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

Examiners: _____ Operators: _____ **SRO**

_____ _____ **OATC**

_____ _____ **BOP**

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

Turnover:
- AMSAC/DSS bypassed for I&E testing
- SASS in Manual for I&E testing
- KHU-1 is aligned to the underground path
- Perform 5 Minute Delithiation Using Deborating IX

Event No.	Malfunction No.	Event Type*	Event Description
0a	Pre-Insert		AMSAC/DSS Bypassed
0b	Pre-Insert		SASS in Manual
0c	Pre-Insert Updater		"A" AFIS Circuit Disabled "B" AFIS Circuit Disabled
0d	Pre-Insert Updater		ES Channels 7 and 8 Fail To Actuate
1		N: OATC, SRO	5 Minute Delithiation Using Deborating IX (OP/1103/04C) Enclosure 4.4
2	Override	C, BOP, SRO	1A HPI Pump trips and standby HPI pump fails to start (TS)
3	MSS450 10-45%	C: BOP, SRO (TS)	Seismic Event With 1A RBCU Rupture
4	MCS004	I: OATC, SRO	Controlling T_{ave} Fails HIGH
5		C: BOP, SRO	1D1 HDP Low Oil Level
6	MCR022	C: OATC, SRO (TS)	Dropped Control Rod, Manual Power Reduction
7	MSS360 Override	M: ALL	1A MSLB In Containment
8	MSS270		1B MDEFDW Pump Trips

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

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

Event Description: **5 Minute Delith Using Deborating IX (OP/1/A/1103/004 C) (N: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
		Crew Response:
	SRO	Direct OATC to perform OP/1/A/1103/004 C Enclosure 4.4 to place Unit 1 Deborating IX in service for a 5 minute Delith beginning at Step 2.8.
	OATC	OATC, uses the above procedure Enclosure 4.4 to place Unit 1 Deborating IX in service for a 5 minute Delith.
		Procedure
		2.8 While placing Unit 1 Deborating IX in service, monitor the following: □ Appropriate ranged NIs □ Primary tank levels □ Neutron error □ CRD position □ IX run-time for proper chemistry control
		2.9 Align Unit 1 Deborating IX for service: __ 2.9.1 Verify closed 1CS-32 & 37 (SPARE DEBOR IX INLET & OUTLET) __ 2.9.2 Ensure closed 1CS-26 (LETDOWN TO RC BHUT) __ 2.9.3 Open 1CS-27 (DEBOR IX INLET) __ 2.9.4 Verify 1HP-15 Controller in "MANUAL" __ 2.9.5 Ensure open 1HP-16 (LDST MAKEUP ISOLATION)
		2.10 Position 1HP-14 (LDST BYPASS) in "BLEED" to place Unit 1 Deborating IX in service
		NOTE: • Chemistry procedures require a minimum of 15 minutes flush for Deborating IXs (R.M.) • Steps 2.11, 2.12, 2.13, and 2.14 nay be performed in any order
		2.11 **IF** sample is desired **AND** Unit 1 Deborating IX will be in service for > 20 minutes, notify Chemist to begin flush for sample of Unit 1 Deborating IX effluent. (R.M.)

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

Event Description: **5 Minute Delith Using Deborating IX (OP/1/A/1103/004 C) (N: OATC, SRO)**

	SRO/OATC	**Crew Response:** 2.12 **IF** unexpected changes are noted, perform the following: (R.M.) • Continue enclosure to remove Unit 1 Deborating IX from service • Notify CR SRO for evaluation 2.13 **IF AT ANY TIME** RCS makeup is required for RCS volume control, perform Section 3 (RCS Makeup With Unit 1 Deborating IX In Service) 2.14 **IF AT ANY TIME** desired to reduce inventory, reduce RCS inventory (Bleed): __ 2.14.1 Open 1CS-26 (LETDOWN TO RC BHUT) __ 2.14.2 **WHEN** complete, close 1CS-26 (LETDOWN TO RC BHUT) 2.15 **IF** sample is desired **AND** Unit 1 Deborating IX has been in service for > 20 minutes, prior to completing run time ensure Chemist has sampled Unit 1 Deborating IX effluent (R.M.) 2.16 **WHEN** run time is complete, perform the following: __ 2.16.1 Position 1HP-14 (LDST BYPASS) to "NORMAL" __ 2.16.2 Ensure closed 1HP-16 (LDST MAKEUP ISOLATION) __ 2.16.3 Perform **one** of the following: (R.M.) • Verify correct IX run time per Step 2.7 • Notify Chemistry for evaluation __ 2.16.4 Reset 1HP-15 Controller for Normal Operation __ 2.16.5 Close 1CS-27 (DEBOR IX INLET) __ 2.16.6 Open 1CS-26 (LETDOWN TO RC BHUT) 2.17 Record IX use in Auto Log
		This event is complete when the crew reaches Step 2.17, or as directed by the Lead Evaluator.

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

Event Description: **"1A" HPI Pump trips and the standby HPI pump fails to auto start: (C; BOP, SRO) TS**

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	**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 = ~15 amps PZR level will begin to decrease and LDST level will begin to increase. **Crew response:** Refer to ARGs: Refer to AP/14 <u>AP/1/A/1700/014, Loss of Normal HPI Makeup and/or RCP Seal Injection</u> 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 **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 (Letdown Isolation) 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.

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

Event Description: **"1A" HPI Pump trips and the standby HPI pump fails to auto start: (C; BOP, SRO) TS**

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	4.111 Place 1HP-31 in HAND 4.112 Slowly open 1HP-31 in small increments until ≈ 8 gpm/RCP is achieved. 4.113 Re-establish normal makeup through 1HP120. 4.115 Reduce 1HP-7 demand to 0%. 4.116 Close 1HP-6 4.117 Open the following: ➢ 1HP-1 (1A Letdown Cooler Inlet) ➢ 1HP-2 (1B Letdown Cooler Outlet) ➢ 1HP-3 (1A Letdown Cooler Inlet) ➢ 1HP-4 (1B Letdown Cooler Outlet **Simulator operator:** Crew may secure the 1A HPIP and direct NEO to open & rack out the 1A HPIP breaker. (Use Quick Strike to open breaker and 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 Refer to Tech Spec 3.5.2 High Pressure Injection • Condition "A" • Required Action: Restore HPI pump to OPERABLE status • Completion Time: 72 hours **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.** **Note: Crew may make a batch addition to the LDST. See attached Encl. 4.4 of OP/1/A/1103/004.** **Note: Crew may enter AP/16 (Abnormal RCP Operation) as a result of high seal return temperatures. Steps are on the next page.**

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

Event Description: **"1A" HPI Pump trips and the standby HPI pump fails to auto start: (C; BOP, SRO) TS**

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	**AP/16 (Abnormal RCP Operation)** 4.1 **IAAT** any RCP meets immediate trip criteria… (does not) GO TO Step 4.12 4.12 **IAAT** all of the following apply: • Rx Power > 70% • Any RCP approaching immediate trip criteria of Encl 5.1 (RCP Immediate Trip Criteria) or it is desired to secure a RCP **THEN** perform the following: • Initiate Encl 5.2 (Rapid Power Reduction). • **WHEN** Rx Power is < 70%, **THEN GO TO** Step 4.2. 4.13 Announce AP entry using the PA system. 4.14 Notify OSM to request evaluation by RCP Component Engineer. 4.15 **AT** the failure is identified, **THEN GO TO** the applicable section per the following table: **4D Loss of Seal Return** 1. **IAAT** any RCP meets immediate trip criteria… (does not) GO TO Step 4.12 12. Monitor RCP parameters for operational abnormalities. 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. 16. Verify RCP seal return low flow alarms off. 16 RNO Request that RCP Component Engineer provide the following: • Immediate evaluation • Additional monitoring requirements ***Cue: If candidate attempts to monitor the Loose part Monitor, indicate that the noise is normal.***
		This event is complete when 1HP-31 is placed in AUTO, or as directed by the Lead Evaluator.

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

Event Description: **Seismic Event With 1A RBCU Rupture (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	***Booth Cue:*** ***After 1HP-31 is placed in AUTO and at the direction of the Lead Evaluator, call the Control Room (4911) as a security guard and state "We have felt a tremor and have observed no plant damage".*** **Plant Response:** • 1SA-9/B-9 (LPSW RBCU A Cooler Rupture) • Reactor Building Normal Sump level will increase **Crew Response:** 3. The BOP should refer to **ARG for 1SA-9/B-9** 3.1 Verify alarm is valid by checking RBCU 1A Inlet Flow and RBCU 1A Δ Flow. 3.2 Verify 1LPSW-18 (RBCU 1A OUTLET) open 3.3 Verify adequate LPSW flow is available; check LPSW pump operation 3.3.1 Verify 1LPSW-16 (1A RBCU INLET PENE) is open 3.3.2 **IF** 1LPSW-16 (1A RBCU INLET PENE) is **NOT** open, refer to TS and SLCs 3.4 Monitor RBNS Level for any unexplained increase 3.5 **IF** RBNS Level is increasing **AND** ES has actuated, notify Chemistry to sample the RBNS for boron concentration to determine if a cooler rupture has occurred based on sample results. 3.6 **IF** RBCU 1A Cooler rupture or line break is indicated, then: 3.6.1 Isolate the 1A RBCU Cooler as follows: A. Close 1LPSW-16 (1A RBCU INLET PENE) B. Close 1LPSW-18 (1A RBCU OUTLET) C. Perform TS 3.6.3 Condition C for closed containment system. D. Enter TS 3.6.5 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 1A RBCU.

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

Event Description: **Seismic Event and 1A RBCU Rupture (C: BOP, SRO) (TS)**

Time	Position	
		3.6.2 Refer to Technical Specifications. 3.6.3 Refer to SLC 16.9.12 (Additional LPSW and Siphon Seal Water System Operability Requirements) **(Does not apply)** 3.6.4 Refer to OP/1/A/1104/010 (Low Pressure Service Water). 3.6.5 Refer to OP/1/A/1104/015 (Reactor Building Cooling System).
	SRO	**Refer To AP/0/A/1700/005, EARTHQUAKE:** 4.1 Announce AP entry using the PA system 4.2. **IAAT** any of the following occur: • Re-flash of Seismic Trigger (1SA-9, E-1) and/or (3SA-9, E-1) • Re-flash of computer alarm: SEISMIC RECORDER (01D0201) on Unit 1 • Aftershocks felt at ONS or Keowee Hydro Station **THEN GO TO** Step 4.3 4.3 **IAAT** major visible damage is observed, **THEN** evaluate Rx trip on all affected units. 4.4 Notify Keowee operating personnel to initiate AP/0/A/2000/001 (Natural Disaster). ***Booth Cue: Respond as the Keowee Operator and state that AP/001will be initiated.*** 4.5 Notify Hydro Central. 4.6 Dispatch operators to perform the following enclosures: • Encl 5.1 (Outside Inspections) • Encl 5.2 (AB Inspections) • Encl 5.3 (LPSW Inspections) 4.7 **IAAT** any Oconee unit is shutdown, **THEN** dispatch an operator to perform Encl 5.4 (RB Inspections). 4.8 Notify the OSM to reference the following: • RP/0/B/1000/001 (Emergency Classification) • OMP 1-14 (Notifications) • Contingency Plan Information supplied from EP for seismic instruments that are out of service, as applicable ***Booth Cue: If asked, Unit 2 will take over the completion of AP/5.***
		This event is complete when 1A RBCU has been isolated, or as directed by the Lead Evaluator.

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

Event Description: **Controlling T_{ave} Fails HIGH (I: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**Plant Response:** • 1SA-02/A-12 (ICS Tracking) will actuate due to neutron and feedwater cross-limits. • Controlling T_{ave} will indicate ≈ 596.4°F. • Actual loop A & B Tave will decrease until operator stops transient. • RCS pressure and temperature will decrease. **Crew Response:** When the Statalarms are received, the candidates should utilize the "Plant Transient Response" process to stabilize the plant. • OATC reports to the SRO reactor power level and direction of movement. • Place the Diamond and both FDW Masters in manual and position as necessary to stabilize the plant. • The BOP reports no valid runback and monitors RCS pressure and inventory and inserts Control Rods as needed. • The SRO should: ➢ Refer to AP/28 (ICS Instrument Failures) **Note: The ICS will remain in manual for the remainder of the scenario.** Refer to AP/1/A/1700/028 (ICS Instrument Failures) 4.1 Provide control bands as required (per OMP 1-18 Attachment I) • NI Power ± 1% not to exceed the pre-transient or allowable power. If at the pre-transient or allowable level, band is NI Power - 1%. • 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 the following: ➢ OMP 1-14 (Notifications) ➢ Emergency Plan • STA

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

Event Description: **Controlling T_{ave} Fails HIGH (I: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**Crew Response:** 4.3 Verify a power transient ≥ 5% has occurred. **RNO: GO TO** Step 4.5 **Note: Step 4.3 will be performed based on whether a power transient ≥ 5% has or has not 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, as needed 4.6 **GO TO** the applicable section per the following table: Section 4A (RCS Temperature Failure) is continued on the next page.

√	Section	Failure
	4A	RCS Temperature

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

Event Description: **Controlling T_{ave} Fails HIGH (I: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior

	SRO/OATC	**Crew Response:**
		NOTE
		• If T_{ave} instrument circuit failed high, the following may have occurred depending on initial ICS station status:
		  • Unit to TRACK due to Rx Cross Limits
		  • Control Rod insertion
		  • Feedwater flow increase
		• If T_{ave} instrument circuit failed low, the following may have occurred depending on initial ICS station status:
		  • Unit to TRACK due to Rx Cross Limits
		  • Control Rod withdrawal
		  • Feedwater flow decrease
		  • Feedwater re-ratio
		1. Ensure the following in HAND:
		__ 1A FDW MASTER
		__ 1B FDW MASTER
		2. Ensure DIAMOND in MANUAL.
		3. Notify SPOC to perform the following:
		  • Select a valid RCS Tave and Delta T_c input to ICS per AM/0/B/0326/020 (Control of Star Module Signal Selection Function)
		  • Investigate and repair the failed RCS temperature instrumentation
		4. **PERFORM** an instrumentation surveillance using applicable table in Encl 5.2 (ICS Instrument Surveillances) for the failed instrument
		5. Verify instrumentation surveillance in Encl 5.2 (ICS Instrument Surveillances) was performed satisfactorily as written
		6. **WHEN** notified by SPOC that a valid RCS Tave and Delta Tc input have been restored to ICS, **THEN GO TO** OP/1/A/1102/004 A Encl (Placing ICS Stations To AUTO)
		Note: The Controlling T_{ave} failure will not be repaired for this scenario.

		This event is complete when the SRO reaches the WHEN step (6) in Section 4A, or as directed by the Lead Evaluator.

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

Event Description: **1D1 HDP Low Oil Level (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Plant Response:** **OAC Alarms:** • HDP 1D1 MTR Lower Bearing Temp Hi-Hi • HDP 1D1 Thrust Bearing Temp Hi **Crew Response:** Refer to the OAC Alarm Response: • Remove the pump from service per OP/1/A/1106/002 D (HDP Operation) ***Booth Cue: If an NEO is sent to look at the HDP, use time compression and report as an NEO, that the lower oil sight glass of the 1D1 HDP is empty. The oil has been contained in the HDP sump and cleanup is in progress.*** SRO should direct BOP to secure the 1D1 HDP per OP/1/A/1106/002 D. SPOC should be notified to investigate and repair the oil leak. The BOP should secure the 1D1 HDP per OP/1/A/1106/002 D Enclosure 4.4 (Shutdown of 1D1 HDP). 2.1 Verify CTP DEMAND ≤ 87% 3.1 Stop 1D1 HTR DRN PUMP 3.2 Verify 1HD-190 (1D1 Flash Tank Emer Level Control) opens by observing computer indication (O1D2092) 3.3 Verify 1HD-208 (1D1 HDP RECIRC) switch in "AUTO" 3.4 **IF** 1D1 HD pump breaker is no longer required, rack out 1TE-7 (1D1 Heater Drain Tank Pump Mtr) **Note: The SRO may determine that tagging the 1D1 HDP breaker is not required at this time.** **Note: The SRO may refer to RP/0/B/1000/017 (Spill Response) and/or request the TBS breakers to be opened due to the HDP oil leak.** ***Booth Cue: If asked, Unit 2 will implement RP/0/B/1000/017 (Spill Response).*** **Note: If the crew fails to secure the 1D1 HDP in a timely manner, it will automatically trip 12 min after the crew receives the high bearing temperature OAC alarms.**
		This event is complete when the 1D1 HDP has been secured, or as directed by the Lead Evaluator.

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Page 1 of 4

Event Description: **Dropped Control Rod, Manual Power Reduction (C: OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**Plant Response:** Statalarm 1SA2/A10 (CRD GLOBAL TROUBLE) Statalarm 1SA2/B10 (CRD ASYMMETRIC ROD POSITION ERROR) Statalarm 1SA2/D9 (CRD OUT INHIBIT) Statalarm 1SA4/C1 (QUADRANT POWER TILT) (**alarms in ≈ 2 minutes**) **Crew Response:** Crew should perform Plant Transient Response (PTR) • OATC reports to the SRO reactor power level and direction of movement. • The BOP reports no valid runback (due to ICS in MAN) and monitors RCS pressure and inventory and inserts Control Rods as needed. SRO should enter AP/1/A/1700/001 (Unit Runback) Entry Conditions: • Any control rod dropped or misaligned > 6.5% (9") from the group average 4.1 **GO TO** the most limiting section per the following table: √ | **Section** | **Runback** | 4H | Asymetric Control Rod (1%/min to 55% power) **Note: The SRO should transfer to Section 4H (Asymmetric Control Rod) of AP/1/A/1700/001**

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Page 2 of 4

Event Description: **Dropped Control Rod, Manual Power Reduction (C: OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**Crew Response:** AP/1/A/1700/001 Section 4H 1. **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 due to actual power re-distributed within the core as a result of a dropped/misaligned rod. 2. Verify Rx is critical 3. Verify Rx runback to 55% core thermal power in progress **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 4. Initiate Encl 5.1 (Control of Plant Equipment During S/D) **(page 16)** **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. 5. Notify SPOC to perform the following: • Investigate cause of dropped or misaligned control rod. • Prepare to reduce the following trip setpoints: • RPS Flux/Flow-Imbalance • RPS High Flux 6. 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) **(may not apply depending on time rod has been dropped)** 7. Notify OSM to make notifications as required per OMP 1-14 (Notifications)

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Page 3 of 4

Event Description: **Dropped Control Rod, Manual Power Reduction (C: OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior

Crew Response:

AP/1/A/1700/001 Section 4H

8. Verify > 1% SDM with allowance for the inoperable control rod per PT/1/A/1103/015 (Reactivity Balance Calculation) within one hour

9. 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.

10. **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

11. **WHEN** all NIs are ≤ the Maximum NI Power limit for the operating RCP combination, **THEN** notify SPOC to reduce RPS trip setpoints based on RPS system installed:

Old RPS System

__ AM/0/A 0301/003 U (Procedure to Reset the Flux/Imbalance/Flow and High Flux Trips for Operation with Excessive Power Tilt, Dropped Control Rod Or Other Conditions)

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Page 4 of 4

Event Description: **Dropped Control Rod, Manual Power Reduction (C: OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: AP/1/A/1700/001 Encl 5.1 (Control of Plant Equipment During Shutdown) 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). 3. Start the following pumps: • 1A/1B FDWP SEAL INJECTION PUMP • 1A/1B FDWP AUXILIARY OIL PUMP 4. **WHEN** CTP ≤ 80%, **THEN** stop 1E1/1E2 HTR DRN PUMP 5. **WHEN** CTP ≤ 65%, **THEN** continue this Enclosure. 6. Place 1FDW-53 and 1FDW-65 in MANUAL and close **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 ≈ 1 x E6 lb/hr < 1A FWP suction flow. 10. **GO TO** Step 12 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: • 1SA-16/A-3 (FWP B FLOW MINIMUM) • 1SA-16/A-4 (FWP B FLOW BELOW MIN) **THEN** trip 1B Main FDW Pump
		This event is complete when the SRO reaches WHEN Step 11 of AP/1/A/1700/001 Section 4H, or as directed by the Lead Evaluator.

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 1 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Plant response: • 1SA-1/A-1, B-1, C-1, D-1, RP Channel Trip • 1SA-2/D-3, RC Press High/Low • Statalarm 1SA-02/A-9 (MS PRESS HIGH/LOW) **Crew response:**
	SRO	• SRO will enter the EOP by directing the OATC to perform Immediate Manual Actions or perform IMAs.
	OATC	• OATC will perform Immediate Manual Actions ➢ Depress REACTOR TRIP pushbutton ➢ Verify reactor power < 5% FP and decreasing ➢ Depress turbine TRIP pushbutton. ➢ Verify all turbine stop valves closed ➢ Verify RCP seal injection available
	BOP	• BOP will perform a symptom check (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)

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 2 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew response:** **Refer to EOP** The SRO will direct the OATC will 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 The OATC and SRO verify IMAs The SRO directs the BOP to perform a Symptoms Check **Note: If Subcooling Margin is lost during this event, Rule 2 will be performed. As a contingency, Rule 2 actions are listed on pages 31-32 of this JPM.** ? BOP performs **Rule #5** (Main Steam Line Break) after receiving concurrence from the SRO **(see page 23)** SRO refers to "Parallel Actions" page of the Subsequent Actions Tab and transfers to the Excessive Heat Transfer Tab SRO will initiate EOP Enclosure 5.1 (ES Actuation) **(see page 28)** The SRO will direct EHT Tab actions **(see next page)** **Note: ES Channels 7 & 8 will not automatically actuate when RB pressure increases above 10 psig. The SRO may direct an RO to manually actuate ES Channels 7 & 8 or allow the operator to actuate the channels per EOP Enclosure 5.1 (ES Actuation)**

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 3 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** EOP Excessive Heat Transfer Tab (EHT) 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-32 and 1FDW-35 4. Close the following on all affected SGs: • 1FDW-372, 1MS-17, 1MS-79, 1MS-35, 1MS-82, 1MS-368 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) 8. Verify letdown in service **RNO: IF** desired to restore letdown, **THEN** initiate Encl 5.5 (Pzr and LDST Level Control) 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 step will unisolate and use it for heat removal. 10. Open the following on all intact SGs • 1FDW-382 and 1FDW-369 11. Start MDEFDWP associated with all intact SGs • 1B MD EFDWP **RNO:** Start TDEFDWP 12. Feed and steam all intact SGs to stabilize RCS P/T using either of the following: **(CT-11)** • TBVs • Dispatch two operators to perform Encl 5.24 (Operation of the ADVs

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 4 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** EOP Excessive Heat Transfer Tab 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 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 • Notify Secondary Chemistry to check for indications of SGTR • Notify RP to check for indications of a SGTR 38. **IAAT** RCS boron is determined to be insufficient for adequate SDM, **THEN** initiate Encl 5.11 (RCS Boration) 39. **IAAT** <u>all</u> the following exist: • ES Bypass Permit satisfied • All SCMs > 0°F • RCS pressure controllable **THEN** bypass ES as necessary 40. Verify any SG is dry

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 5 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** EOP Excessive Heat Transfer Tab 41. Minimize SCM using the following methods as necessary: **(CT-7)** **Note: Target should be 10 - 20°F SCM.** • De-energize all Pzr heaters • Use Pzr Spray • Throttle HPI to maintain Pzr level > 100" [180" acc] • PORV 42. Verify any RCP operating 43. Maintain RCP NPSH • OAC • Encl 5.18 44. Initiate Encl 5.16 (SG Tube-to-Shell ΔT Control) **NOTE** RCP 1A1 provides the best Pzr spray 45. **IAAT** all the following exist: • < one RCP operating in any loop • All SCMs > 0°F • RCP available in an idle loop **THEN** initiate Encl 5.6 (RCP Restart) to start one RCP in each idle loop 46. **IAAT** all the following exist: • RBS actuated • RB pressure < 10 psig • 1RIA-57 **NOT** in alarm • 1RIA-58 **NOT** in alarm **THEN** stop both RBS pumps 47. **IAAT** T_{cold} approaches 400°F, **AND** all RCPs are operating, **THEN** ensure < four RCPs are operating

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 6 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** EOP Excessive Heat Transfer Tab 48. **IAAT** BWST level is ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES). 49. Verify all SCMs > 0°F. 50. Verify indications of SGTR ≥ 25 gpm **RNO: GO TO** Step 52 52. Verify required RCS makeup flow within normal makeup capability. 53. Verify <u>either</u> of the following: • <u>Any</u> SG isolated • <u>Any</u> SG has an unisolable steam leak 54. **GO TO** FCD tab EOP Forced Cooldown Tab (FCD) 1. **IAAT** cooldown rate **CANNOT** be controlled within Tech Spec limits: • T_{cold} > 280°F: ≤ 50°F / ½ hr • T_{cold} ≤ 280°F: ≤ 25°F / ½ hr **THEN GO TO** EHT tab 2. Verify letdown in service 3. Establish and maintain appropriate level per Rule 7 (SG Feed Control) <u>and</u> pressure in <u>available</u> <u>intact</u> SGs 4. **IAAT** T_{cold} approaches 400°F, **AND** <u>all</u> RCPs are operating, **THEN** ensure < four RCPs are operating 5. **IAAT** all the following exist: __ ES Bypass Permit satisfied __ All SCMs > 0°F __ RCS pressure controllable **THEN** bypass ES
		This event is complete when the SRO transfers to the Forced Cooldown (FCD) Tab of the EOP, or as directed by the Lead Evaluator.

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 7 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Rule 5 1. Perform the following on affected headers: • Initiate AFIS 1A SG Digital Channels 1 and 2 • Select OFF for 1A MDEFDW Pump **(CT-17)** **Note: The critical task is to stop feeding the affected SG.** • Trip both Main FDW pumps • Close 1FDW-315, 1FDW-33, and 1FDW-31 2. Verify 1 TD EFDW PUMP operating. **RNO: IF** MD EFDWP for the intact SG is operating, **THEN GO TO Step 5.** 5. Verify 1B SG is an affected SG. **RNO: GO TO** Step 7 7. **WHEN** overcooling is stopped, **THEN** adjust steaming of unaffected SG to maintain CETCs constant using either of the following: **(CT-11)** • TBVs • Dispatch two operators to perform Encl 5.24 (Operation of ADV's) **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%, and Pzr Level increasing, **THEN** 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

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 8 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Rule 5 9. **WHEN** CETCs have stabilized, **THEN** resume use of T_c for RCS temperature control 10. Ensure Rule 3 (Loss of Main or Emergency FDW) is in progress or complete 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. *(1B MD is operating to 1B SG)* 6. **GO TO** Step 37 37. **IAAT** an EFDW valve **CANNOT** control in AUTO **OR** manual operation if 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, **THEN** throttle EFDW as necessary.

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 9 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Rule 3 44. **IAAT** Unit 1 EFDW is in operation, **THEN** initiate Encl 5.9 (Extended EFDW Operation) EOP Enclosure 5.9 (Extended EFDW Operation) 1. Monitor EFDW parameters on EFW graphic display 2. **IAAT** UST level is < 4', **THEN GO TO** Step 117 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 **RNO: GO TO** Step 12

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 10 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Enclosure 5.9 **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 **Note: The SRO should determine that restoring the secondary side of the plant is not a priority at this time and direct the RO to continue in Rule 3.** EOP Rule 3 Continued 45. **WHEN** directed by CR SRO, **THEN EXIT** this rule EOP Rule 5 Continued 11. Ensure Rule 8 (Pressurized Thermal Shock (PTS)) is on progress or complete 12. **WHEN** directed by CR SRO, **THEN EXIT** this rule **Note: When Rule 5 is complete, the 1B MDEFDW pump will trip. This will require Rule 3 to be reinitiated to start the TD EFDW pump to feed the 1B SG.** **When the team determines that the 1B MDEFDW pump has tripped the SRO should direct that Rule 3 be re-performed. The SRO could also direct the performance of a Symptoms Check in which case the TD EFWP could be started per the Symptoms Check. Rule 3 should still be performed.**

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 11 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Rule 3 (After 1B MD EFDWP trips) 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 if 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, **THEN** throttle EFDW as necessary. 44. **IAAT** Unit 1 EFDW is in operation, **THEN** initiate Encl 5.9 (Extended EFDW Operation). 45. **WHEN** directed by CR SRO, **THEN EXIT** this rule

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 12 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Enclosure 5.1 (ES Actuation) 1. Determine all ES channels that should have actuated based on RCS pressure and RB pressure. • RB 3 psig: Channels 1, 2, 3, 4, 5 & 6 • RB 10 psig: Channels 7 & 8 2. Verify all ES digital channels associated with actuation setpoints have actuated. **RNO:** Actuate affected ES digital channels. **Note: The RO actuates ES Channels 7 & 8** 3. **IAAT** additional ES actuation setpoints are exceeded, **THEN** perform Steps 1-2. 4. Place HPI in manual control. 5. Verify Rule 2 in progress or complete. **RNO: GO TO** Step 66. 66. Open 1HP-24 and 1HP-25 67. Ensure at least two HPI pumps are operating 68. Verify 1HP-26 and 1HP-27 are open 69. **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 | 70. Verify any RCP operating 71. Open 1HP-20 and 1HP-21 72. **IAAT** any RCP is operating, **AND** ES Channels 5 and 6 actuate, **THEN** perform Steps 73-75

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 13 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Enclosure 5.1 (ES Actuation) 73. Open the following: __ 1CC-7 __ 1CC-8 __ 1LPSW-15 __ 1LPSW-6 74. Ensure only one CC pump operating 75. Ensure Standby CC pump in AUTO 76. **IAAT** ES Channels 3 & 4 are actuated, **THEN GO TO** Step 77 77. Place the following in manual control **CAUTION** LPI pump damage may occur if operated in excess of 30 minutes against shutoff head 78. **IAAT** any LPI pump is operating against shutoff head, **THEN** at the CR SROs discretion, stop affected LPI pumps **(CT)** 79. **IAAT** RCS pressure is < LPI pump shutoff head, **THEN** perform Steps 80-81 **RNO: GO TO** Step 82 82. **IAAT** 1A and 1B LPI PUMPs are off/tripped, **AND** all of the following exists..... **RNO: GO TO** Step 85 85. **IAAT** 1A LPI PUMP fails while operating, **AND** 1B LPI PUMP is operating, **THEN** close 1LP-17 86. **IAAT** 1B LPI PUMP fails while operating, **AND** 1A LPI PUMP is operating, **THEN** close 1LP-18 87. Start A and B OUTSIDE AIR BOOSTER FANS

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 14 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Enclosure 5.1 (ES Actuation) 88. Notify Unit 3 to start 3A and 3B OUTSIDE AIR BOOSTER FANS 89. Verify 1CF-1 and 1CF-2 are open 90. Verify 1HP-410 closed 91. Secure makeup to the LDST 92. Verify all ES channel 1-4 components are in the ES position 93. Verify Unit 2 turbine tripped **RNO: GO TO** Step 96 96. Close 1LPSW-139 97. Place 1LPSW-251 and 1LPSW-252 in FAIL OPEN 98. Start all available LPSW pumps 99. Verify either of the following: __ Three LPSW pumps operating __ Two LPSW pumps operating when TS only requires two operable 100. Open 1LPSW-4 and 1LPSW-5 101. **IAAT** BWST level ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES) 102. Dispatch an operator to perform Encl 5.2 (Placing RB Hydrogen Analyzers In Service) (**PS**) 103. Select DECAY HEAT LOW FLOW ALARM SELECT switch to ON 104. **IAAT** ES channels 5 & 6 have actuated, **THEN** perform Step 105 105. Verify all ES channel 5 & 6 components in the ES position 106. IAAT ES channels 7 & 8 have actuated, THEN perform Step 107 107. Verify all ES channel 7 & 8 components in the ES position 108. Notify U2 CR SRO that SSF is inoperable due to OTS1-1 open

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 15 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Rule 2 (**if required**) 1. **IAAT** all the following 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 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. Open 1HP-26 and 1HP-27 9. Verify at least two HPI pumps operating, **AND** HPI flow in any header is in the Unacceptable Region of Figure 1 **THEN** perform Steps 11-13 **RNO: GO TO** Step 12 12. **IAAT** the following 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** throttle HPI to maximize flow ≤ flow limit

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page 16 of 17

Event Description: **1A Main Steam Line Break in RB (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Rule 2 13. Notify CR SRO of HPI status 14. Verify RCS pressure > 550 psig 15. **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** Step 16 **RNO: GO TO** Step 27 27. **IAAT** TBVs are unavailable, **THEN** perform the following..... 28. Verify 1SA-2/C-8 (AFIS HEADER A INITIATED) lit 29. Verify 1SA-2/D-8 (AFIS HEADER B INITIATED) lit **RNO:** Select OFF for both digital channels on AFIS HEADER B 30. Verify any EFDW pump operating
		This event continues in conjunction with Event 8 which initiates after Rule 5 is complete, or as directed by the Lead Evaluator.

Op-Test No.: _____ Scenario No.: 1 Event No.: 8 Page 17 of 17

Event Description: **1B MDEFW Pump Trips**

Time	Position	Applicant's Actions or Behavior
		Crew Response: 31. Start 1A and 1B MD EFDW pumps on all intact SGs: **RNO:** Start 1 TD EFDW PUMP **(CT-10)** 32. Verify any EFDW pump operating 33. Verify both SGs intact **RNO:** 1. Establish 450 gpm EFDW flow to the intact SG 2. **GO TO** Step 35 35. Verify both MD EFDWPs operating **RNO:** 1. **IF** 1 TD EFDW PUMP is operating, **OR NO** Main FDW pumps operating, **THEN GO TO** Step 37 2. **GO TO** Step 39 37. Trip both Main FDW pumps EOP Rule 2 38. Place FDW block valve switches in CLOSE: __ 1FDW-33 __ 1FDW-31 __ 1FDW-42 __ 1FDW-40 **NOTE** • SG levels must continue to increase until the SG Level 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 39. Utilize Rule 7 (SG Feed Control) to feed all intact SGs to the appropriate SG Level Control Point using available feed sources 40. Notify CR SRO of SG feed status
		This scenario is complete when EFW flow, RCS pressure and temperature are under control, or as directed by the Lead Evaluator.

CRITICAL TASKS

1. CT-17 Isolate Overcooling SG(s)

2. CT-7 Minimize SCM

3. CT-11 Control SG Pressure (adjust TBVs/ADVs) to Maintain RC Temperature Constant

4. CT-10 Establish FW Flow and Feed SG(s)

5. CT Secure LPI pumps within 30 minutes of ES actuation and RCS pressure above shut off head of the LPI pumps. (TCA#8)

SAFETY: Take a Minute			
UNIT 0 (OSM)			
SSF Operable: Yes	KHU's Operable: U1 - UG, U2 - OH	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: 681	100% Power	100% Power
RCS Leakage: +.025 gpm (No WCAP action level)	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 #
AMSAC/DSS Bypassed	Today / 06:30	7 Days	SLC 16.7.2 Condition A & B

Shift Turnover Items (CR SRO)

Primary

- SASS in MANUAL for I&E testing
- AMSAC/DSS Bypassed for I&E testing
- Power was reduced two hours ago per dispatcher. Xenon is building in. Rx ENG is preparing a maneuvering plan.
- The OATC is to perform a 5 minute Delith using Deborating IX per OP/1/A/1103/004 C Enclosure 4.4 beginning at Step 2.8

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 (CR SRO)		
RCS Boron: 30 ppmB	Gp 7 Rod Position: 80%	

Human Performance Emphasis (OSM)

Procedure Use and Adherence

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

Examiners: _____ Operators: _____ **SRO**

_____ _____ **OATC**

_____ _____ **BOP**

Initial Conditions:

- Reactor power = 100%, Unit 2: 100%, Unit 3: 100%

Turnover:

- AMSAC/DSS Bypassed For I&E Testing
- SASS in Manual For I&E Testing
- Perform Control Rod movement PT (Group 1 only) per PT/1/A/0600/015 Enclosure 13.2 (Control Rod Movement At Power) beginning at Step 3.3

Event No.	Malf. No.	Event Type*	Event Description
0a	Pre-Insert		AMSAC/DSS Bypassed
0b	Pre-Insert		SASS in MANUAL
0c	Pre-Insert		LPSW Pump auto start disabled
0d	Pre-Insert		1B2 RCP Fails to Trip From Switch
0e	Pre-insert		1HP-4 Failed Open
1		N: OATC, SRO	Control Rod Movement PT (Group 1 only)
2	Override	C: BOP, SRO	1HP-31 Fails OPEN in AUTO
3	MPI 281 @ 68%	I: OATC, SRO	ΔT_C Controller Fails HIGH ('A' Loop Hot)
4	Updater & Override	C: BOP, SRO (TS)	Operating LPSW Pump Trips, Standby LPSW Pump Fails To Auto Start
5	MPS400	C: BOP, SRO, (TS)	RCS Leak ≈ 135 gpm
6		R: OATC, SRO	Manual Power Reduction Due to RCS Leak
7	MPS400	M: All	SBLOCA (LOSCM to LOCA CD) 1HP-4 Fails to CLose
8	Override		1FDW-316 Fails Closed

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

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

Event Description: **Control Rod Movement PT (Group 1 only) (N: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO	Direct the OATC to perform Control Rod movement PT (Group 1 only) PT/1/A/0600/015 Enclosure 13.2 (Control Rod Movement At Power) beginning at step 3.3
		PT/1/A/0600/015 Enclosure 13.2
	SRO/OATC	**NOTE:** When operating switches on Diamond, maintain switch depressed until light indication changes state. 3.3 Perform the following: (R.M.) • Ensure SEQ OR is ON. • Ensure SAFETY RODS OUT BYPASS is ON. • Ensure RUN is ON. • Ensure SINGLE SELECT SWITCH selected to ALL. **NOTE:** CRD Groups 1-6 are required to be ≥ 95% withdrawn for Shutdown Margin Calculation at Power enclosure of PT/1/A/1103/015 (Reactivity Balance Procedure) to be valid. 3.4 **IF AT ANY TIME** any CRD Group 1-6 reaches 95% during insertion, stop inserting associated group. (R.M.) 3.5 Perform the following to test CRD Group 1: (R.M.) 3.5.1 Ensure GROUP SELECT SWITCH to 1 3.5.2 Ensure Group 1 CONTROL ON lights are ON. (PI panel) **NOTE:** • 1SA-2/C-10 "CRD Safety Rods Not At Upper Limit" will alarm when Safety Groups are inserted. • Control rods should NOT be left inserted. Rod withdrawal should commence immediately after insertion is complete. 3.5.3 Perform the following: A. Insert CRD Group 1 B. **WHEN** all 100% lights OFF, stop insertion C. Begin Group 1 withdraw to 100% **Note: 1SA2/C-10 "CRD Safety Rods Not At Upper Limit" will alarm when Group 1 Control Rods are inserted.**

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

Event Description: **Control Rod Movement PT (Group 1 only) (N: OATC, SRO)**

	SRO/OATC	**PT/1/A/0600/015 Enclosure 13.2** **NOTE:** In RUN speed, all rod motion is inhibited 12 seconds after first rod reaches OUT LIMIT. D. **WHEN** OUT LIMIT is ON, maintain WITHDRAW until CRD TRAVEL "Out" light OFF 3.5.4 Verify all 100% lights are ON for Group 1 (PI Panel) 3.5.5 Verify unit is stable **Note: Steps 3.6 through 3.12.5 are NA'd** 3.13 Perform the following: (R.M.) • Ensure SEQ is ON • Ensure GROUP SELECT SWITCH to OFF • Ensure SAFETY RODS OUT BYPASS is OFF 3.14 Return Rx Diamond and FDW Masters To Automatic per OP/1/A/1102/004 A (ICS Operation) OP/1/A/1102/004 A Encl 4.1 (Placing Rx Diamond/FDW Masters To Hand) 2.8 **WHEN** required, place ICS back in auto as follows: 2.8.1 Ensure "RATE SET" thumbwheels at 0.0 2.8.2 **IF** TURBINE MASTER is in manual, perform the following: **Note: Step 2.8.2 is N/A** 2.8.3 **IF** DIAMOND is in manual, perform the following: A. Verify REACTOR MASTER in "AUTO" B. **IF** both SGs are off of Level Control, perform the following: 1. **IF** selected T_{ave} (O1E2086) is different from T_{ave} setpoint (O1E2087) by more than ± 0.15°F, on REACTOR MASTER adjust T_{ave} setpoint (O1E2087) toward selected T_{ave} (O1E2086) 2. Verify selected T_{ave} is within ± 0.15°F of T_{ave} setpoint

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

Event Description: **Control Rod Movement PT (Group 1 only) (N: OATC, SRO)**

	SRO/OATC	OP/1/A/1102/004 A Encl 4.1 (Placing Rx Diamond/FDW Masters To Hand) C. **IF** either SG is on Level Control, adjust T_{ave} setpoint (O1E2087) to 579°F D. Place DIAMOND in "AUTO" 2.8.4 Ensure STM GENERATOR MASTER in "AUTO" 2.8.5 **IF** either 1A **OR** 1B FDW Master is in HAND, perform the following: A. Perform the following: • Select 1A FDW MASTER to "MEAS VAR" • Select 1B FDW MASTER to "MEAS VAR" B. **IF** either 1A **OR** 1B FDW Master Measured Variable is **NOT** on the caret, notify SPOC to investigate and repair the problem C. Verify the following: • 1A FDW MASTER Measured Variable on the caret • 1B FDW MASTER Measured Variable on the caret D. Perform the following: • Select 1A FDW MASTER to "POS" • Select 1B FDW MASTER to "POS" E. Simultaneously perform the following: • Select 1A FDW MASTER to "AUTO" • Select 1B FDW MASTER to "AUTO" 2.9 **IF** required slowly adjust Tave setpoint to ≈ 579°F (O1E2087) 2.10 **IF** desired adjust CTP as follows: **Note: Step 2.10 is not required for this scenario.**
		This event is complete when ICS has been returned to AUTO, or as directed by the Lead Evaluator.

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

Event Description: **1HP-31 Fails OPEN (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Plant response:** 1SA2/B-2 (HP RCP Seal Inlet Header Flow **High**/Low) (42 gpm) **Crew response:** **Refer to ARG for 1SA-2/B-2:** 3.1 High Alarm 3.1.1 Verify high seal flow conditions with individual RCP seal indications 3.1.2 1HP-31 may have failed open/mid-position. **Take manual control of 1HP-31 and throttle to maintain 32 gpm.** • Refer to AP/1/A/1700/022 (Loss Of Instrument Air) as required • Refer to AP/1/A/1700/023 (Loss Of ICS Power) as required. 3.1.3 **IF** flow **CANNOT** be reduced in above manner, adjust 1HP-31 (RCP Seal Flow Control) per OP/1/A/1104/002 (HPI system) **Note: The SRO may initially refer to AP/14 (Loss of Normal Makeup and/or Seal Injection) and/or AP/16 (Abnormal RCP Operation).**
		This event is complete when Seal Injection flow is manually reduced to ≈ 32 gpm, or as directed by the Lead Evaluator.

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

Event Description: **ΔT_C Controller Fails HIGH ('A' Loop T_{hot}) (I: OATC, SRO)**

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.
		  • 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.
		• SRO should direct the BOP to reference Statalarm 1SA-02/B-5
		• SRO will refer to AP/28 (ICS Instrument Failures)
		4.1 Provide control bands as required (per OMP 1-18 Attach I)
		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

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

Event Description: **ΔT_C Controller Fails HIGH ('A' Loop T_{hot}) (I: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: 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 to prevent changes in core reactivity 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.: _____ Scenario No.: 1 Event No.: 4 Page 1 of 2

Event Description: **Operating LPSW Pump Trips, Standby LPSW Pump Fails to Auto Start (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Plant response:** **Statalarms:** • 1SA-9/A-9 (LPSW Header A Press Low) **OAC Alarm:** • LPSW HDR Pressure LO LO • LO LO RCP MTR Cooler Inlet HDR LPSW **Control board indications:** • LPSW Header A/B Pressure Low **Crew response:** • Refer to OAC alarm response 1. Refer to AP/24 (Loss of LPSW) 2. Notify engineering 3. Refer to TS 3.7.7 • Refer to ARG for 1SA-9/A-9 (LPSW Header A/B Press Low) 3.1 Refer to AP/1/A/1700/024 (Loss of LPSW) 3.2 Have Unit 2 refer to AP/2/A/1700/024 (Loss of LPSW). ***Booth Cue: If notified to refer to AP/2/A/1700/024, inform operator that AP/2/A/1700/24 will be referenced immediately.*** AP/1/A/1700/024 (Loss of LPSW) Entry Conditions: Loss of <u>or</u> degraded LPSW operation as indicated by <u>any</u> of the following: • LPSW header pressure low STATALARM • LPSW header pressure LO-LO OAC alarm • Automatic Start of Standby LPSW Pump

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

Event Description: **Operating LPSW Pump Trips, Standby LPSW Pump Fails to Auto Start (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	Crew Response: AP/1/A/1700/024 (Loss of LPSW) **NOTE** Unit 1 normally handles LPSW System operation unless otherwise directed by the CR SRO 4.1 Verify Unit 1 is going to handle LPSW system operations. 4.2 **IAAT** any LPSW pump is cavitating, **THEN** perform Steps 4.3 – 4.4 **RNO: GO TO** Step 4.5 4.5 Start available (**NOT** previously cavitating) LPSW pumps, as necessary, to raise LPSW header pressure. 4.6 **IAAT** LPSW to <u>all</u> RBCUs has been isolated, **AND** LPSW header pressure is > 25 psig, **THEN** perform Step 4.7 **RNO: GO TO** Step 4.8 4.8 Verify normal LPSW System operation is restored. 4.9 Verify that RB Auxiliary Coolers have isolated: **RNO: GO TO** Step 4.11 4.11 **EXIT** this procedure The SRO should refer to TS: • TS 3.7.7 (Low Pressure Service Water System) Condition "A" applies. Restore required LPSW pump to operable status. 72 hours completion time. • TS 3.3.28 (LPSW pump Auto-Start Circuitry) Condition "A". Restore Auto-Start Circuitry to operable. 7 day completion time. **Note: TS 3.3.28 actions not required for an operating pump. Would enter and exit on the same Tsail entry.**
		This event is complete when the SRO has referred to TS, or as directed by the Lead Evaluator.

Op-Test No.: _____ Scenario No.: 2 Event No.: 5 Page 1 of 4

Event Description: **RCS Leak ≈ 135 gpm (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
		Plant Response: Alarms: • OAC RB Normal Sump Temp HI HI • 1SA-9/A-6 (RB NORMAL SUMP HIGH/LOW) • 1SA-8/B-9 (RM Process Monitor Radiation HIGH) Control Board Indications • PZR and LDST level deceasing • RC makeup flow increasing • RB normal sump level increasing **Crew Response:**
	SRO	The SRO may refer to TS 3.4.13 (RCS Operational Leakage) and determine that Condition A, Reduce leakage to within limits within 4 hours and Condition B, Be in MODE 3 in 12 hours are in effect. This is for an unidentified leak > 1 gpm. **Note: SRO may not refer to TS during the scenario due to other events occurring.** **Note: The crew may determine that Immediate Manual Action Step 3.2 of AP/02 applies and close 1HP-5 prior to the SRO entering AP/02.** **Note: AP/1/A/1700/018 entry conditions will also be met due to RB RIA alarms. If the crew asks, Unit 2 will perform AP/18 (Abnormal Release of Radioactivity) actions.**
	SRO/BOP	SRO enters AP/2 (Excessive RCS Leakage) AP/02 Immediate Manual Actions 3.1 Verify HPI operating 3.2 **IAAT** RC makeup flow is > 100 gpm, **AND** Pzr level is decreasing, **THEN** close 1HP-5

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

Event Description: **RCS Leak ≈ 135 gpm (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Crew response:** AP/2 (Excessive RCS Leakage) 3.3 **IAAT** all the following exist: (**should not apply**) __ HPI flow is > NORMAL MAKEUP CAPABILITY (≈ 160 gpm) with letdown isolated __ Pzr level decreasing __ SG Tube Leakage **NOT** indicated __ LPI DHR NOT in service **THEN** perform the following: A. Ensure Rx is tripped B. Initiate Unit 1 EOP AP/02 Subsequent Actions 4.1 Initiate Pzr and LDST level makeup using Unit 1 EOP Encl 5.5, as necessary (**see page 13**) 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 4.4 Initiate the following notifications: __ OSM to reference the following: • RP/1000/001 (Emergency Classification) • OMP 1-14 (Notifications) • Encl 5.9 (Oversight Guidelines) __ STA and RP 4.5 Monitor the following trends to determine leak area (AB or RB) and trend for degradation: __ T6 AP02 __ T6 WASTE __ RIAs

Op-Test No.: _____ Scenario No.: 2 Event No.: 5 Page 3 of 4

Event Description: **RCS Leak ≈ 135 gpm (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Crew response:** 4.6 Verify specific leak location is identified **Note: Crew should determine that the leak is in the Reactor Building due to RB RIAs increasing, RBNS rate increasing, and NO RCP seal failure indications and proceed to Step 4.53** 4.7 Initiate Encl 5.1 (Leak Rate Determination) Calculation of RCS Volume Loss from Enclosure 5.1: Leak Rate = _____ (MU) + _____ (SI) - _____ (LD) - _____ (TSR) = _____ 4.8 **WHEN** leak area/failure is identified, **THEN GO TO** applicable step that best fits leak area/failure

√	Area/ Failure	Symptoms	Step
	Rx Bldg	↑ RB RIAs ↑ RBNS rate NO RCP seal failure indications	4.53

4.53 **IAAT** in MODE 1 **AND** leak is > LDST makeup capability from 1A BHUT, **THEN** initiate a shutdown using AP/29 (Rapid Unit Shutdown)

Note: The 135 gpm leak is greater than LDST makeup capability from 1A BHUT and the SRO should use AP/29 to initiate a unit shutdown.

4.54 **IAAT** leak rate is ≥ 10 gpm, **THEN** discontinue pumping RBNS

		This event is complete when the SRO has made the decision to shutdown, or as directed by the Lead Evaluator.

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

Event Description: **RCS Leak ≈ 135 gpm (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Crew response:** EOP Enclosure 5.5 (Pzr and LDST Level Control) **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-27 • 1HP-120 setpoint or valve demand • 1HP-5 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: __ Open 1CS-26 and 1CS-41 __ Position 1HP-14 to BLEED __ Notify SRO 5. **IAAT** letdown bleed is **NO** longer desired, **THEN** position 1HP-14 to NORMAL 6. **IAAT** 1C HPI PUMP is required, **THEN** perform Steps 7-9 **RNO: GO TO** Step 10 10. **IAAT** LDST level **CANNOT** be maintained, **THEN** perform Step 11 **RNO: GO TO** Step 12 12. **IAAT** additional makeup flow to LDST is desired, **AND** 1A BLLED TRANSFER PUMP is operating, **THEN** dispatch an operator to close 1CS-48
		EOP Enclosure 5.5 (Pzr and LDST Level Control) may be run as part of Event 5.

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

Event Description: **Manual Power Reduction Due To RCS Leakage (R: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** SRO directs Unit shutdown per AP/29 (Rapid Unit Shutdown): 4.1 Initiate Encl 5.1 (Support Actions During Rapid Unit Shutdown) **(Details on page 16)** 4.2 Announce AP entry using the PA system. 4.3 **IAAT** both of the following apply: __ It is desired to stop power decrease. __ CTP > 18% **THEN** perform Steps 4.4 – 4.7
	OATC	4.8 Verify ICS in AUTO **RNO**: 1. Initiate manual power reduction to desired power level. 2. **GO TO** Step 4.10 4.10 Verify both Main FDW pumps running. **NOTE** • 1B Main FDW Pump is the preferred pump to be shutdown first. • To lower 1B Main FDW Pump suction flow, bias is adjusted counter-clockwise. • To lower 1A Main FDW Pump suction flow, bias is adjusted clockwise. 4.11 Adjust bias for first Main FDW pump desired to be shutdown units suction flow is ≈ 1 X 10^6 lbm/hr less than remaining Main FDW pump suction flow. 4.12 **WHEN** core thermal power is < 65% FP, **THEN** continue. 4.13 **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: • FWP B FLOW MINIMUM (1SA-16/A-3) • FWP B FLOW BELOW MIN (1SA-16/A-4) **THEN** trip 1B Main FDW Pump.

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

Event Description: **Manual Power Reduction Due To RCS Leakage (R: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: 4.14 **IAAT** both Main FDW pumps running, **AND** both of the following exists: __ 1A Main FDW pump is the first pump to be shut down __ Any of the following alarms occur: • FWP A FLOW MINIMUM (1SA-16/A-1) • FWP A FLOW BELOW MIN (1SA-16/A-2) **THEN** trip 1A Main FDW Pump 4.15 Verify Turbine-Generator shutdown is required 4.16 Start the TURBINE TURNING GEAR OIL PUMP 4.17 Start 1A through 1E TURBINE BRNG OIL LIFT PUMPS 4.18 Start the TURBINE MOTOR SUCTION PUMP 4.19 **IAAT** both of the following apply: __ ICS in automatic __ NI power ≤ 18% **THEN** deselect MAXIMUM RUNBACK 4.20 Verify Turbine-Generator shutdown is required 4.21 **WHEN** NI power ≤ 18%, **THEN** depress turbine TRIP pushbutton

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

Event Description: **Manual Power Reduction Due To RCS Leakage (R: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP	**Crew Response:** **Enclosure 5.1 (Support Actions During Rapid Unit Shutdown)** 1. Notify WCC SRO to initiate Encl 5.2 (WCC SRO Support During Rapid Unit Shutdown) 2. Start the following pumps: __ 1A & 1B FDWP Seal Injection Pumps __ 1A & 1B FDWP Aux Oil Pumps 3. **WHEN** CTP ≤ 80%, **THEN** continue 4. Stop 1E1 HTR DRN PUMP 5. Place 1HD-254 switch to OPEN 6. Stop 1E2 HTR DRN PUMP 7. Place 1HD-276 switch to OPEN 8. Verify Turbine-Generator shutdown is required 9. Place 1TA & 1TB AUTO/MAN transfer switch in MAN 10. Close 1TA SU 6.9 KV FDR 11. Verify 1TA NORMAL 6.9 KV FDR opens 12. Close 1TB SU 6.9 KV FDR 13. Verify 1TB NORMAL 6.9 KV FDR opens 14. Place MFB1 and MFB2 AUTO/MAN transfer switches in MAN 15. Close $E1_1$ MFB1 STARTUP FDR 16. Verify $N1_1$ MFB1 NORMAL FDR opens 17. Close $E2_1$ MFB2 STARTUP FDR 18. Verify $N2_1$ MFB2 NORMAL FDR opens 19. Notify CR SRO that Unit auxiliaries have been transferred **Note: Once electrical auxiliaries have been transferred, the scenario may continue.**
		This event is complete when a unit shutdown of > 10% has occurred AND the transfer of electrical Auxiliaries has not started OR is complete, or as directed by the Lead Evaluator.

Op-Test No.: _____ Scenario No.: 2 Event No.: 7 Page 1 of 8

Event Description: **Small Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Plant response:** • Statalarms: ➢ 1SA-8/B-9, Process Radiation Monitor High • Control board indications: ➢ PZR level will decrease due to the leak ➢ RCS pressure will decrease ➢ ES Channels 1&2 will actuate when RCS pressure is < 1600 psig ➢ ES Channels 3-6 will actuate when RB pressure is > 3 psig **Crew response:** The SRO will refer to EOP Subsequent Actions Parallel Actions page. The SRO will receive Symptoms Check/Report from one of the ROs. The SRO will transfer to the LOSCM Tab of the EOP. (**details on next page**) The SRO will determine that EDLs are in effect The SRO will direct one of the ROs to perform EOP Encl. 5.1 (ES Actuation) (**details on page 22**) **Note: The RCS will eventually saturate with all HPI injecting.** The SRO will provide concurrence to the other RO to perform Rule 2 (Loss of Subcooling Margin) (**details on page 20**). EOP LOSCM Tab 1. Ensure Rule 2 in progress or complete 2. Verify Station ASW feeding <u>any</u> SG **RNO: GO TO** Step 4 4. Verify LOSCM caused by excessive heat transfer **RNO: GO TO** Step 6 6. **IAAT** either of the following exists: __ LPI FLOW TRAIN A <u>plus</u> LPI FLOW TRAIN B ≥ 3400 gpm __ <u>Only one</u> LPI header in operation with header flow ≥ 2900 gpm **THEN GO TO** LOCA CD tab

Op-Test No.: _____ Scenario No.: 2 Event No.: 7 Page 2 of 8

Event Description: **Small Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Plant response:** EOP LOSCM Tab 7. Verify SSF activated per AP/25..... **RNO: GO TO** Step 9 9. Verify all of the following exist: __ **NO** RCPs operating __ HPI flow in both HPI headers __ Adequate total HPI flow per Figure 1 (Total Required HPI Flow) 10. **GO TO** Step 89 89. Open 1AS-40 while closing 1MS-47 90. Verify HPI forced cooling in progress 91. Close 1GWD-17, 1HP-1, 1HP-2, and 1RC-3 92. Verify either of the following: __ Core superheated __ Rx Vessel head level at 0" **RNO: GO TO** Step 94 94. **IAAT** BWST level is ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES) 95. Maintain SG pressure < RCS pressure utilizing either of the following: __ TBVs __ ADVs 96. Verify any SG available for feeding/steaming 97. Initiate Encl 5.16 (SG Tube-to-Shell ΔT Control) 98. Verify indications of SGTR exist **RNO: GO TO** Step 101 101. Verify HPI forced cooling in progress **RNO: GO TO** Step 103

Op-Test No.: _____ Scenario No.: 2 Event No.: 7 Page 3 of 8

Event Description: **Small Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Plant response:** EOP LOSCM Tab 103. Verify CETCs trend decreasing 104. Verify primary to secondary heat transfer is excessive **RNO: GO TO** Step 106 106. Verify indications of SGTR ≥ 25 gpm **RNO: GO TO** Step 108 108. Verify required RCS makeup flow within normal makeup capability **RNO: GO TO** LOCA CD tab EOP LOCA CD Tab 1. IAAT BWST level is ≤ 19', THEN initiate Encl 5.12 2. Verify ES actuated 3. GO TO Step 7 7. Place all RBCUs in low speed and open 1LPSW-18, 21, and 24 8. Initiate Encl 5.35 (Containment Isolation) 9. Start all RB Aux fans 10. **IAAT** LPI flow is > 2900 gpm, **THEN GO TO** Step 11 **RNO: GO TO** Step 42 42. Initiate Encl 5.36 (Equipment Alignment For Plant Shutdown) 43. **IAAT** all the following exist: __ All SCMs > 0°F __ RCS pressure > LPI shutoff head __ Required HPI within normal makeup capability **THEN GO TO** Step 44 **RNO: GO TO** Step 47
		This portion of the event is complete when the SRO transfers to the LOCA CD Tab, or as directed by the Lead Evaluator.

Op-Test No.: _____ Scenario No.: 2 Event No.: 7 Page 4 of 8

Event Description: **Small Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	BOP	**Plant Response:** Rule 2, Loss of Subcooling Margin (SCM) 1. Verify any SCM ≤ 0°F, Reactor power is ≤ 1%, and ≤ 2 minutes have elapsed since loss of SCM 2. Stop all RCPs (within 2 min of LOSCM) **(CT-1)** **Note: 1B2 RCP will not trip from the switch. RNO will be performed to de-energize 1TA and 1TB (6.9KV switchgear).** **Step 2 RNO** 1. Place 1TA AUTO/MAN switch in MAN 2. Place 1TB AUTO/MAN switch in MAN 3. Open 1TA SU 6.9 KV FDR 4. Open 1TB SU 6.9 KV FDR 3. Notify CR SRO of RCP status 4. Verify a Blackout does not exist and **GO TO** Step 6 6. Open 1HP-24 and 1HP-25 7. Start all available HPI pumps 8. Open 1HP-26 and 1HP-27 9. Verify at least two HPI pumps are operating using two diverse indications 10. Verify HPI flow is acceptable and **GO TO** Step 12 12. Verify HPI pump flow limits are not being exceeded 13. Notify CR SRO of HPI status 14. Verify RCS pressure > 550 psig 15. Verify that LPI flow in both headers is < 2900 gpm and **GO TO** Step 27 27. Verify TBVs are available 28. Verify 1SA-2/C-8 is not lit and Select OFF for both digital channels on AFIS HEADER A 29. Verify 1SA-2/D-8 is not lit and Select OFF for both digital channels on AFIS HEADER B 30. Verify any EFDW pump operating **RNO:** Place 1FDW-315 and 1FDW-316 in MANUAL and close

Op-Test No.: _____ Scenario No.: 2 Event No.: 7 Page 5 of 8

Event Description: **Small Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Plant response:
	BOP	Rule 2, Loss of Subcooling Margin (SCM) 31. Start 1A and 1B MD EFDW pumps on all intact SGs 32. Verify <u>any</u> EFDW pump operating 33. Verify <u>both</u> SGs intact 34. Establish 300 gpm EFDW flow to 1A and 1B SGs 35. Verify both MD EFDWPs operating 36. Place 1 TD EFDW PUMP in PULL TO LOCK 37. Trip <u>both</u> Main FDW pumps 38. Place FDW block valve switches in CLOSE (1FDW-33, 1FDW-31, 1FDW-42, 1FDW-40) 39. Utilize Rule 7 (SG Feed Control) to feed all intact SGs to the appropriate SG Level Control Point using available feed sources (Main & EFDW) **(CT-10)** **Note: They should feed to the LOSCM Setpoint (290 – 300" XSUR) and flow may be throttled but level should continue to increase.** 40. Notify CR SRO of SG feed status 41. **IAAT** SG pressure is > RCS pressure, **THEN** reduce SG pressure < RCS pressure using TBVs 42. Verify no Main FDW pumps are operating and **GO TO** Step 49 49. Ensure Rule 3 (Loss of Main or Emergency FDW) is in progress or complete (**details on page 25 of the scenario**) ***Booth Cue: After Rule 3 is initiated, or as directed by the Lead Evaluator, FIRE TIMER 8 to fail 1FDW-316 closed.*** 50. **WHEN** directed by CR SRO, **THEN EXIT** this rule

Op-Test No.: _____ Scenario No.: 2 Event No.: 7 Page 6 of 8

Event Description: **Small Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC	**Crew Response:** When ES Channels 1 and 2 actuate, an operator should inform the SRO that ES Channels 1 and 2 have actuated. The SRO should direct initiation of EOP **Encl. 5.1, ES Actuation** per the Parallel Actions page of Subsequent Actions or the LOSCM Tab. EOP Enclosure 5.1(ES Actuation) 1. Determine all ES channels that should have actuated based on RCS pressure and RB pressure. 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 HPI in Manual (RZ Modules). 5. Verify Rule 2 in progress or complete. 6. Determine **NO** RCPs operating and **GO TO** Step 8. **Note: ES Channels 1-thru-6 may actuate due to High Reactor Building Pressure; therefore, the ES Actuation Checklist may be performed in a staggered fashion as the various ES Channels are actuated.** 8. Determine **NO** RCPs operating and **GO TO** Step 12 12. **IAAT** ES channels 3&4 are actuated, **THEN GO TO** Step 13 13. Place1A and 1B LPI pumps and 1LP-17/18 in manual control. **CAUTION** LPI pump damage may occur if operated in excess of 30 minutes against a shutoff head. 14. **IAAT** any LPI pump is operating against a shutoff head, **THEN** at the CR SRO's discretion, stop affected LPI pumps **(CT)** 15. **IAAT** RCS pressure < LPI pump shutoff head, **THEN** realign LPI **RNO: GO TO** Step 18 18. **IAAT** 1A and 1B LPI pumps are off/tripped.....align 1C LPI pump **RNO: GO TO** Step 21

Op-Test No.: _____ Scenario No.: 2 Event No.: 7 Page 7 of 8

Event Description: **Small Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC	**Crew Response:** EOP Enclosure 5.1 (ES Actuation) 21. **IAAT** 1A LPI pump fails while operating..... 22. **IAAT** 1B LPI pump fails while operating..... 23. Start A and B OUTSIDE AIR BOOSTER FANS **(CT-27 within 30 minutes of ES actuation)** 24. Notify Unit 3 to start 3A and 3B OUTSIDE AIR BOOSTER FANS 25. Verify 1CF-1 and 1CF-2 are open 26. Verify 1HP-410 closed 27. Secure makeup to the LDST 28. Verify all ES channel 1-4 components are in the ES position **RNO:** 1. **IF** 1HP-3 fails to close, **THEN** close 1HP-1 2. **IF** 1HP-4 fails to close, THEN close 1HP-2 3. Notify SRO to evaluate components **NOT** in ES position and initiate action to place in ES position if desired **Note: 1HP-4 is failed open and will not close. The operator should diagnose this and perform the RNO and close 1HP-2 located on 1UB1** 29. Verify Unit 2 turbine tripped (Unit 2 turbine is online) **RNO: GO TO** Step 32 32. Close 1LPSW-139 33. Fail Open 1LPSW-251/252 34. Start <u>all available</u> LPSW pumps 35. Verify three LPSW pumps operating 36. Open 1LPSW-4 and 1LPSW-5 37. **IAAT** BWST level ≤ 19'. **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES) **RNO:** 1. Display BWST level using OAC Turn-on Code "SHOWDIG O1P1600" 2. Notify crew of BWST level IAAT step

Op-Test No.: _____ Scenario No.: 2 Event No.: 7 Page 8 of 8

Event Description: **Small Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC	**Crew Response:** EOP Enclosure 5.1 (ES Actuation) 38. Dispatch an operator to perform Encl. 5.2 (Placing RB Hydrogen Analyzers In Service) 39. Select DECAY HEAT LOW FLOW ALARM SELECT switch to ON 40. **IAAT** ES channels 5 & 6 have actuated, **THEN** perform Step 41 41. Verify all ES channel 5 & 6 components are in the ES position 42. **IAAT** ES channels 7 & 8 have actuated, **THEN** perform Step 43 **RNO: GO TO** Step 44 44. Notify U2 CR SRO that SSF is inoperable due to OTS1-1 open. 45. **IAAT** conditions causing ES actuation have cleared, **THEN** initiate Encl 5.41 (ES Recovery) 46. **WHEN** CR SRO approves, **THEN EXIT** this enclosure **Note: The operator must get SRO approval to exit this enclosure.**
		This event is complete after Rule 3 is initiated from Rule 2 (step 49 of Rule 2) is performed, or as directed by the Lead Evaluator.

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

Event Description: **1FDW-316 Fails Closed**

Time	Position	Applicant's Actions or Behavior
	BOP	**Crew response:** **Rule 3, Loss of Main or Emergency FDW:** 1. Verify loss of Main FDW/EFDW is not due to Turbine Building Flood and **GO TO** Step 3 3. **IAAT NO** SGs can be fed with FDW (Main/CBP/Emergency) **AND** any of the following: • 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 **Note: 1FDW-316 is failed in the closed position and will not operate in AUTO or Manual. Candidate should then GO TO Step 41** 41. Notify CR SRO that Encl 5.27 (Alternate methods for Controlling EFDW Flow) is being initiated. 42. Initiate Encl 5.27 **Enclosure 5.27 (Alternate Methods for Controlling EFDW Flow)** 1. Identify the failure as 1FDW-316 failed closed and **GO TO** Step 39 39. Verify 1B MD EFDWP operating 40. Stop 1B MD EFDWP 41. Verify 1A MD EFDWP is operating 42. Place 1 TD EFDW PUMP in PULL TO LOCK

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

Event Description: **1FDW-316 Fails Closed**

Time	Position	Applicant's Actions or Behavior
		Crew response: **Enclosure 5.27 (Alternate Methods for Controlling EFDW Flow)** 43. Place 1FDW-44 in HAND and set demand to 0% 44. Close 1FDW-42 45. Verify 1B MD EFDWP will be used 46. Open 1FDW-384 47. Verify 1FDW-45 closed and 1FDW-47 open 48. Start 1B MD EFDWP **NOTE** • Flow from the TD EFDWP through a S/U control valve should be read on the FDW SU FLOW gauge • Flow from a MD EFDWP through a S/U control valve should be read on the MDEFWP DISCH FLOW gauge 49. Verify either of the following: • HPI Forced Cooling is maintaining core cooling • CBP feed providing SG feed **RNO:** 1. **IF** any SG is being fed, **THEN** perform the following: A. Throttle 1FDW-44 to establish 100 gpm B. Throttle 1FDW-44 to obtain desired level per Rule 7 (SG Feed Control) 4. Notify CR SRO of SG feed status 5. **GO TO** Step 51 51. **IAAT** proper SG level is reached per Rule 7 (SG Feed Control), **AND** SG level permits auto level control, **THEN** place 1FDW-44 in AUTO 52. **WHEN** directed by the CR SRO, **THEN EXIT** this enclosure
		This scenario is complete when feedwater flow has been established to the 1B SG and the cooldown rate is controllable, or as directed by the Lead Evaluator.

CRITICAL TASKS

1. CT-1 Trip All RCPs
2. CT-10 Establish FDW Flow And Feed SG(s)
3. CT-27 Implementation Of Control Room Habitability Guidance (Within 30 minutes of ES Actuation)
4. CT Secure LPI pumps within 30 minutes of ES actuation if RCS pressure greater than LPI pump shutoff head. (TCA#8)

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: 100%	Mode: 1	Mode: 1
Gross MWE: 902	100% Power	100% Power
RCS Leakage: +.025 gpm (No WCAP action level)	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 #
AMSAC/DSS Bypassed	Today / 06:30	7 Days	SLC 16.7.2 Conditions A & B

Shift Turnover Items (CR SRO)

Primary

- SASS in MANUAL for I&E testing
- AMSAC/DSS Bypassed for I&E testing
- OATC will perform Control Rod movement PT (Group 1 only) per PT/1/A/0600/015 Encl 13.2 beginning at Step 3.3

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 (CR SRO)		
RCS Boron: 30 ppmB	Gp 7 Rod Position: 93%	

Human Performance Emphasis (OSM)

Procedure Use and Adherence

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

Examiners: _____ Operators: _____ **SRO**

_____ _____ **OATC**

_____ _____ **BOP**

Initial Conditions:

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

Turnover:

- SASS in Manual for I&E testing
- AMSAC/DSS Bypassed for I&E testing
- Pressurize the LDST With H_2

Event No.	Malf. No.	Event Type*	Event Description
0a	Pre-Insert		SASS in MANUAL
0b	Pre-Insert		AMSAC/DSS Bypassed
1		N; BOP, SRO	Pressurize LDST With H_2
2	MSS200	C; BOP, SRO	Vacuum Leak
3	Override	C; OATC, SRO (TS)	PZR Spray Valve (1RC-1) Fails OPEN
4	MPI150	I; OATC, SRO (TS)	PZR "A" RTD Fails LOW
5		C; BOP, SRO (TS)	Spurious ES-3 Actuation
6	MCR061	C; OATC, SRO	Continuous Control Rod Withdrawal
7		M; ALL	Blackout Requiring Manual Alignment From CT-5 CT-1 Lockout KHU-1 Emergency Lockout KHU-2 Emergency Lockout
8	MPS400	M; ALL	LBLOCA With Failure of 1B LPI Pump

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

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

Event Description: **Pressurize LDST with H_2 (N; BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Crew response:** • Refer to OP/1/A/1106/017, Enclosure 4.5 (Unit 1 LDST H_2 Addition) to adjust LDST pressure beginning at Step 2.2. 2.2 Immediately prior to pressurization determine lowest reading of diverse LDST level indications: _____ inches 2.3 For existing LDST level determine LDST Pressure allowable per LDST Pressure vs Level curve: _____ psig 2.4 Notify Operator at H_2 Cage to pressurize primary hydrogen ***Booth Cue: Using TIME COMPRESSION, notify the operator that primary H_2 is aligned at the H_2 cage.*** **NOTE: Operator should be in constant communication with CR to close 1H-26 if 1H-1 fails open.** 2.5 Direct Operator to open 1H-26 (LDST Block) 2.6 Direct Operator to use explosive detector to monitor the following: • Pressurized, non-welded H_2 piping and fittings within local area of addition • Loop seal (A-2-N of LDST Rm) ***Booth Cue: Using TIME COMPRESSION, notify the operator that 1H-26 is open and H_2 monitoring is complete.*** 2.7 Cycle 1H-1 (LDST SUPPLY) as required to pressurize LDST per LDST Pressure vs Level curve 2.8 **WHEN** Hydrogen addition complete, ensure closed 1H-1 (LDST SUPPLY) 2.9 Direct Operator to close 1H-26 (LDST Block) 2.10 Ensure LDST pressure within LDST Pressure vs Level curve 2.11 Notify Operator at H_2 Cage to isolate primary hydrogen 2.12 Log LDST Hydrogen addition in Auto Log
		This event is complete when LDST pressurization is stopped, or as directed by the Lead Evaluator.

Op-Test No.: _____	Scenario No.: **3**	Event No.: **2**	Page 1 of 2
Event Description:	**Vacuum Leak (C; BOP, SRO)**		

Time	Position	Applicant's Actions or Behavior
	BOP	**Plant Response:** • 1SA-03/A-6 (COND VACUUM LOW) • OAC alarm, Main Condenser Vacuum LOW **Crew response:** Refer to Alarm Response Guide 1SA-03/A-6 1. Alarm setpoint • 25" Hg vacuum decreasing 2. Automatic Action • None; however, Main Turbine trip setpoint is ≤ 21.75" Hg (**not online for this scenario**) and FWPT trip setpoint is ≤ 19" Hg **Note: For this scenario, condenser vacuum will not be allowed to decrease below 22" Hg. Once 1SA-03/A-6 alarms, the condenser vacuum leak rate will be decreased to ensure the operating FDW pump will not trip.** 3. Manual Action • Refer to AP/1/A/1700/027 (Loss of Condenser Vacuum)
	SRO	Refer to AP/1/A/1700/027 (Loss of Condenser Vacuum) 1. Entry Conditions • Decreasing condenser vacuum as indicated by low condenser vacuum alarms 4.1 Announce AP entry using the PA system 4.2 **IAAT** <u>both</u> of the following apply: __ Condenser vacuum ≤ 22" Hg __ MODE 1 <u>or</u> 2 **THEN** trip the Rx.

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

Event Description: **Vacuum Leak (C; BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
		Crew response: AP/1/A/1700/027 (Loss of Condenser Vacuum) 4.3 Dispatch operators to perform the following: __ Perform Encl 5.1 (Main Vacuum Pump Alignment) __ Look for vacuum leaks ***Booth Cue: Using TIME COMPRESSION, call the Control Room to notify the operator that the Main Vacuum Pumps are aligned and Enclosure 5.1 is complete.*** 4.4 Ensure <u>all</u> available Main Vacuum Pumps operating (A, B, & C) 4.5 Ensure 1V-186 is closed 4.6 Ensure Stm to Stm Air Eject A, B, C > 255 psig 4.7 Verify Stm Seal Hdr Press > 1.5 psig 4.8 Ensure <u>all</u> available CCW pumps operating ***Booth Cue: Call Control Room as the NEO sent out to look for vacuum leaks and report that a leak was found on the 1B Main FDW Pump pumping trap sight glass.*** ***The leak will be removed after the control room directs the NEO to isolate the sight glass.*** 4.9 Verify Condensate flow ≥ 2300 gpm 4.10 **WHEN** condenser vacuum is stable, **AND** Encl 5.1 (Main Vacuum Pump Alignment) is complete, **THEN EXIT** this procedure
		This event is complete when the SRO reaches Step 4.10 of AP/027, or as directed by the Lead Evaluator.

Op-Test No.: _____	Scenario No.: **3**	Event No.: **3**	Page 1 of 3
Event Description:	**PZR Spray Valve (1RC-1) Fails OPEN (C; OATC, SRO)**		

Time	Position	Applicant's Actions or Behavior
		Plant Response: • RCS pressure will decrease • 1SA-2/D-3, (RC PRESS HIGH/LOW) **Crew Response:** **Note: The crew may perform Plant Transient Response (PTR)**
	BOP	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)
	SRO/OATC	Refer to AP/1/A/1700/044 (Abnormal Pressurizer Pressure Control) 1. Entry Conditions 1.1 Inability to maintain control of RC pressure due to failure of the PORV, 1RC-1, or PZR heaters as indicated by any of the following: • High or Low RC pressure alarms • RC pressure outside of control band • Pressurizer Relief Valve Flow Statalarm 3. Immediate Manual Actions 3.1 **IAAT** <u>all</u> of the following conditions exist: __ PORV open __ RC pressure < 2300 psig (HIGH) <u>or</u> 480 psig (LOW) __ PZR level ≤ 375" **THEN** close 1RC-4 **Note: The crew may perform Immediate Manual Action Step 3.2 (next page) from memory prior to the SRO entering AP/44.**

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

Event Description: **PZR Spray Valve (1RC-1) Fails OPEN (C; OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: AP/1/A/1700/044 (Abnormal Pressurizer Pressure Control) 3.2 **IAAT** all the following conditions exist: __ RC pressure < 2155 psig __ RC pressure decreasing without a corresponding decrease in PZR level __ PZR heaters unable to maintain RCS pressure **THEN** close the following: __ 1RC-1 __ 1RC-3 **Note: If the block valve is not closed, the Reactor will trip on variable low pressure and ES actuation will occur.** **Note: The PZR spray valve (1RC-1) will remain failed for the remainder of the scenario and the operator will be required to maintain RCS pressure manually as required using 1RC-3.** **Note: 1RC-1 normally maintains RCS pressure 2155-2205 psig.** 4.1 Announce AP entry using the PA system 4.2 **GO TO** the applicable per the following table:

√	Failure Caused RCS Pressure	Step
	Decrease	**4.3**
	Increase	4.19

4.3 Verify the following:

__ 1RC-4 failed to close

__ PORV open

RNO: GO TO Step 4.5

4.5 Verify 1RC-1 failed OPEN

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

Event Description: **PZR Spray Valve (1RC-1) Fails OPEN (C; OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: 4.6 Position the following to maintain RC pressure within desired band, as required: __ 1RC-1 __ 1RC-3 4.7 Verify RC pressure decreasing uncontrollably **RNO: GO TO** Step 4.14 4.14 Verify PZR heaters maintaining RCS pressure within desired band 4.15 Notify SPOC to repair malfunctioning component 4.16 Ensure requirements of following are met: __ TS 3.4.1 (RCS Pressure, Temperature, and Flow DNB Limits) **(Will be entered if RCS pressure < 2125 psig)** __ TS 3.4.9 (Pressurizer) __ TS 3.4.12 (LTOP System) __ SLC 16.5.1 (RCS Vents) 4.17 **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
		This event is complete when the RCS pressure decrease has been stopped and PZR level is stable, or as directed by the Lead Evaluator.

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

Event Description: **PZR 'A' RTD Fails LOW (I; OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	OATC	***Booth Cue: Call the BOP to request the following: "This is the Secondary Chemist requesting the value of steam flow to the 'E' Heaters".*** (This will help to ensure the OATC will take actions for the PZR RTD failure) **Plant Response:** Statalarms: • OAC (RC PZR level 1&3 mismatch) • OAC (RC PZR level 2&3 mismatch) Board indications: • PZR level 1 and 2 indicates ≈ 104 inches • PZR level 3 indicates ≈ 154 inches and slowly increasing **Crew Response:** Refer to ARG 1SA-02/C-3 (RC Pressurizer Level High/Low): 1. Alarm Setpoint 1.1 High – 260" water 1.2 Low – 200" water 2. Automatic Action None 3. Manual Action 3.1 Check alternate PZR level indications.. 3.2 Check for proper Makeup/Letdown flows and adjust to restore proper level. • RO may take 1HP-120 to manual to control PZR level. **Note: If in MANUAL the RO should take 1HP-120 back to AUTO.**

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

Event Description: **PZR 'A' RTD Fails LOW (I; OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
		Crew Response:
	SRO	Refer to ARG 1SA-02/C-3 (RC Pressurizer Level High/Low):
		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 M/U and/or RCP SI)
		• AP/1/A/1700/032 (Loss of Letdown)
		3.4 Refer to Technical Specification 3.4.9, Pressurizer
		3.5 Refer to Technical Specification 3.3.8, PAM Instrumentation.
	OATC/BOP	• Condition A applies
	BOP	3.6 Refer to OP/1/A/1105/014 Enclosure 4.9, Control Room Instrumentation Operation And Information, SASS Information.
		OP/1/A/1105/014 Enclosure 4.9 (SASS Information)
		3.2 SASS (Smart Automatic Signal Selector) Manual Operation
		3.2.1 **IF** "MISMATCH" light is on and "TRIP 'A'" or "TRIP 'B'" light is on, a SASS trip has occurred.
		A. Controlling signal will be selected from CR keyswitch (for parameters in ICS Cabinet #8).
		B. Select valid signal as controlling signal by positioning CR keyswitch or pushbutton for Pzr level to valid signal (for parameters in ICS Cabinet #8).
		3.2.2 **IF** "MISMATCH" light is on, a mismatch has occurred
		A. Controlling signal will be signal selected from CR keyswitch (for parameters in ICS Cabinet #8).
		B. Select valid signal as controlling signal by positioning CR keyswitch or pushbutton for Pzr level to valid signal **(Select Pzr Level #3)**
		3.2.3 Initiate a Work Request to repair faulty signal
		Note: The SRO may direct an RO to select Pzr Level #3 prior to referencing OP/1/A/1105/014
		Note: If the SRO has not addressed the TS for this event, continue to next event and ask the TS as a follow up question.
		This event is complete when PZR level 3 has been selected, or as directed by the Lead Evaluator.

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

Event Description: **Spurious ES Channel 3 Actuation (C; BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
		Plant Response: Statalarms: • 1SA-1/C-10 ES Channel 3 Trip Control Board Indications: • ES Channel 3 actuates on RZ Modules • 1A LPI pump starts • 1A LPI train aligns • A and C LPSW pumps start **Crew Response:** 1. Determine ES actuation not valid and inform the SRO 2. Crew may perform Plant Transient Response (PTR) 3. SRO enter AP/42 (Inadvertent ES Actuation)
	SRO/BOP	**AP/1/A/1700/042 (Inadvertent ES Actuation) actions:** 1. Entry Conditions Engineered Safeguards actuation occurred due to invalid reason while in MODE 1-4 4.1 Verify ES Channel 1 or 2 has actuated **RNO: GO TO** Step 4.4 4.4 Verify ES Channel 5 or 6 has actuated **RNO: GO TO** Step 4.7 4.7 Close the following: __ 1HP-24 __ 1HP-25 4.8 Ensure AP/42 Encl 5.1 (Side Board Actions) is in progress **Note: Encl 5.1 of AP/42 contains no verifiable actions for the BOP to mitigate a spurious ES-3 actuation** 4.9 Initiate announcement of AP Entry using the PA system

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

Event Description: **Spurious ES Channel 3 Actuation (C; BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: 4.10 Verify ES Channel 1 or 2 has actuated **RNO:** 1. **IF** ES Channel 5 or 6 has actuated, **THEN** initiate AP/42 Encl 5.2 (Letdown Restoration) 2. **GO TO** Step 4.20 4.20 Verify ES Channel 3 or 4 has actuated 4.21 Place the affected components in MANUAL: (RZ Module) ES Channel 3 __ LPI-P1A __ 1LP-17 4.22 Verify LPI was aligned in decay heat removal mode prior to ES actuation **RNO:** 1. Stop the following: __ 1A LPI PUMP __ 1B LPI PUMP 2. Close the following: __ 1LP-17 __ 1LP-18 4.23 Notify SPOC to investigate and repair the cause of the inadvertent ES actuation, as necessary **Note: ES-3 components will remain in Manual for the rest of the scenario and will require the crew to manually reinitiate them when conditions require the channel to actuate.** SRO refers to Encl. 5.4 (TS/SLC Requirements) **TS 3.3.7** (ES Digital Channels) • Condition A applies (Declare associated components inoperable within 1 hour) **TS 3.3.6** (ESPS Manual Initiation) • Condition A applies (Restore to Operable status within 72 hours) **TS 3.3.6** (ESPS Manual Instrumentation) due to the manual actuation initiation being blocked if any ES component in MANUAL • Condition A applies (Restore to Operable status within 72 hours) **TS 3.5.4** (BWST) BWST level – **Entry NOT required**
		This event is complete when ES 3 components are secured, or as directed by the Lead Evaluator.

Op-Test No.: _____	Scenario No.: **3**	Event No.: **6**	Page 1 of 1
Event Description:	**Continuous Rod Withdrawal Requiring Manual Reactor Trip (C; OATC, SRO)**		

Time	Position	Applicant's Actions or Behavior
	SRO/OATC BOP	**Plant Response:** • Control Rods withdrawing without operator action • NI-5 thru NI-9 indicate increasing reactor power • SURs on Wide Range NIs increasing **Crew Response:** • The candidates should utilize the "Plant Transient Response (PTR)" process to stabilize the plant and recognize that control rods are withdrawing without a valid signal. • Verbalize to the SRO reactor power level and direction of movement. • Place the Diamond in MANUAL to stabilize the plant. (Board operator may also take the FDW Masters to HAND.) ➢ The crew should insert control rods and monitor reactor power and wide range startup rate to stabilize the plant • Report no valid (ICS) Runback and monitor RCS pressure and inventory **Note: 1RC-3 (previously closed due to 1RC-1 failing open) may be required to be manually operated to control RCS pressure. Normally, 1RC-1 will open at 2205 psig increasing and close at 2155 psig decreasing. Since 1RC-1 is failed open, the operator will be required to control RCS pressure manually with 1RC-3.** **Note: The SRO/OATC may elect to trip the Reactor during this transient per SOMP 1-02 and OMP 1-18 Attachment J (Plant Transient Response).** **During abnormal operating conditions a manual reactor trip shall be initiated if any of the following conditions occur:** • **Reactor power level approaches any operating limit** • **Reactor power level exceeds the pre-transient power level by greater than 5% AND the cause of the power change is NOT understood, OR is NOT controllable** • **Any time plant conditions are considered uncontrollable or unsafe** **Note: If the Reactor is tripped, then GO TO event 7 (next page).**
		This event is complete when the plant is stable or if the Reactor is manually tripped, or as directed by the Lead Evaluator.

Op-Test No.: _____	Scenario No.: **3**	Event No.: **7**	Page 1 of 6
Event Description:	**Blackout Requiring Manual Alignment From CT-5 (M; ALL)**		

Time	Position	Applicant's Actions or Behavior
		Plant Response • Reactor will trip (if not already tripped) • MFBs will de-energize • CT-1 Lockout • KHU-1 Emergency Lockout • KHU-2 Emergency Lockout
	SRO OATC	**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 **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	SRO directs BOP to perform Symptoms Check: • Power Range NIs **<u>NOT</u>** < 5% and/or **<u>NOT</u>** 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)

Op-Test No.: _____	Scenario No.: **3**	Event No.: **7**	Page 2 of 6
Event Description:	**Blackout Requiring Manual Alignment From CT-5 (M; ALL)**		

Time	Position	Applicant's Actions or Behavior
	SRO	**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. Perform Rule 3 when the Main FDW Pumps trip (**see next page**) Blackout Tab • Direct an RO to announce plant conditions using PA system • Direct an RO to notify OSM to reference the Emergency Plan and NSD 202 (Reportability) 1. Verify <u>two</u> ROs available to perform Control Room actions 2. Notify <u>one</u> RO to perform Encl 5.38 (Restoration of Power) **(see page 4)** 3. Verify any SG is being fed 4. Verify <u>any</u> MD EFDWP operating **RNO:** Position the following to OFF: __ 1A MD EFDWP __ 1B MD EFDWP 5. Feed and steam <u>available</u> SGs as necessary to stabilize RCS P/T 6. **IAAT NO** SGs are being fed, **AND** <u>any</u> source of EFDW (Unit 1 or another unit) becomes available, **THEN** perform the following..... 7. **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. 8. **IAAT** power is restored to <u>any</u> of the following: __ 1TC __ 1TD __ 1TE **THEN GO TO** Step 9 **RNO: GO TO** Step 11 9. Initiate AP/11 (Recovery From Loss of Power) 10. **GO TO** Subsequent Actions Tab 11. Verify Encl 5.38 (Restoration of Power) in progress or complete

Op-Test No.: _____	Scenario No.: **3**	Event No.: **7**	Page 3 of 6
Event Description:	**Blackout Requiring Manual Alignment From CT-5 (M; ALL)**		

Time	Position	Applicant's Actions or Behavior
	OATC	**Crew Response:** 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) 45. **WHEN** directed by CR SRO, **THEN EXIT** this rule EOP Enclosure 5.9 (Extended EFDW Operation) 1. Monitor EFDW parameters on EFD graphic display 2. **IAAT** UST level < 4', **THEN GO TO** Step 117 3. **IAAT** feeding both SGs with one MD EFDWP is desired..... **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

Op-Test No.: _____	Scenario No.: **3**	Event No.: **7**	Page 4 of 6
Event Description:	**Blackout Requiring Manual Alignment From CT-5 (M; ALL)**		

Time	Position	Applicant's Actions or Behavior
	BOP	**Crew Response:** 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 **(not modeled on simulator)** 2. **IF NO** Keowee units are operating, **THEN GO TO** Step 36 36. **IAAT** CT-5 indicates ≈ 4160 volts, **THEN GO TO** Step 50 50. Place the following switches in MAN: __ MFB1 AUTO/MAN (**already in manual**) __ MFB2 AUTO/MAN (**already in manual**) __ STANDBY 1 AUTO MAN __ STANDBY 2 AUTO MAN 51. Open the following breakers: __ $N1_1$ MFB1 NORMAL FDR (**already open**) __ $N2_1$ MFB2 NORMAL FDR (**already open**) __ $E1_1$ MFB1 STARTUP FDR (**already open**) __ $E2_1$ MFB2 STARTUP FDR (**already open**)

Op-Test No.: _____	Scenario No.: **3**	Event No.: **7**	Page 5 of 6
Event Description:	**Blackout Requiring Manual Alignment From CT-5 (M; ALL)**		

Time	Position	Applicant's Actions or Behavior
	BOP	**Crew Response:** 52. Place the following switches in MAN: __ CT4 BUS 1 AUTO/MAN __ CT4 BUS 2 AUTO/MAN __ CT5 BUS 1 AUTO/MAN (**already in manual**) __ CT5 BUS 2 AUTO/MAN (**already in manual**) 53. Open the following breakers: __ SK1 CT4 STBY BUS 1 FEEDER (**already open**) __ SK2 CT4 STBY BUS 2 FEEDER (**already open**) 54. Close the following breakers: **(CT-8) (*Critical Steps to regain power. Only one set of breakers is required to regain power)** __ SL1 CT5 STBY BUS 1 FEEDER* __ SL2 CT5 STBY BUS 2 FEEDER* 55. Place the following switches in AUTO: __ CT5 BUS 1 AUTO/MAN __ CT5 BUS 2 AUTO/MAN 56. Verify Standby Bus #1 energized 57. Notify CR SRO in each unit where a blackout exists that Standby Bus #1 is energized **Note: The Blackout exists on Unit 1 only.** 58. Close the following breakers: __ $S1_1$ STBY BUS 1 TO MFB1* __ $S2_1$ STBY BUS 2 TO MFB2* 59. Verify <u>any</u> of the following energized: __ 1TC, __ 1TD, __ 1TE 60. Notify Unit 1 CR SRO of status of 4160V SWGR **Note: When power is restored, IAAT Step 8 (B/O Tab) will apply and the SRO will initiate AP/11 (steps next page) and GO TO the Subsequent Actions Tab.**

Op-Test No.: _____ Scenario No.: **3** Event No.: **7** Page 6 of 6

Event Description: **Blackout Requiring Manual Alignment From CT-5 (M; ALL)**

Time	Position	Applicant's Actions or Behavior
	BOP	**Crew Response:** AP/11 (Recovery From Loss of Power) 4.1 Announce AP entry using OMP 1-18 placard. **4.2 IAAT** Pzr level > 80"[180"acc], **AND** Pzr heaters are desired, **THEN** position Pzr heaters to AUTO. **4.3** Verify load shed of inverters was performed... 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 a 230KV Switchyard Isolation has occurred as indicated by either of the following on: __ 1SA-15/E-6 (EL SWYD ISOLATION CONFIRMED CHNL A LOGIC) __ 1SA-14/E-6 (EL SWYD ISOLATION CONFIRMED CHNL B LOGIC) 4.15 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)
		This event is complete when power has been restored and the transfer to Subsequent Actions has occurred, or as directed by the Lead Evaluator.

Op-Test No.: _____	Scenario No.: **3**	Event No.: **8**	Page 1 of 8
Event Description:	**LBLOCA With Failure of 1B LPI Pump (M; ALL)**		

Time	Position	Applicant's Actions or Behavior
		Plant Response: Control Board Indications: • 1SA-2/D-3 (RC PRESS HI/LOW) • RCS Pressure and PZR level decreasing • ES 1-6 actuate (**except ES Channel 3 which is in MANUAL**) • RCS subcooling margin will indicate 0°F • The LOOP A and LOOP B SUBCOOLING MARGINs will indicate Superheat due to no LPI pumps operating (1A LPI pump is in Manual and OFF due to previous ES-3 actuation and the 1B LPI pump will not start) **Crew Response:**
	SRO OATC/BOP	• SRO may direct an RO to perform a Symptoms Check ➢ Power Range NIs **NOT** < 5% and/or **NOT** 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 o CSAE Offgas alarms o Process Monitor alarms (RIA-40) o Area monitor alarms (RIA-16/17)
	SRO	• SRO may direct an RO to actuate ES Channel 3 components previously placed in manual • Once any Subcooling Margin (SCM) indicates ≤ 0°F, the SRO will direct or concur initiation of Rule 2 (Loss of SCM) **(see page 25)** • SRO will transfer to the LOSCM Tab (**see next page**)

Op-Test No.: _____	Scenario No.: **3**	Event No.: **8**	Page 2 of 8
Event Description:	**LBLOCA With Failure of 1B LPI Pump (M; ALL)**		

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** LOSCM Tab Parallel Actions • SRO will direct an RO to initiate Encl 5.1 (ES Actuation) **(see page22)** • SRO will direct an available RO to make notifications ➢ Announce plant conditions using PA system ➢ Notify OSM to reference Emergency Plan and NSD 202 (Reportability) ➢ Notify plant staff that EDLs are in affect using PA system 1. Ensure Rule 2 (Loss of SCM) is in progress or complete 2. Verify Station ASW feeding <u>any</u> SG **RNO: GO TO** Step 4 4. Verify LOSCM caused by excessive heat transfer **RNO: GO TO** Step 6 6. **IAAT** <u>either</u> of the following exist: __ LPI FLOW TRAIN A <u>plus</u> LPI FLOW TRAIN B ≥ 3400 gpm __ <u>Only one</u> LPI header in operation with header flow ≥ 2900 gpm **THEN GO TO** LOCA CD tab **Note: When the 1A LPI Pump is manually started and aligned per Enclosure 5.1, this step will apply and the SRO should transfer to the LOCA CD tab. (CT-4)** 7. Verify SSF activated per AP/25 with both of the following systems required: __ SSF RC Makeup __ SSF Aux Service Water **RNO: GO TO** Step 9 9. Verify all of the following exist: __ NO RCPs operating __ HPI flow in <u>both</u> HPI headers __ Adequate <u>total</u> HPI flow per Figure 1 (Total Required HPI Flow) 10. **GO TO** Step 89 89. Open 1AS-40 while closing 1MS-47

Op-Test No.: _____	Scenario No.: **3**	Event No.: **8**	Page 3 of 8
Event Description:	**LBLOCA With Failure of 1B LPI Pump (M; ALL)**		

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** **Note: Once LPI flow is > 2900 gpm, IAAT Step 6 of the LOSCM Tab will apply and the SRO will transfer to the LOCA CD Tab.** LOCA CD Tab 1. **IAAT** BWST level is ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES) 2. Verify ES actuated 3. **GO TO** Step 7 7. Perform the following: __ Ensure <u>all</u> RBCUs in low speed __ Open 1LPSW-18 __ Open 1LPSW-21 __ Open 1LPSW-24 8. Initiate Encl 5.35 (Containment Isolation) 9. Start all RB Aux fans 10. **IAAT** <u>either</u> of the following exists: __ LPI FLOW TRAIN A plus LPI FLOW TRAIN B ≥ 3400 gpm __ <u>Only one</u> LPI header in operation with header flow ≥ 2900 gpm **THEN GO TO** Step 11 11. Stop <u>all</u> RCPs 12. Dispatch an operator to perform the following: __ Remove white tag and close 1XO-F5C (1CF-1 Bkr) __ Remove white tag and close 1XP-F5C (1CF-2 Bkr) __ Close 1XS2-F3D (1LP-104 Bkr) 13. **IAAT** breakers for 1CF-1 AND 1CF-2 are closed, **THEN** close 1CF-1 and 1CF-2 14. Dispatch an operator to perform Encl 5.28 (Local SG Isolation) to isolate <u>both</u> SGs
		This event is complete when the SRO has transferred to the LOCA CD Tab, or as directed by the Lead Evaluator.

Op-Test No.: _____ Scenario No.: **3** Event No.: **8** Page 4 of 8

Event Description: **LBLOCA With Failure of 1B LPI Pump (M; ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** EOP Enclosure 5.1 (ES Actuation) 1. Determine all ES channels that should have actuated based on RCS pressure and RB pressure:

√	Actuation Setpoint (psig)	Associated ES Channel
	1600 (RC□)	1 & 2
	550 (RCS)	3 & 4
	3 (RB)	1, 2, 3, 4, 5, & 6
	10 (RB)	7 & 8

2. Verify all ES digital channel associated with actuation setpoints have actuated
3. **IAAT** additional ES actuation setpoints are exceeded, **THEN** perform Steps 1 – 2
4. Place HPI in manual control
5. Verify Rule 2 in progress or complete
6. Verify any RCP operating

RNO: GO TO Step 8

8. **IAAT** any RCP is operating, **AND** ES Channels 5 and 6 actuate, **THEN** perform Steps 9 – 11

RNO: GO TO Step 12

12. **IAAT** ES Channels 3 & 4 are actuated, **THEN GO TO** Step 13
13. Place the following in manual control:
    - __ 1A LPI PUMP
    - __ 1LP-17
    - __ 1B LPI PUMP
    - __ 1LP-18
14. **IAAT** any LPI pump is operating against shutoff head, **THEN** at the CR SRO's discretion, stop affected LPI pumps

Op-Test No.: _____	Scenario No.: **3**	Event No.: **8**	Page 5 of 8
Event Description:	**LBLOCA With Failure of 1B LPI Pump (M; ALL)**		

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** EOP Enclosure 5.1 (ES Actuation) 15. **IAAT** RCS pressure is < LPI pump shutoff head, **THEN** perform Steps 16 – 17 16. Perform the following: __ Open 1LP-17 __ Start 1A LPI PUMP 17. Perform the following: __ Open 1LP-18 __ Start 1B LPI PUMP **RNO:** 1. Stop 1B LPI PUMP 2. Close 1LP-18 18. **IAAT** 1A and 1B LPI PUMP's are off/tripped, **AND** all the following exist: __ RCS pressure < LPI pump shutoff head __ 1LP-19 closed __ 1LP-20 closed **THEN** perform Steps 19 – 20 **RNO: GO TO** Step 21 21. **IAAT** 1A LPI PUMP fails while operating, **AND** 1B LPI PUMP is operating, **THEN** close 1LP-17 22. **IAAT** 1B LPI PUMP fails while operating, **AND** 1A LPI PUMP is operating, **THEN** close 1LP-18 23. Start the following: **(CT-27)** __ A OUTSIDE AIR BOOSTER FAN __ B OUTSIDE AIR BOOSTER FAN 24. Notify Unit 3 to start the following: __ 3A OUTSIDE AIR BOOSTER FAN __ 3B OUTSIDE AIR BOOSTER FAN

Op-Test No.: _____	Scenario No.: **3**	Event No.: **8**	Page 6 of 8
Event Description:	**LBLOCA With Failure of 1B LPI Pump (M; ALL)**		

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** EOP Enclosure 5.1 (ES Actuation) 25. Verify the following are open: __ 1CF-1 __ 1CF-2 26. Verify 1HP-410 closed 27. Secure makeup to the LDST 28. Verify all ES channel 1 – 4 components are in the ES position **RNO:** 1. **IF** 1HP-3 fails to close, **THEN** close 1HP-1 2. **IF** 1HP-4 fails to close, **THEN** close 1HP-2 3. Notify SRO to evaluate components **NOT** in ES position and initiate action to place in ES position if desired **Note: The 1B LPI pump is failed.** 29. Verify Unit 2 turbine tripped **RNO: GO TO** Step 32 32. Close 1LPSW-139 33. Place the following in FAIL OPEN: __ 1LPSW-251 FAIL SWITCH __ 1LPSW-252 FAIL SWITCH 34. Start all available LPSW pumps 35. Verify either of the following: __ Three LPSW pumps operating __ Two LPSW pumps operating when Tech Specs only requires two operable 36. Open the following: __ 1LPSW-4 __ 1LPSW-5 37. **IAAT** BWST level ≤ 19' **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES)

Op-Test No.: _____ Scenario No.: **3** Event No.: **8** Page 7 of 8

Event Description: **LBLOCA With Failure of 1B LPI Pump (M; ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** Rule 2 (Loss of SCM) 1. **IAAT** all the following 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 3. Notify CR SRO of RCP status 4. Verify Blackout exists **RNO: GO TO** Step 6 6. Open the following: __ 1HP-24 __ 1HP-25 7. Start all available HPI pumps 8. Open the following: __ 1HP-26 __ 1HP-27 9. Verify at least two HPI pumps are operating using two diverse indications 10. **IAAT** ≥ 2 HPI pumps are operating, **AND** HPI flow in any header is in the Unacceptable Region of Figure 1, **THEN** perform Steps 11 – 13 **RNO: GO TO** Step 12 12. **IAAT** the following 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 throttle HPI to maximize flow ≤ flow limit

Op-Test No.: _____	Scenario No.: 3	Event No.: 8	Page 8 of 8
Event Description:	**LBLOCA With Failure of 1B LPI Pump (M; ALL)**		

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** Rule 2 (Loss of SCM) 13. Notify CR SRO of HPI status 14. Verify RCS pressure > 550 psig **RNO:** Ensure ES Digital Channels 3 and 4 actuated 15. **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** Step 16 16. Perform the following: __ Place 1FDW-315 in MANUAL and close __ Place 1FDW-316 in MANUAL and close __ Place 1FDW-35 in HAND and close __ Place 1FDW-44 in HAND and close 17. Notify crew that performance of Rule 3 is **NOT** required due to LB LOCA 18. **WHEN** directed by CR SRO, **THEN EXIT** this rule
		This scenario is complete when stable core cooling is established, or as directed by the Lead Evaluator.

CRITICAL TASKS

1. CT-8 Electrical Power Alignment

2. CT-4 Initiate LPI **(within 60 minutes of no LPI flow when required)**

3. CT-27 Implementation of Control Room Habitability Guidance (**Within 30 minutes of ES Actuation**)

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: 2	**Unit 2**	**Unit 3**
Reactor Power: 3%	Mode: 1	Mode: 1
Gross MWE: 0	100% Power	100% Power
RCS Leakage: +.025 gpm (No WCAP action level)	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 #
AMSAC/DSS	Today / 06:30	7 Days	SLC 16.7.2 Conditions A & B

Shift Turnover Items (CR SRO)

Primary

- SASS in MANUAL for I&E testing
- AMSAC/DSS Bypassed
- Pressurize the LDST with H_2
- Hold power increase for about 1 hour so Rx Engineering can collect data.
- When in MODE 2, evaluate or restrict evolutions involving MS, FDW, and EFDW to minimize changes to RCS temperature and reactor power.

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 (CR SRO)		
RCS Boron: 1688 ppmB	Gp 6 Rod Position: 49%	

Human Performance Emphasis (OSM)

Procedure Use and Adherence