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

Examiners: _____ Operators: _____ **SRO**

_____ _____ **OATC**

_____ _____ **BOP**

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

Turnover:
- SASS in Manual for I&E testing
- AMSAC/DSS bypassed for I&E testing
- 1B FDWPT on Handjack for MGU repair, work is completed; NEO on station at 1B FDWPT
- GWD Tank B release in progress
- ACB-3 closed

Event No.	Malfunction No.	Event Type*	Event Description
0a	Pre-Insert		SASS in Manual
0b	Pre-Insert		AMSAC/DSS bypassed for I&E testing
0c	Pre-Insert		1B CC pump fails to auto start
0d	Pre-Insert		Block ALL Turbine trip except MANUAL
1		N: BOP, SRO	Restore 1B MFWP from Hand Jack
2	MPS 290 Override	C: BOP, SRO	1A CC pump trips and 1B CC pump fails to auto start
3	MPS110	C: BOP, SRO (**TS**)	Restore Letdown (1HP-5 fails CLOSED) (**TS**)
4	MCS008	I: OATC, SRO	Selected Tcold Fails HIGH (622°F)
5	MCR021	R: OATC, SRO (**TS**)	Dropped Control rod (**TS**), Manual power reduction
6	MEL170	SRO (**TS**)	CT-1 Transformer Lockout (**TS**)
7	MPI290	C: OATC, SRO	Main Turbine Fails to trip (Lockout EHC Pumps) (occurs with event 8)
8	MEL090 MCR024 MEL020	M: ALL	Switchyard Isolate (RX trip) Stuck Control rod KHU-2 lock out
9	MEL180	M: ALL	Blackout due to Loss of second Keowee Unit (KHU-1) Recover power from CT-5

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

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

Event Description: **Restore 1B FDWPT from Hand Jack (N: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
		Crew Response:
	SRO	Direct BOP to perform OP/1/A/1106/002 B (FDWPT Operation), Encl. 4.13, Taking the 1B FDWPT Off Handjack beginning at Step 2.1
	BOP	Use the above procedure Encl. 4.13, and remove the 1B FDWPT from Handjack and restore speed control to the 1B MGU (motor gear unit)
		2. Procedure 2.1 **IF** in Mode 1 **OR** Mode 2, **WHILE** enclosure is in progress monitor the following indications: {20} • Appropriate ranged Nis • Neutron error • RCS Loop ΔT (curve for "Loop ΔT Vs Reactor Power" is in PT/1/A/0600/001) • FDW Flow (curve for "Expected Feedwater Flow Per Header Vs Reactor Power" is in OP/0/A/1108/001) 2.2 Remove "T/O SHEET" CR tag from 1B MAIN FDW PUMP (ICS) station. 2.3 Run 1B MAIN FDW PUMP (ICS) station to "HSS" (high speed stop). 2.4 Perform the following: 2.4.1 Establish communication with Operator at 1B FDWPT. ***Booth Cue: NEO will report "Standing by the 1B FDWPT Motor Gear Unit".*** 2.4.2 Run 1B MAIN FDW PUMP (ICS) to low speed stop. 2.4.3 Run 1B MAIN FDW PUMP (ICS) to high speed stop. (≈ 1/8" from hard stop) 2.4.4 Verify Motor Gear Unit operated smoothly through entire operation. ***Booth Cue: NEO will report "Motor Gear Unit operated smoothly".*** 2.5 Turn FWT 1B HANDJACK switch to "OFF". 2.6 **IF** Unit 1 is in Mode 1 or 2 **AND** both FDWPT ICS stations are in "HAND": (**does not apply**) 2.7 Decrease 1B MAIN FDW PUMP (ICS) until 1B FDWPT controlled by 1B MAIN FDW PUMP (ICS) station. 2.8 Increase 1B FDWPT Motor Speed Changer. 2.9 Verify 1B FDWPT speed does **NOT** increase.

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

Event Description: **Restore 1B FDWPT from Hand Jack (N: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: 2.10 Position 1B FWPT MOTOR SPEED CHANGER to 'FR' under "RAISE" until 1B FDWPT MOTOR SPEED CHANGER is at "HSS". 2.11 After 1B FDWPT MOTOR SPEED CHANGER reaches "HSS", hold 1B FDWPT MOTOR SPEED CHANGER switch in 'FR' for 3 to 5 seconds to make all contacts. **Note: Steps 2.12 – 2.14 do not apply.** 2.12 **IF** Unit 1 is in Mode 3: 2.13 **IF** Unit 1 is in Mode 1 or 2 with 1A FDWPT shutdown: 2.14 **IF** Unit 1 is in Mode 1 or 2 with 1A FDWPT operating but **NOT** in auto: 2.15 **IF** Unit 1 is in Mode 1 or 2 with 1A FDWPT in auto: 2.15.1 Verify 1A MAIN FDW PUMP (ICS) in "AUTO". 2.15.2 Place 1B MAIN FDW PUMP (ICS) in "AUTO". 2.15.3 Verify ICS adjusts 1B FDWPT speed to balance suction flow. 2.16 **IF** required, remove Turnover Sheet note for control of 1B FDWPT with Motor Speed Changer.

This event is complete when the 1B MFDWPT is placed in AUTO, or as directed by the Lead Examiner.

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

Event Description: **1A CC pump trips and 1B CC pump fails to auto start (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
		Plant response: • 1SA-9/B-1, CC CRD RETURN FLOW LOW • 1SA-9/C-1, CC COMP COOLING RETURN FLOW LOW • 1SA-2/C-1, LETDOWN TEMPERATURE HIGH • 1HP-5 (Letdown Isolation) will close due to high letdown temperature • CC Total Flow Low • Component Cooling Pressure Low • Pzr level will begin to increase once 1HP-5 closes
	BOP	**Crew Response:** Refer to ARG 1SA-9/B-1 OR 1SA-9/C-1 • Determine low flow is due to CC Pump failure AND Standby CC Pump did **NOT** start and perform the following: • Verify CC Surge Tank level > 12" • Start Standby CC Pump **Note: The SRO will not be required to initiate AP/20 if the Standby Pump is started per the ARG.**
	SRO	Initiate AP/20 (Loss of Component Cooling) 3.1 **IAAT** both of the following are lost: • CC to RCPs and RCP seal injection **THEN** Trip the Rx, stop all RCPs and initiate AP/25 3.2 **IAAT** ≥ two CRD stator temperatures ≥ 180°F, **THEN** trip Rx 4.1 Verify at least one CC pump operating **RNO:** **GO TO** Step 4.3 4.3 Open 1CC-7 and 1CC-8 4.4 Verify ≥ one CC pump operating **RNO:** 1. **IF** CC Surge Tank level ≥ 12" **THEN** attempt to start a CC Pump 2. **IF** unable to start any CC pump…(**does not apply**) 4.5 Verify CC TOTAL FLOW > 575 gpm 4.6 Verify Letdown in service and LETDOWN TEMP ≤ 130°F **RNO:** 1. **IF** LETDOWN TEMP > 130°F, **THEN** close 1HP-5 2. Initiate AP/32 or EOP Encl 5.5 to restore letdown **Note: If the SRO initiates EOP Encl 5.5 to restore Letdown, these actions are listed beginning on page 26.**

This event is complete when the standby CC pump is started, or as directed by the Lead Examiner.

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

Event Description: **Restore Letdown (1HP-5 fails CLOSED) (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO BOP	**Crew Response:** SRO should enter AP/1/A/1700/032 (Loss of Letdown) 4.1 Place 1HP-120 in HAND and reduce demand to zero. 4.2 Initiate makeup to LDST as required (Encl.5.5 or OP/1/A/1103/004). 4.3 Initiate notification of the following: __ OSM to reference the following: • OMP 1-14 (Notifications) • Emergency Plan __ STA 4.4 Notify Chemistry of the following: • Current RCS boron sample is needed for possible unit shutdown. • Normal letdown line is isolated. 4.5 **IAAT** either of the following exists: __ Pzr level ≥ 260", **AND** letdown **CANNOT** be established __ Plant conditions exist such that letdown will **NOT** be restored **THEN** initiate unit shutdown at ≈ 20%/min per AP/29 (Rapid Unit Shutdown). 4.6 **IAAT** Pzr level ≥ 375", **THEN** trip Rx. 4.7 Position the standby HPI pump switch to OFF. 4.8 Throttle 1HP-31 to establish 12 - 15 gpm SEAL INLET HDR FLOW. **Note: Statalarm 1SA-2/B-2 (RCP SEAL INLET HEADER FLOW HIGH/LOW) will actuate once seal inlet header flow is decreased to < 22 gpm)** 4.9 Verify HPI pump flow ≥ 65 gpm. (30 gpm Recirc + ___ SI +___ MU) **RNO:** Log beginning time for HPI pump flow below minimum 4.10 Determine the cause of loss of letdown and **GO TO** Step 4.29 for actual letdown temperature high. 4.29 Notify SPOC to initiate repairs on failed equipment. 4.30 **IAAT** letdown can be re-established, **THEN** perform Steps 4.31 – 4.46. 4.31 Place CC system in operation 4.32 Close 1HP-6. 4.33 Close 1HP-7. 4.34 Open the following: • 1HP-1 • 1HP-2 • 1HP-3 • 1HP-4

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

Event Description: **Restore Letdown (1HP-5 fails CLOSED) (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/ BOP	**Crew Response:** AP/1/A/1700/032 (Loss of Letdown) 4.35 Verify letdown temperature < 135°F (**it is not**) **RNO:** 1. Open 1HP-13. 2. Close the following: • 1HP-8 • 1HP-9&11 3. **IF** any deborating IX in service…(**no deborating IX is in service**) 4. Select LETDOWN HI TEMP INTLK BYP switch to BYPASS **Note: Statalarm 1SA-2/E-4 (HP LETDOWN FLOW INTERLOCK BYPASSED) will actuate once the LETDOWN HI TEMP INTLK BYP switch is placed in BYPASS.** 4.36 Open 1HP-5.(**will not OPEN**) **RNO: GO TO** Step 4.11 4.11 Close 1HP-6 4.12 Close 1HP-7 4.13 Open 1HP-5 (**will NOT open**) **RNO:** 1. Dispatch an operator in continuous communication with Control Room to manually open 1HP-5 (LETDOWN ISOLATION)\ ***Booth cue: When called, use TIME COMPRESSION and FIRE TIMER 14 to manually open 1HP-5.*** 2. **IF** 1HP-5 is manually open, **THEN** enter TS 3.6.3. 3. **IF** 1HP-5 **CANNOT** be manually opened, **THEN GO TO** Step 4.29. 4.14 **WHEN** 1HP-5 is open, **THEN** continue. 4.15 Place the CC system in service. 4.16 Verify letdown temperature is < 135°F (**it is not**) **RNO:** 1. Open 1HP-13. 2. Close the following: • 1HP-8 • 1HP-9&11 3. **IF** any deborating IX in service…(**no deborating IX is in service**) 4. Select LETDOWN HI TEMP INTLK BYP switch to BYPASS.

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

Event Description: **Restore Letdown (1HP-5 fails CLOSED) (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO/ BOP	**Crew Response:** 4.17 Throttle open 1HP-7 to establish ≈ 20 gpm. 4.18 **WHEN** letdown temperature < 130°F, **THEN** place LETDOWN HI TEMP INTLK BYP switch in NORMAL 4.19 Open 1HP-6 4.20 Adjust 1HP-7 to control desired letdown flow (≈ 75 gpm) 4.21 Re-establish normal makeup through 1HP-120. 4.22 Verify <u>any</u> purification IX in service **RNO:** **IF** purification IX operation is desired, **THEN** initiate OP/1/A/1103/004 B (Purification IXs) to establish desired IX operation 4.23 Notify SPOC to initiate repairs on 1HP-5 4.24 Verify seal injection flow reduced in Step 4.8 4.25 Re-establish normal RCP seal injection flow (≈ 32 gpm) 4.26 Position the standby HPI pump switch to AUTO 4.27 **WHEN** repairs complete on 1HP-5, **THEN** perform the following: A. Locally turn 1HP-5 handwheel fully clockwise B. **EXIT** TS 3.6.3 4.28 **EXIT** this procedure **Note: 1HP-5 will not be repaired for this scenario.** **Note: If pressurizer level exceeds 260 inches, TS 3.4.9 Condition A should be entered requiring level be restored within 1 hour** **Note: The crew may request an R&R to place the 1A CC pump switch to OFF.**
	SRO	The SRO enters TS 3.6.3 Condition A due to one or more penetration flow paths with one containment isolation valve inoperable • Required Action is to isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, one closed and de-activated non-automatic power operated valve, closed manual valve, blind flange, or check valve with flow through the valve secured within 4 hours **AND** verify the affected penetration flow path is isolated once per 31 days for isolation devices outside containment.

This event is complete when the Standby HPI pump is placed in AUTO, or as directed by the Lead Examiner.

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

Event Description: **Selected Tcold Fails HIGH (622°F) (I: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
		Plant Response: • Loop "B" Tc Dixson meter pegs high (620°F) • Loop "B" ΔT Dixson meter reads 0°F • ΔTc meter reads "pegged" low (-10°F; "B" loop Hot) • Controlling NR Tave digital display reads ≈ 595.5°F • Controlling Tave Chessell dislplay reads ≈ 595°F • 1SA-2/B4 (RC Average Temperature High/Low) • 1SA2/B-5, RC COLD LEG DIFF TEMP HIGH
	OATC	**Crew Response**: • When the Statalarms are received, the candidates should utilize the "Plant Transient Response" process to stabilize the plant. • Verbalize 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 SRO should: ➢ Refer to AP/28, ICS Instrument Failures ➢ Contact SPOC to repair the failed instrument.
	SRO	**AP/28, ICS Instrument Failures** 4.1 Provide control bands as required. 4.2 Initiate notification of the following: __ OSM to reference the following: • OMP 1-14 (Notifications) • Emergency Plan __ STA 4.3 Verify a power transient ≥ 5% has occurred. **RNO: GO TO** Step 4.5. 4.4 Notify Rx Engineering and discuss the need for a maneuvering plan 4.5 Use the following, as necessary, to determine the applicable section from table in Step 4.6: • OAC alarm video • OAC display points • Control Board indications • SPOC assistance, as needed 4.6 **GO TO** Section 4A, RCS Temperature

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

Event Description: **Selected Tcold Fails HIGH (622°F) (I: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	**Crew Response:** **AP/1/A/1700/028 Section 4A RCS Temperature Failure** 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 Tc input to ICS per AM/0/B/0326/020 (Control of Star Module Signal Selection Function). • Investigate and repair the failed RCS temperature instrumention. 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 ICS will remain in manual for the remainder of the scenario.** **Note: The crew may initiate EOP Encl 5.5 for inventory control. These steps are included beginning on page 26 if necessary.**

This event is complete when Section 4A Step 6 is reached, or as directed by the Lead Examiner.

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

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

Time	Position	Applicant's Actions or Behavior
		Plant Response: Group 2 Rod 6 drops into the core Statalarm 1SA-2/A-10 (CRD GLOBAL TROUBLE) Statalarm 1SA-2/B-10 (CRD ASYMMETRIC ROD POSITION ERROR) Statalarm 1SA-2/D-9 (CRD OUT INHIBIT) Statalarm 1SA-4/C-1 (QUADRANT POWER TILT) (**alarms in ≈ 2 minutes**) Statalarm 1SA-5/A-5 (1A RPS TROUBLE) Statalarm 1SA-5/B-5 (1B RPS TROUBLE) Statalarm 1SA-5/D-5 (1D RPS TROUBLE)
	BOP/OATC	**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. • The OATC will adjust FDW and/or control rods as necessary to restore reactor power to the desired control band.
	SRO	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.: 1 Scenario No.: 1 Event No.: 5 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 2. Verify Rx is critical 3. Verify power > 55% when the rod was dropped or misaligned. 4. 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 5. Initiate Encl 5.1 (Control of Plant Equipment During S/D) **(page 13)** **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. 6. 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 7. 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**) 8. Notify OSM to make notifications as required per OMP 1-14 (Notifications) ***Booth cue: If asked, the OSM will NOT refer to Tech Specs.***
	SRO	The SRO should enter TS 3.1.5 Condition A for one safety control rod not fully withdrawn. The Required Action is to withdraw the control rod or verify SDM is within the limit specified in the COLR or initiate boration to restore SDM to within limit and declare the rod inoperable. Completion Time is within 1 hour

Op-Test No.: 1 Scenario No.: 1 Event No.: 5 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

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

10. 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.

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

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

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

12. **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:

New RPS System

- AM/1/A/0315/017 (TXS RPS Channel A, B, C, And D Parameter Changes For Abnormal/Normal Operating Conditions.)

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

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

Time	Position	Applicant's Actions or Behavior
	BOP	**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 10^6 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 12 of AP/01, or as directed by the Lead Examiner.

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

Event Description: **CT-1 Transformer Lockout (PCB 17 and 18 open) (SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
		Plant Response: CT-1 transformer will be de-energized 1SA-15/C-2 EL SU SOURCE VOLT MONIT LOGIC UNDERVOLTAGE PCB-17 and PCB-18 will open
	BOP	**Crew Response:** Refer to ARG 1SA-15/C-2 **2. Automatic Action** 2.1 Loss of startup source from the Yellow Bus. **3 Manual Action**
	SRO	Refer to Technical Specification 3.8.1, AC Sources – Operating Condition A: Both required offsite sources and the overhead emergency power path inoperable due to inoperable unit startup transformer. Required Action: A.1 Perform SR 3.8.13. Within 1 hour if not performed in previous 12 hours. **AND** A.2 Align the emergency startup bus to share another unit's startup transformer. Within 12 hours **AND** A.3.1 Restore unit startup transformer to OPERABLE status and normal startup bus alignment. Within 36 hours **OR** A.3.2 Designate one unit, sharing the startup transformer, to be shutdown. Within 36 hours **Note: If asked Unit 2 will perform SR 3.8.1.3.** **Note: An RO may dispatch a NEO to Emergency Power Switching Logic Panel #1 to determine status.**

This event is complete when the SRO has referred to Technical Specifications, or as directed by the Lead Examiner.

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

Event Description: **Main Turbine Fails to trip (C: OATC, SRO)**
Runs concurrent with Event 8

Time	Position	Applicant's Actions or Behavior
	OATC	**Plant Response:** The reactor will trip on high RCS pressure due to the Switchyard Isolation. **Crew response:** The SRO will direct the OATC to 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. (**They will be open**) **RNO:** Place both EHC pumps in PULL TO LOCK. 3.5 Verify RCP seal injection available. **RNO:** **IF** CC is unavailable, **THEN** immediately perform the following: • Stop all RCPs. • Notify CR SRO to initiate AP/25 (Standby Shutdown Facility Emergency Operating Procedure). **Note: Power will be restored in about 15 seconds.**

This event is complete when the EHC pumps have been locked out, or as directed by the Lead Examiner.

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

Event Description: **Switchyard Isolation (RX trip) (M: ALL)**
Stuck Control Rod
KHU-1 lock out

Time	Position	Applicant's Actions or Behavior

	OATC	**Plant Response:**
		The plant will attempt to runback but will trip on HIGH RCS pressure
		KHU-1 will lock out
		KHU-2 will supply power to the MFBs via CT-4 and the Standby Bus in about 30 seconds.
		
		Crew response:
		Perform Immediate Manual Actions (IMAs)
		• 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.
		• **IF** CC is unavailable, **THEN** immediately perform the following:
		  • Stop all RCPs.
		  • Notify CR SRO to initiate AP/25 (Standby Shutdown Facility Emergency Operating Procedure).
		AP/25 (May not be implement since power will return in ≈ 30 seconds)
		4.1 Verify any of the following required due to loss of function:
		  • SSF RCMU feed
		  • SSF ASW feed to SGs
		4.2 Stop all RCPs
		4.3 Verify a Licensed Operator staged in SSF and available to perform AP/0/A/1700/025 (Standby Shutdown Facility Emergency Operating Procedure). (**no operator is staged at the SSF**)
		RNO: 1. Obtain the following items:
		  • Vital area access key ring
		  • Flashlight
		  • Respirator (if Security Event)
		2. Proceed to the SSF.
		
		Note: If needed, the RO performing AP/25 actions will be stopped before leaving the control room and informed that a Unit 2 RO will perform SSF actions.

Op-Test No.: 1 Scenario No.: 1 Event No.: 8 Page 2 of 5

Event Description: **Switchyard Isolation (RX trip) (M: ALL)**
Stuck Control Rod
KHU-1 lock out

Time	Position	Applicant's Actions or Behavior
		Crew response:
	BOP	Perform Symptoms Check • Power Range NIs < 5% • Power Range NIs decreasing • Any SCM < 0°F • Loss of Main and Emergency FDW (including unsuccessful manual initiation of EFDW) • Uncontrolled Main Steam line(s) pressure decrease • Indications of SGTR: The SRO will direct an RO to initiate Rule 3 due to a loss of Main FDW (**see page 19**) When power is restored, the SRO should initiate AP/11 from Parallel Actions Page of Subsequent Actions tab (**see page 25**)
	SRO	The SRO will refer to EOP Subsequent Actions 4.1 Verify all control rods in Groups 1 – 7 fully inserted. (**one control rod will NOT be fully inserted**) **RNO:** 1. Open 1HP-24 and 1HP-25 2. Secure makeup to the LDST 3. If CRDs are energized… (**they are NOT**) 4.2 Verify Main FDW in operation **RNO:** 1. Ensure Rule 3 is in progress or complete 2. **GO TO** Step 4.5 4.5 **IAAT** Main FDW is operating, **AND** level in any SG is > 96% on the Operating Range, **THEN** perform Steps 4.6 - 4.8 **RNO:** **GO TO** Step 4.9 4.9 **IAAT** TBVs **CANNOT** control SG pressure at desired setpoint, **THEN** manually control pressure in affected SGs 4.10 Verify 1RIA-40 operable with CSAE OFF-GAS BLOWER operating 4.11 **GO TO** Step 4.14 4.14 Dispatch an operator with Encl 5.29 (MSRV Locations) to verify all MSRVs have reseated 4.15 Verify ES is required. **RNO:** 1. Initiate Encl 5.5 (Pzr and LDST Level Control) (**see page 26**) 2. **GO TO** Step 4.17

Op-Test No.: 1 Scenario No.: 1 Event No.: 8 Page 3 of 5

Event Description: **Switchyard Isolation (RX trip) (M, ALL)**
Stuck Control Rod
KHU-1 lock out

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** EOP Subsequent Actions 4.17 Open PCB-20 and PCB-21 4.18 Verify Generator Field Breaker open. 4.19 Verify EXCITATION is OFF. 4.20 Verify Aux Bldg and Turbine Bldg Instrument Air pressure ≥ 90 psig. 4.21 Verify ICS/NNI power available. 4.22 Verify all 4160V switchgear (1TC, 1TD & 1TE) energized. 4.23 Verify both SGs > 550 psig. 4.24 Verify Main FDW operating. **RNO:** 1. Ensure Rule 3 (Loss of Main or Emergency FDW) in progress or complete. 2. Ensure SG levels approaching proper setpoint. (Rule 7) 3. **GO TO** Step 4.28. 4.28 Verify all SCMs > 0°F. 4.29 Verify both SGs intentionally isolated to stop excessive heat transfer. **RNO:** **GO TO** Step 4.31. 4.31 Verify heat transfer exists. 4.32 Verify primary to secondary heat transfer has been excessive. **RNO:** **GO TO** Step 4.34. 4.34 Verify indications of SGTR ≥ 25 gpm. **RNO:** **GO TO** Step 4.36. 4.36 Verify required RCS makeup flow within normal makeup capability. 4.37 Verify two Main FDW pumps operating. **RNO:** **GO TO** Step 4.39. 4.39 Verify <u>any</u> CBP operating. **RNO:** **GO TO** Step 4.44. 4.44 Verify any HWP operating. **RNO:** **GO TO** Step 4.48. 4.48 Close 1SSH-9, 1MS-76, and 1MS-79

Op-Test No.: 1 Scenario No.: 1 Event No.: 8 Page 4 of 5

Event Description: **Switchyard Isolation (RX trip) (M, ALL)**
Stuck Control Rod
KHU-1 lock out

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew response**: EOP Subsequent Actions 4.49 Perform the following: __ Stop all Htr Drain pumps. __ Stop both MSRH Drain pumps. 4.50 Place 1HD-37 and 1HD-52 in DUMP: 4.51 Verify 1MS-24 and 1MS-33 are closed: 4.52 Verify <u>all</u> MSRVs reseated. 4.53 Verify Pzr level < 375″ 4.54 Verify <u>any</u> RCP operating. **RNO: GO TO** Step 4.56. 4.56 **IAAT** <u>all</u> the following exist: __ < one RCP/loop operating __ RCP available for restart in idle loop __ RCS P/T stable 4.57 Maintain RCS P/T stable. 4.58 **IAAT** Station Management desires a Natural Circ cooldown, **THEN GO TO** FCD tab. 4.59 **WHEN** the OSM approves, **THEN GO TO** OP/1/A/1102/010 (Controlling Procedure For Unit Shutdown) Encl (S/D To Mode 3 Following Rx Trip Or Rapid S/D).
	BOP	**Rule 3 (Loss of Main or Emergency Feedwater)** 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 to feed <u>all</u> <u>intact</u> SGs. 5. Verify any EFDW pump operating. 6. **GO TO** Step 37. 37. **IAAT** an EFDW valve **CANNOT** control in AUTO… **RNO: GO TO** Step 43

This event is complete when RCS temperature and pressure are stable, or as directed by the Lead Examiner.

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

Event Description: **Switchyard Isolation (RX trip) (M: ALL)**
Stuck Control Rod
KHU-1 lock out

Time	Position	Applicant's Actions or Behavior
	BOP	**Crew response:** **Rule 3 (Loss of Main or Emergency Feedwater)** 43. Verify <u>any</u> 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.
	BOP	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 12. Notify CR SRO to set priority based on the NOTE above <u>and</u> EOP activities

This event is complete when RCS temperature and pressure are stable, or as directed by the Lead Examiner.

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

Event Description: **Blackout Loss of second Keowee Unit Recover Power using CT-5**

Time	Position	Applicant's Actions or Behavior
	SRO	**Plant response:** KHU #2 Emergency Lockout MFBs will de-energize **Crew response:** The SRO may direct an RO to perform a Symptoms Check The SRO will direct an RO to re-initiate Rule 3 (**see page 24**) SRO will transfer to the **BLACKOUT tab** • The SRO will direct an RO to initiate AP/25 • Direct and RO to announce plant conditions using the plant page and notify the OSM to reference EP and NSD 202 (reportability).
	SRO	**Note: The RO performing AP/25 actions should be stopped before leaving the control room and informed that a Unit 2 RO will perform SSF actions.** EOP Blackout tab 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). **Note: Enclosure 5.38 steps begin on the next page.** 3. Verify <u>any</u> 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. **<u>NOTE</u>** Feeding SGs with EFDW is desired above HPI Forced Cooling. Step 6 should be performed prior to re-performing Rule 3. 6. **IAAT NO** SGs are being fed, **AND** any source of EFDW (Unit 1 or another unit) becomes available, 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 1TC, 1TD, 1TE, **THEN GO TO** Step 9 **RNO:** **GO TO** Step 11 9. Initiate AP/11 (Recovery From Loss of Power)

Op-Test No.: 1 Scenario No.: 1 Event No.: 9 Page 2 of 5

Event Description: **Blackout Loss of second Keowee Unit**
Recover Power using CT-5

Time	Position	Applicant's Actions or Behavior
	SRO	10. **GO TO** Subsequent Actions tab 11. Verify Encl 5.38 (Restoration of Power) in progress or complete. 12. **IAAT** all 4160V SWGR (1TC, 1TD, 1TE) are de-energized, **AND** Standby Bus #1 is energized, **THEN GO TO** Step 13. **RNO: GO TO** Step 78 **Note: Power may not be restored at this point. In which case the crew will route to Step 78.** 78. **IAAT** all 4160V SWGR (1TC, 1TD, 1TE) are de-energized for 1½ hours, **THEN** dispatch an operator to perform Encl 5.17 (Generator Emergency Hydrogen Purge). {20} 79. Verify blackout exists on all three units. **RNO: GO TO** Step 81.
	OATC/BOP	81. Verify MFB 1 and MFB 2 de-energized 82. **WHEN** Encl 5.38 (Restoration of Power) is complete, **THEN** continue this procedure. **EOP Enclosure 5.38 (Restoration of Power) (CT-8)** **Note: The CT is not met if Encl 5.38 is completed with power NOT restored.** 1. Verify power has been restored. **RNO: GO TO** Step 3 3. Place 1HP-31 in HAND and reduce demand to 0. 4. Close 1HP-21. 5. Verify MFB1/2 is energized **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**) 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 / MFB2 AUTO/MAN __ STANDBY 1 / STANDBY 2 AUTO/MAN

Op-Test No.: 1 Scenario No.: 1 Event No.: 9 Page 3 of 5

Event Description: **Blackout Loss of second Keowee Unit Recover Power using CT-5**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew response:** **EOP Enclosure 5.38** 51. Open the following breakers: __ $N1_1$ MFB1 NORMAL FDR __ $N2_1$ MFB2 NORMAL FDR __ $E1_1$ MFB1 STARTUP FDR __ $E2_1$ MFB2 STARTUP FDR 52. Place the following switches in MAN: __ CT4 BUS 1 AUTO/MAN __ CT4 BUS 2 AUTO/MAN __ CT5 BUS 1 AUTO/MAN __ CT5 BUS 2 AUTO/MAN 53. Open the following breakers: __ SK1 CT4 STBY BUS 1 FEEDER __ SK2 CT4 STDY BUS 2 FEEDER 54. Close the following breakers: **(CT-8)** __ 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. 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. 61. Verify Jocassee Hydro is being aligned to ONS. **RNO:** **GO TO** Step 63. 63. **EXIT** this enclosure.

Op-Test No.: 1 Scenario No.: 1 Event No.: 9 Page 4 of 5

Event Description: **Blackout Loss of second Keowee Unit**
Recover Power using CT-5

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**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 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… **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.: 1 Scenario No.: 1 Event No.: 9 Page 5 of 5

Event Description: **Blackout Loss of second Keowee Unit**
Recover Power using CT-5

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew response:** AP/1/A/1700/011 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 per Unit 1 EOP Encl (Load Shed of Inverters During SBO) **RNO: GO TO** Step 4.9 4.9 Verify load shed of inverters has initiated as indicated by <u>either</u> of the following statalarms on: __ 1SA-15/D-4 __ 1SA-14/D-4 **RNO: GO TO** Step 4.11 4.11 Close the following breakers: __ 1TC INCOMING FDR BUS 1 __ 1TC INCOMING FDR BUS 2 __ 1TD INCOMING FDR BUS 1 __ 1TD INCOMING FDR BUS 2 __ 1TE INCOMING FDR BUS 1 __ 1TE INCOMING FDR BUS 2 4.12 Verify 1SA-15/E-6 (EL SWYD ISOLATION CONFIRMED CHNL A LOGIC) is OFF **RNO: GO TO** Step 4.15 4.15 Verify <u>any</u> Oconee unit receiving power from its normal source 4.16 Place transfer switches in MAN for <u>all</u> Oconee units receiving power from the normal source (1T, 2T, 3T) • MFB1 AUTO/MAN • MFB2 AUTO/MAN • TA AUTO/MAN • TB AUTO/MAN 4.17 Verify load shed was initiated as indicated by either of the following statalarms on: __ 1SA-15/D-4 __ 1SA-14/D-4

This event is complete when power is restored, or as directed by the Lead Examiner.

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

Event Description: **EOP Encl 5.5 actions if needed**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew response:** EOP Enclosure 5.5 (Pzr and LDST Level Control) 1. Utilize the following as necessary to maintain desired Pzr level: • 1A HPI Pump • 1B HPI Pump • 1HP-26 • 1HP-7 • 1HP-120 setpoint or valve demand • 1HP-5 2. **IAAT** makeup to the LDST is desired, **THEN** makeup from 1A BHUT 3. **IAAT** it is desired to secure makeup to LDST, **THEN** secure makeup from 1A BHUT 4. **IAAT** it is desired to bleed letdown flow to 1A BHUT, **THEN** perform the following: A. Open 1CS-26 and 1CS-41 B. Position 1HP-14 to BLEED C. Notify SRO 5. **IAAT** letdown bleed is **NO** longer desired, **THEN** position 1HP-14 to NORMAL 6. IAAT 1C HPI PUMP is required, THEN perform Steps 7-9 **RNO:** **GO TO** Step 10 7. Open 1HP-24 and 1HP-25 8. Start 1C HPI PUMP 9. Throttle 1HP-26 and 1HP-27 as required to maintain desired Pzr level 10. **IAAT** LDST level **CANNOT** be maintained, **THEN** perform Step 11 **RNO:** **GO TO** Step 12 11. Perform the following: • Open 1HP-24 and 1HP-25 • Close 1HP-16 12. **IAAT** additional makeup flow to LDST is desired, **AND** 1A BLEED TRANSFER PUMP is operating, **THEN** dispatch an operator to close 1CS-48 13. **IAAT** two Letdown Filters are desired, **THEN** open 1HP-17 and 1HP-18

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

Event Description: **EOP Encl 5.5 actions if needed**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew response:** EOP Enclosure 5.5 (Pzr and LDST Level Control) continued 14. **IAAT** all of the following exist: __ Letdown isolated __ LPSW available __ Letdown restoration desired **THEN** perform Steps 15-33 **RNO:** **GO TO** Step 34 15. Open 1CC-7 and 1CC-8 16. Ensure only one CC pump running 17. Place non-running CC pump in AUTO 18. Verify 1HP-1 and 1HP-2 are open 19. **GO TO** Step 22 22. Monitor for unexpected conditions while restoring letdown 23. Verify both letdown coolers to be placed in service 24. Open 1HP-1, 1HP-2, 1HP-3, and 1HP-4 25. Verify at least one letdown cooler is aligned 26. Close 1HP-6 27. Close 1HP-7 28. Verify Letdown temperature < 135°F **RNO:** 1. Open 1HP-13 2. Close 1HP-8 and 1HP-9&11 3. **IF** any deborating IX is in service, **THEN** perform the following: A. Select 1HP-14 to NORMAL B. Close 1HP-16 4. Select LETDOWN HI TEMP INTLK BYP switch to BYPASS 29. Open 1HP-5 30. Adjust 1HP-7 for ≈ 20 gpm letdown 31. **WHEN** letdown temperature is < 130°F, **THEN** place LETDOWN HI TEMP INTLK BYP switch to NORMAL 32. Open 1HP-6 33. Adjust 1HP-7 to control desired letdown flow 34. **IAAT** it is determined that letdown is unavailable due to equipment failures or letdown system leakage, **THEN** notify SRO to initiate AP/32

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

Event Description: **EOP Encl 5.5 actions if needed**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew response:** EOP Enclosure 5.5 (Pzr and LDST Level Control) continued 35. **IAAT** > 1 HPI pump is operating, **AND** additional HPI pumps are **NO** longer needed, **THEN** perform the following: A. Obtain SRO concurrence to reduce running HPI pumps B. Secure the desired HPI pumps C. Place secured HPI pump switch in AUTO, if desired 36. **IAAT** all the following conditions exist: __ Makeup from BWST **NOT** required __ LDST level > 55" __ All control rods inserted __ Cooldown Plateau **NOT** being used **THEN** close 1HP-24 and 1HP-25 37. Verify 1CS-48 has been closed to provide additional makeup flow to LDST **RNO: GO TO** Step 39 38. **WHEN** 1CS-48 is **NO** longer needed to provide additional makeup flow to LDST, **THEN** perform the following: A. Stop 1A BLEED TRANSFER PUMP B. Locally position 1CS-48 one turn open C. Close 1CS-46 D. Start 1A BLEED TRANSFER PUMP E. Locally throttle 1CS-48 to obtain 90-110 psig discharge pressure F. Stop 1A BLEED TRANSFER PUMP 39. Verify two Letdown Filters in service, **AND** only one Letdown filter is desired **RNO: GO TO** Step 41 41. **WHEN** directed by CR SRO, **THEN EXIT** this enclosure

These actions are complete when directed by the CR SRO.

CRITICAL TASKS

CT-8 Electrical Power Alignment
Recover Power using CT-5 (CT): Recovering electrical power during a Station Blackout event is necessary for the operation of normal and emergency plant equipment.

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: 100%	Mode: 1	Mode: 1
Gross MWE: 900	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

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.
- Control 1B FDWPT with Motor Speed Changer
- T/O SHEET CR tag on 1B MAIN FDW PUMP (ICS) station.
- The BOP is to remove 1B MFDWP from the Hand Jack per OP/1/A/1106/002 B beginning at Step 2.1. NEO is stationed at the 1B MFDWP.
- GWD Tank 'B' release in progress

Reactivity Management (CR SRO)

RCS Boron: 30 ppmB	Gp 7 Rod Position: 90%	

Human Performance Emphasis (OSM)

Procedure Use and Adherence

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

Examiners: _____ Operators: _____ **SRO**

_____ _____ **OATC**

_____ _____ **BOP**

Initial Conditions:
- Unit 1: Reactor Power = 87% Unit 2: 100% Unit 3: 100%

Turnover:
- SASS in Manual
- AMSAC/DSS bypassed for I&E testing
- GWD Tank B release in progress
- PT/1/A/0290/003, Turbine Valve Movement, in progress. Continue and test CV1.

Event No.	Malfunction No.	Event Type*	Event Description
0a	Pre-Insert		SASS in MANUAL
0b	Pre-Insert		AMSAC/DSS bypassed
0c	Pre-Insert		Block all reactor trips but manual
1		N: BOP, SRO	PT/1/A/0290/003, Turbine Valve Movement, in progress, testing CV1
2	Override	SRO **(TS)**	1A HPI pump trips **(TS)**
3	MPS244	C: BOP, SRO	1A2 RCP lower seal failure (requires pump shutdown)
4	MPI281, 68	I: OATC, SRO	ΔT_C Controller fails when 1A2 RCP is secured
5	Override	C: BOP, SRO **(TS)**	HPSW Jockey Pump trips "A" HPSW pump auto initiation logic inoperable **(TS)**
6	Override	C: OATC, SRO	PZR spray valve (1RC-1) fails OPEN
7	Override MPI300	C: OATC, SRO	Loss of power to 1TB (Loss of 1B2 RCP) ATWS with 1C HPI pump failure
8	MPS400 (.23)	M: All	SBLOCA with LOSCM (ES actuation) (Trip RCPs) Rapid RCS cooldown

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

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

Event Description: **PT/1/A/0290/003, Turbine Valve Movement in progress, testing CV1 (N: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP	**Crew response:** The BOP should use the in progress procedure PT/1/A/0290/003 (Turbine Valve Movement) Enclosure 13.2, Control Valve Movement At Power, at Step 2.1 to test CV1: 2.1 Ensure Standby EHC pump in operation **Note: 1SA-4/C-7 (MT TURBINE PANEL TROUBLE) will actuate when the 1B EHC pump is started.** ***Booth Cue: If contacted to respond to investigate the Turbine Panel alarm, state that 1SA-0/B-5 (STANDBY HYDRAULIC FLUID PUMP RUNNING) is actuated.*** 2.2 Perform the following: • Verify Standby EHC Pump Amp > 0 amps • Verify Standby EHC Pump running smoothly • Verify Standby EHC Pump Discharge Pressure > 1500 psig 2.3 Verify CV4 closed 2.4 **IF** CV3 and CV4 test required: (**test not required, pages 2-4 of the procedure are N/A**) 2.5 **IF** CV2 test required: (**test not required, pages 5 & 6 of the procedure are N/A**) 2.6 **IF** CV1 test required: 2.6.1 **IF** required, select "Control Valve 1 & 2 Test". 2.6.2 Verify "Test Permissive" is ON. 2.6.3 Record CV1 pretest position: ≈ 94 % Open. 2.6.4 Select "Initiate Test" for Control Valve 1 Test. 2.6.5 **IF** any of the following conditions occur, select "Abort CV1 Test": • NI POWER changes > 2%. (R.M.) • ICS Turbine Master trips to HAND. (R.M.) • Turbine vibration > 10 mils for > 5 seconds. 2.6.6 **IF** "Test Failed" is "ON" **AND** CV1 is **NOT** fully closed, select "Abort CV1 Test". 2.6.7 **IF** "Test Failed" is "ON" **AND** CV1 remains closed perform the following: A. Do **NOT** select "Abort CV1 Test". (R.M.) B. Notify WCC & Engineering that the (FASV) for the Control Valve under test is stuck in the energized state. C. Monitor Turbine Vibrations closely if in this abnormal state.

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

Event Description: **PT/1/A/0290/003, Turbine Valve Movement in progress, testing CV1 (N: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP	**Crew response:** PT/1/A/0290/003 (Turbine Valve Movement) Enclosure 13.2, Control Valve Movement At Power, to test CV1: 2.6.8 Perform EITHER for CV1: A. Verify "Test Successful" indicated for CV1. B. **IF** "Test Successful" **NOT** indicated for CV1, verify CV1 moved towards closed position. 2.6.9 Verify CV1 test indicator reset. 2.6.10 Verify CV1 within ± 5.0% of pretest position. 2.6.11 Perform the following: • Verify acceptance criteria met. (**acceptance is met**) • **IF** acceptance criteria **NOT** met, notify SRO. 2.7 **IF** desired: 2.7.1 Stop Standby EHC pump. 2.7.2 Place Standby EHC pump control switch to "AUTO".

This event is complete when test of CV1 is complete and the standby EHC pump is placed in AUTO, or as directed by the Lead Examiner.

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

Event Description: **1A HPI pump trips (SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	**Plant response:** Standby HPI Pump starts on low Seal Inlet Header Flow (< 22 gpm) 1SA-02/B-2, HP RCP SEAL INLET HEADER FLOW HIGH/LOW, actuates. **Crew response:** The crew may perform Plant Transient Response Refer to ARG 1SA-02/B-2 Low Alarm 3.2.1 Verify low seal flow condition with individual RCP seal flow indications 3.2.2 **IF** Low Seal Flow condition is due to an HPI System failure, refer to AP/1/A/1700/014 (Loss of Normal HPI Makeup and/or RCP Seal Injection) 3.2.3 **IF** Low Seal Flow condition is NOT due to an HPI System failure, adjust 1HP-31 (RCP Seal Flow Control) per OP/1/A/1104/002 (HPI System) 3.2.4 Monitor for low LDST level: A. Makeup as required per OP/1/A/1103/004 (Soluble Poison Concentrate Control) B. Verify LDST levels as read on OAC: • O1A1042 HP LDST LVL 1 • O1A1043 HP LDST LVL 2 C. **IF** an accurate LDST level **CANNOT** be maintained or verified, align suction for HPI Pumps from BWST per AP/1/A/1700/014 (Loss of Normal HPI Makeup and/or Seal Injection) **Note: The crew may request an R&R to place the 1A HPI pump switch in the OFF position.** **Booth cue: If asked the WCC will evaluate placing the 1C HPI pump in service.**
	SRO	SRO refers to TS 3.5.2 and enters Condition A for one inoperable HPI pump. APPLICABILITY: MODES 1 and 2, MODE 3 with RCS temperature > 350°F CONDITION A: One HPI pump inoperable REQUIRED ACTION: Restore HPI pump to OPERABLE status COMPLETION TIME: 72 hours

This event is complete when TS 3.5.2 is addressed, or as directed by the Lead Examiner.

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

Event Description: **1A2 RCP lower seal failure (requires pump shutdown) (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
		Plant response: • 1SA-06/B-5, RC PUMP 1A2 SEAL CAVITY PRESS HI/LOW • OAC Alarm RCP 1A2 LOWER SEAL CAVITY PRESSURE HI HI • OAC Alarm RCP 1A2 UPPER SEAL CAVITY PRESSURE HI HI
	BOP	**Crew response:** Refer to the ARGs 3.1 Upper/Lower Seal Cavity Pressure High 3.1.1 Go To AP/1/A/1700/016, Abnormal RCP Operation, for limits and required action 3.2 Upper/Lower Seal Cavity Pressure Low 3.2.1 **IF** in Mode 1 or 2, Go To AP/1/A/1700/016, Abnormal RCP Operation, for limits and required action
	SRO	Refer to AP/1/A/1700/016 (Abnormal RCP Operation) 4.1 **IAAT** any RCP meets immediate trip criteria of Encl 5.1 (RCP Immediate Trip Criteria), **THEN** perform Steps 4.2 - 4.11. **RNO: GO TO** Step 4.12. 4.12 **IAAT** either of the following apply: • Any RCP approaching immediate trip criteria of Encl 5.1 (RCP Immediate Trip Criteria) • It is desired to secure a RCP **THEN** perform Steps 4.13 - 4.15. **RNO: GO TO** Step 4.16 **Note: It is acceptable for the SRO to take either procedure path to secure the 1A2 RCP. Step 4.16 is on the next page.** 4.13 Verify Rx Power > 70% 4.14 Initiate Encl 5.2 (Rapid Power Reduction) (**see page 7**) 4.15 **WHEN** Rx Power is ≤ 70%, **THEN GO TO** Step 4.2 4.2 Verify MODE 1 or 2 4.3 Verify Rx power is ≤ 70% as indicated on all NIs 4.4 Verify three RCPs will remain operating after affected RCP is tripped 4.5 Verify any SG on Low Level Limits **RNO: GO TO** Step 4.8 4.8 Verify FDW masters in Auto 4.9 Stop affected RCP 4.10 Verify ICS re-ratios feed water to establish desired ΔT_C **Note: When the 1A2 RCP is secured, ICS will not re-ratio FDW as expected and initiate the next event (see page 8).**

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

Event Description: **1A2 RCP lower seal failure (requires pump shutdown) (C: BOP, SRO)**

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

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

SRO

AP/1/A/1700/016 Section 4A, RCP Seal Failure

1. **IAAT** any RCP meets immediate trip criteria of Encl 5.1, **THEN** perform Steps 2-11

RNO: **GO TO** Step 12

12. **IAAT** any of the following indicate external RCP seal leakage:
    - RB RIAs increasing or in alarm
    - RCS Tave constant with LDST level decreasing more than normal
    - Quench Tank level rate increasing
    - RB Normal Sump rate increasing
    - Visual confirmation

    THEN initiate AP/02 (Excessive RCS Leakage)
13. Verify the following are open:
    - 1HP-20
    - 1HP-21
14. Verify the following is open for the affected RCP:
    - 1HP-226 (1A2 RCP)
15. **IAAT** either of the following conditions apply to an operating RCP:

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

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

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

Event Description: **1A2 RCP lower seal failure (requires pump shutdown) (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew response:** AP/1/A/1700/016 Section 4A, RCP Seal Failure 16 **IAAT** shut down of an RCP is desired, **THEN** perform Steps 17-27 17. Verify MODE 1 or 2 18. Verify three RCPs will remain operating after affected RCP is tripped 19. Verify Rx power is ≤ 70% as indicated on all NIs **RNO:** 1. Direct an RO to initiate Encl 5.2 (Rapid Power Reduction) 2. **WHEN** Rx power is ≤ 70% on all NIs, **THEN** continue this procedure 20. Verify any SG on Low Level Limits **RNO: GO TO** Step 23 23. Verify FDW masters in Auto 24. Stop affected RCP 25. Verify ICS re-ratios feedwater to establish desired ΔT_C **Note: When the 1A2 RCP is secured, the Delta T_C controller will fail and Feedwater will not properly re-ratio as expected and initiate the next event.**
	OATC	AP/16 Enclosure 5.2, Rapid Power Reduction 1. Verify ICS in AUTO 2. Initiate MAXIMUM RUNBACK to ≤ 70% as indicated by all NIs 3. **WHEN** Rx Power is ≤ 70% as indicated by all NIs, **THEN** press MAXIMUM RUNBACK to stop runback 4. Notify CR SRO that Rx Power is ≤ 70% 5. Adjust CTPD SET to match CTP DEMAND 6. Stop the following pumps: __ 1E1 HTR DRN PUMP __ 1E2 HTR DRN PUMP 7. Verify Rx Power was reduced ≥ 15% within a 1 hour period 8. Notify Primary Chemistry to perform Tech Spec SR 3.4.11.2 as required 9. **EXIT** this enclosure

This event is complete when Rx power is reduced to ≤ 70% and the 1A2 RCP is secured, or as directed by the Lead Examiner.

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

Event Description: **ΔT_C Controller fails when 1A2 RCP is secured (I: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	OATC	**Crew Response:** The crew will be required to diagnose that Feedwater failed to ratio properly and mitigate the failure per AP/16 AP/1/A/1700/016 Abnormal RCP Operation 25. Verify ICS re-ratios feedwater to establish desired ΔT_C **RNO:** 1. Place DELTA T_C station in HAND 2. Manually adjust DELTA T_C station to achieve desired ΔT_C **Note: The approximate value for total FDW flow at 65% power is 7.1 E6 lbm/hr. The 1A S/G FDW flow should be ≈ 2.4 E6 lbm/hr and the 1B S/G FDW flow should be ≈ 4.7 E6 lbm/hr to achieve the desired ΔT_C of ≈ zero.** 3. **IF** DELTA T_C station does **NOT** control, **THEN** perform the following: (**does not apply**) 4. Initiate AP/28 (ICS Instrument Failures) 26. Initiate Encl 4.3 (Special Instructions for < 4 RCP Operation) of OP/1/A/1102/004 (Operation at Power) 27. Initiate the following notifications: • Notify OSM to make required notifications of OMP 1-14 (Notifications) • Notify Rx Engineering and request a power maneuver plan, if needed • Notify SOC if load reduction was required • Notify Chemistry to take RCS boron samples on a 1 hour frequency
	SRO	Refer to AP/1/A/1700/028, ICS Instrument Failures 4.1 Provide control bands as required 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, as needed

This event is complete when the crew initiates AP/28, or as directed by the Lead Examiner.

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

Event Description: **ΔT_C Controller fails when 1A2 RCP is secured (I: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** AP/1/A/1700/028, ICS Instrument Failures 4.1 Provide control bands as required 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, as needed 4.6 **GO TO** the applicable section per the following table:

√	Section	Failure
	4F	**Delta T_C**

	SRO	AP/1/A/1700/028 Section 4F 1. Ensure the following in HAND: __ 1A FDW MASTER __ 1B FDW MASTER __ DELTA T_C 2. Re-ratio feed water flow, as required, to establish DELTA T_C while maintaining total feed water flow constant 3. Notify SPOC to perform the following: __ Investigate and repair the failed Delta T_C controller 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: The Delta T_C controller will not be repaired for this scenario.**

This event is complete when the crew initiates AP/28, or as directed by the Lead Examiner.

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

Event Description: **HPSW Jockey Pump trips with HPSW auto initiation logic inoperable (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	**Plant Response:** • 1SA-9/A-8 HPSW Header A/B PRESS LOW • 1SA-9/D-8 HPSW JOCKEY PUMP OFF • HPSW header pressure decreases due to Jockey Pump trip. **Crew Response:** Refer to ARG 1SA-9/D-8 3.1 Verify automatic actions until jockey pump is restarted 3.2 **IF** there is **NO** evidence of breaker and/or pump motor problem, attempt to restart jockey pump one time. If restart is unsuccessful, notify Maintenance Department. The crew may refer to ARG 1SA-9/A-8 3.1 Verify proper jockey pump operation 3.2 Refer to SLC 16.9.8a 3.3 Verify HPSW pumps start (start manually if **NOT** already in operation per OP/0/A/1104/011) when preset levels in EWST are reached 3.4 **IF** HPSW Header Pressure continues to decrease **AND** EWST level is **NOT** dropping, manually start a HPSW Pump 3.5 Refer to AP/1-2/A/1700/030 (Aux Building Flood) 3.6 Investigate and correct reason for excessive HPSW usage 3.7 Verify BASE and STANDBY HPSW Pumps stop at 80,000 gals 3.8 **IF** manually started, return HPSW Pumps when **NO** longer needed ***Booth Cue:*** ***After the crew manually starts the HPSW Jockey Pump, call the Control Room as SPOC and report "During investigation of the Jockey Pump failure, it has been determined that the 'A' HPSW Pump auto initiation logic circuit is OOS (or not functioning properly)".*** ***Booth Cue:*** ***If the crew dispatches a NEO to determine if a problem exists with HPSW Jockey Pump motor/breaker, use TIME COMPRESSION and inform the RO that no problem was found with the Jockey Pump motor or breaker***
	SRO	SRO refers to SLC 16.9.1 and enters Condition A for HPSW pump A and B auto initiation logic inoperable. APPLICABILITY: At all times CONDITION A: Equipment inoperable in the Oconee Fire Suppression Water Supply System REQUIRED ACTION: Restore inoperable equipment to OPERABLE status COMPLETION TIME: 7 days

This event is complete when the Jockey Pump has been restarted and the SRO refers to SLC 16.9.1, or as directed by the Lead Examiner.

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

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	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** all of the following conditions exist: __ PORV open __ RC pressure < 2300 psig (HIGH) or 480 psig (LOW) __ PZR level ≤ 375" **THEN** close 1RC-4 **Note: The crew may perform Immediate Manual Action Step 3.2 from memory prior to the SRO entering AP/44.** 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 (1RC-3) is not closed, the Reactor will trip on variable low pressure and ES actuation will occur.**

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

Event Description: **PZR spray valve (1RC-1) fails OPEN (C: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** **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.** AP/1/A/1700/044 (Abnormal Pressurizer Pressure Control) 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

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: (**no TS should not apply**)
__ TS 3.4.1 (RCS Pressure, Temperature, and Flow DNB Limits)
__ TS 3.4.9 (Pressurizer)
__ TS 3.4.12 (LTOP System)
__ SLC 16.5.1 (RCS Vents)

4.17 **WHEN** repairs complete, **THEN** place the following components in desired position for current plant conditions as determined by CR SRO

This event is complete when the RCS pressure decrease has been stopped and PZR level is stable, or as directed by the Lead Examiner.

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

Event Description: **Loss of power to 1TB (C: OATC, SRO)**
ATWS (Rule 1) with 1C HPI pump failure

Time	Position	Applicant's Actions or Behavior
		Plant Response: An automatic RX trip should have occurred due to the loss of 2 RCPs. **Crew Response:** The SRO will direct the OATC to perform EOP Immediate Manual Actions The SRO will direct the BOP to perform a Symptoms Check
	OATC	EOP Immediate Manual Actions: 3.1 Depress REACTOR TRIP pushbutton. 3.2 Verify reactor power < 5% FP and decreasing. **RNO:** **GO TO** Rule 1 (ATWS/Unanticipated Nuclear Power Production)
	OATC	EOP Rule 1 **(CT-24)** 1. Verify any Power Range NI ≥ 5% FP 2. Initiate manual control rod insertion to the IN LIMIT 3. Notify CR SRO to **GO TO** UNPP tab (**see next page**) 4. Open 1HP-24 and 1HP-25 5. Ensure only one of the following operating: • 1A HPI PUMP • 1B HPI PUMP 6. Start 1C HPI PUMP **Note:** **The 1C HPI pump will not start and only the 1B HPI pump (the standby HPI pump) will be operating.** **RNO:** 1. Start the standby HPI pump 2. **IF** at least two HPI pumps are operating, **THEN** open 1HP-409 7. Open 1HP-26 and 1HP-27 8. Dispatch one operator without wearing Arc Flash PPE to open 600V CRD breakers on the following: • 1X9-5C (Unit 1 CRD Norm Fdr Bkr) • 2X1-5B (Unit 1 CRD Alternate Fdr Bkr) ***Booth Cue: Trip CRD breakers 4 minutes after the CR request.*** 9. Verify only two HPI pumps operating **RNO:** **IF** all HPI pumps operating, **THEN** perform the following: (**does not apply**) 10. **EXIT** this rule

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

Event Description: **Loss of power to 1TB (C: OATC, SRO)**
ATWS (Rule 1) with 1C HPI pump failure

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** EOP UNPP tab: 1. Ensure Rule 1 is in progress or complete 2. Verify Main FDW is operating and in AUTO 3. **IAAT** Main FDW is **NOT** operating, **THEN** perform the following: A. Trip the turbine-generator B. Start all available EFDW pumps 4. **IAAT** all power range NIs are < 5% FP, **THEN** perform Steps 5-6 **RNO: GO TO** Step 7 5. Depress turbine TRIP pushbutton 6. Verify all turbine stop valves closed 7. Verify any wide range NI > 1% FP **RNO: GO TO** Step 15 8. Open 1RC-4 and 1HP-5 9. Maximize letdown 10. Verify Main FDW available 11. Adjust Main FDW flow as necessary to control RCS temperature 12. Verify overcooling in progress **RNO: GO TO** Step 15 15. Secure makeup to LDST 16. **WHEN** all Wide Range NIs are ≤ 1% FP, **AND** decreasing, **THEN** continue 17. Control RCS temperature using the following methods: __ Tave ≤ 555°F – Adjust SG pressure as necessary to stabilize RCS temperature using either of the following: • TBVs • Dispatch two operators to perform Encl 5.24 (Operation of the ADVs) __ Tave > 555°F – Utilize Rule 7 (SG Feed Control) to control SG feed rate as necessary to maintain cooldown rate within Tech Spec limits during the approach to the SG Level Control Point 18. Throttle HPI per Rule 6 (HPI) 19. **WHEN** RCS pressure < 2300 psig, **THEN** continue 20. Verify PORV closed 21. Adjust letdown flow as desired 22. Verify RCP seal injection available 23. **GO TO** Subsequent Actions tab

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

Event Description: **Loss of power to 1TB (C: OATC, SRO)**
ATWS (Rule 1) with 1C HPI pump failure

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

This event is complete when the SRO transfers to the Subsequent Actions tab, or as directed by the Lead Examiner.

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 Page 1 of 10

Event Description: **SBLOCA with LOSCM (ES actuation) (M: ALL)**
Rapid RCS cooldown

Time	Position	Applicant's Actions or Behavior
		Plant Response: RCS pressure will begin to decrease 1SA-08/A-9 RM Area Monitor Radiation High 1SA-08/B-9 Process Monitor Radiation High 1SA-08/E-9 Reactor Building Normal Sump Isolate ES Channels 1 and 2 will actuate on low RCS pressure (< 1600 psig) ES Channels 3 – 6 will actuate on High RB pressure (> 3 psig) in ≈ 6 min **Crew Response:** When <u>any</u> SCM indicates 0°F, the SRO will direct an operator to perform Rule 2. (**details on page 21**) The SRO will transfer to the LOSCM tab of the EOP from Subsequent Actions Parallel Actions page.
	SRO	The SRO will direct an operator to initiate EOP Encl 5.1, ES Actuation, per LOSCM Parallel Actions Page. (**details begin on page 22**) If the crew asks, Unit 2 will perform AP/1/A/1700/018 (Abnormal Release of Radioactivity) actions.
		Note: The crew may transfer to the ICC tab if it is noticed that Rx Vessel head level briefly indicates 0" (see page 20)
	SRO	EOP LOSCM tab 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 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 7. Verify SSF activated per AP/25 with <u>both</u> of the following systems required: • SSF RC Makeup • SSF Aux Service Water **RNO: GO TO** Step 9

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 Page 2 of 10

Event Description: **SBLOCA with LOSCM (ES actuation) (M: ALL)**
Rapid RCS cooldown

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response**: EOP LOSCM tab 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) **RNO: GO TO** Step 11 **Note: Since only one HPI pump will be operating, HPI flow will not exist in both HPI headers** 11. **IAAT** all SCMs are > 0°F, **OR** all the following exists: • **NO** RCPs operating • HPI flow in both HPI headers • Adequate total HPI flow per Figure 1 **THEN GO TO** Step 89 12. Start both MDEFDW pumps • 1A MDEFDW Pump • 1B MDEFDW Pump 13. Start the TDEFDWP 14. Establish 300 gpm EFDW flow to each of the following: • 1A SG • 1B SG 15. Verify both MDEFDW pumps are operating 16. Initiate full depressurization of both SGs utilizing either of the following: • TBVs • ADVs 17. Initiate EFDW flow to all available SGs to LOSCM setpoint at maximum allowable rate (per Table 3 of Rule 7) **Note: The maximum flow for 1A and 1B MD EFDW pumps are 600 gpm per pump with suction from the UST. The TD EFDW pump maximum flow is 950 gpm. The maximum EFDW flow per header is 1000 gpm.** 18. Trip both Main FDW Pumps 19. Place FDW block valve switches in close: • 1FDW-33 • 1FDW-31 • 1FDW-42 • 1FDW-40

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 Page 3 of 10

Event Description: **SBLOCA with LOSCM (ES actuation) (M: ALL)**
Rapid RCS cooldown

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response**: EOP LOSCM tab 20. Open 1AS-40 while closing 1MS-47 21. Ensure Rule 3 (Loss of Main or Emergency FDW) is in progress or complete 22. **GO TO** Step 34 34. **IAAT** RCS pressure reaches 2450 psig, **THEN** perform Steps 35 and 36 **RNO:** 1. **IF** HPI forced cooling is in progress, **THEN GO TO** Step 37 2. Close 1RC-4 3. **GO TO** Step 37 37. Close: • 1GWD-17 • 1HP-1 • 1HP-2 • 1RC-3 38. Verify <u>either</u> of the following: • <u>Core</u> superheated • Rx vessel head level at 0" **RNO:** **GO TO** Step 40 40. **IAAT** BWST level is ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES) 41. **WHEN** <u>all</u> SCMs are > 0°F, **OR** <u>all</u> the following exist: • **NO** RCPs operating • HPI flow in <u>both</u> HPI headers • Adequate <u>total</u> HPI flow per Figure 1 **THEN** maintain SG pressure < RCS pressure utilizing <u>either</u> of the following: • TBVs • ADVs 42. Verify primary to secondary heat transfer exists 43. Perform the following: __ Control steaming and feed rates on <u>all</u> <u>intact</u> SGs to maintain cooldown rate within Tech Spec limits: • T_{cold} > 280°F: ≤ 50°F / ½ hr • T_{cold} ≤ 280°F: ≤ 25°F / ½ hr __ Utilize <u>either</u> of the following: • TBVs • ADVs 44. Initiate Encl 5.16 (SG Tube-to-Shell ΔT Control)

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 Page 4 of 10

Event Description: **SBLOCA with LOSCM (ES actuation) (M: ALL)**
Rapid RCS cooldown

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** EOP LOSCM tab 45. **IAAT** an SGTR has occurred, **AND** any affected SG approaches overfill: 46. Verify HPI forced cooling in progress **RNO: GO TO** Step 48 48. Verify CETCs trend decreasing 49. Verify primary to secondary heat transfer is excessive **RNO: GO TO** Step 51 51. Verify indications of SGTR ≥ 25 gpm **RNO: GO TO** Step 53 53. Verify required RCS makeup flow within normal makeup capability **RNO: GO TO** LOCA CD tab
	SRO	EOP 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 all 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** 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 11 11. Stop all RCPs 12. Dispatch an operator to perform the following (Unit 1 Equip Rm): __ Remove white tag and close 1XO-F5C (1A CFT Outlet) __ Remove white tag and close 1XP-F5C (1B CFT Outlet) __ Close 1XS2-F3D (1LP-104 Post LOCA Boron Dilute)

This event is complete when the SRO transfers to the LOCA CD tab, or as directed by the Lead Examiner.

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 Page 5 of 10

Event Description: **SBLOCA with LOSCM (ES actuation) (M: ALL)**
Rapid RCS cooldown

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response**: EOP ICC tab (**if required**) 1. **IAAT** CETCs > 1200°F, **AND** TSC is ready to provide guidance, **THEN** perform the following: A. Notify TSC to enter the OSAG B. **EXIT** this procedure 2. Ensure full HPI and control per Rule 6 (HPI) 3. **IAAT** RCS pressure is ≤ 550 psig, **OR** RB pressure is ≥ 3 psig, **THEN** perform Steps 4-8 4. Open 1LP-21 and 1LP-17 5. Start 1A LPI Pump 6. Open 1LP-22 and 1LP-18 7. Start 1B LPI Pump 8. Verify two LPI pumps operating 9. **IAAT** all the following exists: __ 1C LPI Pump off __ 1C LPI Pump available __ LPI required __ ECCS pump suction aligned to BWST __ 1A LPI Pump unavailable __ 1B LPI Pump unavailable **THEN** perform Steps 10-13 **RNO: GO TO** Step 14 14. Open 1CF-1 and 1CF-2 15. **IAAT** core SCM is ≥ 0°F, **THEN GO TO** LOCA CD tab (**page 19**)

This event is complete when the SRO transfers to the LOCA CD tab, or as directed by the Lead Examiner.

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 Page 6 of 10

Event Description: **SBLOCA with LOSCM (ES actuation) (M: ALL)**
Rapid RCS cooldown

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** Initiate Rule 2 when <u>any</u> SCM indicates 0°F EOP Rule 2, Loss of SCM 1. **IAAT** <u>all</u> exist: • <u>Any</u> SCM ≤ 0°F • Rx power ≤ 1% • ≤ 2 minutes elapsed since loss of SCM **THEN** perform Steps 2 and 3 2. Stop all RCPs **(CT-1) (Within 2 minutes of LOSCM)** 3. Notify CR SRO of RCP status 4. Verify Blackout exists **RNO:** **GO TO** Step 6 6. Open 1HP-24 and 1HP-25 7. Start <u>all</u> <u>available</u> HPI pumps 8. **GO TO** Step 13 13. Open 1HP-26 and 1HP-27 14. Verify <u>at least two</u> HPI pumps are operating using two diverse indications **RNO:** **GO TO** Step 27 27. Verify <u>at least two</u> HPI pumps are operating **RNO:** Maximize HPI flow ≤ 475 gpm (including seal injection for A hdr only) 28. Verify RCS pressure > 550 psig 29. **IAAT** either 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** Step 34 30. Dispatch two operators to perform Encl 5.24 (Operation of the ADVs) 31. Verify 1SA-2/C-8 (AFIS HEADER A INITIATED) lit **RNO:** Select OFF for <u>both</u> digital channels on AFIS HEADER A 32. Verify 1SA-2/D-8 (AFIS HEADER B INITIATED) lit **RNO:** Select OFF for <u>both</u> digital channels on AFIS HEADER B 33. Notify CR SRO: • Suspend Rule 3 until directed by LOSCM tab • Degraded HPI exists 34. **EXIT** this rule

These actions are complete when Rule 2, Loss of Subcooling Margin is exited.

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 Page 7 of 10

Event Description: **SBLOCA with LOSCM (ES actuation) (M: ALL)**
Rapid RCS cooldown

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** **Note: Initially, ES Channels 1 and 2 will actuate when RCS pressure decreases below 1600 psig. When Reactor Building pressure increases to > 3 psig, ES Channels 3-6 will actuate. If the RO reaches Step 15 prior to ES 3&4 actuation, the procedure directs going to Step 51. When ES Channel 3&4 actuate, the RO should return to IAAT Steps 3, 9, 10, and 15 and perform any required actions** EOP Enclosure 5.1, ES Actuation 1. Determine all ES channel that should have actuated based on RCS pressure and RB pressure:

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

2. Verify all ES channels associated with actuation setpoints have actuated
3. **IAAT** additional ES actuation setpoints are exceeded, **THEN** perform Steps 1 – 2
4. Place Diverse HPI in BYPASS
5. Perform both:
   - Place ES CH 1 in MANUAL
   - Place ES CH 2 in MANUAL
6. Verify Rule 2 in progress or complete
7. Verify any RCP operating **RNO: GO TO** Step 9
8. Open 1HP-20 and 1HP-21
9. **IAAT** all exist:
   - Voter associated with ES channel is in OVERRIDE
   - An ES channel is manually actuated
   - Components on that channel require manipulation

   THEN depress RESET on the required channel
10. **IAAT** any RCP is operating, **AND** ES Channels 5 an 6 actuate, **THEN** perform Steps 11-14

RNO: GO TO Step 15

15. **IAAT** ES Channels 3 & 4 are actuated, **THEN GO TO** Step 16

RNO: GO TO Step 51 (**see page 24 if required**)

16. Place Diverse LPI in BYPASS

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 Page 8 of 10

Event Description: **SBLOCA with LOSCM (ES actuation) (M: ALL)**
Rapid RCS cooldown

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Enclosure 5.1, ES Actuation 17. Perform both: • Place ES CH 3 in MANUAL • Place ES CH 4 in MANUAL 18. **IAAT** any LPI pump is operating against a shutoff head, **THEN** at the CR SROs discretion, stop affected LPI pumps 19. **IAAT** RCS pressure is < LPI pump shutoff head, **THEN** perform Steps 20 - 21 **RNO:** **GO TO** Step 22 22. **IAAT** 1A and 1B LPI PUMPs are off / tripped, **AND** all of the following exist: • RCS pressure < LPI pump shutoff head • 1LP-19 closed • 1LP-20 closed **THEN** perform Steps 23 - 24 **RNO:** **GO TO** Step 25 25. **IAAT** 1A LPI PUMP fails while operating, **AND** 1B LPI PUMP is operating, **THEN** close 1LP-17 26. **IAAT** 1B LPI PUMP fails while operating, **AND** 1A LPI PUMP is operating, **THEN** close 1LP-18 27. Start A and B OUTSIDE AIR BOOSTER FANs (**CT-27**) (**Must be started within 30 minutes of LOCA**) 28. Notify Unit 3 to start 3A and 3B OUTSIDE AIR BOOSTER FANs 29. Verify 1CF-1 and 1CF-2 are open 30. Verify 1HP-410 closed 31. Secure makeup to the LDST 32. 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** is ES position and initiate action to place in ES position if desired **Note:** **The 1A & 1C HPI pumps and 1A & 1B LPI pumps will not be in the ES position.** 33. Verify Unit 2 turbine tripped **RNO:** **GO TO** Step 36 36. Close 1LPSW-139 37. Place in FAIL OPEN: __ 1LPSW-251 FAIL SWITCH __ 1LPSW-252 FAIL SWITCH 38. Start all available LPSW pumps

Op-Test No.: 1 | Scenario No.: 2 | Event No.: 8 | Page 9 of 10

Event Description: **SBLOCA with LOSCM (ES actuation) (M: ALL)**
Rapid RCS cooldown

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Enclosure 5.1, ES Actuation 39. Verify either: __ Three LPSW pumps operating __ Two LPSW pumps operating when Tech Specs only requires two operable 40. Open 1LPSW-4 and 1LPSW-5 41. **IAAT** BWST level ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES) 42. Dispatch an operator to perform Encl 5.2 (Placing RB Hydrogen Analyzers In Service) (**PS**) 43. Select DECAY HEAT LOW FLOW ALARM SELECT switch to ON 44. **IAAT** ES channels 5 & 6 have actuated **THEN** perform Step 45 45. Verify all ES channel 5 & 6 components are in the ES position 46. **IAAT** ES channels 7 & 8 have actuated, **THEN** perform Step 47 **RNO:** **GO TO** Step 48 48. Notify U2 CR SRO that SSF is inoperable due to OTS1-1 open 49. **IAAT** conditions causing ES actuation have cleared, **THEN** initiate Encl 5.41 (ES Recovery) 50. **WHEN** CR SRO approves, **THEN EXIT** this enclosure **Note:** **The following steps may be required depending on how quick the RO gets to Step 15 of Encl 5.1. If the RO reaches Step 15 prior to ES 3&4 actuation, the procedure directs going to Step 51. When ES Channel 3&4 actuate, the RO should return to IAAT Steps 3, 9, 10, and 15 and perform any required actions (see page 21).** 51. Start A and B OUTSIDE AIR BOOSTER FANS 52. Notify Unit 3 to start 3A and 3B OUTSIDE AIR BOOSTER FANS 53. Verify 1CF-1 and 1CF-2 are open 54. Verify 1HP-410 closed 55. Secure makeup to the LDST 56. Verify all ES channel 1&2 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** is ES position and initiate action to place in ES position if desired **Note:** **The 1C HPI pump will not be in the ES position** 57. Verify Unit 2 turbine tripped **RNO:** **GO TO** Step 60 60. Close 1LPSW-139

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 Page 10 of 10

Event Description: **SBLOCA with LOSCM (ES actuation) (M: ALL)**
Rapid RCS cooldown

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Enclosure 5.1, ES Actuation 61. Place in FAIL OPEN: __ 1LPSW-251 FAIL SWITCH __ 1LPSW-252 FAIL SWITCH 62. Start <u>all available</u> LPSW pumps. 63. Verify <u>either</u>: __ Three LPSW pumps operating __ Two LPSW pumps operating when Tech Specs only requires two operable 64. Open: __ 1LPSW-4 __ 1LPSW-5 65. **IAAT** BWST level ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES). 66. Dispatch an operator to perform Encl 5.2 (Placing RB Hydrogen Analyzers In Service). (**PS**) 67. Notify U2 CR SRO that SSF is inoperable due to OTS1-1 open. 68. **IAAT** conditions causing ES actuation have cleared, **THEN** initiate Encl 5.41 (ES Recovery). 69. **WHEN** CR SRO approves, **THEN EXIT** this enclosure.

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

Event Description: **EOP Enclosure 5.5 (if required)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** EOP Enclosure 5.5, Pzr and LDST Level Control **(if needed)** 1. Utilize the following as necessary to maintain desired Pzr level: • 1A HPI Pump • 1B HPI Pump • 1HP-26 • 1HP-7 • 1HP-120 setpoint or valve demand • 1HP-5 2. **IAAT** makeup to the LDST is desired, **THEN** makeup from 1A BHUT. 3. **IAAT** it is desired to secure makeup to LDST, **THEN** secure makeup from 1A BHUT. 4. **IAAT** it is desired to bleed letdown flow to 1A BHUT, **THEN** perform the following: A. Open: • 1CS-26 • 1CS-41 B. Position 1HP-14 to BLEED. C. Notify SRO. 5. **IAAT** letdown bleed is **NO** longer desired, **THEN** position 1HP-14 to NORMAL. 6. **IAAT** 1C HPI PUMP is required, **THEN** perform Steps 7 – 9. **RNO:** **GO TO** Step 10. 7. Open 1HP-24 and 1HP-25 8. Start 1C HPI PUMP 9. Throttle the following as required to maintain desired Pzr level: • 1HP-26 • 1HP-27 10. **IAAT** LDST level **CANNOT** be maintained, **THEN** perform Step 11. **RNO:** **GO TO** Step 12. 11. Perform the following: • Open 1HP-24 • Open 1HP-25 • Close 1HP-16

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

Event Description: **EOP Enclosure 5.5 (if required)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** 12. **IAAT** additional makeup flow to LDST is desired, **AND** 1A BLEED TRANSFER PUMP is operating, **THEN** dispatch an operator to close 1CS-48 (1A BHUT Recirc) (A-1-107, Unit 1 RC Bleed Transfer Pump Rm.). 13. **IAAT** two Letdown Filters are desired, **THEN** perform the following: • Open 1HP-17. • Open 1HP-18 14. **IAAT** all of the following exist: • Letdown isolated • LPSW available • Letdown restoration desired **THEN** perform Steps 15 - 33 **RNO: GO TO** Step 34. 34. **IAAT** it is determined that letdown is unavailable due to equipment failures or letdown system leakage, **THEN** notify CR SRO to initiate AP/32 (Loss of Letdown). 35. **IAAT** > 1 HPI pump is operating, **AND** additional HPI pumps are **NO** longer needed, **THEN** perform the following: A. Obtain SRO concurrence to reduce running HPI pumps. B. Secure the desired HPI pumps. C. Place secured HPI pump switch in AUTO, if desired. 36. **IAAT** all the following conditions exist: • Makeup from BWST **NOT** required • LDST level > 55" • All control rods inserted • Cooldown Plateau **NOT** being used **THEN** close: • 1HP-24 • 1HP-25 37. Verify 1CS-48 (1A BHUT Recirc) has been closed to provide additional makeup flow to LDST. **RNO: GO TO** Step 39. 39. Verify two Letdown Filters in service, **AND** only one Letdown filter is desired. **RNO: GO TO** Step 41. 41. **WHEN** directed by CR SRO, **THEN EXIT** this enclosure.

These actions are complete when EOP Enclosure 5.5 (Pzr and LDST Level Control) is exited.

CRITICAL TASKS

CT-24 Shutdown Reactor – ATWS
In the event the reactor fails to trip in response to automatic and manual demands, then de-energize CRDMs, begin maximum boric acid addition to RCS, and maintain adequate primary to secondary heat transfer.

CT-1 Trip All RCPs
Tripping all RCPs of a within 2 minutes of a LOSCM ensures fuel will remain adequately covered and avoid possible fuel damage.

CT-27 Implementation of Control Room Habitability Guidance within 30 minutes of LOCA

~~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: 87%	Mode: 1	Mode: 1
Gross MWE: 804	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
- Reactor power reduced for Turbine Valve Testing.
- GWD Tank B release in progress

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.
- Complete PT/1/A/0290/003 Turbine Valve Movement test for CV1. Begin at step 2.1 of Encl. 13.2 (Control Valve Movement At Power)

Reactivity Management (CR SRO)

RCS Boron: 30 ppmB	Gp 7 Rod Position: 80%	R2 Reactivity management controls established in the Control Room per SOMP 01-02

Human Performance Emphasis (OSM)

Procedure Use and Adherence

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

Examiners: _____ Operators: _____ **SRO**

_____ _____ **OATC**

_____ _____ **BOP**

Initial Conditions:
- Reactor Power = 87% Unit 2: 100% Unit 3: 100%

Turnover:
- Turbine Valve Movement PT has just been completed and awaiting maneuvering plan to return to full power
- SASS in Manual
- AMSAC/DSS bypassed for I&E testing

Event No.	Malfunction No.	Event Type*	Event Description
0a	Pre-Insert		SASS in MANUAL
0b	Pre-Insert		AMSAC/DSS bypassed
0c	Pre-Insert		'A' AFIS Circuit Disabled 'B' AFIS Circuit Disabled
0d	Pre-Insert		1C HPI pump will not start
1	MPI150	I: OATC, SRO (**TS**)	PZR RTD 'A' Fails LOW (**TS**)
2	MSS200	C: BOP, SRO	Condenser Vacuum Leak
3	Override	C: BOP, SRO	1B Main FDW Pump Active Thrust Bearing Temperature HIGH Requiring Manual Trip
4	Override	C: OATC, BOP, SRO(**TS**)	Inadvertent ES Channel 1 actuation (**TS**)
5	MCS005	I: OATC, SRO	Controlling Tave Fails HIGH
6	MSS360,30	M: ALL	1A MSLB in the reactor building
7	MSS330 MSS260 MSS270	M: ALL	Loss of all SG feed HPI F/C

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

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

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

Time	Position	Applicant's Actions or Behavior
		Booth Cue: Call as a WCC SRO (Tony Green) and inform the BOP that you are performing a key locker audit. Request that he go to the RPS cabinets and report if any shutdown bypass keys are still inside. (This will help to ensure the OATC will take actions for the PZR RTD failure) ARG 1SA-06/D-9 FW TREATED WATER PANEL TROUBLE 3. Manual Action 3.1 Contact Water Treatment Room and/or inform secondary Chemist **Note: Once the BOP has taken action to respond to the alarm, the PZR RTD failure will begin.** **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 ≈ 150 inches • PZR level 3 indicates ≈ 220 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 taken to MANUAL to control PZR level, the RO should place 1HP-120 back to AUTO.** 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)

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

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

Time	Position	Applicant's Actions or Behavior
		Crew Response: Refer to ARG 1SA-02/C-3 (RC Pressurizer Level High/Low): 3.4 Refer to Technical Specification 3.4.9, Pressurizer 3.5 Refer to Technical Specification 3.3.8, PAM Instrumentation. • Condition A applies 3.6 Refer to OP/1/A/1105/014 (Control Room Instrumentation Operation And Information) OP/1/A/1105/014 Enclosure 4.11 (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.**
	SRO	The SRO should enter TS 3.3.8 Condition A for one or more Functions with one required channel inoperable (two channels of PZR level are required) The Required Action is to restore the required channel to operable status within 30 days If the level in the Pzr reaches 260 inches, the SRO should enter TS 3.4.9 Condition "A". Restore level to within limit within 1 hour.

This event is complete when PZR level 3 is selected, or as directed by the Lead Examiner.

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

Event Description: **Condenser 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 and FDWPT trip setpoint is ≤ 19" Hg 3. Manual Action • Refer to AP/1/A/1700/027 (Loss of Condenser Vacuum) **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 turbine will not trip.** ***Booth Cue: When the low vacuum statalarm actuates, FIRE TIMER 14 to reduce the leak size.*** ***Booth Cue: When directed to isolate the vacuum leak, FIRE TIMER 15 to remove the vacuum leak.***
	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** both of the following apply: __ Condenser vacuum ≤ 22" Hg __ MODE 1 or 2 **THEN** trip the Rx.

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

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

Time	Position	Applicant's Actions or Behavior
	SRO	**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) (**PS**) __ 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 a Hotwell 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 **Note: The crew may request an R&R for configuration control of the valves manipulated to stop the vacuum leak.**

This event is complete when the SRO reaches Step 4.10 of AP/27, or as directed by the Lead Examiner.

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

Event Description: **1B Main FDW Pump Active Thrust Bearing Temperature HIGH Requiring Manual Trip (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO BOP	**Plant response:** OAC Alarm O1A0928 FWPT 1B ACTIVE THRUST BEARING TEMP **Crew Response:** Refer to OAC Alarm Response for O1A0928 for HI-HI temperature > 200°F HI-HI: 1) If temperature cannot be maintained below HI-HI setpoint, refer to OP/1/A/1106/002 B (FDWPT Operation) to remove FDWP from service 2) Refer to OP/1/A/1102/004 (Operation at Power) 3) Notify Component Engineer ***Booth cue: If contacted, respond as the Component Engineer and recommend that the 1B FDWPT be removed from service as soon as possible.*** ***Booth cue: If contacted, respond as the OSM and recommend that the 1B FDWPT be removed from service as soon as possible*** ***Booth cue: If a NEO is dispatched, he should report that the 1B FDWP smells hot and the bearing housing is hot to the touch.*** The BOP should refer to OP/1/A/1106/002 B (FDWPT Operation) The SRO will refer to AP/1/A/1700/029 (Rapid Unit Shutdown) (**see next page**) OP/1/A/1106/002 B (FDWPT Operation) Enclosure 4.9 Initial Conditions 1.1 CTP DEMAND < 65% power 1.2 Review Limits and Precautions Procedure 2.1 **IF** this is first FDWPT to be shutdown: 2.1.1 Verify 1SA-5/E-1 (FWPT/RX TRIP ALERT) **NOT** in alarm 2.1.2 Position the following: A. Ensure 1FDW-53 (1A FDWP RECIRC CONTROL) in MAN B. Ensure Closed 1FDW-53 (1A FDWP RECIRC CONTROL) C. Ensure 1FDW-65 (1B FDWP RECIRC CONTROL) in MAN D. Ensure Closed 1FDW-65 (1B FDWP RECIRC CONTROL) 2.2 **IF** in FDW Heatup, perform the following: (**does not apply**) 2.3 Ensure running 1B FDWP AUX OIL PUMP 2.4 **IF** 1A FDWP is **NOT** isolated for maintenance, start 1A FDWP AUX OIL PUMP 2.5 Place 1B MAIN FDW PUMP (ICS) in HAND 2.6 Slowly run 1B MAIN FDW PUMP demand signal to minimum

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

Event Description: **1B Main FDW Pump Active Thrust Bearing Temperature HIGH Requiring Manual Trip (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
		Crew Response:
	BOP	OP/1/A/1106/002 B (FDWPT Operation) continued 2.7 **IF** required, verify 1A FDWPT picks up load by observing FDWPT suction flow instruments 2.8 Immediately trip 1B FDWPT from FW TURB 1B TRIP/RESET switch • Verify closed 1B FDWPT HP stop valve • Verify closed 1B FDWPT LP stop valve 2.9 **WHEN** 1B FDWPT reaches 0 speed: • Ensure 1B FDWP TURNING GEAR MOTOR starts • Ensure 1B FDWP TURNING GEAR engages 2.10 Open the following: • 1SD-125 (1B FDWPT LPSV BS Stm Trap Byp) (T-1-C25) • 1SD-126 (1B FDWPT HPSV BS Stm Trap Byp) (T-1-D25) 2.11 Place 1B FDWP Runback Bypass switch to BYPASS (T-1 Located on SG FDW Panel 1 SGFP) ***Booth Cue: When contacted, respond as a NEO and state that 1SD-125 and 1SD-126 are OPEN.*** ***Booth Cue: When contacted, respond as a NEO and state that the 1B FDWP Runback Bypass switch is in BYPASS.*** 2.12 **IF** both FDWPTs are tripped, close 1AS-97 (**does not apply**)
	SRO	AP/1/A/1700/029 (Rapid Unit Shutdown) 4.1 Initiate Encl 5.1 (Support Actions During Rapid Unit Shutdown) (**see next page**) 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 **RNO: GO TO** Step 4.8 **Note: Steps 4.4-4.7 will apply once Rx power has been reduced to < 65%** 4.4 Verify ICS in AUTO 4.5 Deselect MAXIMUM RUNBACK 4.6 Initiate OP/1/A/1102/004 (Operation at Power) power reduction Encl 4.7 **WHEN** conditions permit, **THEN** perform one of the following: __ Depress MAXIMUM RUNBACK to resume power reduction __ **GO TO** appropriate operating procedure for continued operation

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

Event Description: **1B Main FDW Pump Active Thrust Bearing Temperature HIGH Requiring Manual Trip (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
		Crew Response:
	SRO	AP/1/A/1700/029 (Rapid Unit Shutdown) 4.8 Verify ICS in AUTO 4.9 Depress MAXIMUM RUNBACK 4.10 Verify both Main FDW pumps running 4.11 Adjust bias for first Main FDW pump desired to be shutdown until 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%, **THEN** continue
	BOP	AP/1/A/1700/029 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 FDWP SEAL INJECTION PUMP __ 1A FDWP AUXILIARY OIL PUMP __ 1B FDWP AUXILIARY OIL PUMP __ 1B FDWP SEAL INJECTION PUMP 3. **WHEN** CTP is ≤ 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 **RNO:** **GO TO** Step 20 20. **IAAT** 1SSH-9 is **NOT** closed, **AND** CTP is ≤ 75%, **THEN** throttle 1SSH-9 to maintain Steam Seal Header pressure 2.5 – 4.5 psig 21. **WHEN** CTP ≤ 65%, **THEN** place the following in MANUAL and close: __ 1FDW-53 and 1FDW-65 22. **IAAT** load is ≤ 550 MWe, **THEN** perform Steps 23 – 24 **RNO:** **GO TO** Step 25 23. Ensure 1A and 1B MSRH DRN PUMPs are stopped 24. Place 1HD-37 and 1HD-52 in DUMP 25. **WHEN** CTP is ≤ 60%, **THEN** ensure 1SSH-9 is closed

This event is complete when 1B Main FDW Pump has been secured, or as directed by the Lead Examiner.

Op-Test No.: 1 Scenario No.: 3 Event No.: 4 Page 1 of 5

Event Description: **Inadvertent ES Channel 1 Actuation (C: OATC, BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Plant response:** 1SA-1/A-10 ES 1 Trip 1SA-16/B-1 EL CT-4 SB Bus 1 Breaker Closed 2SA-17/A-5 KEOWEE STATALARM PANEL ALARM 2SA-17/C-1 KHU 1 EMERGENCY START INITIATED 2SA-18/C-1 KHU 2 EMERGENCY START INITIATED 1SA-6/A-5, B-5, C-5, D-5, RC Pump Seal Cavity Press Hi/Low (**≈ 1 min later**) 1SA-6/D-7, E-5, E-6, E-7 RC Pump Seal Return Temp High Both Keowee Hydro Units Emergency Start Over time, Reactor power will begin to slowly decrease due to BWST water injecting into the core. This affect will vary depending on crew response (how quickly 1HP-24 is closed). The SRO may enter TS 3.4.9 if PZR level increases to > 260" **Crew Response:** The SRO will initiate AP/1/A/1700/042 Inadvertent ES Actuation 4.1 Verify <u>any</u> of the following have <u>inadvertently actuated</u>: __ Diverse HPI (**not actuated**) __ ES Channel 1 __ ES Channel 2 (**not actuated**) 4.2 Perform the following on <u>all</u> <u>inadvertently actuated</u> system(s): __ Ensure DIVERSE HPI BYPASS is in BYPASS (**does not apply**) __ Ensure ES CH-1 is in MANUAL __ Ensure ES CH-2 is in MANUAL (**does not apply**) 4.3 Throttle HPI, as required, to maintain <u>desired</u> Pzr level 4.4 Verify <u>any</u> of the following have <u>inadvertently actuated</u>: __ ES Channel 5 (**not actuated**) __ ES Channel 6 (**not actuated**) **RNO:** 1. **IF** ES Channel 1, ES Channel 2, <u>or</u> Diverse HPI have inadvertently actuated, **AND** it is desired to restore letdown, **THEN** initiate AP/42 Encl 5.2 (Letdown Restoration) (**see page 12**) 2. **GO TO** Step 4.10 4.10 Close 1HP-24 and 1HP-25 4.11 Ensure AP/42 Encl 5.1 (Required Operator Actions) is in progress (**see page 11**)

Op-Test No.: 1 Scenario No.: 3 Event No.: 4 Page 2 of 5

Event Description: **Inadvertent ES Channel 1 Actuation (C: OATC, BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: AP/1/A/1700/042 Inadvertent ES Actuation 4.12 Verify <u>any</u> of the following have <u>inadvertently actuated</u>: __ Diverse LPI __ ES Channel 3 __ ES Channel 4 **RNO: GO TO** Step 4.17 4.17 Verify the Rx is critical 4.18 Verify ICS in Auto 4.19 Verify control rods are outside the desired control band **RNO: GO TO** Step 4.21 4.21 Verify <u>any</u> of the following have <u>inadvertently actuated</u>: __ ES Channel 1 __ Diverse HPI 4.22 Perform the following on <u>all</u> <u>inadvertently actuated</u> system(s): __ Ensure DIVERSE HPI BYPASS is in BYPASSED (**does not apply**) __ Ensure ES ELECTRICAL 1 is in MANUAL 4.23 Dispatch an operator to perform Encl 5.3 (SSF Restoration) 4.24 Notify SPOC to investigate <u>and</u> repair the cause of the inadvertent ES actuation, as necessary 4.25 Initiate logging TS/SLC Entry/Exit, as applicable, in accordance with Encl 5.4 (TS/SLC Requirements) (**See page 12 for detailed information**) 4.26 **WHEN** <u>all</u> of the following exist: __ Reason for inadvertent ES Channel <u>or</u> Diverse HPI/LPI actuation has need resolved __ ES Channel <u>or</u> Diverse HPI/LPI reset is desired __ OSM concurs **THEN** continue The SRO refers to TS 3.3.7 and enters Condition A for one inoperable digital automatic actuation logic channel inoperable APPLICABILITY: MODES 1 and 2 CONDITION A: One or more digital automatic actuation logic channel inoperable REQUIRED ACTION: Place associated component(s) in ES configuration **<u>OR</u>** Declare the associated component(s) inoperable COMPLETION TIME: 1 hour

Op-Test No.: 1 Scenario No.: 3 Event No.: 4 Page 3 of 5

Event Description: **Inadvertent ES Channel 1 Actuation (C: OATC, BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** AP/1/A/1700/042 Enclosure 5.1 Required Operator Actions 1 Initiate announcement of AP entry using the PA system 2 Verify <u>any</u> of the following have <u>inadvertently actuated</u>: __ Diverse HPI __ ES Channel 1 __ ES Channel 2 3 Open the following: __ 1HP-20 __ 1HP-21 4 Open the following for operating RCPs: __ 1HP-228 (1A1) __ 1HP-226 (1A2) __ 1HP-232 (1B1) __ 1HP-230 (1B2) 5 Verify <u>any</u> of the following have <u>inadvertently actuated</u>: __ ES Channel 7 __ ES Channel 8 **RNO: GO TO** Step 9 9 Perform the following: A. Open the following to restore RB RIAs: __ 1PR-7 __ 1PR-8 __ 1PR-9 __ 1PR-10 B. From the ENABLE CONTROLS screen on the RIA View Node, perform the following: 1. Select OFF for RB RIA sample pump 2. Start the RB RIA sample pump 10. Verify <u>any</u> of the following have <u>inadvertently actuated</u>: __ Diverse HPI __ ES Channel 1 11. Notify the following that the SSF is inoperable due to the SSF power loss • Unit 2, Unit3, and Security 12. **EXIT** this enclosure

Op-Test No.: 1 Scenario No.: 3 Event No.: 4 Page 4 of 5

Event Description: **Inadvertent ES Channel 1 Actuation (C: OATC, BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** AP/1/A/1700/042 Enclosure 5.4 (TS/SLC Requirements) **Any ES Channel** • TS 3.3.7 (Engineered Safeguards Protective System (ESPS) Digital Automatic Actuation Logic Channels) due to the automatic actuation logic being blocked if any ES channel is in MANUAL or ES Voters in OVERRIDE (**DOES APPLY**) **Condition "A". 1 hour completion time.** • TS 3.3.5 (Engineered Safeguards Protective System (ESPS) Analog Instrumentation) due to inoperable ES instrumentation (**DOES NOT APPLY**) • TS 3.5.4 (Borated Water Storage Tank (BWST)) BWST level (**DOES NOT APPLY**) **ES Channel 1 or 2** • TS 3.4.15 (RCS Leakage Detection Instrumentation) due to Rx Bldg RIAs being out of service (**Applies until RIAs are returned to service.**) • TS 3.10.1 (Standby Shutdown Facility(SSF)) for SSF inoperability due to the SSF power loss (ES Channel 1 only) (**APPLIES**) • TS 3.4.9 (Pressurizer) if PZR level is > 260" (**Applies if Pzr exceeds 260".)** **ES Channel 3 or 4** • TS 3.7.7 (Low Pressure Service Water (LPSW) System) if LPSW leakage accumulator level is outside allowable band. Evaluate OAC point O1E0507 (LPSW LEAKAGE ACCUMULATOR LEVEL). Notify Unit 2 to evaluate OAC point O2E0507 (LPSW LEAKAGE ACCUMULATOR LEVEL). (**DOES NOT APPLY**) **Any Diverse Actuation System** • SLC 16.7.6 (Diverse Actuation Systems) due to the automatic actuation logic being blocked if any Diverse Actuation system in OVERRIDE or BYPASS. (**DOES NOT APPLY**)

Op-Test No.: 1 Scenario No.: 3 Event No.: 4 Page 5 of 5

Event Description: **Inadvertent ES Channel 1 Actuation (C: OATC, BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** AP/1/A/1700/042 Enclosure 5.2 Letdown Restoration 1 Verify a CC pump operating 2 Verify letdown is isolated 3 Close 1HP-5 4. Verify it is desired to place <u>both</u> letdown coolers in service 5. Open the following: __ 1HP-1 __ 1HP-2 __ 1HP-3 __ 1HP-4 6. Close 1HP-6 7. Close 1HP-7 8. Verify letdown temperature < 135°F 9. Open 1HP-5 10. Adjust 1HP-7 for ≈ 20 gpm letdown 11. **WHEN** letdown temperature < 130°F, **THEN** place LETDOWN HI TEMP INTLK BYP switch in NORMAL 12. Open 1HP-6 13. Adjust 1HP-7 to control desired letdown flow 14. **IAAT** it is desired to <u>bleed</u> letdown flow to 1A BHUT, **THEN** perform the following: A. Open the following: __ 1CS-26 __ 1CS-41 B. Position 1HP-14 to BLEED C. Notify SRO 15. **IAAT** letdown <u>bleed</u> is **NO** longer desired, **THEN** position 1HP-14 to NORMAL 16. **WHEN** SRO approves, **THEN EXIT** this enclosure

This event is complete when the SRO reaches WHEN step 4.26 and has referred to TS, or as directed by the Lead Examiner.

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

Event Description: **Controlling Tave Fails HIGH (I: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Plant Response:** • 1SA-02/A-12 (ICS Tracking) will actuate due to neutron and feedwater cross-limits. • Controlling T_{ave} will indicate ≈ 596.2°F. • Actual Loop A & B Tave will decrease until operator stops transient. • RCS pressure and temperature will decrease. • Rx power will initially increase and an ICS FDWPT Runback may occur due to RCS temperature decrease **Crew Response:** When the Statalarms are received, the candidates should utilize the Plant Transient Response (PTR) 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 SRO should: ➢ Refer to AP/28 (ICS Instrument Failures) • If the crew initiates EOP enclosure 5.5 for inventory control, the actions are listed beginning on page 28 **Note: The ICS will remain in manual for the remainder of the scenario.** **Note: The crew may manually trip the Reactor if the failure is not immediately recognized due to the power increase. If the crew trips the Reactor, continue with the next event.** 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 • 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.: 1 Scenario No.: 3 Event No.: 5 Page 2 of 2

Event Description: **Controlling Tave Fails HIGH (I: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
		Crew Response:
	SRO	AP/1/A/1700/028 (ICS Instrument Failures) 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	Failure
	4A	RCS Temperature

	SRO	AP/1/A/1700/028 Section 4A (RCS Temperature Failure) 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 Examiner.

Op-Test No.: 1 Scenario No.: 3 Event No.: 6 Page 1 of 9

Event Description: **1A Main Steam Line Break in RB (M: ALL)**
1C HPI Pump Fails to start on ES

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)
		• The 1C HPI pump will fail to start on ES Channel 2 actuation
		• ES Channels 1-8 will actuate
		Crew response:
	SRO	SRO will enter the EOP by directing the OATC to perform Immediate Manual Actions (or 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 Symptoms Check (per OMP 1-18 Attachment C)
		• Reactivity Control
		o Power Range NIs < 5% and decreasing
		• ICC/Loss of Subcooling Margin (SCM)
		o If any SCM ≤ 0°F, perform Rule 2
		• Loss of Heat Transfer (LOHT)
		o Loss of Main and Emergency FDW (including unsuccessful manual initiation of EFDW)
		• Excessive Heat Transfer (EHT)
		o **Uncontrolled Main Steam Line(s) pressure decrease**
		• Steam Generator Tube Rupture
		o CSAE off-gas alarms, process RIAs (RIA-40, 59, 60), area RIAs (RIA-16/17)
		BOP performs **Rule #5** (Main Steam Line Break) after receiving concurrence from the SRO **(detail begin on page 18)**
		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) **(details begin on page 21)**
		The SRO will direct Excessive Heat Transfer Tab actions **(see next page)**
		The SRO will direct an RO to make a PA announcement and notify the OSM to reference the Emergency Plan and NSD-202

Op-Test No.: 1 Scenario No.: 3 Event No.: 6 Page 2 of 9

Event Description: **1A Main Steam Line Break in RB (M: ALL)**
1C HPI Pump Fails to start on ES

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** EOP Excessive Heat Transfer Tab (EHT) 1. Verify <u>any</u> 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 <u>all affected</u> SGs: • 1FDW-32 and 1FDW-35 (for 1A SG) 4. Close the following on <u>all affected</u> SGs: • 1FDW-372, 1MS-17, 1MS-79, 1MS-35, 1MS-82, 1MS-368 5. Verify level in <u>both</u> SGs < 96% O.R. 6. **IAAT** <u>core</u> SCM is > 0°F, **THEN** perform Steps 7 and 8 7. Throttle HPI per Rule 6 (HPI) **(CT-5)** **Note: HPI flow must be throttled and RCS temperature controlled to prevent a solid Pzr and subsequent operation of the PORV.** 8. Verify letdown in service **RNO:** **IF** desired to restore letdown, **THEN** initiate Encl 5.5 (Pzr and LDST Level Control) (**see page 29**) 9. Verify <u>any</u> SG has an intact secondary boundary (intact SG) 10. Open the following on <u>all intact</u> SGs • 1FDW-382, 1FDW-369, and 1MS-26 11. Start MDEFDWP associated with <u>all intact</u> SGs • 1B MD EFDWP 12. Feed and steam <u>all intact</u> SGs to stabilize RCS P/T using <u>either</u> of the following: Note: RCS temperature must be controlled, HPI throttled, and letdow • TBVs • Dispatch two operators to perform Encl 5.24 (Operation of the ADVs 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

Op-Test No.: 1 Scenario No.: 3 Event No.: 6 Page 3 of 9

Event Description: **1A Main Steam Line Break in RB (M: ALL)**
1C HPI Pump Fails to start on ES

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** EOP Excessive Heat Transfer Tab 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** all the following exist: • ES Bypass Permit satisfied • All SCMs > 0°F • RCS pressure controllable **THEN** bypass ES as necessary **RNO:** **GO TO** Step 41 41. Verify any SG is dry 42. Minimize SCM using the following methods as necessary: __ De-energize all Pzr heaters __ Use Pzr spray __ Throttle HPI to maintain Pzr level > 100" [180" acc] __ Use PORV

Op-Test No.: 1 Scenario No.: 3 Event No.: 6 Page 4 of 9

Event Description: **1A Main Steam Line Break in RB (M: ALL)**
1C HPI Pump Fails to start on ES

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: Overcooling must be stopped prior to violating NDT limits.** **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: • TBVs • Dispatch two operators to perform Encl 5.24 (Operation of ADV's) 8. **WHEN** all of the following exist: __ Core SCM >0° F __ Rx Pwr ≤ 1% __ Pzr Level increasing, **THEN** continue 9. Verify ES HPI actuated 10. Place Diverse HPI in BYPASS 11. Place ES CH 1 and ES CH 2 in MANUAL 12. Perform the following to stabilize RCS P/T: • Throttle HPI • Reduce 1HP-120 setpoint to > 100" (180" ACC) • Adjust steaming of unaffected SG (1B SG) to maintain CETCs constant 13. **WHEN** CETCs have stabilized, **THEN** resume use of T_C for RCS temperature control 14. Ensure Rule 3 (Loss of Main or Emergency FDW) is in progress or complete (**see next page**) 15. Ensure Rule 8 (Pressurized Thermal Shock (PTS)) is in progress or complete 16. **WHEN** directed by CR SRO, **THEN EXIT** this rule

Op-Test No.: 1 Scenario No.: 3 Event No.: 6 Page 5 of 9

Event Description: **1A Main Steam Line Break in RB (M: ALL)**
1C HPI Pump Fails to start on ES

Time	Position	Applicant's Actions or Behavior
		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. *(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. 44. **IAAT** Unit 1 EFDW is in operation, **THEN** initiate Encl 5.9 (Extended EFDW Operation) (**see next page**) 45. **WHEN** directed by CR SRO, **THEN EXIT** this rule

Op-Test No.: 1 Scenario No.: 3 Event No.: 6 Page 6 of 9

Event Description: **1A Main Steam Line Break in RB (M: ALL)**
1C HPI Pump Fails to start on ES

Time	Position	Applicant's Actions or Behavior
		Crew Response: 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 **<u>NOTE</u>** • Loss of the condensate system for ≥ 25 minutes results in cooling down to LPI using the ADVs. If NO HWPs are operating, continuing this enclosure to restore the condensate system is a priority 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 <u>and</u> 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.**

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Event Description: **1A Main Steam Line Break in RB (M: ALL)**
1C HPI Pump Fails to start on ES

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. • 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:** Depress TRIP on affected ES logic channels that have **NOT** previously been actuated **Note: The SRO may direct an RO to manually actuate ES Channel 1 which was previously placed in manual (place in AUTO)** 3. **IAAT** additional ES actuation setpoints are exceeded, **THEN** perform Steps 1-2. 4. Place Diverse HPI in BYPASS 5. Place ES CH 1 and ES CH 2 in MANUAL 6. Verify Rule 2 in progress or complete. **RNO: GO TO** Step 70 70. Open 1HP-24 and 1HP-25 71. Ensure at least two HPI pumps are operating 72. Verify 1HP-26 and 1HP-27 are open 73. **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 | **Note: 1HP-409 may be opened to allow HPI flow in both headers due to the failure of the 1C HPI pump. This will occur if Rule 5 has not intentionally throttled HPI when the RO reaches this step.** 74. Verify any RCP operating 75. Open 1HP-20 and 1HP-21 76. **IAAT** all exist: __ Voter associated with ES channel is in OVERRIDE __ An ES channel is manually actuated __ Components on that channel required manipulation **THEN** depress RESET on the required channel

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Event Description: **1A Main Steam Line Break in RB (M: ALL)**
1C HPI Pump Fails to start on ES

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** EOP Enclosure 5.1 (ES Actuation) 77. **IAAT** any RCP is operating, **AND** ES Channels 5 and 6 actuate, **THEN** perform Steps 78-81 78. Place ES CH 5 and ES CH 6 in MANUAL 79. Open: __ 1CC-7 __ 1CC-8 __ 1LPSW-15 __ 1LPSW-6 80. Ensure only one CC pump operating 81. Ensure Standby CC pump in AUTO 82. **IAAT** ES Channels 3 & 4 are actuated, **THEN GO TO** Step 83 83. Place Diverse LPI in BYPASS 84. Place ES CH 3 and ES CH 4 in MANUAL **CAUTION** LPI pump damage may occur if operated in excess of 30 minutes against shutoff head 85. **IAAT** any LPI pump is operating against shutoff head, **THEN** at the CR SROs discretion, stop affected LPI pumps 86. **IAAT** RCS pressure is < LPI pump shutoff head, **THEN** perform Steps 87-88 **RNO: GO TO** Step 89 89. **IAAT** 1A and 1B LPI PUMPs are off/tripped, **AND** all of the following exists..... **RNO: GO TO** Step 92 92. **IAAT** 1A LPI PUMP fails while operating, **AND** 1B LPI PUMP is operating, **THEN** close 1LP-17 93. **IAAT** 1B LPI PUMP fails while operating, **AND** 1A LPI PUMP is operating, **THEN** close 1LP-18 94. Start A and B OUTSIDE AIR BOOSTER FANS 95. Notify Unit 3 to start 3A and 3B OUTSIDE AIR BOOSTER FANS 96. Verify 1CF-1 and 1CF-2 are open 97. Verify 1HP-410 closed 98. Secure makeup to the LDST

Op-Test No.: 1 Scenario No.: 3 Event No.: 6 Page 9 of 9

Event Description: **1A Main Steam Line Break in RB (M: ALL)**
1C HPI Pump Fails to start on ES

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** EOP Enclosure 5.1 (ES Actuation) 99. 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 1C HPI pump, 1A & 1B LPI pumps, 1HP-26, 1HP-20, and 1HP-21 will not be in its ES position.** 100. Verify Unit 2 turbine tripped **RNO:** **GO TO** Step 103 103. Close 1LPSW-139 104. Place 1LPSW-251 and 1LPSW-252 FAIL SWITCH in FAIL OPEN 105. Start all available LPSW pumps 106. Verify either: __ Three LPSW pumps operating __ Two LPSW pumps operating when TS only requires two operable 107. Open 1LPSW-4 and 1LPSW-5 108. **IAAT** BWST level ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES) 109. Dispatch an operator to perform Encl 5.2 (Placing RB Hydrogen Analyzers In Service) (**PS**) 110. Select DECAY HEAT LOW FLOW ALARM SELECT switch to ON 111. **IAAT** ES channels 5 & 6 have actuated, **THEN** perform Step 112 112. Verify all ES channel 5 & 6 components in the ES position **RNO:** Notify SRO to evaluate components **NOT** in ES position and initiate action to place in ES position if desired **Note: 1CC-7, 1CC-8, 1LPSW-6, and 1LPSW-15 will not be in the ES position.** 113. **IAAT** ES channels 7 & 8 have actuated, **THEN** perform Step 114 114. Verify all ES channel 7 & 8 components are in the ES position 115. Notify U2 CR SRO that SSF is inoperable due to OTS1-1 open 116. **IAAT** conditions causing ES actuation have cleared, **THEN** initiate Encl 5.41 (ES Recovery) 117. **WHEN** CR SRO approves, **THEN EXIT** this enclosure

This event is complete when the SRO reaches Step 32 of the Excessive Heat Transfer tab of the EOP, or as directed by the Lead Examiner.

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

Event Description: **Loss of all SG feed requiring HPI F/C (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Plant Response**: EFDW flow goes to zero and level in the 1B SG begins to decrease RCS pressure and temperature will begin to increase **Crew Response:** The SRO may direct an RO to perform a Symptoms Check An RO may attempt to start the TD EFDW pump during a Symptoms Check The SRO will direct an RO to re-perform Rule 3 (**see page 27**) The SRO will transfer to the Loss of Heat Transfer tab from the Excessive Heat Transfer tab Parallel Actions Page When RCS pressure increases to > 2300 psig, the SRO will direct an RO to perform Rule 4 (HPI Forced Cooling) (**see page 26**) The SRO will declare Emergency Dose Limits once HPI Forced Cooling is initiated EOP Loss of Heat Transfer tab 1. Ensure Rule 3 (Loss of Main or Emergency FDW) is in progress or complete 2. **IAAT** the RCS heats to the point where core SCM = 0°F, **THEN GO TO** Step 4 3. **IAAT NO** SGs can be fed with FDW (Main/CBP/Emergency), **AND** any of the following exists: __ RCS pressure reaches 2300 psig OR NDT limit __ Pzr level reaches 375" [340" acc] **THEN GO TO** Step 4 **RNO** 1. Reduce RCPs to one pump/loop 2. When any of the following exits: • EFDW flow has been re-established by existing Rules/Enclosures • EFDW aligned from another unit • Operator performing Rule 3 or Encl 5.27 reports EFDW available **THEN GO TO** Step 48 4. **PERFORM** Rule 4 (Initiation of HPI Forced Cooling) 5. Verify all the following: __ At least two HPI pumps operating __ Acceptable HPI flow exists in both HPI headers per Rule 4 __ PORV open __ 1RC-4 open 6. **GO TO** HPI CD tab

This event is complete when the SRO transfers to the HPI CD tab of the EOP, or as directed by the Lead Examiner.

Op-Test No.: 1 Scenario No.: 3 Event No.: 7 Page 2 of 4

Event Description: **Loss of all SG feed requiring HPI F/C (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** EOP HPI CD tab 1. **IAAT** BWST level is ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES) 2. **IAAT** either of the following exists: __ LPI FLOW TRAIN A plus LPI FLOW TRAIN B ≥ 3400 gpm __ Only one LPI header in operation with header flow ≥ 2900 gpm **THEN GO TO** LOCA CD tab 3. Verify all of the following exists: __ PORV open __ 1RC-4 open __ Two HPI trains injecting __ CETCs ≤ 640°F 4. Perform the following: __ Ensure all RBCUs in low speed __ Open 1LPSW-18 __ Open 1LPSW-21 __ Open 1LPSW-24 5. Initiate Encl 5.35 (Containment Isolation) 6. **IAAT** all the following exist: __ Any RBS pump operating __ RB pressure < 3 psig __ < 24 hours into event __ Reactor Engineering confirms Condition Zero or Condition One per RP/0/B/1000/018 (Core Damage Assessment) **THEN** stop all RBS pumps 7. Start A and B Outside Air Booster Fans 8. Notify Unit 3 to start 3A and 3B Outside Air Booster Fans 9. Verify 1SA-2/C-8 (AFIS HEADER A INITIATED) lit 10. Verify 1SA-2/D-8 (AFIS HEADER B INITIATED) lit **RNO:** Select OFF for both digital channels on AFIS HEADER B 11. Verify indications of SGTR ≥ 25 gpm **RNO:** **GO TO** Step 17

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

Event Description: **Loss of all SG feed requiring HPI F/C (M: ALL)**

Time	Position	Applicant's Actions or Behavior

Crew Response:

EOP Rule 4 (Initiation of HPI Forced Cooling)

1. Verify <u>any</u> HPI pump can be operated
2. Open 1HP-24 and 1HP-25
3. Start <u>all</u> <u>available</u> HPI pumps
4. Open 1HP-26 and 1HP-27
5. Open 1RC-4
6. Verify flow exists in <u>any</u> HPI header
7. Perform the following:
   __ Place 1RC-66 SETPOINT SELECTOR to OPEN
   __ Depress 1RC-66 OPEN PERMIT pushbutton
8. Verify <u>at least two</u> HPI pumps operating
9. Verify flow in <u>both</u> HPI headers is in the acceptable region of Figure 1

RNO: 1. **IF** 1A HPI header flow is unacceptable, **THEN** open 1HP-410
2. **IF** 1B HPI header flow is unacceptable, **THEN** open 1HP-409

Note: 1HP-409 may have been previously opened per EOP Encl 5.1 due to the failure of the 1C HPI pump.

10. Verify flow exists in <u>any</u> HPI header
11. Perform the following:
    __ Place 1RC-66 SETPOINT SELECTOR to OPEN
    __ Depress 1RC-66 OPEN PERMIT pushbutton
12. Verify > one RCP operating
13. Stop all but one RCP
14. **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

15. De-energize <u>all</u> Pzr heaters
16. Close 1HP-5
17. Close TBVs, 1FDW-35, and 1FDW-44

This event is complete when the SRO transfers to the HPI CD tab of the EOP, or as directed by the Lead Examiner.

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

Event Description: **Loss of all SG feed requiring HPI F/C (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: EOP Rule 3 (Loss of Main or Emergency FDW) 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)* **RNO: GO TO** Step 7 7. Place the following in MANUAL and close: __ 1FDW-315 and 1FDW-316 8. Verify both of the following: __ Any CBP operating __ TBVs available on an intact SG **RNO: GO TO** Step 16 16. Verify 1 TD EFDW PUMP is operable and available for manual start 17. Dispatch an operator to perform Encl 5.26 (MAN Start of TDEFDWP) 18. Verify cross-tie with Unit 2 is desired **RNO:** 1. Dispatch an operator to open 1FDW-313 and 1FDW-314 2. **GO TO** Step 20 19. Dispatch an operator to open 2FDW-313 and 2FDW-314 20. Dispatch an operator to 1FDW-313 and have them notify the CR when in position 21. Notify alternate unit to perform the following: __ Place both EFDW control valves in manual and closed __ Start their TD EFDW PUMP 22. **WHEN** either of the follow exists: __ Operator is in position at 1FDW-313 __ Unit 1 TD EFDW PUMP has been manually started **THEN** continue **Note: RCS pressure will increase to > 2300 psig and Rule 3 will be suspended while HPI Forced Cooling is aligned.**

This event is complete when the SRO transfers to the HPI CD tab of the EOP, or as directed by the Lead Examiner.

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

Event Description: **EOP Enclosure 5.5 (Pzr and LDST Level Control) if needed**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** EOP Enclosure 5.5, Pzr and LDST Level Control 1. Utilize the following as necessary to maintain desired Pzr level: • 1A HPI Pump • 1B HPI Pump • 1HP-26 • 1HP-7 • 1HP-120 setpoint or valve demand • 1HP-5 2. **IAAT** makeup to the LDST is desired, **THEN** makeup from 1A BHUT. 3. **IAAT** it is desired to secure makeup to LDST, **THEN** secure makeup from 1A BHUT. 4. **IAAT** it is desired to bleed letdown flow to 1A BHUT, **THEN** perform the following: A. Open: • 1CS-26 • 1CS-41 B. Position 1HP-14 to BLEED. C. Notify SRO. 5. **IAAT** letdown bleed is **NO** longer desired, **THEN** position 1HP-14 to NORMAL. 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. 11. Perform the following: • Open 1HP-24 • Open 1HP-25 • Close 1HP-16 12. **IAAT** additional makeup flow to LDST is desired, **AND** 1A BLEED TRANSFER PUMP is operating, **THEN** dispatch an operator to close 1CS-48 (1A BHUT Recirc) (A-1-107, Unit 1 RC Bleed Transfer Pump Rm.). 13. **IAAT** two Letdown Filters are desired, **THEN** perform the following: • Open 1HP-17. • Open 1HP-18

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

Event Description: **EOP Enclosure 5.5 (Pzr and LDST Level Control) if needed**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** EOP Enclosure 5.5, Pzr and LDST Level Control 14. **IAAT** all of the following exist: • Letdown isolated • LPSW available • Letdown restoration desired **THEN** perform Steps 15 - 33 **RNO:** **GO TO** Step 34 15. Open 1CC-7 and 1CC-8 16. Ensure only one CC pump running 17. Place the non-running CC pump in AUTO 18. Verify 1HP-1 and 1HP-2 are open 19. **GO TO** Step 22 22. Monitor for unexpected conditions while restoring letdown 23. Verify both letdown coolers to be placed in service 24. Open 1HP-1, 1HP-2, 1HP-3, and 1HP-4 25. Verify at least one letdown cooler is aligned 26. Close 1HP-6 27. Close 1HP-7 28. Verify letdown temperature < 135°F **RNO:** 1. Open 1HP-13 2. Close 1HP-8 and 1HP-9&11 3. **IF** any deborating IX is in service, **THEN** perform the following: __ Select 1HP-14 to NORMAL __ Close 1HP-16 4. Select LETDOWN HI TEMP INTLK BYP switch to BYPASS 29. Open 1HP-5 30. Adjust 1HP-7 for ≈ 20 gpm letdown 31. **WHEN** letdown temperature is < 130°F, **THEN** place LETDOWN HI TEMP INTLK BYP switch to NORMAL 32. Open 1HP-6 33. Adjust 1HP-7 to control desired letdown flow 34. **IAAT** it is determined that letdown is unavailable due to equipment failures or letdown system leakage, **THEN** notify CR SRO to initiate AP/32 (Loss of Letdown).

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

Event Description: **EOP Enclosure 5.5 (Pzr and LDST Level Control) if needed**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew Response:** EOP Enclosure 5.5, Pzr and LDST Level Control 35. **IAAT** > 1 HPI pump is operating, **AND** additional HPI pumps are **NO** longer needed, **THEN** perform the following: A. Obtain SRO concurrence to reduce running HPI pumps. B. Secure the desired HPI pumps. C. Place secured HPI pump switch in AUTO, if desired. 36. **IAAT** all the following conditions exist: • Makeup from BWST **NOT** required • LDST level > 55" • All control rods inserted • Cooldown Plateau **NOT** being used **THEN** close: • 1HP-24 • 1HP-25 37. Verify 1CS-48 (1A BHUT Recirc) has been closed to provide additional makeup flow to LDST. **RNO: GO TO** Step 39 38. **WHEN** 1CS-48 is **NO** longer needed to provide additional makeup flow to LDST, **THEN** perform the following: A. Stop 1A BLEED TRANSFER PUMP B. Locally position 1CS-48 one turn open C. Close 1CS-46 D. Start 1A BLEED TRANSFER PUMP E. Locally throttle 1CS-48 to obtain 90-110 psig discharge pressure F. Stop 1A BLEED TRANSFER PUMP 39. Verify two Letdown Filters in service, **AND** only one Letdown filter is desired **RNO: GO TO** Step 41 41. **WHEN** directed by CR SRO, **THEN EXIT** this enclosure

These steps will be completed as directed by the SRO for RCS inventory control.

CRITICAL TASKS

CT-17, Isolate overcooling SG

CT-5, Control HPI

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: 87%	Mode: 1	Mode: 1
Gross MWE: 802	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
-

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.
- Turbine Valve Movement PT has just been completed and awaiting maneuvering plan to return to full power
-
-

Reactivity Management (CR SRO)

RCS Boron: 30 ppmB	Gp 7 Rod Position: 80%	R2 Reactivity management controls established in the Control Room per SOMP 01-02

Human Performance Emphasis (OSM)

Procedure Use and Adherence

Facility: **Oconee** Scenario No.: **4fs** (SPARE NOT USED) Op-Test No.: **1**

Examiners: _____ Operators: _____ **SRO**

_____ _____ **OATC**

_____ _____ **BOP**

Initial Conditions:
- Unit 1: Reactor Power = 3% Unit 2: 100% Unit 3: 100%

Turnover:
- SASS in Manual
- AMSAC/DSS bypassed for I&E testing
- GWD Tank B release in progress
- 1C RPS Channel Thot failed to 620°F; this input is bypassed

Event No.	Malfunction No.	Event Type*	Event Description
0a	Pre-Insert		SASS in MANUAL
0b	Pre-Insert		AMSAC/DSS bypassed
0b	Pre-Insert		1B RBCU fails to receive an ES signal
1		N: OATC, SRO	OP/1/A/1103/004, Encl 4.6 RCS Makeup from 1A and 1B BHUT
2	Override	I: BOP, SRO (**TS**)	1RIA-37 and 38 fails to terminate GWR (SLC) **(TS)**
3	Override MSS450	C: BOP, SRO (**TS**)	Seismic Event With 1A RBCU Rupture (**TS**)
4	MPS090	C: OATC SRO	1HP-120 (RC Volume Control) Fails CLOSED
5	Updater	I: BOP, SRO (**TS**)	1A RPS Channel RC pressure fails HIGH (**TS**)
6	MCR070	C: OATC, SRO	Drop Group 5 Control Rods
7	MPS020	M: ALL	1B S/G Tube Rupture
8	MPS400	M: ALL	LBLOCA

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

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

Event Description: **OP/1/A/1103/004, Encl 4.6 RCS Makeup from 1A and 1B BHUT (N: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	OATC	**Crew response:** The OATC should use the in progress procedure OP/1/A/1103/004 (Soluble Poison Control) Enclosure 4.6 (RCS Makeup From 1A and 1B BHUT) beginning at Step 2.1 to makeup to the RCS from 1A and 1B BHUT. 2.1 Perform appropriate section(s) to achieve desired results: • Perform Section 3 (Makeup From 1A and 1B BHUT) for RCS Makeup 3.1 Determine required RCS Makeup volume by performing the following: 3.1.1 **IF** desired, utilize Enclosure 4.1 (RCS Boron Change Calculation) 3.1.2 **IF** two Letdown Filters are available, perform the following: A. Review Component Boron Log for out-of-service Letdown Filter boron B. Make appropriate adjustments to Makeup volumes for placing second Letdown Filter in service 3.1.3 Perform the following: A. Review Component Boron Log for 1A RC Bleed Storage Header boron. {18} B. Make appropriate adjustments to Makeup volumes based on 1A RC Bleed Storage Header boron {18} 3.1.4 Record required Makeup volume: **100** gallons **(≈ 62 gals 1A BHUT and ≈ 38 gals DW)** 3.2 Ensure required RCS Makeup volume and source acceptable. (R.M.) 3.3 **IF** two Letdown Filters are available, perform the following: • Open 1HP-17 (1A LETDOWN FILTER INLET) • Open 1HP-18 (1B LETDOWN FILTER INLET) 3.4 Ensure open 1HP-16 (LDST MAKEUP ISOLATION). **Note: The crew may chose to perform the makeup with 1HP-15 in AUTO or MANUAL.** 3.5 **IF** Makeup with 1HP-15 in "AUTO" desired, perform the following: 3.5.1 Select "S" on 1HP-15 Controller. 3.5.2 Enter batch size on 1HP-15 Controller. (R.M.) 3.5.3 Place 1HP-15 Controller in "AUTO". 3.5.4 Ensure "P" on 1HP-15 Controller. 3.6 **WHILE** making up to Unit 1 LDST from 1A **and** 1B BHUT, monitor the following indications: (R.M.) • Appropriate ranged NIs • Primary tank levels • Neutron error (if applicable) • CRD position (if applicable)

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

Event Description: **OP/1/A/1103/004, Encl 4.6 RCS Makeup from 1A BHUT (N: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	OATC	**Crew response:** 3.7 **IF AT ANY TIME** abnormal condition(s) require stopping RCS Makeup, perform the following: (RM) 3.7.1 Stop 1A BLEED TRANSFER PUMP. 3.7.2 **IF** RCS Makeup stopped due to alarm(s) **OR** abnormal indication(s), notify CRSRO. 3.7.3 **WHEN** conditions allow RCS Makeup to continue, perform **one** of the following: • Start 1A BLEED TRANSFER PUMP. • Go To Step 3.12 to terminate the addition. 3.8 Start 1A BLEED TRANSFER PUMP. 3.9 Open 1CS-46 (1A RC BLEED XFER PUMP DISCH). 3.10 **IF** increased Makeup flow required, perform the following: (AB-1, Unit 1-BTP Room). • Throttle 1CS-48 (1A BHUT Recirc) to establish desired flow. • Ensure 90 - 125 psig on 1CS-PG-0084. 3.11 **WHEN** required volume is added, ensure stopped 1A BLEED TRANSFER PUMP. 3.12 Close 1CS-46 (1A RC BLEED XFER PUMP DISCH). (R.M.) 3.13 Perform **one** of the following: (R.M.) • Verify correct volume added • Notify CRSRO of incorrect volume added. 3.14 Reset 1HP-15 Controller for Normal Operation. 3.15 Record 1A BHUT boron in Component Boron Log for 1A RC Bleed Storage Header **Note: The crew may chose to perform the makeup with 1HP-15 in AUTO or MANUAL.** 3.16 **IF** Makeup with 1HP-15 in "AUTO" desired, perform the following: 3.16.1 Select "S" on 1HP-15 Controller. 3.16.2 Enter batch size on 1HP-15 Controller. (R.M.) 3.16.3 Place 1HP-15 Controller in "AUTO". 3.16.4 Ensure "P" on 1HP-15 Controller. 3.17 **IF AT ANY TIME** abnormal condition(s) require stopping RCS Makeup, perform the following: (RM) 3.7.1 Stop 1B BLEED TRANSFER PUMP. 3.7.2 **IF** RCS Makeup stopped due to alarm(s) **OR** abnormal indication(s), notify CRSRO. 3.7.3 **WHEN** conditions allow RCS Makeup to continue, perform **one** of the following: • Start 1B BLEED TRANSFER PUMP. • Go To Step 3.22 to terminate the addition.

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

Event Description: **OP/1/A/1103/004, Encl 4.6 RCS Makeup from 1A BHUT (N: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	OATC	**Crew response:** 3.18 Start 1B BLEED TRANSFER PUMP. 3.19 Open 1CS-56 (1B RC BLEED XFER PUMP DISCH). 3.20 **IF** increased Makeup flow required, perform the following: (AB-1, Unit 1-BTP Room). • Throttle 1CS-58 (1A BHUT Recirc) to establish desired flow. • Ensure 90 - 125 psig on 1CS-PG-0085. 3.21 **WHEN** required volume is added, stop 1B BLEED TRANSFER PUMP. 3.22 Close 1CS-56 (1B RC BLEED XFER PUMP DISCH). (R.M.) 3.23 Perform **one** of the following: (R.M.) • Verify correct volume added • Notify CRSRO of incorrect volume added. 3.24 Reset 1HP-15 Controller for Normal Operation. 3.25 Close 1HP-16 (LDST MAKEUP ISOLATION). 3.26 Record RCS batch volume in AutoLog. 3.27 **IF** desired to remove **one** Letdown Filter from service, perform the following: **(Continue)** 3.27.1 Verify > 10 minutes since LDST Makeup was secured. {8} (R.M.) 3.27.2 Position **one** of the following: • Close 1HP-17 (1A LETDOWN FILTER INLET) • Close 1HP-18 (1B LETDOWN FILTER INLET) 3.27.3 Record RCS boron for out-of-service Letdown Filter in Component Boron Log 3.28 **IF** RCS sample for boron required, notify Chemistry to sample 3.29 **IF** increased Makeup flow from 1A BHUT was required, perform the following: 3.29.1 Start 1A BLEED TRANSFER PUMP 3.29.2 **IF** discharge pressure is NOT 90-110 psig, throttle 1CS-48 to obtain 90 – 110 psig on 1CS-PG-0084 3.29.3 Stop 1A BLEED TRANSFER PUMP 3.30 **IF** increased Makeup flow from 1B BHUT was required, perform the following: 3.30.1 Start 1B BLEED TRANSFER PUMP 3.30.2 **IF** discharge pressure is NOT 90-110 psig, throttle 1CS-58 to obtain 90 – 110 psig on 1CS-PG-0085 3.30.3 Stop 1B BLEED TRANSFER PUMP

This event is complete when Step 3.24 is complete to reset 1HP-15, or as directed by the Lead Examiner.

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

Event Description: **1RIA-37 and 38 fails to terminate GWR (I: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
		Plant response: • 1SA-9/A-4, (GWD DISCH RADIATION INHIBIT) • 1SA-8/B-9, (RM PROCESS MONITOR HIGH) **Note: SRO may invoke OMP1-18 to close 1GWD-5**
	BOP	**Crew response:** Statalarm 1SA-9/A-4, (GWD DISCH RADIATION INHIBIT) 2. Automatic Action 2.1 **IF** high alarm is received, 1RIA-37 and/or 1RIA-38 will close valves 1GWD-4, 5, 6, and 7 and GWD-206, 207 and stop the WG Exhauster. 3. Manual Action 3.1 Ensure automatic action has taken place. **(they have not)** 3.2 Refer to OP/1-2/A/1104/18 (Gaseous Waste Disposal System) for direction on continuing or terminating release
	BOP	**Crew response:** Statalarm 1SA-8/B-9, (RM PROCESS MONITOR HIGH) 2. Automatic Action 2.1 1RIA-37 **AND/OR** RIA-38 will close valves 1GWD-4, 5, 6, 7, GWD-206, 207 and stop the WG exhauster if high setpoint is received. 2.2 AP/1/A/1700/018 (Abnormal Release of Radioactivity) will provide additional Automatic Actions if this ARG directs entry into the AP. **(This ARG does not direct use of AP/18)** 3. Manual Action 3.1 Determine radiation monitors in alarm 3.10 **IF** 1RIA-37 or 1RIA-38 alarms during GWD tank release, **GO TO** OP/1-2/A/1104/018 (GWD System) for applicable guidance.
	BOP	**Crew response:** OP/1-2/A/1104/018 (GWD Tank Release) Complete Encl. 4.9 of OP/1-2/A/1104/018 (GWD Tank Release) 3.30 **IF** 1RIA-37 or 38 High Alarm is received, perform the following: 3.30.1 Close GWR DISCHARGE FLOW CONTROL (GWD-5) 3.30.2 Record maximum cpm of 1RIA-37 and 1RIA-38 **Note: 1RIA-37 maximum value is 7.2E5 cpm and 1RIA-38 maximum value is 1.11E1 cpm.** 3.30.3 **IF** desired to continue release, Go To Enclosure 4.15 3.30.4 **IF** desired to terminate release. Go To Section 4 (GWR Termination).

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

Event Description: **1RIA-37 and 38 fails to terminate GWR (I: BOP, SRO) (SLC)**

Time	Position	Applicant's Actions or Behavior
	BOP	**Crew Response:** **Section 4. GWR Termination:** 4.1 Record "Stop GWR # _____" in Auto Log 4.2 Complete Enclosure 4.10 (GWD Tank Sample Request) and route to RP 4.3 **IF** GWD Tank 'A' released, perform the following: (**does not apply**) 4.4 **IF** GWD Tank 'B' released, perform the following: 4.4.1 Isolate GWD Tank 'B' as follows: • Close GWD-99 (Tank 1B Discharge Block) • Close GWD-100 (Decay Tanks Discharge Header Block) • Place GWD-5 (B GWD Tank Discharge) switch in CLOSED 4.4.2 Check GWD Tank 'B' for accumulation of water as follows: • Throttle open LWD-241 • Throttle open LWD-355 • Throttle open LWD-353 • Throttle open LWD-354 4.4.3 **WHEN** no water passes through sight-glass, position the following: • Close LWD-241 • Close LWD-355 • Close LWD-353 • Close LWD-354 4.5 **IF** GWD Tank 'C' released, perform the following: (**does not apply**) 4.6 **IF** GWD Tank 'D' released, perform the following: (**does not apply**) 4.7 Drain GWD Filters as follows: • Throttle LWD-242 (Waste Gas Absolute Filter Drain) • Throttle LWD-243 (Waste Gas Charcoal Filter Drain) 4.8 After one minute, perform the following: • Close LWD-242 (Waste Gas Absolute Filter Drain) • Close LWD-243 (Waste Gas Charcoal Filter Drain) • Purge 1RIA-37, 38

This event is complete when GWD Tank B is isolated (GWD-5 closed) in Step 4.4, or as directed by the Lead Examiner.

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

Event Description: **1RIA-37 and 38 fails to terminate GWR (I: BOP, SRO) (SLC)**

Time	Position	Applicant's Actions or Behavior
	SRO	SRO refers to SLC 16.11.3 and enters Condition C and Condition I APPLICABILITY: At all times CONDITION C: One or more required gaseous effluent monitoring instrument channels inoperable. REQUIRED ACTION: Enter the Condition referenced in Table 16.11.3-2 for the function (Immediately) Restore the instrument(s) to OPERABLE status (30 days) CONDITION I: As required by Required Action C.1 in Table 16.11.3-2 REQUIRED ACTION: Suspend release of radioactive effluents (Immediately)

This event is complete when GWD Tank B is isolated (GWD-5 closed) in Step 4.4, or as directed by the Lead Examiner.

Op-Test No.: 1 Scenario No.: 4 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
		Plant response: • 1SA-9/B-9 (LPSW RBCU A Cooler Rupture) • Reactor Building Normal Sump level will increase **Crew response:**
	BOP	The BOP should refer to **ARG for 1SA-9/B-9** 3.1 Verify alarm condition 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 ***Booth Cue: Once the BOP begins to perform ARG actions, call the Control Room (4911) as a security guard and state "We have felt a tremor and have observed no plant damage". If asked, state that the tremor was felt in the Turbine Building.*** 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 Condition B 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. 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).

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

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

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** **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 continue AP/5 actions.*** 4.9 Initiate the following to monitor SF Pool temperature and level: • Unit 1-2 AP/35 (Loss of SFP Cooling and/or Level) Encl 5.14 (SFP Temperature and Level Monitoring) • Unit 3 AP/35 (Loss of SFP Cooling and/or Level) Encl 5.14 (SFP Temperature and Level Monitoring) 4.10 Monitor Keowee lake level for indications of dam/dike leakage

This event is complete when 1A RBCU has been isolated, or as directed by the Lead Examiner.

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

Event Description: **1HP-120 (RC Volume Control) Fails CLOSED (C: OATC, SRO)**
Note: Activate this event during event 3.

Time	Position	Applicant's Actions or Behavior
		Plant Response: • RCS makeup flow goes to ≈ 10 gpm (HPI Warming Flow) • PZR level begins to decrease • LDST level begins to increase • Valve position demand for 1HP-120 begins to increase to the 100% demand value and valve position indication will indicate closed (green light) • 1SA-02/ B-1, HP LETDOWN TANK LEVEL HIGH/LOW, will illuminate after several minute time delay
	BOP	**Crew Response:** The crew may refer to ARG 1SA-02/B-1, HP LETDOWN TANK LEVEL HIGH/LOW and perform the required actions. 3.1 Instrument Failed: 3.1.1 Compare alternate channels to verify alarm validity: • O1A1042 LDST LEVEL 1 • O1A1043 LDST LEVEL 2 3.2 Verify LDST pressure does not exceed LDST level/pressure operability requirement per OP/1/A/1104/002, (HPI System). 3.3 **IF** High Level alarm is received: 3.3.1 Bleed as required by OP/1/A/1103/004 (Soluble Poison Concentration Control).
	BOP	OP/1/A/1103/004, Soluble Poison Concentration Control Refer to **Enclosure 4.8 Reducing RCS Inventory**: 1.1 Verify HPI System operating 1.2 Ensure open 1CS-26 (LETDOWN TO RC BHUT). 1.3 Ensure open 1CS-41 (1A RC BHUT INLET). 1.4 Position 1HP-14 (LDST BYPASS) to "BLEED". 1.5 **WHEN** desired LDST level achieved, position 1HP-14 (LDST BYPASS) to "NORMAL".
	SRO	Refer to AP/1/A/1700/014, Loss of Normal Makeup and/or RCP Seal Injection 3.1 **IAAT** RCP seal injection flow is lost, **AND** Component Cooling is lost, **THEN** perform the following: A. Trip the Rx B. Stop all RCPs C. Initiate AP/25 (SSF EOP) **Note: The crew may initiate EOP Encl 5.5 for RCS inventory control due LDST level increase (see page 22)**

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

Event Description: **1HP-120 (RC Volume Control) Fails CLOSED (C: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew Response:** AP/1/A/1700/014, Loss of Normal Makeup and/or RCP Seal Injection 3.2 **IAAT** loss of suction to operating HPI pumps is indicated: • Motor amps low or cycling • Discharge pressure low or cycling • Abnormal LDST level trend **THEN GO TO** Step 3.3 **RNO: GO TO** Step 4.7 4.7 Announce AP entry using PA System 4.8 Verify any HPI pump operating 4.9 Verify RCP seal injection or HPI makeup line leak indicated by any of the following: • Report of line leak • Abnormal LDST level decrease • 1RIA-32 (AUX BLDG GAS) • 1RIA-45 (NORM VENT GAS) • RB RIAs in alarm • Abnormal RBNS level increase • Abnormal LAWT or HAWT level increase **RNO: GO TO** Step 4.11 4.11 Verify RCP seal injection flow exists to any RCP 4.12 Verify 1HP-120 operable in AUTO **RNO:** 1. Attempt to operate 1HP-120 in HAND 2. **IF** 1HP-120 fails to operate, **THEN GO TO** Step 4.176 4.176 Perform the following as necessary to maintain Pzr level > 200" • Close 1HP-6 • Throttle 1HP-7 • Throttle 1HP-26 4.177 Place 1HP-120 in HAND and close 4.178 Notify SPOC to investigate and repair 1HP-120 4.179 **WHEN** 1HP-120 is repaired, **THEN** slowly re-establish flow through 1HP-120 **Note: 1HP-120 will remain failed for the remainder of the scenario.**

This event is complete when Pzr level is returned to normal band (200-230"), or as directed by the Lead Examiner.

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

Event Description: **1A RPS Channel RC pressure fails HIGH (I: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	**Plant Response:** • 1SA-1/A6 (1A HI PRESS TRIP • 1SA-5/A5 (1A RPS TROUBLE) actuates • OAC alarm for 1A RPS RC PRESS DEV actuates **Crew Response:** Refer to ARG for 1SA-5/A5 (1A RPS TROUBLE) 3.1 **IF** Reactor trips, Go To EP/1/A/1800/001 (Emergency Operating Procedure). 3.2 Refer to OP/1/A/1105/014 (Control Room Instrumentation Operation and Information). 3.3 Initiate Work Request for I&E to investigate cause. Refer to ARG for 1SA-1/A-6 (1A HI PRESS TRIP 3.1 Check instrumentation to verify high pressure 3.2 Refer to OP/1/A/1105/014 (Control Room Instrumentation Operation and Information) Refer to OP/1/A/1105/014 (Control Room Instrumentation Operation and Information) Enclosure 4.7 (Removal and Restoration of RPS Channels) **2. Initial Conditions** 2.1 Verify **one** of the following: 2.1.1 A procedure requires RPS Channel to be placed in Trip or Bypass. 2.1.2 Equipment failure requires RPS Channel to be placed in Trip or Bypass. 2.2 Identify affected RPS Channel **1A** (1A, 1B, 1C, 1D) **3. Procedure** 3.1 **IF** affected RPS channel is **NOT** required per TS 3.3.1, perform **one** of the following: **(step not applicable - it is required)** 3.2 **IF** affected RPS channel is required per TS 3.3.1, perform the following: 3.2.1 Verify **one** of the following for the remaining unaffected RPS channels: A. Verify no RPS channels tripped **AND** no RPS functions are tripped. B. Perform the following: • **IF** any RPS channel is tripped, verify RPS channel is bypassed • **IF** any RPS function is tripped, verify RPS functions are bypassed **OR** verify RPS channel is bypassed 3.2.2 Declare affected RPS Channel inoperable.

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

Event Description: **1A RPS Channel RC pressure fails HIGH (I: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	**Crew Response:** **NOTE:** For determining appropriate TS condition a tripped channel is considered inoperable. 3.2.3 Refer to TS 3.3.1 and enter appropriate TS Condition. 3.2.4 Trip affected RPS channel using MANUAL TRIP Key as follows: A. Obtain Key #312. B. Place MANUAL TRIP Keyswitch in "TRIP". (Cab. 2, 4, 6, or 8) 3.3 **IF** RPS Channel removed from service due to equipment failure, perform the following: • Initiate Work Request • **IF** required per OMP 1-14 (notifications), perform appropriate notifications 3.4 **WHEN** notified by I&E, restore RPS channels as follows: **Note: The 1A RPS channel will remain tripped for the remainder of the scenario.**
	SRO	The SRO should enter TS 3.3.1 Condition A for one required channel inoperable. The Required Action is to place the channel in trip within 4 hours for Unit(s) with RPS digital upgrade complete

This event is complete when the 1A RPS channel is placed in trip, or as directed by the Lead Examiner.

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

Event Description: **Drop Group 5 Control Rods (C: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
		Plant Response: Group 6 control rods will drop into the core which will cause Reactor power to decrease **Crew Response**: The OATC should manually trip the reactor **Booth Cue: FIRE TIMER 7 to initiate a SGTL in the 1B SG when the Reactor is manually tripped.**
	OATC	The SRO will direct the OATC to 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	The SRO will direct the BOP to perform a Symptoms Check • Reactivity Control ➢ Power Range NIs < 5% and decreasing • ICC/Loss of Subcooling Margin (SCM) ➢ If any SCM ≤ 0°F, perform Rule 2 • Loss of Heat Transfer (LOHT) ➢ Loss of Main and Emergency FDW (including unsuccessful manual initiation of EFDW) • Excessive Heat Transfer (EHT) ➢ Uncontrolled Main Steam Line(s) pressure decrease • Steam Generator Tube Rupture ➢ **CSAE off-gas alarms, process RIAs (RIA-40, 59, 60), area RIAs (RIA-16/17)** **Note: The BOP will report indications of a SGTL in the 1B SG which will initiate the next event.**

This event is complete when the reactor is tripped, or as directed by the Lead Examiner.

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

Event Description: **Drop Group 5 Control Rods (C: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO	Verify Immediate Manual Actions with the OATC Transfer to Subsequent Actions 4.1 Verify all control rods in Groups 1 – 7 fully inserted. 4.2 Verify Main FDW in operation. 4.3 Verify either of the following: __ Main FDW overfeeding causing excessive temperature decrease. __ Main FDW underfeeding causing SG level decrease below setpoint. **RNO GO TO** Step 4.5. 4.5 **IAAT** Main FDW is operating, **AND** level in any SG is > 96% on the Operating Range, **THEN** perform Steps 4.6 - 4.8. **RNO GO TO** Step 4.9. 4.9 **IAAT** TBVs **CANNOT** control SG pressure at desired setpoint, **THEN** manually control pressure in affected SGs using either of the following: __ TBVs __ Dispatch two operators to perform Encl 5.24 4.10 Verify 1RIA-40 operable with CSAE OFF-GAS BLOWER operating. Once the BOP reports the Steam Generator Tube leak rate is greater than 25 gpm, review Parallel Actions page and transfer to the SGTR tab

This event is complete when the reactor is tripped, or as directed by the Lead Examiner.

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

Event Description: **1B S/G Tube Rupture (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Plant Response**: 1SA-08/E-10 (N-16 RM PRIMARY TO SECONDARY TUBE LEAK) 1SA-08/D-10 (RM CSAE EXHAUST RADIATION HIGH) **Crew Response:** The SRO will transfer to the SGTR tab from Subsequent Actions Parallel Actions Page The SRO will declare Emergency Dose Limits in effect. EOP SGTR tab 1. Verify Rx tripped 2. Maintain Pzr level 140 – 180" [175 – 215" acc] by initiating Encl 5.5 3. Start A and B OUTSIDE AIR BOOSTER FANS **(CT-27)** **(Note: Fans must be started prior to completing Encl 5.1)** 4. Notify Unit 3 to start 3A and 3B OUTSIDE AIR BOOSTER FANS 5. Perform the following: __ Monitor RIAs 16 and 17 to identify all SGs with a tube rupture __ Inform SRO of results 6. Dispatch an operator to open A and B Turbine Bldg Sump pump BKRs 7. Notify RP to survey both MS lines for radiation 8. **GO TO** Step 27 27. Secure any unnecessary offsite release paths (Main Vacuum Pumps, TDEFDW, Emergency Steam Air Ejector, etc.) 28. Verify Main FDW or EFDW controlling properly 29. Open 1HP-24 and 1HP-25 30. Secure makeup to LDST 31. Maintain both SG pressures < 950 psig using TBVs 32. **IAAT** all the following exists: __ All SCMs > 0°F __ ES Bypass Permit satisfied __ RCS pressure controllable **THEN** perform Step 33 **RNO: GO TO** Step 34 33. Bypass HPI and LPI as applicable 34. Verify any RCP operating 35. Maintain RCP NPSH during the reduction of SCM

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

Event Description: **S/G Tube Rupture (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew Response: 36. Reduce and maintain core SCM at minimum using any/all of the following methods: **(CT-7)** **Note: To satisfy this CT, SCM must be being reduced to ≈ 10 – 20 degrees subcooling in a controlled evolution.** __ De-energize all Pzr heaters __ Use Pzr spray __ Maintain Pzr level 140 – 180" [175 – 215" acc] 37. **IAAT** RCS de-pressurization methods are inadequate in minimizing core SCM, **THEN** perform Steps 38-40 **RNO:** **GO TO** Step 41 38. Verify Pzr spray nozzle ΔT ≥ 410°F 39. Close 1LWD-1 and 1LWD-2 40. Cycle PORV as necessary 41. Verify 1SA-2/C-8 (AFIS HEADER A INITIATED) lit **RNO:** Select OFF for both digital channels on AFIS HEADER A 42. Verify 1SA-2/D-8 (AFIS HEADER B INITIATED) lit **RNO:** Select OFF for both digital channels on AFIS HEADER B 43. Verify RCS temperature > 532°F 44. Initiate a cooldown as follows: __ Decrease SG pressure to 835 – 845 psig using any of the following: • TBV setpoint adjusted to 710 – 720 psig • TBVs in manual • ADVs __ Maximize cooldown rate limited only by the ability to maintain Pzr level > 100" [180" acc]

This event is complete when the crew begins to action to reduce SCM at Step 36 of the SGTR tab, or as directed by the Lead Examiner.

Op-Test No.: 1 Scenario No.: 4 Event No.: 8 Page 1 of 6

Event Description: **LBLOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Plant Response: ES Channels 1 – 8 actuate RCS pressure begins to rapidly decrease which will quickly reduce SCM to ≤ 0°F 1B RBCU fails to receive an ES signal **Crew Response:** The SRO may direct an RO to perform a Symptoms Check The SRO will direct an RO to perform Rule 2 (Loss of SCM) once any SCM = 0°F (**see page 18**) The SRO will transfer to the LOSCM tab from the SGTR Parallel Actions Page The SRO may transfer to the ICC tab from the LOSCM tab Parallel Actions Page if Reactor Vessel head level indicates 0" (**see next page**) The SRO will direct an RO to perform EOP Encl 5.1 (ES Actuation) (**see page 19**)
	SRO	EOP LOSCM tab 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 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
	SRO	EOP 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 all RBCUs in low speed __ Open 1LPSW-18, 1LPSW-21, and 1LPSW-24 8. Initiate Encl 5.35 (Containment Isolation) 9. Start <u>all</u> RB Aux fans

This event is complete when Encl 5.1 actions are complete and the SRO transfers to the LOCA CD tab, or as directed by the Lead Examiner.

Op-Test No.: 1 Scenario No.: 4 Event No.: 8 Page 2 of 6

Event Description: **LBLOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	**Crew response:** EOP ICC tab 1. **IAAT** CETCs > 1200°F, AND TSC is ready to provide mitigation guidance, THEN perform the following: A. Notify TSC to enter the OSAG B. **EXIT** this procedure 2. Ensure full HPI and control per Rule 6 (HPI) 3. **IAAT** RCS pressure is ≤ 550 psig, **OR** RB pressure is ≥ 3 psig, **THEN** perform Steps 4-8 4. Open 1LP-21 and 1LP-17 5. Start 1A LPI Pump 6. Open 1LP-22 and 1LP-18 7. Start 1B LPI Pump 8. Verify two LPI pumps operating 9. **IAAT** all the following exist: __ 1C LPI Pump off __ 1C LPI Pump available __ LPI required __ ECCS pump suction aligned to BWST __ 1A LPI Pump unavailable __ 1B LPI Pump unavailable **THEN** perform Steps 10-13 **RNO:** **GO TO** Step 14 14. Open 1CF-1 and 1CF-2 15. **IAAT** core SCM is ≥ 0°F, **THEN GO TO** LOCA CD tab

Op-Test No.: 1 Scenario No.: 4 Event No.: 8 Page 3 of 6

Event Description: **LBLOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew response:** EOP Rule 2 (Loss of SCM) 1. **IAAT** all exist: __ Any SCM ≤ 0°F __ Rx power ≤ 1% __ ≤ 2 minutes elapsed since loss of SCM **THEN** perform Steps 2 and 3 2. Stop all RCPs 3. Notify CR SRO of RCP status 4. Verify Blackout exists **RNO:** **GO TO** Step 6 6. Open 1HP-24 and 1HP-25 7. Start all available HPI pumps 8. **GO TO** Step 13 13. Open 1HP-26 and 1HP-27 14. Verify at least two HPI pumps are operating using two diverse indications 15. **IAAT** ≥ 2 HPI pumps operating, **AND** HPI flow in any header is in the Unacceptable Region of Figure 1, **THEN** perform Step 16-21 **RNO:** **GO TO** Step 17 17. **IAAT** flow limits are exceeded, **Pump Operation** / **Limit** 1 HPI pump/hdr / 475 gpm (incl, seal injection for A hdr) 1A & 1B HPi pumps operating with 1HP-409 open / Total flow of 950 gpm (incl. seal injection) **THEN** perform Steps 18-20 **RNO:** **GO TO** Step 21 18. Place Diverse HPI in BYPASS 19. Place ES CH 1 and ES CH 2 in MANUAL 20. Throttle HPI to maximize flow ≤ flow limit 21. Notify SRO of HPI status 22. Verify RCS pressure > 550 psig **RNO:** Ensure ES Channels 3 and 4 actuated

Op-Test No.: 1 Scenario No.: 4 Event No.: 8 Page 4 of 6

Event Description: **LBLOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew response:
	OATC/BOP	EOP Rule 2 (Loss of SCM) 23. **IAAT** either exists: __ LPI FLOW TRAIN A plus LPI FLOW TRAIN B ≥ 3400 gpm __ Only one LPI header in operation with header flow ≥ 2900 gpm **THEN GO TO** Step 24 24. 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 25. Notify crew that performance of Rule 3 is **NOT** required due to LB LOCA 26. **WHEN** directed by CR SRO, **THEN EXIT** this rule
	OATC/BOP	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. 3. **IAAT** additional ES actuation setpoints are exceeded, **THEN** perform Steps 1-2. 4. Place Diverse HPI in BYPASS 5. Place ES CH 1 and ES CH 2 in MANUAL 6. Verify Rule 2 in progress or complete. 7. Verify any RCP operating **RNO: GO TO** Step 9 9. **IAAT** all exist: __ Voter associated with ES channel is in OVERRIDE __ An ES channel is manually actuated __ Components on that channel require manipulation **THEN** depress RESET on the required channel 10. **IAAT** any RCP is operating, **AND** ES Channels 5 an 6 actuate, **THEN** perform Steps 11-14 **RNO: GO TO** Step 15 15. **IAAT** ES Channels 3 & 4 are actuated, **THEN GO TO** Step 16

Op-Test No.: 1 Scenario No.: 4 Event No.: 8 Page 5 of 6

Event Description: **LBLOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew response:** EOP Enclosure 5.1 (ES Actuation) 16. Place Diverse LPI in BYPASS 17. Perform both: • Place ES CH 3 in MANUAL • Place ES CH 4 in MANUAL 18. **IAAT** any LPI pump is operating against a shutoff head, **THEN** at the CR SROs discretion, stop affected LPI pumps 19. **IAAT** RCS pressure is < LPI pump shutoff head, **THEN** perform Steps 20 – 21 20. Open 1LP-17 and Start 1A LPI PUMP 21. Open 1LP-18 and Start 1B LPI PUMP 22. **IAAT** 1A and 1B LPI PUMPs are off / tripped, **AND** all of the following exist: __ RCS pressure < LPI pump shutoff head __ 1LP-19 closed __ 1LP-20 closed **THEN** perform Steps 23 - 24 **RNO:** **GO TO** Step 25 25. **IAAT** 1A LPI PUMP fails while operating, **AND** 1B LPI PUMP is operating, **THEN** close 1LP-17 26. **IAAT** 1B LPI PUMP fails while operating, **AND** 1A LPI PUMP is operating, **THEN** close 1LP-18 27. Start A and B OUTSIDE AIR BOOSTER FANs 28. Notify Unit 3 to start 3A and 3B OUTSIDE AIR BOOSTER FANs 29. Verify 1CF-1 and 1CF-2 are open 30. Verify 1HP-410 closed 31. Secure makeup to the LDST 32. Verify all ES channel 1 – 4 components are in the ES position 33. Verify Unit 2 turbine tripped **RNO:** **GO TO** Step 36 36. Close 1LPSW-139 37. Place in FAIL OPEN: __ 1LPSW-251 FAIL SWITCH __ 1LPSW-252 FAIL SWITCH 38. Start all available LPSW pumps

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Event Description: **LBLOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew response:** EOP Enclosure 5.1 (ES Actuation) 39. Verify <u>either</u>: __ Three LPSW pumps operating __ Two LPSW pumps operating when Tech Specs only requires two operable 40. Open 1LPSW-4 and 1LPSW-5 41. **IAAT** BWST level ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES) 42. Dispatch an operator to perform Encl 5.2 (Placing RB Hydrogen Analyzers In Service) (**PS**) 43. Select DECAY HEAT LOW FLOW ALARM SELECT switch to ON 44. **IAAT** ES channels 5 & 6 have actuated **THEN** perform Step 45 45. Verify <u>all</u> ES channel 5 & 6 components are in the ES position **RNO:** Notify SRO to evaluate components **NOT** in ES position <u>and</u> initiate action to place in ES position if desired **Note: The 1B RBCU fails to receive an ES signal and will not be in the ES position unless it has been started IAW guidance in the LOCA CD tab.** **If the 1B RBCU has not been started per the LOCA CD tab, the SRO should direct starting the 1B RBCU in LOW speed.** 46. **IAAT** ES channels 7 & 8 have actuated, **THEN** perform Step 47 47. Verify <u>all</u> ES 7 & 8 components are in the ES position 48. Notify U2 CR SRO that SSF is inoperable due to OTS1-1 open 49. **IAAT** conditions causing ES actuation have cleared, **THEN** initiate Encl 5.41 (ES Recovery) 50. **WHEN** CR SRO approves, **THEN EXIT** this enclosure

This event is complete when Encl 5.1 actions are complete, the 1B RBCU has been started in LOW speed and the SRO transfers to the LOCA CD tab, or as directed by the Lead Examiner.

Op-Test No.: 1 Scenario No.: 4 Event No.: 8 Page 1 of 2

Event Description: **EOP Enclosure 5.5 (if required)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew response:** EOP Enclosure 5.5 (Pzr and LDST Level Control) (**if needed**) 1. Utilize the following as necessary to maintain desired Pzr level: • 1A HPI Pump • 1B HPI Pump • 1HP-26 • 1HP-7 • 1HP-120 setpoint or valve demand • 1HP-5 2. **IAAT** makeup to the LDST is desired, **THEN** makeup from 1A BHUT. 3. **IAAT** it is desired to secure makeup to LDST, **THEN** secure makeup from 1A BHUT. 4. **IAAT** it is desired to bleed letdown flow to 1A BHUT, **THEN** perform the following: A. Open: • 1CS-26 • 1CS-41 B. Position 1HP-14 to BLEED. C. Notify SRO. 5. **IAAT** letdown bleed is **NO** longer desired, **THEN** position 1HP-14 to NORMAL. 6. **IAAT** 1C HPI PUMP is required, **THEN** perform Steps 7 – 9. **RNO:** **GO TO** Step 10. 7. Open 1HP-24 and 1HP-25 8. Start 1C HPI PUMP 9. Throttle the following as required to maintain desired Pzr level: • 1HP-26 • 1HP-27 10. **IAAT** LDST level **CANNOT** be maintained, **THEN** perform Step 11. **RNO:** **GO TO** Step 12. 11. Perform the following: • Open 1HP-24 • Open 1HP-25 • Close 1HP-16

Op-Test No.: 1 Scenario No.: 4 Event No.: 8 Page 2 of 2

Event Description: **EOP Enclosure 5.5 (if required)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	**Crew response:** EOP Enclosure 5.5 (Pzr and LDST Level Control) (**if needed**) 12. **IAAT** additional makeup flow to LDST is desired, **AND** 1A BLEED TRANSFER PUMP is operating, **THEN** dispatch an operator to close 1CS-48 (1A BHUT Recirc) (A-1-107, Unit 1 RC Bleed Transfer Pump Rm.). 13. **IAAT** two Letdown Filters are desired, **THEN** perform the following: • Open 1HP-17. • Open 1HP-18 14. **IAAT** all of the following exist: • Letdown isolated • LPSW available • Letdown restoration desired **THEN** perform Steps 15 - 33 **RNO:** **GO TO** Step 34. 34. **IAAT** it is determined that letdown is unavailable due to equipment failures or letdown system leakage, **THEN** notify CR SRO to initiate AP/32 (Loss of Letdown). 35. **IAAT** > 1 HPI pump is operating, **AND** additional HPI pumps are **NO** longer needed, **THEN** perform the following: A. Obtain SRO concurrence to reduce running HPI pumps. B. Secure the desired HPI pumps. C. Place secured HPI pump switch in AUTO, if desired. 36. **IAAT** all the following conditions exist: • Makeup from BWST **NOT** required • LDST level > 55" • All control rods inserted • Cooldown Plateau **NOT** being used **THEN** close: • 1HP-24 • 1HP-25 37. Verify 1CS-48 (1A BHUT Recirc) has been closed to provide additional makeup flow to LDST. **RNO:** **GO TO** Step 39. 39. Verify two Letdown Filters in service, **AND** only one Letdown filter is desired. **RNO:** **GO TO** Step 41. 41. **WHEN** directed by CR SRO, **THEN EXIT** this enclosure.

These actions are complete when EOP Enclosure 5.5 (Pzr and LDST Level Control) is exited.

CRITICAL TASKS

CT-27 Implementation of Control Room Habitability Guidance

CT-7 Minimize SCM to reduce the leak flowrate from the RCS to the secondary side of a SG

~~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 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
• 1C RPS Channel Thot is failed to 620°F – input bypassed
• OATC is to use the in progress procedure to perform a 100 gallon batch addition to the LDST from 1A and 1B BHUT (OP/1/A/1103/004 Encl 4.6 beginning at Step 2.1)
• OP/1/A/1102/002, Encl 4.7 in progress and complete up to step 3.39
• GWD Tank "B" release in progress
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.
• OP/1/A/1102/001 Encl 4.7 is in progress and complete up to Step 3.39. Holding current power level while Rx Engineering is taking data.
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Reactivity Management (CR SRO)		
RCS Boron: 1756 ppmB	Gp 7 Rod Position: 6%	R2 Reactivity Management controls established in the Control Room per SOMP 01-02

Human Performance Emphasis (OSM)
Procedure Use and Adherence