when Encl. 5.38 is complete.** 23. Verify 4160 volt power has been restored to the MFB. 24. **GO TO** Step 35. 35. Verify any of the following energized: • 1TC • 1TD • 1TE 35. Notify Unit 1 CR SRO of status of 4160V SWGR. 36. EXIT this enclosure

This event is complete once the SRO transitions back to Subsequent Actions, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/BOP/ OATC	**AP/11 (Recovery From Loss of Power)** 4.1 Announce AP entry using OMP 1-18 placard. 4.2 **IAAT all** exist: • 1KI energized • Pzr level > 80 ″ □[180 ″ □acc], • Pzr heaters are desired, **THEN** position Pzr heaters to AUTO. 4.3 Verify load shed of inverters was performed per Unit 1 EOP Encl (Load Shed of Inverters During SBO). **RNO: GO TO** Step 4.9 4.9 Verify load shed has initiated as indicated by either of the following statalarms on: __ 1SA-15/D-4 (EL LOAD SHED CHNL A LOGIC INITIATE) __ 1SA-14/D-4 (EL LOAD SHED CHNL B LOGIC INITIATE) 4.10 Verify load shed is complete as indicated by LOAD SHED COMPLETE on any ES Module (Channel 1 or 2). 4.11 Close the following breakers: __ 1TC INCOMING FDR BUS 1 __ 1TC INCOMING FDR BUS 2 __ 1TD INCOMING FDR BUS 1 __ 1TD INCOMING FDR BUS 2 __ 1TE INCOMING FDR BUS 1 __ 1TE INCOMING FDR BUS 2 4.12 Verify 1SA-15/E-6 (EL SWYD ISOLATION CONFIRMED CHNL A LOGIC) is OFF. **RNO: GO TO** Step 4.15 4.15 Verify any Oconee unit receiving power from its normal source (1T, 2T, 3T). 4.16 Place transfer switches in MAN for all Oconee units receiving power from the normal source (1T, 2T, 3T): • MFB1 AUTO/MAN • MFB2 AUTO/MAN • TA AUTO/MAN • TB AUTO/MAN

This event is complete once the SRO transitions back to Subsequent Actions, or as directed by the Lead Examiner.

Time	Position	Applicant's Actions or Behavior
	SRO/BOP/ OATC	**AP/11 (Continued)** 4.17 Verify load shed was initiated as indicated by either of the following statalarms on: • 1SA-15/D-4 (EL LOAD SHED CHNL A LOGIC INITIATE) • 1SA-14/D-4 (EL LOAD SHED CHNL B LOGIC INITIATE) 4.18 Verify ES has occurred. **RNO: GO TO** Step 20 4.20 SimultaAOusly press RESET on both of the following pushbuttons to reset Main Feeder Bus Monitor Panel Load Shed Circuitry: • MFB UNDERVOLTAGE CHANNEL 1 RESET • MFB UNDERVOLTAGE CHANNEL 2 RESET 4.21 Verify load shed signal reset as indicated by both of the following statalarms off: • 1SA-15/D-4 (EL LOAD SHED CHNL A LOGIC INITIATE) • 1SA-14/D-4 (EL LOAD SHED CHNL B LOGIC INITIATE) 4.22 **IAAT** electrical loads are added, **AND** any MFB is energized by: • CT-4 • CT-5 • Backcharged 1T **THEN** ensure transformer within limits of the applicable enclosure. 4.23 Verify power is being supplied to U1 Main Feeder Bus through CT-4 underground path. 4.24 Place all CBP control switches to OFF. 4.25 **GO TO** Step 4.214

This event is complete once the SRO transitions back to Subsequent Actions, or as directed by the Lead Examiner.

Op-Test No.: **ILT44** Scenario No.: **3** Event No.: **8** Page 1 of 1

Event Description: **TDEFWP trips**

Time	Position	Applicant's Actions or Behavior
		Examiners Note: Once power is restored to the MFB's, the TDEFWP will fail. This will prompt the SRO to direct an RO to re-perform Rule 3 to start the MDEFWP's since the switches for them were placed in OFF during the Blackout.
	ALL	**EOP Rule 3** 1. Verify loss of Main FDW/EFDW is due to Turbine Building Flooding **RNO: GO TO** Step 3 3. **IAAT NO** SGs can be fed with FDW (Main/CBP/Emergency) **AND** any of the following exist: • RCS pressure reaches 2300 psig **OR** NDT limit • Pzr level reaches 375" [340" acc] **THEN PERFORM** Rule 4 (Initiation of HPI Forced Cooling) 4. Start operable EFDW pumps, as required, to feed all intact SGs 5. Verify any EFDW pump operating 6. **GO TO** Step 37 37. **IAAT** an EFDW valve **CANNOT** control in AUTO, **OR** manual operation of EFDW valve is desired to control flow/level, **THEN** perform Steps 38-42 **RNO: GO TO** Step 43 43. Verify any SCM ≤ 0°F **RNO: IF** overcooling, **OR** exceeding limits in Rule 7 (SG Geed Control), **THEN** throttle EFDW, as necessary 44. **IAAT** Unit 1 EFDW is in operation, **THEN** initiate Encl 5.9 (Extended EFDW Operation) **(page 25)** 45. **WHEN** directed by CR SRO, **THEN EXIT** this rule

This event is complete when the MD EFDW pumps have been restarted, or as directed by the Lead Examiner.

EXAMINER NOTE

At any time during this scenario the operator may choose to use Enclosure 5.5 to maintain RCS inventory control. See below.

ENCLOSURE 5.5

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
NOTE Maintaining Pzr level >100″ [180″ acc] will ensure Pzr heater bundles remain covered.	
1. Utilize the following as necessary to maintain desired Pzr level: • 1A HPI Pump • 1B HPI Pump • 1HP-26 • 1HP-7 • 1HP-120 setpoint or valve demand • 1HP-5	__ **IF** 1HP-26 will **NOT** open, **THEN** throttle 1HP-410 to maintain desired Pzr level.
2. **IAAT** makeup to the LDST is desired, **THEN** makeup from 1A BHUT.	
3. **IAAT** it is desired to secure makeup to LDST, **THEN** secure makeup from 1A BHUT.	
4. **IAAT** it is desired to bleed letdown flow to 1A BHUT, **THEN** perform the following: A. Open: __ 1CS-26 __ 1CS-41 B. Position 1HP-14 to BLEED. C. Notify SRO.	
5. **IAAT** letdown bleed is **NO** longer desired, **THEN** position 1HP-14 to NORMAL.	

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6. **IAAT** 1C HPI PUMP is required, **THEN** perform Steps 7 - 9.	__ **GO TO** Step 10.
7. Open: • 1HP-24 • 1HP-25	1. __ **IF** both BWST suction valves (1HP-24 and 1HP-25) are closed, **THEN** perform the following: A. __ Start 1A LPI PUMP. B. __ Start 1B LPI PUMP. C. Open: __ 1LP-15 __ 1LP-16 __ 1LP-9 __ 1LP-10 __ 1LP-6 __ 1LP-7 D. __ **IF** two LPI Pumps are running only to provide HPI pump suction, **THEN** secure one LPI pump. E. __ Dispatch an operator to open 1HP-363 (Letdown Line To LPI Pump Suction Block) (A-1-119, U1 LPI Hatch Rm, N end). F. __ **GO TO** Step 8. 2. __ **IF** only one BWST suction valve (1HP-24 or 1HP-25) is open, **THEN** perform the following: A. __ **IF** three HPI pumps are operating, **THEN** secure 1B HPI PUMP. B. __ **IF** < 2 HPI pumps are operating, **THEN** start HPI pumps to obtain two HPI pump operation, preferably in opposite headers. C. __ **GO TO** Step 9.

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8. Start 1C HPI PUMP.	__ **IF** at least two HPI pumps are operating, **THEN** throttle 1HP-409 to maintain desired Pzr level.
9. Throttle the following as required to maintain desired Pzr level: • 1HP-26 • 1HP-27	1. __ **IF** at least two HPI pumps are operating, **AND** 1HP-26 will **NOT** open, **THEN** throttle 1HP-410 to maintain desired Pzr level. 2. __ **IF** 1A HPI PUMP and 1B HPI PUMP are operating, **AND** 1HP-27 will **NOT** open, **THEN** throttle 1HP-409 to maintain desired Pzr level.

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10. **IAAT** LDST level **CANNOT** be maintained, **THEN** perform Step 11.	__ **GO TO** Step 12.
11. Perform the following: • Open 1HP-24. • Open 1HP-25. • Close 1HP-16.	1. __ **IF** both BWST suction valves (1HP-24 and 1HP-25) are closed, **THEN** perform the following: A. __ Start 1A LPI PUMP. B. __ Start 1B LPI PUMP. C. Open: __ 1LP-15 __ 1LP-16 __ 1LP-9 __ 1LP-10 __ 1LP-6 __ 1LP-7 D. __ **IF** two LPI Pumps are running only to provide HPI pump suction, **THEN** secure one LPI pump. E. __ Dispatch an operator to open 1HP-363 (Letdown Line To LPI Pump Suction Block) (A-1-119, U1 LPI Hatch Rm, N end). F. __ **GO TO** Step 12. 2. __ **IF** only one BWST suction valve (1HP-24 or 1HP-25) is open, **AND** three HPI pumps are operating, **THEN** secure 1B HPI PUMP.

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE		RESPONSE NOT OBTAINED
12.	**IAAT** additional makeup flow to LDST is desired, **AND** 1A BLEED TRANSFER PUMP is operating, **THEN** dispatch an operator to close 1CS-48 (1A BHUT Recirc) (A-1-107, Unit 1 RC Bleed Transfer Pump Rm.).	
13.	**IAAT** <u>two</u> Letdown Filters are desired, **THEN** perform the following: • Open 1HP-17. • Open 1HP-18	
14.	**IAAT** <u>all</u> of the following exist: • Letdown isolated • LPSW available • Letdown restoration desired **THEN** perform Steps 15 - 33. {41}	__ **GO TO** Step 34.
15.	Open: • 1CC-7 • 1CC-8	1. __ Notify CR SRO that letdown **CANNOT** be restored due to inability to restart the CC system. 2. __ **GO TO** Step 34.
16.	Ensure only one CC pump running.	
17.	Place the non-running CC pump in AUTO.	
18.	Verify <u>both</u> are open: • 1HP-1 • 1HP-2	1. __ **IF** 1HP-1 is closed due to 1HP-3 failing to close, **THEN GO TO** Step 20. 2. __ **IF** 1HP-2 is closed due to 1HP-4 failing to close, **THEN GO TO** Step 20.
19.	**GO TO** Step 22.	

<u>NOTE</u>
Verification of leakage requires visual observation of East Penetration Room.

20.	Verify letdown line leak in East Penetration Room has occurred.	__ **GO TO** Step 22.
21.	**GO TO** Step 34.	

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE		RESPONSE NOT OBTAINED
22.	Monitor for unexpected conditions while restoring letdown.	
23.	Verify <u>both</u> letdown coolers to be placed in service.	1. __ **IF** 1A letdown cooler is to be placed in service, **THEN** open: __1HP-1 __1HP-3 2. __ **IF** 1B letdown cooler is to be placed in service, **THEN** open: __1HP-2 __1HP-4 3. __ **GO TO** Step 25.
24.	Open: • 1HP-1 • 1HP-2 • 1HP-3 • 1HP-4	
25.	Verify <u>at least one</u> letdown cooler is aligned.	Perform the following: A. __ Notify CR SRO of problem. B. __ **GO TO** Step 34.
26.	Close 1HP-6.	
27.	Close 1HP-7.	
28.	Verify letdown temperature < 125°F.	1. __ Open 1HP-13. 2. Close: __1HP-8 __1HP-9&11 3. __ **IF** <u>any</u> deborating IX is in service, **THEN** perform the following: A. __Select 1HP-14 to NORMAL. B. __Close 1HP-16. 4. __ Select LETDOWN HI TEMP INTLK BYP switch to BYPASS.

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE		RESPONSE NOT OBTAINED
29.	Open 1HP-5.	
30.	Adjust 1HP-7 for ≈ 20 gpm letdown.	
31.	**WHEN** letdown temperature is < 125°F, **THEN** place LETDOWN HI TEMP INTLK BYP switch to NORMAL.	
32.	Open 1HP-6.	
33.	Adjust 1HP-7 to control desired letdown flow.	

NOTE

AP/32 (Loss of Letdown) provides direction to cool down the RCS to offset increasing pressurizer level.

34.	**IAAT** it is determined that letdown is unavailable due to equipment failures or letdown system leakage, **THEN** notify CR SRO to initiate AP/32 (Loss of Letdown).	
35.	**IAAT** > 1 HPI pump is operating, **AND** additional HPI pumps are **NO** longer needed, **THEN** perform the following: A. Obtain SRO concurrence to reduce running HPI pumps. B. Secure the desired HPI pumps. C. Place secured HPI pump switch in AUTO, if desired.	
36.	**IAAT** all the following conditions exist: • Makeup from BWST **NOT** required • LDST level > 55″ • All control rods inserted • Cooldown Plateau **NOT** being used **THEN** close: • 1HP-24 • 1HP-25	

ENCLOSURE 5.5 (cont.)

ACTION/EXPECTED RESPONSE		RESPONSE NOT OBTAINED
37.	Verify 1CS-48 (1A BHUT Recirc) has been closed to provide additional makeup flow to LDST.	__ **GO TO** Step 39.
38.	**WHEN** 1CS-48 (1A BHUT Recirc) is **NO** longer needed to provide additional makeup flow to LDST, **THEN** perform the following: A. Stop 1A BLEED TRANSFER PUMP. B. Locally position 1CS-48 (1A BHUT Recirc) one turn open (A-1-107, Unit 1 RC Bleed Transfer Pump Rm.). C. Close 1CS-46. D. Start 1A BLEED TRANSFER PUMP. E. Locally throttle 1CS-48 (1A BHUT Recirc) to obtain 90 - 110 psig discharge pressure. F. Stop 1A BLEED TRANSFER PUMP.	
39.	Verify two Letdown Filters in service, **AND** only one Letdown filter is desired.	__ **GO TO** Step 41.
40.	Perform one of the following: • Place 1HP-17 switch to CLOSE. • Place 1HP-18 switch to CLOSE.	
41.	**WHEN** directed by CR SRO, **THEN EXIT** this enclosure.	

• • • END •

1. Limits And Precautions

1.1 Unit 1 shall be operated within Guidelines For Operation of SOMP 01-02 (Reactivity Management). (R.M.)

1.2 Intentional positive Reactivity additions will be made by only one method at a time. (R.M.)

1.3 For unexplained/undesired Rx power or Reactivity changes, Rx power increases shall be stopped and Reactivity change evaluated by SRO. {27} (R.M.)

1.4 SRO shall evaluate all Reactivity Management decisions. {27} (R.M.)

1.5 During Unit heatup and evolutions having potential to affect Reactivity, increased monitoring of Source Range NIs shall be conducted. (R.M.)

1.6 Unit shall be maintained within guidelines of COLR (Core Operating Limits Report) for the following: (R.M.)

- Axial Power Imbalance
- Quadrant Power Tilt
- CRD Position Limits

1.7 When **NOT** changing Rx power, RATE SET shall be set to 0.0 to prevent unanticipated Rx power change rates if ICS goes into Track. (R.M.)

1.8 NI calibration shall **NOT** be performed between 17% and 20% Core Thermal Power (CTP). This is due to increased vulnerabilities and magnitude of power change when transitioning from Low Level Limits to ICS flow control. {74} (R.M.)

1.9 NIs calibrations shall be performed per guidance in OP/1/A/1102/004 (Operation At Power). (R.M.)

2. Initial Conditions

_____ 2.1 Verify REACTOR MASTER in "AUTO".

_____ 2.2 Verify DIAMOND in "AUTO".

_____ 2.3 **IF** expected power change < 1%, ensure R2 reactivity management controls established in Control Room for power change per SOMP 01-02 (Reactivity Management). (R.M.) {105}

_____ 2.4 **IF** expected power change ≥ 1%, ensure R1 reactivity management controls established in Control Room for power change per SOMP 01-02 (Reactivity Management). (R.M.) {105}

3. Procedure (R.M.) {67}

_____ 3.1 **WHILE** enclosure is in progress, monitor the following indications: {105}

- Appropriate ranged NIs
- Neutron error
- FDW Flow (curve for "Expected Feedwater Flow Per Header Vs Reactor Power" is in OP/0/A/1108/001)

_____ 3.2 **IF AT ANY TIME** hold in power is desired, ensure "HOLD" selected. {61}

_____ 3.3 **IF AT ANY TIME** hold in power **NOT** required, ensure "HOLD" is **NOT** selected. {61}

3.4 **IF** change in power/rate is desired, perform the following:

3.4.1 Review the following regarding current power change:

- _____ Appropriate controlling enclosure of this procedure
- _____ PT/0/A/1103/020 (Power Maneuvering Guidelines)
- _____ **IF** in progress, PT/0/A/0811/001 (Power Escalation Test)
- _____ **IF** available, Maneuvering Plan
- _____ Core Operating Limits Report for CRD Groups 5-8 position limits, Core Power Imbalance limits, and Quadrant Power Tilt limits,

_____ 3.4.2 Ensure "HOLD" is selected. {61}

_____ 3.4.3 Ensure selected "%/MIN" or "%/HR" on "RATE SET" pushbutton.

_____ 3.4.4 Ensure desired rate selected on "RATE SET" thumbwheels.

_____ _____ 3.4.5 Ensure rate selected is within above limits.
SRO

_____ 3.4.6 Insert desired CTPD SET using "INCREASE/DECREASE" pushbuttons.

_____ _____ 3.4.7 Ensure CTPD SET is within above limits.
SRO

_____ 3.4.8 Ensure "HOLD" is **NOT** selected. {61}

_____ 3.4.9 **WHEN** desired CTP is achieved, select 0.0 on RATE SET thumbwheels.

CRITICAL TASKS

1. 1 CT, If 1RC-3 is not close it will become a CT. (**Page 14**)

2. CT-24, Shutdown reactor **(Page 17)**

3. CT-8, Restore Power from CT-4 Standby BUS 1 or 2 Feeder (**Page 27**)

SAFETY: Take a Minute

UNIT 0 (OSM)			
SSF Operable: No	KHU's Operable: U1 - OH, U2 - UG	LCTs Operable: 2	Fuel Handling: No

UNIT STATUS (CR SRO)

Unit 1 Simulator	Other Units	
Mode: 2	**Unit 2**	**Unit 3**
Reactor Power: 0.02%	Mode: 1	Mode: 1
Gross MWE: N/A	100% Power	100% Power
RCS Leakage: 0.024 gpm	EFDW Backup: Yes	EFDW Backup: Yes
RBNS Rate: 0.01 gpm		

Technical Specifications/SLC Items (CR SRO)

Component/Train	OOS Date/Time	Restoration Required Date/Time	TS/SLC #
SSF	Yesterday 0000	6 Days	TS 3.10.1 A B C D E

Shift Turnover Items (CR SRO)

Primary

- Tave = 536°F

- Startup procedure at step 3.36 (OP/1/A/1102/001, Enclosure 4.7)
- Increase Reactor power to 6 -7%
- Stop at step 3.44 and wait for a maneuvering plan from reactor engineering
- Unit 2 CRS has oversight during the power increase

Secondary

- 1SSH-1, 1SSH-3, 1SD-2, 1SD-5, 1SD-140, 1SD-303, 1SD-355, 1SD-356 and 1SD-358 are closed with power supply breakers open per the Startup Procedure for SSF Overcooling Event.

- 1AS-35 throttled per Secondary Chemist to provide steam to E heaters for secondary O2 removal.

Reactivity Management (CR SRO)

RCS Boron = 1680 ppmb	Rod position Gp 7 5% WD	R1 Reactivity management controls established in the Control Room per SOMP 01-02

Human Performance Emphasis (OSM)

Procedure Use and Adherence