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

Examiners: _____ Operators: _____ **SRO**

_____ _____ **OATC**

_____ _____ **BOP**

Initial Conditions:

- Reactor Power = 100%

Turnover:

- SASS is in manual for calibration
- AMSAC/DSS is bypassed for calibration
- CT-5 is OOS for maintenance
- OP/1/A/1106/002B Encl 4.13 in progress to restore 1B FWPT from Handjack

Event No.	Malfunction No.	Event Type*	Event Description
0a	Override		CT-5 OOS
0b	Override		AMSAC/DSS Bypassed
0c	Override		SASS in Manual
1		N: BOP, SRO	Restore 1B FWPT Pump From Handjack
2	MPS090	C: OATC, SRO	1HP-120 Fails Closed
3	MCS004	I: OATC, SRO	Controlling NR Tave Fails High **(CT-2)**
4	Override	C: BOP, SRO	1B FWPT Low Oil Level
5		R: OATC, SRO **(TS)**	Manual Power Reduction
6	Override	C: BOP, SRO **(TS)**	Recurring High Vibration on 1A RBCU
7	MEL170	SRO **(TS)**	CT-1 Lockout
8	MEL090 MEL180 Override	M: ALL	Switchyard Isolate • KHU-2 Emergency Lockout **(CT-4)** • TD EFDW Pump fails to start in Auto **(CT-3)**

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

SCENARIO 1 EVENT SUMMARY

Event 1: When the crew takes the shift, the SRO will direct the BOP to restore 1B FWPT from Handjack. Once proper operation of the FDW Pump Motor Gear Unit is verified, the 1B FWPT will be placed in automatic.

Event 2: 1HP-120 will fail closed which will cause RCS makeup to be lost. Pressurizer level will begin to decrease and Letdown Storage Tank level will begin to increase. Once the crew responds to the event and takes action to stabilize RCS makeup and letdown, 1HP-120 will be repaired and the crew will place the valve back in automatic and restore normal operation.

Event 3: Controlling Narrow Range Tave will fail high. FDW flow will increase and Control Rods will insert in an attempt to restore normal parameters. Once alarms are received, the crew will perform Plant Transient Response to stabilize the plant. The OATC will decrease Feedwater flow and the BOP will insert Control Rods, if needed, to restore the heat balance. Once the plant is stable, the SRO will enter AP/1/A/1700/028 (ICS Instrument Failures) and ensure the appropriate ICS stations are in manual and the BOP will perform an instrument surveillance for the failed instrument.

Event 4: The 1B FWPT low oil level Statalarm (1SA-8/B-6) will actuate. The CRS will initiate AP/1/A/1700/029 to shut down the 1B FWPT. The BOP will start the U1 FDWP Aux Oil Pumps and the FDWP Seal Injection Pumps prior to securing the 1B FWPT. The OATC will perform a manual power reduction to ≤ 65% to allow the BOP to secure the 1B FWPT.

Event 5: The OATC will perform a Power Reduction with the Diamond and Feedwater Masters in HAND. The power reduction will continue until $\underline{<}$ 65% to allow for securing the 1B FWPT.

Event 6: OAC alarm O1D1361 (RBCU Fan 1A Vib) will alarm and the BOP will refer to the OAC alarm response. The first time the alarm comes in, it will be reset using the OAC alarm response guidance. After the first alarm is reset, it will alarm again in ≈ 3 minutes. This time the alarm will not reset and the BOP must secure the 1A RBCU. The SRO will declare the 1A RBCU inoperable and enter TS 3.6.5 Required Actions.

Event 7: The CT-1 Transformer (Startup Transformer) will lockout causing PCB-17 and PCB-18 to trip open. This will require the SRO to enter TS 3.8.1.

Event 8: A Switchyard Isolation will occur and seconds later the Reactor will trip causing a Blackout. The SRO will enter the Blackout Tab of the EOP. The Turbine Driven Emergency Feedwater Pump (TD EFDWP) will not automatically start which will require an operator to manually start the pump to restore heat removal from the core. Power will be restored in accordance with EOP Enclosure 5.38 (Restoration of Power) from Keowee Hydro Unit 1.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **1** Page 1 of 2

Event Description: **Restore 1B FWPT From Handjack (N: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	***OP/1/A/1106/002 B Encl 4.13*** **Crew response:** SRO directs the BOP to restore 1B FWPT from Handjack per OP/1/A/1106/002 B Enclosure 4.13 **OP/1/A/1106/002 B Encl 4.13** (Taking 1B FDWPT Off Handjack) rev 40 **NOTE:** If both FDWPT(s) are in HAND changes in FDW valve ΔP can cause CTP to change 2.1 **IF** in Mode 1 **OR** Mode 2, perform the following: 2.1.1 **WHILE** enclosure is in progress monitor the following indications: • 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) **NOTE:** Operator should locally verify Motor Gear Unit moves smoothly from low speed stop and back to high speed stop 2.4 Perform the following: 2.4.1 Establish communication with Operator at 1B FDWPT 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: When asked, state that the MGU operated smoothly through the entire operation.*** 2.5 Turn 1B FDWP HANDJACK switch to "OFF"

This event is complete when the 1B FWPT is placed in Auto (Step 2.15), or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **1** Page 2 of 2

Event Description: **Restore 1B FWPT From Handjack (N: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	***OP/1/A/1106/002 B Encl 4.13*** **Crew response:** **OP/1/A/1106/002 B Encl 4.13** **NOTE:** Changes in FDW valve ΔP will cause swings in CTP. Decreases in FDW valve ΔP will cause CTP to decrease 2.6 **IF** Unit 1 is in Mode 1 or 2 **AND** both FDWPT ICS stations are in "HAND" **(N/A)** **NOTE:** • Motor Gear Unit control indicated by FDWPT speed and/or suction flow decreasing • Two successful decreases verifies control with Motor Gear Unit 2.7 Decrease 1B MAIN FDW PUMP (ICS) until 1B FDWPT controlled by 1B MAIN FDW PUMP (ICS) station 2.8 Increase 1B FDWP Motor Speed Changer 2.9 Verify 1B FDWPT speed does **NOT** increase 2.10 Position 1B FDWP MOTOR SPEED CHANGER to 'FR' under "RAISE" until 1B FDWP MOTOR SPEED CHANGER is at "HSS" 2.11 After 1B FDWP MOTOR SPEED CHANGER reaches "HSS", hold 1B FDWP MOTOR SPEED CHANGER switch in 'FR' for 3 to 5 seconds to make all contacts 2.12 **IF** Unit 1 is in Mode 3: **(N/A)** 2.13 **IF** Unit 1 is in Mode 1 or 2 with 1A FDWPT shutdown: **(N/A)** **NOTE:** Changes in FDW valve ΔP will cause swings in CTP. Decreases in FDW valve ΔP will cause CTP to decrease 2.14 **IF** Unit 1 is in Mode 1 or 2 with 1A FDWPT operating but **NOT** in auto: **(N/A)** 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 FWPT is placed in Auto (Step 2.15), or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **2** Page 1 of 4

Event Description: **1HP-120 Fails Closed (C: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO BOP	***Booth Cue:*** ***When directed by the Lead Examiner, call as the WCC SRO and request Battery 1CA voltage located on 1EB6. If asked, I&E needs the reading for data trending.*** **Plant Response:** • RCS makeup flow goes to ≈ 8 – 10 gpm (HPI Warming Flow) • PZR level begins to decrease • LDST level begins to increase • Valve position demand for 1HP-120 will 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 minutes **Crew Response:** ***Examiner Note:*** ***If the 1HP-120 failure is recognized before the LDST Statalarm actuates, the SRO will make a direct entry into AP/14 (next page). Otherwise the crew may perform the ARG and OP below and enter AP/14 when the SRO determines the entry conditions are met.*** ***ARG 1SA-02/B-1*** The crew may refer to ARG 1SA-02/B-1 (HP LETDOWN TANK LEVEL HIGH/LOW) and perform the required actions. rev 35 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/0/A/1108/001 (Curves and General Information). 3.3 **IF** High Level alarm is received: 3.3.1 Bleed as required by OP/1/A/1103/004 (Soluble Poison Concentration Control).

This event is complete when Step 4.457 of AP/14 is complete, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-2** Scenario No.: **1** Event No.: **2** Page 2 of 4

Event Description: **1HP-120 Fails Closed (C: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	OATC/SRO	***OP/1/A/1103/004*** **Crew Response:** ***Examiner Note: The crew may perform Enclosure 4.8 as necessary to reduce inventory.*** **OP/1/A/1103/004 Enclosure 4.8** (Reducing RCS Inventory) rev 108 2.1 Verify HPI System operating 2.2 Ensure open 1CS-26 (LETDOWN TO RC BHUT) 2.3 Ensure open 1CS-41 (1A RC BHUT INLET) 2.4 Position 1HP-14 (LDST BYPASS) to "BLEED" 2.5 **WHEN** desired LDST level achieved, position 1HP-14 to "NORMAL" ***Examiner Note: The crew may initiate EOP Encl 5.5 for RCS inventory control due LDST level increase (page 43)*** ***AP/1/A/1700/014*** **AP/1/A/1700/014** (Loss of Normal Makeup and/or RCP Seal Injection) rev 20 3.1 Verify HPI pump cavitation is indicated: • Motor amps low or cycling • Discharge pressure low or cycling **RNO: GO TO** Step 3.3 3.2 Stop affected HPI pump(s). 3.3 **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) 4.1 Announce AP entry using PA System 4.2 Verify either of the following is running: __ 1A HPI Pump __ 1B HPI Pump

This event is complete when Step 4.457 of AP/14 is complete, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **2** Page 3 of 4

Event Description: **1HP-120 Fails Closed (C: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	OATC/SRO	***AP/1/A/1700/014*** **Crew Response:** **AP/1/A/1700/014** 4.3 Verify leak indicated by any of the following: • Report of RCP seal injection or HPI makeup line leak • Abnormal drop in LDST level • 1RIA-32 (AUX BLDG GAS) • 1RIA-45 (NORM VENT GAS) • RB RIAs in alarm • Abnormal rise in RBNS level • Abnormal rise in LAWT or HAWT level **RNO:** 1. **IF** an HPI Pump is running, **THEN GO TO** Step 4.6 2. **GO TO** Step 4.458 4.6 Verify seal injection flow normal (~32 gpm) 4.7 Verify 1HP-120 operable in AUTO **RNO:** 1. Place 1HP-120 in HAND and attempt to maintain Pzr level in desired band **(will NOT operate)** 2. **IF** Pzr level **CANNOT** be maintained with 1HP-120, **THEN GO TO** Step 4.447. 4.447 Perform the following as necessary to maintain Pzr level > 200" • Close 1HP-6 • Throttle 1HP-7 • Throttle 1HP-26 4.448 Dispatch an operator to close 1HP-121 (RC Volume Control Outlet) (Unit 1 E Pen Rm. 2' SE 1HP-120) 4.449 **WHEN** 1HP-120 is repaired, **THEN** locally open 1HP-121 (RC Volume Control Outlet) (Unit 1 E Pen Rm. 2' SE 1HP-120)

This event is complete when Step 4.457 of AP/14 is complete, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **2** Page 4 of 4

Event Description: **1HP-120 Fails Closed (C: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	OATC/SRO	***AP/1/A/1700/014*** ***Examiner Note: After Step 4.449 and Lead Examiners direction, 1HP-120 will be repaired <u>using time compression</u>.*** ***Booth Cue: When directed by Lead Examiner, Activate Timer 2B and call the crew and report that <u>using time compression</u> 1HP-120 has been repaired.*** ***Examiner Note: If the crew doesn't contact Maintenance then 1HP-120 will not be fixed.*** **<u>Crew Response</u>:** 4.450 Slowly re-establish flow through 1HP-120. 4.451 Place 1HP-120 in AUTO 4.452 Close 1HP-26 4.453 Verify 1HP-122 (RC VOLUME CONTROL BYPASS) throttled **RNO: GO TO** Step 4.455 ***Examiner Note: 1HP-6 may be open or closed based on the actions taken in Step 4.447.*** 4.455 Verify 1HP-6 open **RNO:** 1. Throttle 1HP-7 for ≈ 20 gpm letdown flow 2. Open 1HP-6 4.456 Adjust 1HP-7 for desired letdown 4.457 **THEN EXIT** this procedure

This event is complete when Step 4.457 of AP/14 is complete, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **3** Page 1 of 4

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

Time	Position	Applicant's Actions or Behavior
		Plant response: • Controlling NR Tave digital display reads ≈ 587°F • Controlling Tave Chessell display reads ≈ 587°F • 1SA-2/A-12 (ICS Tracking) • 1SA-2/C-11 (ICS Loss of OAC CTP Signal) • Control Rods will insert and FDW flow will increase • RCS pressure will decrease ***Examiner Note: If Reactor power decreases below 85% during this event, the SRO will enter Tech Spec 3.10.1 Conditions A-E which all have a 7 day completion time (SSF OOS).*** **Crew response:** When the Statalarms are received, the crew should perform Plant Transient Response (PTR) to stabilize the plant
	OATC ***CT-2*** BOP SRO	The OATC should: • Communicate to the CRS the initial alarm (if applicable) followed by reactor power level and direction • Place the appropriate ICS stations in manual (Diamond and both FDW Masters in this case) in manual if any of the following occur: ○ NI power increasing above the pre-transient power level ○ Failed instrument is diagnosed ○ Invalid input exists and the CRS directs the ICS be placed in manual • Remain focused on reactor power level and FDW response during the transient CT-2 Bounding Criteria: Stop automatic inward rod motion before control rod alignment limits are violated. Control rods enter the Unacceptable Region in ~5 minutes with no operator action. ***Examiner Note: The OATC will have to reduce FDW in order to stabilize power below the pre-transient level.*** The BOP should: • Determine if a valid ICS runback exists and inform the CRS • Monitor plant response and verify operating limits NOT exceeded • If ICS is placed in Manual, remain focused on RCS pressure, SG outlet pressure and RCS inventory The SRO should: • Refer to AP/28 (ICS Instrument Failures) (**next page**) • Ensure Maintenance (FIN-24/SPOC) is contacted to repair the failed instrument
This event is complete when the SRO reaches Step 6 of Section 4A or as directed by the Lead Examiner.		

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **3** Page 2 of 4

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

Time	Position	Applicant's Actions or Behavior
	OATC/SRO	***AP/1/A/1700/028*** **Crew response:** **AP/1/A/1700/028** (ICS Instrument Failures) rev 24 4.1 Provide control bands as required **(AD-OP-ONS-0002 Attachment 17)** ***Attachment 17:*** rev 01 ***1. Plant Conditions Stable or TPB ≤ Pre-transient Conditions*** ***1.1 The following bands are to be established during manual control of plant conditions (as needed) but may be adjusted by the CRS if required*** ***1.1.1 NI Power ± 1% not to exceed the pre-transient or allowable power. If at the pre-transient or allowable level, band is NI Power – 1%*** ***1.1.2 Current Tave ± 2°F*** ***1.1.3 Current SG Outlet Pressure ± 10 PSIG (N/A)*** ***1.1.4 Delta Tc 0ºF ± 2°F*** 4.2 Initiate notification of the following: __ SM 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 • Maintenance assistance, as needed

This event is complete when the SRO reaches Step 6 of Section 4A or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **3** Page 3 of 4

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

Time	Position	Applicant's Actions or Behavior

	OATC/SRO	***AP/1/A/1700/028***
		Crew response:
		AP/1/A/1700/028 (ICS Instrument Failures)
		4.6 **GO TO** the applicable section per the following table:
		√ | **Section** | **Failure**
		| 4A | RCS Temperature
		AP/1/A/1700/028 Section 4A
		AP/1/A/1700/028 Section 4A (RCS Temperature Failure)
		NOTE
		• If Tave instrument circuit failed high, the following may have occurred depending on initial ICS station status:
		  • Unit to TRACK due to Rx Cross Limits
		  • Control Rod insertion
		  • Feedwater flow rising
		• If Tave instrument circuit failed low, the following may have occurred depending on initial ICS station status:
		  • Unit to TRACK due to Rx Cross Limits
		  • Control Rod withdrawal
		  • Feedwater flow lowers
		  • Feedwater re-ratio
		1. Ensure the following in HAND:
		__ 1A FDW MASTER
		__ 1B FDW MASTER
		2. Ensure DIAMOND in MANUAL

This event is complete when the SRO reaches Step 6 of Section 4A or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **3** Page 4 of 4

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

Time	Position	Applicant's Actions or Behavior
	OATC/SRO	***AP/1/A/1700/028 Section 4A*** **Crew response:** 3. Notify Maintenance to perform the following: __ Select a valid RCS Tave and Delta Tc input to ICS per AM/1/A/0326/020 (Control of Unit 1 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 ***Examiner Note:*** ***This step will require the BOP to refer to Table 1 (RCS Temperature) of Enclosure 5.2 (next page) and determine if the surveillance for SR 3.4.1.2 can be met as it is written with the failed temperature instrument. Based on plant response to the failure the BOP will determine either:*** • ***The surveillance is not required to be met due to plant conditions (not steady state)*** • ***The surveillance can be met as written*** • ***The surveillance can NOT be met as written*** ***This information will be reported to the SRO when asked in Step 5.*** 5. Verify instrumentation surveillance in Encl. 5.2 (ICS Instrument Surveillances) was performed satisfactorily as written. **RNO:** Initiate a Surveillance Evaluation in accordance with PT/1/A/0600/001 and OP/1/A/1105/014 **(if needed)** 6. **WHEN** notified by Maintenance 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)

This event is complete when the SRO reaches Step 6 of Section 4A or as directed by the Lead Examiner.

Enclosure 5.2

ICS Instrument Surveillances {4}

AP/**1**/A/1700/028

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Table 1 - RCS Temperature

	COMPONENT	✓	COMPUTER	REQUIRED CONDITIONS
SR 3.4.1.2 12 Hours	RCS Pressure, Temperature, and Flow DNB Limits		O1P1888 O1P1889	**IF** in MODE 1 Steady State Operation, verify RCS loop average temperature: As read on OAC: ΔTc, °F 4 RCP Op 3 RCP Op 0 < 580.0 < 580.0 1 < 580.4 < 580.2 2 < 580.8 < 580.4 3 < 581.1 < 580.7 4 < 581.5 < 580.9 5 < 581.9 < 581.1 As read on Dixson indication (OAC unavailable): ΔTc, °F 4 RCP Op 3 RCP Op 0 < 579.5 < 579.5 1 < 579.9 < 579.7 2 < 580.3 < 579.9 3 < 580.6 < 580.2 4 < 581.0 < 580.4 5 < 581.4 < 580.6 Steady State Operation is defined as operation within a 4% (e.g., 88% - 92% RTP) power band for ≥ 4 hours. When only 3 RCPs operating, limits applied to loop with lowest loop average temperature for the condition where ΔTc Setpoint is "0" per the COLR.

Op-Test No.: **ILT 20-1** Scenario No.: 1 Event No.: **4** Page 1 of 5

Event Description: **1B FWPT Low Oil Level (C: BOP/SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Plant response:** • Statalarm 1SA-8/B-6 FWPT "B" OIL LEVEL HIGH/LOW ***Booth Cue: If crew initiates AP/1/A/1700/052 Turbine Building Oil Leak/Fire, then call as the SM and notify the crew that U2 will perform the AP.*** **Crew response:** Refer to the Alarm Response Guide for LOW Level: 3.2.1 Manually trip 1B FWPT if oil level is 7" below normal Limits and Precautions of OP/1/A/1106/002 3.2.2 IF oil purifier is in operation, check for proper operation • Refer to OP/1/A/1106/024 3.2.3 Check for leaking tank or oil lines. Bring oil level back to normal by adding oil. 3.2.4 IF tank OR oil lines are found to be leaking AND they CANNOT be repaired on line, reduce reactor power as necessary per OP/1/A/1102/004 (Operation at Power) 3.2.5 IF Loss of oil occurs, Open TBS Pump Breakers and contain oil due to Haz Mat concerns. 3.2.6 Shut down 1B FWPT per OP/1/A/1106/002 B (FDWPT Operation) and repair leaks The SRO will enter AP/1/A/1700/029 to reduce Reactor power ≤ 65% to secure the 1B FWPT (**next page**) ***Booth Cue: If an AO is sent to look at the 1B FWPT, report as an AO, that the oil level is 2.5" below normal and slowly lowering. The AO can see oil in the FWPT trenches.*** ***Booth Cue: If Component Engineer contacted, ask what crew recommends. If needed inform them that 1B FWPT needs to be removed from service.*** ***Booth Cue: If SM contacted, ask what crew recommends. If needed recommend reducing power with AP/1/A/1700/029 and then remove 1B FWPT from service.*** SRO should direct BOP to secure the 1B FWPT once Reactor power has been reduced to ≤ 65%. Maintenance should be notified to investigate and repair the oil leak. **Note: The SRO may refer to RP/0/A/1000/017 (Spill Response)** ***Booth Cue: If asked, Unit 2 will implement RP/0/A/1000/017 (Spill Response)*** ***Booth Cue: If asked, Unit 2 will open the TBS Pump breakers.*** ***Booth Cue: If asked about the oil purifier, notify the crew that the purifier is on the 1A FWPT***

This event is complete when the 1B FWPT has been secured or when directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: 1 Event No.: **4** Page 2 of 5

Event Description: **1B FWPT Low Oil Level (C: BOP/SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	***AP/1/A/1700/029*** **Crew response:** **AP/1/A/1700/029** (Rapid Unit Shutdown) rev 13 4.1 Initiate Encl 5.1 (Support Actions During Rapid Unit Shutdown) (**page 17**) 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 4.8 Verify ICS in AUTO **RNO:** Initiate manual power reduction to desired power level
	OATC/SRO	***Examiner Note: The SRO will give the OATC operating bands on Reactor Power, Reduction Rate, Tave, and delta Tc for the power reduction. The OATC will reduce power by first lowering FDW and then inserting control rods as necessary.*** **GO TO Step 4.10** 4.10 Verify both Main FDW pumps running **NOTE** • 1B Main FDW Pump is the preferred pump to be shutdown first • To lower 1B Main FDW Pump suction flow, bias is adjusted counter-clockwise • To lower 1A Main FDW Pump suction flow, bias is adjusted clockwise 4.11 Adjust bias for first Main FDW pump desired to be shutdown 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% FP, **THEN** continue 4.13 **IAAT** both Main FDW pumps running, **AND** both of the following exist: __ 1B Main FDW Pump is first pump to be shut down __ Any of the following alarms actuate and remain in alarm: • FWP B FLOW MINIMUM (1SA-16/A-3) • FWP B FLOW BELOW MIN (1SA-16/A-4) **THEN** trip 1B Main FDW Pump. ***Booth Cue: If asked as an AO for 1B FWPT Oil Level, report level is 3 inches below normal and slowly lowering.***

This event is complete when the 1B FWPT has been secured or when directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: 1 Event No.: 4 Page 3 of 5

Event Description: **1B FWPT Low Oil Level (C: BOP/SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO	*OP/1/A/1106/002 B Enc 4.9* **Crew response:** ***Examiner Note:*** ***Once Reactor Power < 65%, the crew may use OP/1/A/1106/002 B Enc. 4.9 to secure the 1B FWPT,*** Rev 40 ***or the CRS may direct the RO to trip the 1B FWPT per guidance in AD-OP-ALL-1000 (Conduct of Operations).*** 1.1 CTP DEMAND <65% power. 1.2 Review Limits and Precautions. **NOTE:** Stopping 1B FDWPT first on Unit Shutdown preferred due to FDWPT discharge pressure trip setpoints. 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 "MANUAL" ___B. Ensure Closed 1FDW-53 (1A FDWP RECIRC CONTROL) ___C. Ensure 1FDW-65 (1B FDWP RECIRC CONTROL) in "MANUAL" ___D. Ensure Closed 1FDW-65 (1B FDWP RECIRC CONTROL) 2.2 **IF** in FDW Heatup, perform the following: ___ 2.2.1 Ensure 1FDW-65 (1B FDWP RECIRC CONTROL) in "MANUAL". ___ Ensure Closed 1FDW-65 (1B FDWP RECIRC CONTROL) ___2.2.2 Ensure 1FDW-53 (1A FDWP RECIRC CONTROL) in "MANUAL". ___ Throttle 1FDW-53 (1A FDWP RECIRC CONTROL) to establish >2300 gpm. 2.3 Ensure running 1B FDWP AUXILIARY OIL PUMP 2.4 **IF** 1A FDWP is **NOT** isolated for maintenance, start 1A FDWP AUXILIARY OIL PUMP. 2.5 Place 1B MAIN FDW PUMP (ICS) in "HAND". 2.6 Slowly run 1B MAIN FDW PUMP demand signal to minimum. 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

This event is complete when the 1B FWPT has been secured or when directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: 1 Event No.: 4 Page 4 of 5

Event Description: **1B FWPT Low Oil Level (C: BOP/SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	2.9 **WHEN** 1B FDWPT reaches 0 speed: ___ Ensure 1B FDWP TURNING GEAR MOTOR starts ___ Ensure 1B FDWP TURNING GEAR engages. ***AP/1/A/1700/029 Enclosure 5.1*** **Crew response:** **AP/29 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. (**next page**) 9. Place the following transfer switches to MAN: __ 1TA AUTO/MAN __ 1TB AUTO/MAN 10. Close 1TA SU 6.9 KV FDR 11. Verify 1TA NORMAL 6.9 KV FDR opens 12. Close 1TB SU 6.9 KV FDR 13. Verify 1TB NORMAL 6.9 KV FDR opens

This event is complete when the 1B FWPT has been secured or when directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: 1 Event No.: 4 Page 5 of 5

Event Description: **1B FWPT Low Oil Level (C: BOP/SRO)**

Time	Position	Applicant's Actions or Behavior

AP/1/A/1700/029 Enclosure 5.1

Crew response:

AP/29 Enclosure 5.1 (Support Actions During Rapid Unit Shutdown)

14. Place the following transfer switches to MAN:
    __ MFB1 AUTO/MAN
    __ MFB2 AUTO/MAN
15. Close E11 MFB1 STARTUP FDR
16. Verify N11 MFB1 NORMAL FDR opens
17. Close E21 MFB2 STARTUP FDR
18. Verify N21 MFB2 NORMAL FDR opens
19. Notify CR SRO that Unit auxiliaries have been transferred
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
    __ 1FDW-65
22. **IAAT** load is ≤ 550 MWe, **THEN** perform Steps 23 - 24

Examiner Note: Once reactor power is < 65%, the CRS may direct the RO to trip the 1B FWPT for equipment protection, or he/she may direct securing the pump per OP/1/A/1106/002B (page 16). Either is acceptable.

Examiner Note: If Reactor power is reduced below 85% during this event, TS 3.10.1 will apply. (NCR#01905183)

TS 3.10.1 STANDBY SHUTDOWN FACILITY

Conditions A-E are applicable due to Reactor power being < 85% which makes the SSF inoperable

Required Action: Restore SSF systems to OPERABLE status (7 days)

******FULL TS LOCATED ON PG 51-52******

This event is complete when the 1B FWPT has been secured or when directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: 1 Event No.: 5 Page 1 of 1

Event Description: **Manual Power Reduction (R: OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	OATC/SRO	***AP/1/A/1700/029*** **Crew response:** **AP/1/A/1700/029** (Rapid Unit Shutdown) rev 13 4.1 Initiate Encl 5.1 (Support Actions During Rapid Unit Shutdown) (**page 17**) 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 4.8 Verify ICS in AUTO **RNO:** Initiate manual power reduction to desired power level ***Examiner Note: The SRO will give the OATC operating bands on Reactor Power, Reduction Rate, Tave, and deltaTC for the power reduction. The OATC will reduce power by first lowering on FDW and then inserting control rods as necessary.*** **GO TO Step 4.10** 4.10 Verify both Main FDW pumps running **NOTE** • 1B Main FDW Pump is the preferred pump to be shutdown first • To lower 1B Main FDW Pump suction flow, bias is adjusted counter-clockwise • To lower 1A Main FDW Pump suction flow, bias is adjusted clockwise 4.11 Adjust bias for first Main FDW pump desired to be shutdown 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% FP, **THEN** continue 4.13 **IAAT** both Main FDW pumps running, **AND** both of the following exist: __ 1B Main FDW Pump is first pump to be shut down __ Any of the following alarms actuate and remain in alarm: • FWP B FLOW MINIMUM (1SA-16/A-3) • FWP B FLOW BELOW MIN (1SA-16/A-4) **THEN** trip 1B Main FDW Pump. ***BOOTH Cue: If asked as an AO for 1B FWPT Oil Level, report level is 3 inches below normal and slowly lowering.***

This event is complete when the 1B FWPT has been secured or when directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **6** Page 1 of 3

Event Description: **Recurring Vibration on 1A RBCU (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	**Plant Response:** • OAC alarm O1D1361 (RBCU Fan 1A Vib) **Crew response:** • Refer to OAC ARG • BOP will attempt to reset vibration alarm (Panel 1AB3) (**It will reset the first time**) • BOP will secure the 1A RBCU • Contact engineering **OAC Alarm O1D1361** 1) Depress the RBCU OAC Vibration alarm reset pushbutton 2) If the alarm doesn't clear stop the RBCU 3) Notify Engineering for an evaluation
	BOP	***Examiner Note: The crew may stop the 1A RBCU per the OAC alarm response guide.*** ***Examiner Note: There is a Limit & Precaution in OP/1104/015 that states if RBCU vibration alarms cannot be promptly cleared, immediately stop the affected RBCU.*** SRO should refer to TS 3.6.5 **(page 22)** **OP/1/A/1104/015** Enclosure 4.3 (RBCU Operation) rev 45 **3. Stopping RBCU(s)** **NOTE:** When starting RBCUs or changing LPSW flows, RB pressure will change as RB temperature changes. 3.1 Verify RB pressure within limits of PT/1/A/0600/001 (Periodic Instrument Surveillance).

This event is complete when 1A RBCU is secured and 1B RBCU is started, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **6** Page 2 of 3

Event Description: **Recurring Vibration on 1A RBCU (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	***OP/1/A/1104/015 Encl 4.3*** **Crew response:** 3.2 Begin monitoring the following: • RB pressure absolute pressure. (OAC Turn On 1RBPA). • RB Temperature **NOTE**: Stopping RBCUs can affect the following: RBCU bearing temperatures, RBCU vibration, RBNS level, 1RIA-47 level, RB pressure/temperature. 3.3 Place desired switch to "OFF": ☐ **1A RBCU** ☐ 1B RBCU ☐ 1C RBCU **NOTE**: • When changing LPSW flows, RB pressure will change as RB temperature changes. • Each RBCU must have ≥ 550 gpm Inlet Flow or ≥ 750 gpm Outlet Flow to meet flow requirements of SLC 16.9.12. 3.4 Position valves as required for RB cooling: ☐ 1LPSW-18 (1A RBCU OUTLET) ☐ 1LPSW-21 (1B RBCU OUTLET) ☐ 1LPSW-24 (1C RBCU OUTLET) **4. Starting RBCUs** **NOTE:** When starting RBCUs or changing LPSW flows, RB pressure will change as RB temperature changes. 4.1 Verify RB pressure within limits of PT/1/A/0600/001 (Periodic Instrument Surveillance). 4.2 Begin monitoring RB pressure absolute pressure (OAC Turn On 1RBPA). 4.3 **IF** personnel inside containment, announce over plant page that starting RBCU.

This event is complete when 1A RBCU is secured and 1B RBCU is started, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **6** Page 3 of 3

Event Description: **Recurring Vibration on 1A RBCU (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	***OP/1/A/1104/015 Encl 4.3*** **Crew response:** **NOTE**: Starting RBCUs can affect the following: RBCU bearing temperatures, RBCU vibration, RBNS level, 1RIA-47 level, RB pressure/temperature. 4.4 Place desired switch to "HIGH or LOW": ☐ 1A RBCU ☐ **1B RBCU** ☐ 1C RBCU ***Examiner Note: The 1B RBCU should be placed in HIGH speed.*** **NOTE**: When changing LPSW flows, RB pressure will change as RB temperature changes. Each RBCU must have ≥ 550 gpm Inlet flow or ≥ 750 gpm Outlet Flow to meet flow requirements of SLC 16.9.12. 4.5 Position valves as required for RB cooling: ☐ 1LPSW-18 (1A RBCU OUTLET) ☐ 1LPSW-21 (1B RBCU OUTLET) ☐ 1LPSW-24 (1C RBCU OUTLET)
	SRO	SRO should refer to TS 3.6.5 **TS 3.6.5 REACTOR BUILDING SPRAY AND COOLING TRAINS** Condition B (7 days) Restore Reactor Building cooling train to OPERABLE status. ***FULL TS LOCATED ON PG 53-55***

This event is complete when 1A RBCU is secured and 1B RBCU is started, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **7** Page 1 of 2

Event Description: **CT-1 Lockout (SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
		Plant response: • 1SA-15/C-2 (EL SU SOURCE VOLT MONIT LOGIC UNDERVOLTAGE) • SA-3/B-4 (Oconee White Startup Transformer CT1 Tie PCB 17) • SA-3/C-4 (Startup Transformer CT1 PCB 18) • CT-1 transformer will be de-energized • PCB-17 and PCB-18 will trip open **Crew response:**
	BOP	The BOP will refer to Statalarm 1SA-15/C-2 Rev 06 3.1 **IF** the start-up source was carrying the unit load **AND** the start-up breakers tripped, verify that power is supplied from the standby source 3.2 Refer to EP/1/A/1800/001 (Emergency Operating Procedure) or AP/1/A/1700/011 (Recovery from Loss of Power) if required **(N/A)** 3.3 **IF** only one phase trips, perform the following: **(N/A)** 3.4 Refer to TS 3.8.1 3.5 Return to the normal (preferable) or start-up source of power as soon as conditions permit
		Examiner Note: If the crew trips the Reactor, Event 7 will auto actuate to initiate a Switchyard Isolation.
		Booth Cue: If asked, U2 will perform the operability check of Keowee Hydro Unit.
		Booth Cue: If the crew attempts to perform a KHU Operability Check, call as the SM and notify the crew that U2 will perform the Operability Check.
	SRO	***Booth Cue: If asked, U2 will perform AP/0/A/1700/048 (Loss of Startup Transformer).***
		Booth Cue: If contacted as Transmission Dept. as to the reason for PCB-17 and 18 breaker trips, respond that investigation is in progress.
		The SRO will refer to Tech Specs (**next page**)

This event is complete when the SRO has determined Tech Specs, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **7** Page 2 of 2

Event Description: **CT-1 Lockout (SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
		Crew response:
	SRO	The SRO will refer to Tech Specs
		TS 3.8.1 AC SOURCES – OPERATING
		Condition A
		(1 hour) Perform SR 3.8.1.3
		AND
		(12 hours) Align the emergency startup bus to share another unit's startup transformer
		AND
		(36 hours) Restore unit startup transformer to OPERABLE status and normal startup bus alignment
		OR
		(36 hours) Designate one unit sharing the startup transformer to be shutdown
		****** FULL TS LOCATED ON PG 56-68******

This event is complete when the SRO has determined Tech Specs, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 1 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior

Plant response:

- Switchyard Isolation occurs
- Main Turbine will trip causing a Reactor trip
- When the Reactor trips, a loss of power will occur due to KHU-2 lockout and CT-1 lockout

Crew response:

- Crew may manually trip the reactor prior to reaching the RCS High Pressure setpoint
- SRO will direct the OATC to perform IMAs and the BOP to perform a symptom check

IMMEDIATE MANUAL ACTIONS

SRO
OATC

The SRO will direct the OATC to perform IMAs Rev 02

3.1 Depress REACTOR TRIP pushbutton
3.2 Verify reactor power < 5% FP and lowering
3.3 Depress the turbine TRIP pushbutton
3.4 Verify all turbine stop valves closed
3.5 Verify RCP seal injection available

RNO: **IF** CC is unavailable, **THEN** immediately:
A. Stop all RCPs
B. Notify CR SRO to initiate AP/25

SYMPTOM CHECK

SRO
BOP

The SRO will direct the BOP to perform a Symptoms Check.

Power Range NIs **NOT** < 5% Power Range NIs **NOT** decreasing	Rule 1, *ATWS/Unanticipated Nuclear Power Production*
Any SCM < 0°F	Rule 2, *Loss Of SCM*
Loss of Main and Emergency FDW (including unsuccessful manual initiation of EFDW)	Rule 3, *Loss of Main or Emerg FDW* Rule 4, *Initiation of HPI Forced Cooling* (Inability to feed SGs and > 2300 psig, NDT limit reached, or PZR level > 375")
Uncontrolled Main steam line(s) pressure decrease	Rule 5, *Main Steam Line Break*
CSAE Off-gas alarms Process monitor alarms (RIA-40, 59,60), Area monitor alarms (RIA-16/17)	None (SGTR Tab is entered when identified SG Tube Leakage > 25 gpm)

CT-3

Start TD EFDW pump to feed all intact SGs (BOUNDING CRITERIA: Establish adequate emergency feedwater flow from the TDEFWP such that entry into HPI Forced Cooling is not required.)

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 2 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Crew response: The SRO will direct the BOP to initiate AP/25 ***Examiner Cue:*** ***When the BOP attempts to proceed to the SSF, inform him/her that a Unit 2 RO will perform AP/25 actions*** The SRO will review the Subsequent Actions Tab Parallel Actions Page (**page 42**) which will require a transfer to the BO Tab. ***BLACKOUT TAB*** **Blackout Tab** rev 05 The SRO will review the BO Tab Parallel Actions Page (**page 41**) ***Examiner Note:*** ***When the Unit 2 CRS is notified to perform Unit 2 EOP Encl 5.42 (PSW Power and Pump Alignment), a booth instructor will enter the simulator to perform the enclosure. Performing this enclosure will have no effect on the outcome of the scenario.*** ***Examiner Cue:*** ***If asked as Unit 2 to perform Parallel Actions Page steps for turning off lights and opening doors in the control room, respond that Unit 2 will perform the steps.*** 1. Ensure Rule 3 (Loss of Main or Emergency FDW) is in progress or complete (**page 33**) 2. Verify TDEFDWP feeding SGs 3. Direct RO to perform Encl 5.45 (PSW Feed and RCP Seals) to establish RCP seals (**page 37**) 4. Verify two ROs available to perform Control Room actions 5. Ensure Encl 5.45 (PSW Feed and RCP Seals) in progress or complete 6. Notify one RO to perform Encl 5.38 (Restoration of Power) (**page 35**) 7. Verify any: __ Any SG is being fed from Emergency FDW or PSW __ SSF or PSW is available to feed SGs 8. Verify both: __ Blackout exists on all three units __ PSW Power **NOT** available **RNO: GO TO** Step 10

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 3 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior

BLACKOUT TAB

Crew response:

10. Verify RCS temperature ≥ 550°F

RNO: 1. Feed and steam available SGs, as necessary, to stabilize RCS P/T using one of the following:

__ TBVs

__ Dispatch two operators to perform Encl 5.24 (Operation of the ADVs) to prepare to steam intact SGs

2. **GO TO** Step 13

11. Verify feeding SGs with TDEFDW pump

12. Feed available SGs as necessary to stabilize RCS P/T in bands prescribed by Rule 7 (SG Feed Control)

NOTE

- Feeding SGs with EFDW is desired above HPI Forced Cooling. If a feed source becomes available, step 13 should be performed prior to re-performing Rule 3
- 100 gpm could cause overcooling if adequate decay heat levels do **NOT** exist

13. **IAAT NO** SGs are being fed, **AND** any source of EFDW (Unit 1 or another unit) becomes available, **THEN** perform Steps 14 - 18

RNO: GO TO Step 19

NOTE

- The EFW system operation is expected to last 2 - 4 hours during a three unit blackout without PSW power
- If battery power is lost and PSW power is not available, EFDW control will be lost

19. **IAAT** the SSF or PSW is available to feed SGs, **AND** EFDW from any source is insufficient to maintain stable RCS P/T, **THEN** perform one of the following:

__ Notify SSF operator that feeding SGs with SSF ASW is required (SSF CR x-2766)

__ Initiate Encl 5.45 (PSW Feed and RCP Seals) and feed SGs with PSW

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 4 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		BLACKOUT TAB **Crew response:** 20. **IAAT** power is restored to any of the following: __ 1TC __ 1TD __ 1TE **THEN GO TO** Step 21 21. Ensure any SG is being fed or action is being taken per Step 13 22. Verify SSF activated 23. Communicate status of SG feed and seal injection to SSF operator using x-2766, radio, or plant page 24. Initiate AP/11 (Recovery from Loss of Power) (**page 31**) 25. **GO TO** Subsequent Actions tab (**next page**) ***Examiner Note: The CRS may start over in the EOP when power is restored and re-perform IMAs and then transfer to Subsequent Actions. Either path is acceptable.***

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 5 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		SUBSEQUENT ACTIONS TAB **Crew response:** **Subsequent Actions Tab** rev 02 4.1 Verify all control rods in Groups 1 – 7 fully inserted 4.2 Verify Main FDW in operation 4.3 Verify either: __ Main FDW overfeeding causing excessive temperature lowering __ Main FDW underfeeding causing SG level lowering 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, **AND** TBVs **NOT** intentionally isolated, **THEN** manually control pressure in affected SGs using either: __ TBVs __ Dispatch two operators to perform Encl 5.24 (Operation of the ADVs) 4.10 Verify 1RIA-40 operable with CSAE OFF-GAS BLOWER operating 4.11 **GO TO** Step 4.14 4.14 Verify both are closed: __ 1MS-17 __ 1MS-26 4.15 Verify ES is required **RNO:** 1. Initiate Encl 5.5 (Pzr and LDST Level Control) (**page 43**) 2. **GO TO** Step 4.17 4.17 Open: __ PCB 20 __ PCB 21

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 6 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		SUBSEQUENT ACTIONS TAB **Crew response:** **Subsequent Actions Tab** 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

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 7 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL))**

Time	Position	Applicant's Actions or Behavior
		AP/1/A/1700/011 **Crew response:** **AP/1/A/1700/011** (Recovery from Loss of Power) rev 59 4.1 Announce AP entry using OMP 1-18 placard 4.2 **IAAT** all exist: __ 1KI energized __ Pzr level > 80″ [180″ acc] __ Pzr heaters are desired **THEN** ensure Pzr heaters in AUTO 4.3 Verify load shed of inverters was performed per Unit 1 EOP Encl (Load Shed of Inverters During SBO) **RNO: GO TO** Step 4.9 4.9 Verify load shed has initiated as indicated by either of the following statalarms on: __ 1SA-15/D-4 (EL LOAD SHED CHNL A LOGIC INITIATE) __ 1SA-14/D-4 (EL LOAD SHED CHNL B LOGIC INITIATE) 4.10 Verify load shed is complete as indicated by LOAD SHED COMPLETE on any ES Channel (Channel 1 or 2) 4.11 Verify breakers closed: __ 1TC INCOMING FDR BUS 1 __ 1TC INCOMING FDR BUS 2 __ 1TD INCOMING FDR BUS 1 __ 1TD INCOMING FDR BUS 2 __ 1TE INCOMING FDR BUS 1 __ 1TE INCOMING FDR BUS 2 4.12 Verify 1SA-15/E-6 (EL SWYD ISOLATION CONFIRMED CHNL A LOGIC) is OFF **RNO: GO TO** Step 4.15 4.15 Verify any Oconee unit receiving power form its normal source (1T, 2T, 3T) **RNO: 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.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 8 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior

AP/1/A/1700/011

Crew response:

AP/1/A/1700/011 (Recovery From Loss of Power)

4.17 Verify load shed was initiated as indicated by either of the following statalarms on:

__ 1SA-15/D-4 (EL LOAD SHED CHNL A LOGIC INITIATE)

__ 1SA-14/D-4 (EL LOAD SHED CHNL B LOGIC INITIATE)

4.18 Verify ES has occurred

RNO: GO TO Step 4.20

4.20 Simultaneously press RESET on both of the following pushbuttons to reset Main Feeder Bus Monitor Panel Load Shed Circuitry:

- MFB UNDERVOLTAGE CHANNEL 1 RESET
- MFB UNDERVOLTAGE CHANNEL 2 RESET

4.21 Verify load shed signal reset as indicated by both of the following statalarms off:

__ 1SA-15/D-4 (EL LOAD SHED CHNL A LOGIC INITIATE)

__ 1SA-14/D-4 (EL LOAD SHED CHNL B LOGIC INITIATE)

CAUTION

Normal plant loads can overload the Auxiliary Transformer, CT-4, or CT-5

4.22 **IAAT** electrical loads are added, **AND** either MFB is energized by:

- CT-4
- CT-5
- Backcharged 1T

THEN ensure transformer is within limits of the applicable enclosure:

√	Source	Encl
	CT-4	5.1A
	CT-5	5.1B
	Transformer 1T	5.1C

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 9 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		RULE 3 **Crew response:** **EOP Rule 3** Rev 3 1. Verify loss of MFDW and/or EFDW was due to any of the following: __ Turbine Building Flooding __ Actions taken to increase SG level due to Turbine Building Flooding **RNO: GO TO** Step 3 3. **IAAT NO** SGs can be fed with FDW (Main/CBP/Emergency/PSW), **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) ***CT-3*** 4. Start operable EFDW pumps, as required, to feed all intact SGs (BOUNDING CRITERIA: Establish adequate emergency feedwater flow from the TDEFWP such that entry into HPI Forced Cooling is not required.) 5. Verify any EFDW pump operating 6. **GO TO** Step 38 38. **IAAT** an EFDW valve **CANNOT** control in AUTO, **OR** manual operation of EFDW valve is desired to control flow/level, **THEN** perform Steps 39 - 43 **RNO: GO TO** Step 44 39. Place EFDW valve in MANUAL 40. Control EFDW flow with EFDW valve in MANUAL 41. **GO TO** Step 44 44. Verify any SCM ≤ 0°F **CAUTION** ATWS events may initially require throttling to prevent exceeding pump limits and additional throttling once the Rx is shutdown to prevent overcooling **RNO: IF** overcooling, **OR** exceeding limits in Rule 7 (SG Feed Control), **THEN** throttle EFDW, as necessary 45. **IAAT** Unit 1 EFDW is in operation, **THEN** initiate Encl 5.9 (Extended EFDW Operation) (**next page**) 46. **WHEN** directed by CRS, **THEN EXIT**

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 10 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior

EOP Encl 5.9

Crew response:

EOP Enclosure 5.9 (Extended EFDW Operation) Rev 01

1. Monitor EFDW parameters on EFW graphic display
2. **IAAT** UST level is < 4', **THEN GO TO** Step 120
3. **IAAT** feeding both SGs with one MD EFDWP is desired, **THEN** perform Steps 4 – 7

RNO: GO TO Step 8

8. Perform as required to maintain UST level > 7.5'
   __ Makeup with demin water
   __ Place CST pumps in AUTO
9. **IAAT** all exist:
   __ Rapid cooldown **NOT** in progress
   __ MD EFDWP operating for each available SG
   __ EFDW flow in each header < 600 gpm
   THEN place 1 TD EFDW PUMP switch in PULL TO LOCK
10. Verify 1 TD EFDW PUMP operating
11. Start TD EFDWP BEARING OIL COOLING PUMP

NOTE

- Loss of the condensate system for ≥ 25 minutes results in cooling down to LPI using the ADVs. If **NO** HWPs are operating, continuing this enclosure to restore the condensate system is a priority unless the CR SRO deems EOP activities higher priority. The 25 minute criterion is satisfied when a HWP is started and 1C-10 is 10% open.
- If the condensate system is operating, the remaining guidance establishes FDW recirc, monitors and maintains UST, and transfers EFDW suction to the hotwell if required.

12. Notify CR SRO to set priority based on the NOTE above and EOP activities

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 11 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		EOP Encl 5.38 **Crew response:** **EOP Enclosure 5.38** (Restoration of Power) Rev 01 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 any of the following energized: __ MFB1 __ MFB2 **RNO: GO TO** Step 8 8. Verify CT-1 indicates ≈ 4160 volts **RNO: GO TO** Step 18 18. Verify both Standby Bus #1 and Standby Bus #2 are de-energized (0 volts) 19. Verify both Keowee units operating **RNO:** 1. Emergency start Keowee units: __ KEOWEE EMER START CHANNEL A __ KEOWEE EMER START CHANNEL B 2. **IF NO** Keowee units are operating, **THEN** perform the following: A. Notify Keowee operator to restore a Keowee unit to operable status B. **GO TO** Step 38 ***Examiner Note: Keowee Hydro Unit 1 will be operating***

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 12 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior

EOP Encl 5.38

Crew response:

EOP Enclosure 5.38

20. Verify both Keowee units in Oconee Control (statalarms on):
    __ UNIT 1 OCONEE CONTROL (2SA-17/E-1)
    __ UNIT 2 OCONEE CONTROL (2SA-18/E-1)

RNO: Notify Keowee Operator to place both Keowee units Master Transfer switches to remote

21. Verify both Keowee units operating

RNO: 1. **IF** UNIT 1 EMER FDR ACB 3 is closed, **AND** Unit 1 Keowee is **NOT** operating, **THEN** open UNIT 1 EMER FDR ACB 3

2. **IF** UNIT 2 EMER FDR ACB 4 is closed, **AND** Unit 2 Keowee is **NOT** operating, **THEN** open UNIT 2 EMER FDR ACB 4

CT-4

22. Ensure one of the following is closed for an operating Keowee unit:

√	Unit 1	√	Unit 2
	UNIT 1 EMER FDR ACB 3		UNIT 2 EMER FDR ACB 4

(BOUNDING CRITERIA: Restore power from KHU-1 prior to completion of Enc. 5.38 of the EOP)

23. Verify 4160 volt power has been restored to the MFB

24. **GO TO** Step 35

35. Verify any of the following energized:
    __ 1TC
    __ 1TD
    __ 1TE

36. Notify Unit 1 CRS of status of 4160V SWGR

37. **EXIT** this enclosure

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 13 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior

EOP Encl 5.45

Crew response:

EOP Enclosure 5.45 (PSW Feed and RCP Seals) rev 06

NOTE

While running this enclosure along with a loss of power to HPIPs, Rule 4 should not be performed until SG feed has been established from some source

1. Verify Unit 2 EOP Encl 5.42 (PSW Power and Pump Alignment) in progress or complete

RNO: Notify Unit 2 to **PERFORM** Unit 2 EOP Encl 5.42 (PSW Power and Pump Alignment)

Examiner Note: ***Once an RO notifies Unit 2 to perform EOP Encl 5.42, a booth instructor will enter the simulator to perform the enclosure. This enclosure will have no effect on the outcome of the scenario.***

2. **WHEN** the Unit 1 PSW 4KV POWER AVAILABLE light lit, **THEN** continue
3. Verify it is desired to power HPI from PSW

RNO: GO TO Step 9

NOTE

There is a 40 second time delay in the swap from Normal to PSW power on HPIPs

4. Verify PSW SELECTED HPI PUMP selected to the 1A HPI pump

RNO: GO TO Step 6

6. Verify PSW SELECTED HPI PUMP selected to the 1B HPI pump
7. Perform the following:
   A. Place 1B HPI PUMP POWER TRANSFER to PSW
   B. Do **NOT** wait for the PSW power light, continue

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 14 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior

EOP Encl 5.45

Crew response:

EOP Enclosure 5.45

8. Place POWER TRANSFER switch to PSW on the following:
   - 1HP-24
   - 1HP-26
   - 1RC-159/1RC-160
   - 1RC-157/1RC-158
   - 1RC-155/1RC-156
9. Position the switch for 1PSW-6 to open
10. Notify the CRS that PSW is aligned and ready to supply SG feed and RCP Seals
11. Verify it is desired to supply RCP seal injection from PSW HPI Pump
12. Close 1HP-5
13. Close 1HP-21
14. **IAAT** it is desired to supply PSW SG feed, **THEN GO TO** Step 45
15. **IAAT** it is desired to supply RCP seals, **THEN GO TO** Step 58 (**next page**)

NOTE

If RCS head vents, loop vents, or PORV have been opened, [acc] levels must be used

16. **IAAT** Pzr level ≥ 85" (165" acc), **AND** it is desired to power the Pzr heaters from PSW, **THEN** dispatch an operator to perform EOP Encl 5.46 (Aligning PZR Heaters From PSW)
17. **IAAT** notified that PSW is **NO** longer required, **THEN GO TO** Step 19
18. **WHEN** directed by CRS, **THEN EXIT** this enclosure

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 15 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		EOP Encl 5.45 **Crew response:** **EOP Enclosure 5.45** 58. **IAAT** notified that SSF Feed has been established or is capable of feeding SGs, **THEN** simultaneously close the PSW control valves: __ 1PSW-22 (1A SG) __ 1PSW-24 (1B SG) 59. **IAAT** PSW SG feed is aligned but **NOT** feeding, **AND** RCS pressure > 2300 psig, **THEN PERFORM** Step 46. **NOTE** If RCS head vents, loop vents, or PORV have been opened, [acc] levels must be used 60. **IAAT** feeding SGs with PSW **AND** Tc 550 - 555°F, **THEN** while maintaining Tc 550 - 555°F, throttle the following valves to slowly raise SG levels to (No RCPs) 240"- 260" XSUR (270" – 290" acc): __ 1PSW-22 (1A SG) __ 1PSW-24 (1B SG) **NOTE** ES may have actuated requiring manual control of HPI 61. Perform the following: __ Close 1HP-139 __ Close 1HP-26 __ Open 1HP-24 62. Ensure 1HP-120 in manual with demand at zero 63. Verify BWST available based on Control Room level indication

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

Op-Test No.: **ILT 20-1** Scenario No.: **1** Event No.: **8** Page 16 of 16

Event Description: **Switchyard Isolate with Turbine trip (M: ALL)**

Time	Position	Applicant's Actions or Behavior

EOP Encl 5.45

Crew response:

EOP Enclosure 5.45

NOTE

- HPI pump ammeter will not respond when HPI pump is powered from PSW
- When the SSF and PSW are both supplying seals it may not be possible to get 30 – 35 gpm flow through 1HP-140

64. Start an HPI Pump by positioning HPI PUMP START FROM PSW POWER to START
65. Throttle 1HP-140 to obtain as close to 30 - 35 gpm RCP Seal flow as possible

NOTE

RCS pressure higher than normal RCS operating pressure could restrict flow through 1HP-140

66. Maintain 30 - 35 gpm Seal Inlet Hdr Flow by throttling 1HP-140 as necessary

NOTE

If RCS head vents, loop vents, or PORV have been opened, [acc] levels must be used

67. **IAAT** Pzr level ≥ 85" (165" acc), **AND** it is desired to power the Pzr heaters from PSW, **THEN** dispatch an operator to perform EOP Encl 5.46 (Aligning Pzr Heaters from PSW)
68. Notify CRS PSW RCP seals have been established

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

Blackout

Parallel Actions

EP/**1**/A/1800/001 0B
Page 1 of 1

CONDITION	ACTIONS	
1. Seal Injection and CC **NOT** available.	1. **IF** SSF RCMU is available, **THEN** initiate AP/25 (Standby Shutdown Facility Emergency Operating Procedure). 2. Notify Unit 2 CRS to immediately perform Unit 2 EOP Encl 5.42 (PSW Power and Pump Alignment). (**PS**)	**SSF** **PSW**
2. CETCs > 1200°F	**GO TO** ICC tab.	**ICC**
3. RCS leakage > 160 gpm with letdown isolated **OR** SGTR > 25 gpm	Notify plant staff that Emergency Dose Limits are in affect using PA system.	**EDL**
4. Individual available to make notifications	• Announce plant conditions using PA system. • Notify SM to reference the Emergency Plan and AD-LS-ALL-0006 (Notification/Reportability Evaluation).	**NOTIFY**
5. Within 56 minutes of the loss of power.	Ensure the following: __ Turn off lights and open both doors to Unit 1 & 2 Unit board area. __ Turn off lights and open both doors to Unit 1 Vertical board area. __ Turn off lights and open both doors to Unit 2 Vertical board area. __ Open OAC Room Doors	**CR COOLING**

Subsequent Actions

Parallel Actions

EP/**1**/A/1800/001 00
Page 1 of 1

CONDITION	ACTIONS	
1. PR NIs ≥ 5% FP **OR** NIs **NOT** lowering	**GO TO** UNPP tab.	**UNPP**
2. All 4160V SWGR de-energized (13)	**GO TO** Blackout tab.	**BLACKOUT**
3. Core SCM indicates superheat	**GO TO** ICC tab.	**ICC**
4. Any SCM = 0°F	**GO TO** LOSCM tab.	**LOSCM**
5. Both SGs intentionally isolated to stop excessive heat transfer	**GO TO** EHT tab.	**LOHT**
6. Loss of heat transfer (including loss of all Main and Emergency FDW)	**GO TO** LOHT tab.	
7. Heat transfer is or has been excessive	**GO TO** EHT tab.	**EHT**
8. Indications of SGTR ≥ 25 gpm	**GO TO** SGTR tab.	**SGTR**
9. Turbine Building flooding **NOT** caused by rainfall event	**GO TO** TBF tab.	**TBF**
10. Inadvertent ES actuation occurred	Initiate AP/1/A/1700/042 (Inadvertent ES Actuation).	**ES**
11. Valid ES actuation has occurred or should have occurred	Initiate Encl 5.1 (ES Actuation).	**ES**
12. Power lost to all 4160V SWGR and any 4160V SWGR re-energized	• Initiate AP/11 (Recovery from Loss of Power). • **IF** Encl 5.1 (ES Actuation) has been initiated, **THEN** reinitiate Encl 5.1.	**ROP**
13. RCS leakage > 160 gpm with letdown isolated	Notify plant staff that Emergency Dose Limits are in affect using PA system.	**EDL**
14. Individual available to make notifications	• Announce plant conditions using PA system. • Notify SM to reference the Emergency Plan and AD-LS-ALL-0006 (Notification/Reportability Evaluation). • **IF** required, **THEN** notify Security to implement compensatory actions for SSF degrade.	**NOTIFY**

Enclosure 5.5
Pzr and LDST Level Control

EP/**1**/A/1800/001 0M
Page 1 of 15

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

Enclosure 5.5
Pzr and LDST Level Control

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

Enclosure 5.5

Pzr and LDST Level Control

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

Enclosure 5.5
Pzr and LDST Level Control

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10. __ **IAAT** LDST level **CANNOT** be maintained, **THEN** perform Step 11.	__ **GO TO** Step 12.
11. __ Perform the following: • Open 1HP-24. • Open 1HP-25. • Close 1HP-16.	1. __ **IF** both BWST suction valves (1HP-24 and 1HP-25) are closed, **THEN** perform the following: A. __ Start 1A LPI PUMP. B. __ Start 1B LPI PUMP. C. Open: __ 1LP-15 __ 1LP-16 __ 1LP-9 __ 1LP-10 __ 1LP-6 __ 1LP-7 D. __ **IF** two LPI Pumps are running only to provide HPI pump suction, **THEN** secure one LPI pump. E. __ Dispatch an operator to open 1HP-363 (Letdown Line To LPI Pump Suction Block) (A-1-119, U1 LPI Hatch Rm, N end). F. __ **GO TO** Step 13. 2. __ **IF** only one BWST suction valve (1HP-24 or 1HP-25) is open, **AND** three HPI pumps are operating, **THEN** secure 1B HPI PUMP.
NOTE Maintaining Pzr level >100″ [180″ acc] will ensure Pzr heater bundles remain covered.	
12. __ Operate Pzr heaters as required to maintain heater bundle integrity.	

Enclosure 5.5
Pzr and LDST Level Control

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13. __ **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.).	
14. __ **IAAT** two Letdown Filters are desired, **THEN** perform the following: __ Open 1HP-17. __ Open 1HP-18	
15. __ **IAAT** all of the following exist: __ Letdown isolated __ LPSW available __ Letdown restoration desired **THEN** perform Steps 16 - 34. {41}	__ **GO TO** Step 35.
16. Open: __ 1CC-7 __ 1CC-8	1. __ Notify CR SRO that letdown **CANNOT** be restored due to inability to restart the CC system. 2. __ **GO TO** Step 35.
17. __ Ensure only one CC pump running.	
18. Place the non-running CC pump in AUTO.	
19. Verify both are open: __ 1HP-1 __ 1HP-2	1. __ **IF** 1HP-1 is closed due to 1HP-3 failing to close, **THEN GO TO** Step 21. 2. __ **IF** 1HP-2 is closed due to 1HP-4 failing to close, **THEN GO TO** Step 21.
20. __ **GO TO** Step 23.	

NOTE
Verification of leakage requires visual observation of East Penetration Room.

21. __ Verify letdown line leak in East Penetration Room has occurred.	__ **GO TO** Step 23.
22. __ **GO TO** Step 35.	

Enclosure 5.5
Pzr and LDST Level Control

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23. __ Monitor for unexpected conditions while restoring letdown.	
24. __ Verify <u>both</u> letdown coolers to be placed in service.	1. __ **IF** 1A letdown cooler is to be placed in service, **THEN** open: __ 1HP-1 __ 1HP-3 2. **IF** 1B letdown cooler is to be placed in service, **THEN** open: __ 1HP-2 __ 1HP-4 3. __ **GO TO** Step 26.
25. Open: __ 1HP-1 __ 1HP-2 __ 1HP-3 __ 1HP-4	
26. __ Verify <u>at least one</u> letdown cooler is aligned.	Perform the following: A. __ Notify CR SRO of problem. B. __ **GO TO** Step 35.
27. __ Close 1HP-6.	
28. __ Close 1HP-7.	
29. __ Verify letdown temperature < 125°F.	1. __ Open 1HP-13. 2. Close: __ 1HP-8 __ 1HP-9&11 3. __ **IF** <u>any</u> deborating IX is in service, **THEN** perform the following: A. __ Select 1HP-14 to NORMAL. B. __ Close 1HP-16. 4. __ Select LETDOWN HI TEMP INTLK BYP switch to BYPASS.

Enclosure 5.5
Pzr and LDST Level Control

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30. __ Open 1HP-5.	
31. __ Adjust 1HP-7 for ≈ 20 gpm letdown. 32. __ **WHEN** letdown temperature is < 125°F, **THEN** place LETDOWN HI TEMP INTLK BYP switch to NORMAL.	
33. Open 1HP-6. 34. __ Adjust 1HP-7 to control desired letdown flow.	
NOTE AP/32 (Loss of Letdown) provides direction to cool down the RCS to offset increasing pressurizer level.	
35. __ **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). 36. __ **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.	
37. __ **IAAT** all the following conditions exist: __ Makeup from BWST **NOT** required __ LDST level > 55″ All control rods inserted __ Cooldown Plateau **NOT** being used **THEN** close: __ 1HP-24 __ 1HP-25	

Enclosure 5.5
Pzr and LDST Level Control

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
38. __ Verify 1CS-48 (1A BHUT Recirc) has been closed to provide additional makeup flow to LDST.	__ **GO TO** Step 40.
39. __ **WHEN** 1CS-48 (1A BHUT Recirc) is **NO** longer needed to provide additional makeup flow to LDST, **THEN** perform the following: A. __ Stop 1A BLEED TRANSFER PUMP. B. __ Locally position 1CS-48 (1A BHUT Recirc) one turn open (A-1-107, Unit 1 RC Bleed Transfer Pump Rm.). C. __ Close 1CS-46. D. __ Start 1A BLEED TRANSFER PUMP. E. __ Locally throttle 1CS-48 (1A BHUT Recirc) to obtain 90 - 110 psig discharge pressure. F. __ Stop 1A BLEED TRANSFER PUMP.	
40. __ Verify two Letdown Filters in service, **AND** only one Letdown filter is desired.	__ **GO TO** Step 42.
41. Perform one of the following: __ Place 1HP-17 switch to CLOSE. __ Place 1HP-18 switch to CLOSE.	
42. __ **WHEN** directed by CR SRO, **THEN EXIT** this enclosure.	

• • • END • • •

3.10 STANDBY SHUTDOWN FACILITY

3.10.1 Standby Shutdown Facility (SSF)

LCO 3.10.1 The SSF Instrumentation and the following SSF Systems shall be OPERABLE:

a. SSF Auxiliary Service Water System;

b. SSF Portable Pumping System;

c. SSF Reactor Coolant Makeup System; and

d. SSF Power System.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTE----------
LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SSF Auxiliary Service Water System inoperable.	A.1 Restore SSF Auxiliary Service Water System to OPERABLE status.	7 days
B. SSF Portable Pumping System inoperable.	B.1 Restore SSF Portable Pumping System to OPERABLE status.	7 days

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(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. SSF Reactor Coolant Makeup System inoperable.	C.1 Restore SSF Reactor Coolant Makeup System to OPERABLE status.	7 days
D. SSF Power System inoperable.	D.1 Restore SSF Power System to OPERABLE status.	7 days
E. SSF Instrumentation inoperable.	E.1 Restore SSF Instrumentation to OPERABLE status.	7 days
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met when SSF Systems or Instrumentation are inoperable due to maintenance.	F.1 Restore to OPERABLE status.	----------NOTE---------- Not to exceed 45 days cumulative per calendar year ---------- 45 days from discovery of initial inoperability
G. Required Action and associated Completion Time of Condition F not met. <u>OR</u> Required Action and associated Completion Time of Condition A, B, C, D, or E not met for reasons other than Condition F.	• Be in MODE 3. <u>AND</u> • Be in MODE 4.	12 hours 84 hours

3.6 CONTAINMENT SYSTEMS

3.6.5 Reactor Building Spray and Cooling Systems

3.6.5 Two reactor building spray trains and three reactor building cooling trains shall be OPERABLE.

----------NOTE----------
Only one train of reactor building spray and two trains of reactor building cooling are required to be OPERABLE during MODES 3 and 4.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

----------NOTE----------
LCO 3.0.4 is not applicable for Unit 2.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One reactor building spray train inoperable in MODE 1 or 2.	A.1 Restore reactor building spray train to OPERABLE status.	7 days AND 14 days from discovery of failure to meet the LCO
B. One reactor building cooling train inoperable in MODE 1 or 2.	B.1 Restore reactor building cooling train to OPERABLE status.	7 days AND 14 days from discovery of failure to meet the LCO

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One reactor building spray train and one reactor building cooling train inoperable in MODE 1 or 2.	C.1 Restore one train to OPERABLE status.	24 hours
D. Required Action and associated Completion Time of Condition A, B, or C are not met.	D.1 Be in MODE 3.	12 hours
E. One required reactor building cooling train inoperable in MODE 3 or 4.	E.1 Restore required reactor building cooling train to OPERABLE status.	24 hours
F. One required reactor building spray train inoperable in MODE 3 or 4.	F.1 Restore required reactor building spray train to OPERABLE status.	24 hours
G. Required Action and associated Completion Time of Condition E or F not met.	G.1 Be in MODE 5.	36 hours

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. Two reactor building spray trains inoperable in MODE 1 or 2. OR Two reactor building cooling trains inoperable in MODE 1 or 2. OR Any combination of three or more trains inoperable in MODE 1 or 2. OR Any combination of two or more required trains inoperable in MODE 3 or 4.	H.1 Enter LCO 3.0.3.	Immediately

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources – Operating

LCO 3.8.1 a. The following AC electrical power sources shall be OPERABLE:

- Two offsite sources on separate towers connected to the 230 kV switchyard to a unit startup transformer and capable of automatically supplying power to one main feeder bus; and
- Two Keowee Hydro Units (KHUs) with one capable of automatically providing power through the underground emergency power path to both main feeder buses and the other capable of automatically providing power through the overhead emergency power path to both main feeder buses.

b. The Keowee Reservoir level shall be ≥ 775 feet above sea level.

c. The zone overlap protection circuitry shall be OPERABLE when the overhead electrical disconnects for the KHU associated with the underground power path are closed.

----------NOTES----------

1. A unit startup transformer may be shared with a unit in MODES 5 or 6.

2. The requirements of Specification 5.5.18, "KHU Commercial Power Generation Testing Program," shall be met for commercial KHU power generation.

3. The requirements of Specification 5.5.19, "Lee Combustion Turbine Testing Program," shall be met when a Lee Combustion Turbine (LCT) is used to comply with Required Actions.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

----------NOTE----------

LCO 3.0.4 is not applicable when both standby buses are energized to comply with Required Actions.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Both required offsite sources and the overhead emergency power path inoperable due to inoperable unit startup transformer.	A.1 Perform SR 3.8.1.3. AND	1 hour if not performed in previous 12 hours
	A.2 Align the emergency startup bus to share another unit's startup transformer. AND	12 hours
	A.3.1 Restore unit startup transformer to OPERABLE status and normal startup bus alignment OR	36 hours
	A.3.2 Designate one unit, sharing the startup transformer, to be shutdown.	36 hours
B. Unit designated to be shutdown due to sharing a unit startup transformer	B.1 Be in MODE 3. AND	12 hours
	B.2 Be in MODE 5.	36 hours

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. KHU or its required overhead emergency power path inoperable due to reasons other than Condition A.	C.1 Perform SR 3.8.1.3 for OPERABLE KHU.	1 hour if not performed in previous 12 hours AND Once per 7 days thereafter
	AND	
	C.2.1 Restore the KHU and its required overhead emergency power path to OPERABLE status.	72 hours AND 72 hours from discovery of the inoperable KHU
	OR	
	C.2.2.1 Energize both standby buses from LCT via isolated power path.	72 hours AND 1 hour from subsequent discovery of de-energized standby bus
	AND	
	C.2.2.2 Suspend KHU generation to grid except for testing.	72 hours
	AND	

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.2.3 ----------NOTE---------- Not applicable to remaining KHU and its required underground emergency power path or LCO 3.3.21 when in Condition H to perform generator stator replacement work. ---------- Verify by administrative means that the remaining KHU and its required underground emergency power path and both required offsite sources are OPERABLE and the requirements of LCO 3.8.3, "DC Sources-Operating," LCO 3.8.6, "Vital Inverters-Operating," LCO 3.8.8, "Distribution Systems-Operating," LCO 3.3.17, "EPSL Automatic Transfer Function," LCO 3.3.18, "EPSL Voltage Sensing Circuits," LCO 3.3.19, "EPSL 230 kV Switchyard DGVP," and LCO 3.3.21, "EPSL Keowee Emergency Start Function" are met. AND	72 hours (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.2.4 Verify alternate power source capability by performing SR 3.8.1.16. AND C.2.2.5 Restore KHU and its required overhead emergency power path to OPERABLE status.	72 hours AND Every 31 days thereafter 28 days when Condition due to an inoperable Keowee main step-up transformer AND ----------NOTE---------- 1. Not to exceed 45 days cumulative per rolling 3-year time period for each KHU. 2. Not applicable during generator stator replacement work. 3. Not applicable until 1 year after the KHU is declared OPERABLE following generator stator replacement work for planned work. ---------- 45 days from discovery of initial inoperability when Condition due to an inoperable KHU

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)		AND ----------NOTE---------- 1. No discretionary maintenance or testing allowed on SSF, PSW, EFW and essential AC Power Systems. 2. Only applicable one time for each KHU due to generator stator replacement work and expires on September 30, 2021. 3. Only applicable if the SSF, PSW, and EFW are administratively verified OPERABLE prior to entering the extended Completion Time. ---------- 55 days from initial inoperability when Condition due to an inoperable KHU to perform generator stator replacement work
D. KHU or its required underground power path inoperable.	D.1 Perform SR 3.8.1.4 for OPERABLE KHU. AND D.2 Energize either standby bus from LCT via isolated power path.	1 hour if not performed in previous 12 hours 24 hours AND 1 hour from subsequent discovery of deenergized required standby bus

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. (continued)	AND		
	D.3	Restore KHU and its required underground emergency power path to OPERABLE status.	72 hours AND 72 hours from discovery of inoperable KHU
E. Required Action and associated Completion Time not met for Required Action D.2.	E.1	Be in MODE 3.	12 hours for one unit AND 24 hours for other unit(s)
	AND		
	E.2	Be in MODE 5.	84 hours
F. Zone overlap protection circuitry inoperable when overhead electrical disconnects for KHU associated with the underground power path are closed.	F.1	Restore zone overlap protection circuitry to OPERABLE status.	72 hours
	OR		
	F.2	Open overhead electrical disconnects for KHU associated with the underground power path.	72 hours
G. Both emergency power paths inoperable due to one inoperable E breaker and one inoperable S breaker on the same main feeder bus.	G.1	Restore one breaker to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. ----------NOTE---------- Condition may be entered only when both required offsite sources are verified by administrative means to be OPERABLE and the requirements of LCO 3.8.3, "DC Sources-Operating;" LCO 3.8.6, "Vital Inverters-Operating;" LCO 3.8.8, "Distribution Systems-Operating;" LCO 3.3.17, "EPSL Automatic Transfer Function;" LCO 3.3.18, "EPSL Voltage Sensing Circuits;" LCO 3.3.19, "EPSL 230 kV Switchyard DGVP," are verified by administrative means to be met. ---------- Both KHUs or their required emergency power paths inoperable for planned maintenance or test with both standby buses energized from LCT via isolated power path.	H.1 Energize both standby buses from LCT via isolated power path. AND H.2 Restore one KHU and its required emergency power path to OPERABLE status.	1 hour from discovery of deenergized standby bus 60 hours AND 240 hours cumulative per 3-year rolling time period when entered during the 45-day Completion Time of Required Action C.2.2.5

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
I. Both KHUs or their required emergency power paths inoperable for reasons other than Condition G and H.	I.1	Energize both standby buses from LCT via isolated power path.	1 hour AND 1 hour from subsequent discovery of deenergized standby bus
	AND		
	I.2	Determine by administrative means the OPERABILITY status of both required offsite sources, and of equipment required by LCO 3.8.3, "DC Sources-Operating," LCO 3.8.6, "Vital Inverters-Operating," LCO 3.8.8, "Distribution Systems-Operating," LCO 3.3.17, "EPSL Automatic Transfer Function," LCO 3.3.18, "EPSL Voltage Sensing Circuits," LCO 3.3.19, "EPSL 230 kV Switchyard DGVP."	1 hour
	AND		
	I.3	Restore one KHU and its required emergency power path to OPERABLE status.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
J. One or both required offsite sources inoperable due to reasons other than Condition A.	J.1	Energize both standby buses from LCT via isolated power path.	1 hour AND 1 hour from subsequent discovery of deenergized standby bus
	AND		
	J.2	Determine by administrative means the OPERABILITY status of both KHUs and their required emergency power paths and of equipment required by LCO 3.8.3, "DC Sources-Operating," LCO 3.8.6, "Vital Inverters-Operating," LCO 3.8.8, "Distribution Systems-Operating," LCO 3.3.17, "EPSL Automatic Transfer Function," LCO 3.3.18, "EPSL Voltage Sensing Circuits," LCO 3.3.19, "EPSL 230 kV Switchyard DGVP," and LCO 3.3.21, "EPSL Keowee Emergency Start Function."	1 hour
	AND		
	J.3	Restore both offsite sources to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
K. ----------NOTE---------- Separate Condition entry is allowed for each breaker. ---------- One trip circuit in one or both closed N breakers inoperable. OR One trip circuit in one or both closed SL breakers inoperable.	K.1 Restore each trip circuit to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
L. ----------NOTE---------- Separate Condition entry is permitted for each inoperable AC Source, and LCO or SR not met. ---------- AC Source inoperable or LCO not met, as stated in Note for Condition H entry. OR AC Source inoperable or LCO not met, as stated in Required Action C.2.2.3 when in Condition C for > 72 hours. OR AC Source inoperable or LCO not met, as stated in Required Actions I.2 or J.2 when in Conditions I or J for > 1 hour. OR SR 3.8.1.16 not met.	----------NOTE---------- Not required when a KHU or its required emergency power path are made inoperable for the purpose of restoring the other KHU to OPERABLE status. ---------- L.1 Restore inoperable AC Source to OPERABLE status. AND L.2 Restore compliance with LCO. AND L.3 Restore compliance with SR 3.8.1.16.	4 hours 4 hours 4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
M. Required Action and associated Completion Time for Condition C, F, G, H, I, J, K or L not met. OR Required Action and associated Completion Time not met for Required Action D.1 or D.3.	M.1 Be in MODE 3. AND M.2 Be in MODE 5.	12 hours 84 hours

CRITICAL TASKS

CT-1 Any Event: Causing an unnecessary plant trip or ESF actuation may constitute a CT failure. Actions taken by the applicant(s) will be validated using the methodology for critical tasks in Appendix D to NUREG-1021. (CT-1)

CT-2 Event 3: Stop automatic inward rod motion before control rod alignment limits are violated, placing the plant in a potentially unanalyzed condition. (CT-2) (page 9)

CT-3 Event 8: Establish adequate emergency feedwater flow from the TDEFWP such that entry into HPI Forced Cooling is not required. (CT-3) (pages 25,33)

CT-4 Event 8: Restore power from Keowee Hydro Unit 1 prior to the completion of EOP Enclosure 5.38 (BWOG CT-3). VOL 3, III I-7, 8 (CT-4) (page 36)

SAFETY: Take a Minute

UNIT 0 (SM)

SSF Operable: Yes PSW Operable: Yes	KHU's Operable: U1 - OH, U2 - UG	LCTs Operable: 0 (CT-5 OOS)	Fuel Handling: No

UNIT STATUS (CRS)

Unit 1 Simulator	Other Units	
Mode: 1	**Unit 2**	**Unit 3**
Reactor Power: 100%	Mode: 1	Mode: 1
Gross MWE: 882	100% Power	100% Power
RCS Leakage: 0.01 gpm No WCAP Action	EFDW Backup: Yes	EFDW Backup: Yes
RBNS Rate: 0.01 gpm		

Technical Specifications/SLC Items (CR SRO)

Component/Train	OOS Date/Time	Restoration Required Date/Time	TS/SLC #
AMSAC/DSS	Today/0300	7 Days	SLC 16.7.2
Lee/Central Alt Pwr Path	Today/0500	N/A	SLC 16.8.6

Shift Turnover Items (CR SRO)

Primary

- 1RIA-3 and 5 removed from RB
- SASS is in Manual for calibration

Secondary

- AMSAC/DSS bypassed for calibration
- Unit 2 is supplying the AS header
- OP/1/A/1106/002 B Encl 4.13 in progress to restore 1B Main FDW Pump from Handjack
- Following turnover, the CRS will direct the BOP to restore the 1B MFDWP from the Handjack per OP/1/A/1106/002 B Enc. 4.13 beginning at Step 2.1.
- 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.

Electrical

- CT-5 OOS for line maintenance

Reactivity Management (CRS)

RCS Boron 41 ppmB	Gp 7 Rod Position: 90% Withdrawn	Batch additions as required for volume control. (OATC)

Human Performance Emphasis (SM)

Procedure Use and Adherence

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

Examiners: _____ Operators: _____ **SRO**

_____ _____ **OATC**

_____ _____ **BOP**

Initial Conditions:

- Reactor Power = 97%

Turnover:

- SASS is in Manual for calibration
- AMSAC/DSS is bypassed for calibration
- CT-5 OOS for maintenance
- PT/1/A/0290/003 Encl 13.2 (Control Valve Movement At Power) in progress to test CV3 & CV4

Event No.	Malfunction No.	Event Type*	Event Description
0a	Override		AMSAC/DSS Bypassed
0b	Override		SASS in Manual
0c	Override		CT-5 OOS
1		N: BOP, SRO	Turbine Control Valve Movement PT (CV3 & CV4)
2	MPS290	C: BOP, SRO	1A CC Pump Trips & Standby CC Pump Fails to Auto Start **(CT-2)**
3	Override	C: OATC, SRO **(TS)**	Inadvertent ES Channel 3 Actuation
4	MCS019	I: OATC, SRO	ΔTc Controller Failure
5/6		C: BOP, SRO	Oil Leak on Main Turbine
6		R: OATC, SRO **(TS)**	Manual Power Reduction
7	MPI290 MPI300 MEL120 MPS140	M: ALL	ATWS (Loss of 1TA Switchgear) **(CT-3)** • Turbine Fails to Trip • 1HP-26 Fails Closed

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

SCENARIO 2 EVENT SUMMARY

Event 1: When the crew takes the shift, the BOP will perform PT/1/A/0290/003 Enclosure 13.2 (Control Valve Movement At Power) to test Turbine Control Valves CV3 & CV4. Once the test is complete, the Turbine Bypass Valves (TBVs) will be closed, returned to automatic, and the Standby EHC pump will be secured and placed in automatic.

Event 2: The operating Component Cooling Pump (1A CC Pump) will trip and the Standby CC Pump (1B CC Pump) will fail to auto start. The BOP will reference an Alarm Response Guide which will direct manually starting the Standby CC Pump. Since there will be no CC flow until the Standby CC Pump is started, Letdown temperature will begin to increase and 1HP-5 will automatically close on high Letdown temperature (135°F). The SRO will then enter AP/1/A/1700/032 (Loss of Letdown) to restore Letdown.

Event 3: Engineered Safeguards (ES) Channel 3 will inadvertently actuate which will cause the 1A LPI Pump to start, 1LP-17 to open, and 'C' LPSW Pump to start. Once the crew determines that the ES actuation is not valid, the SRO will enter AP/1/A/1700/042 (Inadvertent ES Actuation) to restore the ES components to normal operation. The SRO will enter TS 3.3.7 and TS 3.7.7.

Event 4: The ΔTc Controller will fail causing 1A Feedwater flow to increase and 1B Feedwater flow to decrease. Once alarms are received, the crew will perform Plant Transient Response to stabilize the plant. Once the plant is stable, the SRO will enter AP/1/A/1700/028 (ICS Instrument Failures) and ensure the appropriate ICS stations are in manual.

Event 5: A report will be made to the control room that there is a large oil leak on the Main Turbine and there is no way to isolate the leak without shutting down the oil system. The SRO will enter an Abnormal Procedure to rapidly shut down the unit with ICS in manual in order to take the turbine offline.

Event 6: Due to ICS Stations being in MANUAL, the OATC will be required to perform a manual power reduction as a result of the Main Turbine Oil leak (Event 5).

Event 7: 1TA Switchgear will lockout and the Reactor will fail to trip automatically or manually (ATWS). The OATC will perform Rule 1 and the SRO will enter the UNPP tab of the EOP. The turbine will fail to trip using the Turbine Trip Pushbutton which will require the operator to lockout both EHC Pumps to prevent overcooling of the RCS. 1HP-26 will fail closed requiring 1HP-410 to be opened to allow full HPI flow from the BWST to borate the RCS and shutdown the Reactor.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **1** Page 1 of 3

Event Description: **Turbine Control Valve Movement PT (N: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior

PT/1/A/0290/003

Crew response:

SRO directs the BOP to perform PT/1/A/0290/003 Encl. 13.2 to test CV3 & CV4

PT/1/A/0290/003 Encl 13.2 (Control Valve Movement at Power) rev 20

2.5 **IF AT ANY TIME** reactor/turbine trip **OR** significant transient occurs, ensure Turbine Bypass Valves to AUTOMATIC

NOTE: CV3 & CV4 testing is combined into single test with CV3 ramping closed and CV4 opening. When CV3 is fully tested, CV4 is disc dumped at < 6 % open to complete test.

2.6 **IF** CV3 and CV4 test required:

2.6.1 Select "Control Valve 3 & 4 Test"

2.6.2 Verify the following:

___ "Test Permissive" is ON for CV3

___ "Test Permissive" is ON for CV4

2.6.3 Record CV3 and CV4 pretest positions:

- CV3 pretest position: _____ % Open
- CV4 pretest position: _____% Open

2.6.4 Select "Initiate CV3 and CV4 Test"

2.6.5 **IF** any of the following conditions occur, select "Abort CV3 & CV4 Test"

☐ NI POWER changes > 2% **(R.M.)**

☐ ICS Turbine Master trips to HAND **(R.M.)**

☐ Turbine vibration > 10 mils for > 5 seconds

CAUTION: If CV3 remains in the closed position with the Test Failed indication "ON", initiating Abort Test could result in a reactivity management event. **(R.M.)**

2.6.6 **IF** "Test Failed" is "ON" **AND** CV3 is **NOT** fully closed, select "Abort CV3 & CV4 Test"

NOTE: If a Control Valve remains closed after it has disc-dump, it may start going open at any time (i.e. 1 min, 5 min, 1 hour). When the Control Valve starts going back open it will open at its normal rate. No transients are expected during this scenario since the EHC Control System will simply continue with the test logic and return the Control Valve to its normal position at the normal controlled test rate.

This event is complete when the Standby EHC pump switch is placed in AUTO (step 2.9.5), or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **1** Page 2 of 3

Event Description: **Turbine Control Valve Movement PT (N: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior

PT/1/A/0290/003

Crew response:

PT/1/A/0290/003 Encl 13.2 (Control Valve Movement At Power)

2.6.7 **IF** "Test Failed" is "ON" **AND** CV3 remained closed perform the following:

A. Do **NOT** select "Abort CV3 & CV4 Test"

B. Notify WCC & Engineering that the (FASV) for the Control Valve under test is stuck in the energized state

NOTE: Control Valves which are not in their normal position could result in asymmetrical loading on the Turbine bearings.

C. Monitor Turbine Vibrations closely if in this abnormal state

2.6.8 Perform **EITHER** for CV3:

A. Verify "Test Successful" indicated for CV3

B. **IF** "Test Successful" **NOT** indicated for CV3, verify CV3 moved towards closed position

2.6.9 Perform **EITHER** for CV4:

A. Verify "Test Successful" indicated for CV4

B. **IF** "Test Successful" **NOT** indicated for CV4, verify CV4 moved towards closed position

NOTE:
- CV3 and CV4 test indicator resets after ≈ 20 seconds
- Test indicators reset is when "Test Permissive" is ON and all other Test Indicators are OFF

2.6.10 Verify CV3 test indicator reset

2.6.11 Verify CV4 test indicator reset

2.6.12 Verify CV3 within ± 5.0% of pretest position

2.6.13 Verify CV4 within ± 5.0% of pretest position

2.6.14 Perform the following:

□ Verify acceptance criteria met.

□ IF acceptance criteria NOT met, notify SRO.

Examiner Note: Steps 2.7 and 2.8 are not applicable.

2.9 Perform the following:

2.9.1 Ensure all Turbine Bypass Valves CLOSED **(R.M.)**

2.9.2 Verify CV-4 returns to its expected pre-test position (Reference step 2.4.1 or Encl 13.1 step 2.3.1)

This event is complete when the Standby EHC pump switch is placed in AUTO (step 2.9.5), or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **1** Page 3 of 3

Event Description: **Turbine Control Valve Movement PT (N: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior

PT/1/A/0290/003

Crew response:

PT/1/A/0290/003 Encl 13.2 (Control Valve Movement At Power)

Examiner Note: CV-4 should return to ≈ 3% open.

2.9.3 IF either TBV in HAND, perform the following:

A. Determine the following:

- Reactor Trip Confirm. OAC point O1S1585 (K19 Reactor Trip Confirm True ☐ False ☐
- THP setpoint. OAC point O1E2089 = _____ psig
- ICS Selected THP. OAC point O1E2088 = _____ psig

B. **IF** O1S1585 (K19 Reactor Trip Confirm) is TRUE (CRDs tripped), perform the following:

- Calculate ICS Selected THP (O1E2088) minus 125 psig = _____ psig
- On TURBINE MASTER adjust THP setpoint (O1E2089) to ~ calculated psig value in Step 1 above.

C. **IF** O1S1585 (K19 Reactor Trip Confirm) is FALSE (CRDs reset), on TURBINE MASTER adjust THP setpoint (O1E2089) to ~ ICS Selected THP (O1E2088).

CAUTION: TBVs placed in automatic with the controlling parameter and setpoint **NOT** matched can result in a significant transient and reactivity management event. **(R.M.)**

THE FOLLOWING STEP IS A CRITICAL STEP (C.S.)

D. **WHEN** proper TBV setpoint is established, ensure Turbine Bypass Valves positioned to AUTO:

- 1A TURBINE BYPASS VALVES **(R.M.)**
- 1B TURBINE BYPASS VALVES **(R.M.)**

2.9.4 Stop Standby EHC pump

2.9.5 Place Standby EHC pump control switch to "AUTO"

2.9.6 Make the following plant page announcement:

"Attention plant personnel. Attention plant personnel. Unit 1 Turbine Valve Movement test is now complete." (repeat)

Booth Cue: If AO is contacted to clear the Turbine Panel Alarm, acknowledge the request and ACTIVATE TIMER 1A.

This event is complete when the Standby EHC pump switch is placed in AUTO (step 2.9.5), or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **2** Page 1 of 4

Event Description: **1A CC Pump Trips & Standby 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) Rev 50 • 1SA-9/C-1 (CC COMP COOLING RETURN FLOW LOW) Rev 50 • 1SA-2/C-1 (LETDOWN TEMPERATURE HIGH) Rev 34 • 1HP-5 (Letdown Isolation) will close due to high letdown temperature • CC Total Flow Low • Component Cooling Pressure Low **Crew response:** Refer to ARG 1SA-9/B-1 OR 1SA-9/C-1 ***ARG 1SA-09/B-1***
	BOP	**ARG 1SA-09/B-1** 3.1 **IF** ES 5 or 6 has actuated, **(N/A)** 3.2 **IF** 1CC-7 or 1CC-8 are closed, **(N/A)** 3.3 **IF** 1SA-09/C-1 is in alarm **AND** the Standby CC Pump did **NOT** start, perform the following: 3.3.1 Verify CC Surge Tank level > 12" ***CT-2*** 3.3.2 Start Standby CC Pump 3.4 **IF NO** CC Pumps are operating, Go To AP/20 (Loss of Component Cooling) **ARG 1SA-09/C-1**
		ARG 1SA-09/C-1 3.1 **IF** ES 5 or 6 has actuated, **(N/A)** 3.2 **IF** 1CC-7 or 1CC-8 are closed, **(N/A)** 3.3 **IF** Standby CC Pump did NOT start, perform the following: 3.3.1 Verify CC Surge Tank level > 12" ***CT-2*** 3.3.2 Start Standby CC Pump *(BOUNDING CRITERIA: Restore CC cooling before two CRD temperatures exceed 180°F (manual Rx Trip required).* 3.4 **IF NO** CC Pumps are operating, Go To AP/20 (Loss of Component Cooling) ***Examiner Note: Once the 1B CC pump is started, the SRO will refer to AP/32 (Loss of Letdown). (next page)*** **ARG 1SA-02/C-1**
		ARG 1SA-02/C-1 Rev 35 3.1 Decrease letdown flow using 1HP-7 (LETDOWN CONTROL) 3.2 **IF** 1HP-5 (LETDOWN CONTROL) closed due to temperature reaching setpoint, refer to AP/1/A/1700/032 (Loss of Letdown)

This event is complete when the Standby HPI Pump is placed back in Auto, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **2** Page 2 of 4

Event Description: **1A CC Pump Trips & Standby CC Pump Fails to Auto Start (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	***AP/1/A/1700/032*** **Crew response:** **AP/1/A/1700/032** (Loss of Letdown) rev 07 4.1 Verify a total loss of letdown exists 4.2 Place 1HP-120 in HAND and reduce demand to zero 4.3 Position the standby HPI pump switch to OFF **CAUTION: RCP individual seal return valves will close if seal injection is < 22 gpm with CC flow < 575 gpm.** 4.4 Throttle 1HP-31 to establish 12 - 15 gpm SEAL INLET HDR FLOW **NOTE: The running HPIP may operate below 65 gpm for up to 4 hours. HPIP time of operation below minimum flow is cumulative.** 4.5 Verify HPI pump flow ≥ 65 gpm (30 gpm Recirc + ___ SI +___ MU) **RNO:** Log beginning time for HPI pump flow below minimum 4.6 Initiate makeup to the LDST as required. (Using EOP Enclosure 5.5 or OP/1/A/1103/004 for batch additions) 4.7 Notify the OSM to reference OMP 1-14, Emergency Plan, and notify the STA 4.8 Verify 1HP-5 closed 4.9 Dispatch an operator to 1HP-5 to establish communication with the CR **NOTE** • **TS 3.4.9 applies when PZR level > 260" (corrected value for 285").** • **Conditions where it is known that letdown CANNOT be restored do not require waiting until 260" to begin a rapid shutdown.** 4.10 **IAAT** either of the following exist: • PZR level > 260 inches **AND** letdown **CANNOT** be established • Plant conditions exist such that letdown will **NOT** be restored **THEN** initiate unit shutdown per AP/29 (Rapid Unit Shutdown) 4.11 **IAAT** PZR level ≥ 375 inches, **THEN** trip Rx 4.12 Determine the cause of loss of letdown: Actual LD Temperature high: **GO TO** Step 4.29

This event is complete when the Standby HPI Pump is placed back in Auto, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **2** Page 3 of 4

Event Description: **1A CC Pump Trips & Standby CC Pump Fails to Auto Start (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP	***AP/1/A/1700/032*** **Crew response:** 4.29 Notify FIN24 to initiate repairs on failed equipment 4.30 **IAAT** letdown can be re-established, **THEN** perform Steps 4.31 - 4.48 4.31 Place CC System in operation 4.32 Close 1HP-6 4.33 Close 1HP-7 4.34 Open 1HP-1, 1HP-2, 1HP-3, and 1HP-4 4.35 Verify letdown temperature < 135°F **RNO:** 1. Open 1HP-13 2. Close 1HP-8, 1HP-9 & 11 3. Verify NO deborating IXs in service 4. Select LETDOWN HI TEMP INTLK BYP switch to BYPASS 4.36 Open 1HP-5 4.37 Throttle open 1HP-7 to establish ≈ 20 gpm 4.38 **WHEN** letdown temperature < 130°F, **THEN** place LETDOWN HI TEMP INTLK BYP switch in NORMAL 4.39 Open 1HP-6 4.40 Adjust 1HP-7 to control desired letdown flow 4.41 Re-establish normal makeup through 1HP-120 4.42 Re-establish normal RCP seal injection flow 4.43 Position the standby HPI pump switch to AUTO ***Examiner Note: This concludes the event. It is not required to put Purification IX in service at step 4.44*** 4.44 Verify any purification IX in service **RNO:** **IF** purification IX operation is desired, **THEN** initiate OP/1/A/1103/004 B to establish desired IX operation 4.45 **EXIT** this procedure

This event is complete when the Standby HPI Pump is placed back in Auto, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **2** Page 4 of 4

Event Description: **1A CC Pump Trips & Standby CC Pump Fails to Auto Start (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO	***Examiner Note:*** ***When letdown is restored and PZR Level is returned to ~220 inches, the Unit may experience Low RCS Pressure and require a TS 3.4.1 entry. If RCS pressure lowers to 2125 psig, TS 3.4.1 Condition A will apply.***
		TS 3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits Condition A (2 hours) Restore RCS DNB Paramater(s) to within limit ***FULL TS LOCATED ON PG 38***
	SRO	

This event is complete when the Standby HPI Pump is placed back in Auto, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **3** Page 1 of 5

Event Description: **Inadvertent ES Channel 3 Actuation (C: OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	**Plant response:** • 1SA-01/C-10 (ES 3 TRIP) • 1SA-03/C-8 (LP INJECTION LOOP "A" FLOW HGH/LOW) • 1SA-03/C-9 (LP INJECTION LOOP "B" FLOW HGH/LOW) • 1A LPI Pump starts • 1LP-17 (1A LPI INJECTION) opens • 'C' LPSW Pump starts • O1E0507 LPSW LEAKAGE ACCUMULATOR Level HIGH **Crew response:** • The crew will determine that the ES actuation is not valid • The SRO may direct the BOP to refer to ARG 1SA-01/C-10 (ES 3 TRIP) • The SRO will enter AP/42 (Inadvertent ES Actuation) (**next page**) ***ARG 1SA-01/C-10*** **ARG 1SA-01/C-10 (ES 3 TRIP)** rev 15 3.1 Determine if ES condition exists (RCS pressure ≤ 550 psig **OR** RB pressure ≥ 3.0 psig) 3.2 **IF** RCS pressure is ≤ 550 psig **OR** RB pressure is ≥ 3.0 psig, Go To EP/1/A/1800/001 (Emergency Operating Procedure) 3.3 **IF** ES condition does **NOT** exist, Initiate AP/1/A/1700/042 (Inadvertent ES Actuation) 3.4 Refer to OP/1/A/1105/014 (Control Room Instrumentation Operation And Information) ***ARG 1SA-03/C-8 and C-9*** **ARG 1SA-03/C-8 (LP INJECTION LOOP "A" FLOW HIGH/LOW)** Rev 65 3.1 High/Low Flow 3.1.1 **IF** in DHR, refer to AP/1/A/1700/026 (Loss of Decay Heat Removal) 3.1.2 **IF NOT** in DHR, refer to EP/1/A/1800/001 (Emergency Operating Procedure) **ARG 1SA-03/C-9 (LP INJECTION LOOP "B" FLOW HIGH/LOW)** Rev 65 3.1 High/Low Flow 3.1.1 **IF** in DHR, refer to AP/1/A/1700/026 (Loss of Decay Heat Removal) 3.1.2 **IF NOT** in DHR, refer to EP/1/A/1800/001 (Emergency Operating Procedure)

This event is complete when the SRO reaches Step 4.26, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **3** Page 2 of 5

Event Description: **Inadvertent ES Channel 3 Actuation (C: OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
		AP/1/A/1700/042 **Crew response:** **AP/1/A/1700/042** (Inadvertent ES Actuation) rev 04 4.1 Verify any of the following have inadvertently actuated: **(N/A)** __ Diverse HPI __ ES Channel 1 __ ES Channel 2 **RNO: GO TO** Step 4.4 4.4 Verify any of the following have inadvertently actuated: **(N/A)** __ ES Channel 5 __ ES Channel 6 **RNO:** 1. **IF** ES Channel 1, ES Channel 2, or Diverse HPI have inadvertently actuated, **AND** it is desired to restore letdown, **THEN** initiate AP/42 Encl 5.2 (Letdown Restoration). **(N/A)** 2. **GO TO** Step 4.10 4.10 Close the following: __ 1HP-24 **(already closed)** __ 1HP-25 **(already closed)**
	BOP	**NOTE** If personnel are available, progression should continue while Encl 5.1 (Required Operator Actions) is in progress. 4.11 Ensure AP/42 Encl 5.1 (Required Operator Actions) is in progress (**page 13**) 4.12 Verify any of the following have inadvertently actuated: __ Diverse LPI **(not actuated)** __ ES Channel 3 __ ES Channel 4 **(not actuated)**
	OATC	4.13 Verify Diverse LPI has inadvertently actuated **(N/A)** **RNO: GO TO** Step 4.15 4.15 Perform the following on all inadvertently actuated system(s): __ Ensure ES CH-3 is in MANUAL __ Ensure ES CH-4 is in MANUAL **(N/A)**

This event is complete when the SRO reaches Step 4.26, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **3** Page 3 of 5

Event Description: **Inadvertent ES Channel 3 Actuation (C: OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	OATC	***AP/1/A/1700/042*** **Crew response:** **AP/1/A/1700/042** (Inadvertent ES Actuation) 4.16 Verify LPI was aligned in decay heat removal mode prior to ES actuation **RNO:** 1. Stop the following: __ 1A LPI PUMP __ 1B LPI PUMP **(not operating)** 2. Simultaneously close the following: __ 1LP-17 __ 1LP-18 **(already closed)** 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 any of the following have inadvertently actuated: __ ES Channel 1 **(not actuated)** __ Diverse HPI **(not actuated)** **RNO:** **GO TO** Step 4.24 4.24 Notify SPOC to investigate and 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) (**page 14**) 4.26 **WHEN** all the following exist: __ Reason for inadvertent ES Channel or Diverse HPI/LPI actuation has been resolved __ ES Channel or Diverse HPI/LPI reset is desired __ OSM concurs **THEN** continue

This event is complete when the SRO reaches Step 4.26, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **3** Page 4 of 5

Event Description: **Inadvertent ES Channel 3 Actuation (C: OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	***AP/1/A/1700/042 Encl 5.1*** **Crew response:** **AP/1/A/1700/042 Enclosure 5.1** (Required Operator Actions) 1. Initiate announcement of AP Entry using the PA system **NOTE** If channels are bypassed or in override, 1SA-1/A-10 (ES 1 Trip) and 1SA-1/B-10 (ES 2 Trip) will be off even though the channel may have actuated. 2. Verify any of the following have inadvertently actuated: __ES Channel 1, 2, or Diverse HPI **RNO: GO TO** Step 5 5. Verify any of the following have inadvertently actuated: __ 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 ***Examiner Note: The SRO may elect to NOT stop the RB RIA sample pump to prevent inadvertently entering TS 3.4.15 since ES Channel 3 actuation does not isolate the RB RIAs.*** 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 any of the following have inadvertently actuated: __ Diverse HPI __ ES Channel 1 **RNO: GO TO** Step 12 12. **EXIT** this enclosure

This event is complete when the SRO reaches Step 4.26, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **3** Page 5 of 5

Event Description: **Inadvertent ES Channel 3 Actuation (C: OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	SRO	***Tech Specs*** **Crew response:** **TS 3.3.7 ESPS AUTOMATIC ACTUATION OUTPUT LOGIC CHANNELS** Condition A (1hour) Place associated component(s) in ES configuration **OR** (1 hour) Declare the associated component(s) inoperable ***FULL TS LOCATED ON PG 39*** **TS 3.7.7 LOW PRESSURE SERVICE WATER SYSTEM (LPSW)** Condition B (7 days) Restore the LPSW WPS to OPERABLE status ***FULL TS LOCATED ON PG 40*** ***Examiner Note: If the RIA sample pump is turned off per AP/42 Encl. 5.1 step 9, TS 3.4.15 Condition B will be entered while the sample pump is off.*** **TS 3.4.15 RCS LEAKAGE DETECTION INSTRUMENTATION** Condition B (Once per 24 hours) Analyze grab samples of the containment atmosphere **OR** (Once per 24 hour) Perform SR 3.4.13.1 **AND** Restore required containment atmosphere radioactivity monitor to OPERABLE status ***FULL TS LOCATED ON PG 41-43***

This event is complete when the SRO reaches Step 4.26, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: 4 Page 1 of 3

Event Description: **ΔTc Controller Failure (I: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
		Plant response: • FDW flow will ratio incorrectly based on the failure • "A" FDW flow will rise causing "A" loop T_C to lower • "B" FDW flow will lower causing "B" loop T_C to rise • This will cause actual ΔT_C to lower (become more negative). Failure to correctly adjust FDW flow will result in QPT alarms. • 1SA-02/B-5 (RC Cold Leg Diff. Temperature High) will actuate if actual ΔT_C increases to ± 5°F • 1SA-02/B-9 (MS STM GEN 'A' LEVEL High/Low) will actuate if 1A SG Operating Range Level reaches ≥ 86%
		Crew response: When the Statalarms are received, the crew should perform Plant Transient Response (PTR) to stabilize the plant • Diagnose the ΔT_C failure by observing the ΔT_C meter on 1UB1 • The OATC will place the Feedwater Masters and the Diamond to MANUAL and re-ratio feedwater using the Loop T_C meters and/or OAC (RCS01) to return actual ΔT_C to near zero
	OATC	The OATC should: • Communicate to the CRS the initial alarm (if applicable) followed by reactor power level and direction • Place the appropriate ICS stations in manual (Diamond and both FDW Masters in this case) in manual if any of the following occur: ○ NI power increasing above the pre-transient power level ○ Failed instrument is diagnosed ○ Invalid input exists and the CRS directs the ICS be placed in manual • Remain focused on reactor power level and FDW response during the transient
	BOP	The BOP should: • Determine if a valid ICS runback exists and inform the CRS • Monitor plant response and verify operating limits NOT exceeded • If ICS is placed in Manual, remain focused on RCS pressure, SG outlet pressure and RCS inventory
	SRO	The SRO should: • Refer to AP/28 (ICS Instrument Failures) (**next page**) • Ensure Maintenance is contacted to repair the failed instrument

This event is complete when the SRO reaches Step 4 of AP/28 Section 4F, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: 4 Page 2 of 3

Event Description: **ΔTc Controller Failure (I: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	OATC/SRO	***AP/1/A/1700/028*** **Crew response:** **AP/1/A/1700/028** (ICS Instrument Failures) rev 24 4.1 Provide control bands as required **(AD-OP-ONS-0002 Attachment 17)** ***Attachment 17:*** rev 01 ***1. Plant Conditions Stable or TPB ≤ Pre-transient Conditions*** ***1.1 The following bands are to be established during manual control of plant conditions (as needed) but may be adjusted by the CRS if required*** ***1.1.1 NI Power ± 1% not to exceed the pre-transient or allowable power. If at the pre-transient or allowable level, band is NI Power – 1%*** ***1.1.2 Current Tave ± 2°F*** ***1.1.3 Current SG Outlet Pressure ± 10 PSIG (N/A)*** ***1.1.4 Delta Tc 0°F ± 2°F*** 4.2 Initiate notification of the following: __ SM 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 • Maintenance assistance, as needed

This event is complete when the SRO reaches Step 4 of AP/28 Section 4F, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: 4 Page 3 of 3

Event Description: **ΔTc Controller Failure (I: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	OATC/SRO	***AP/1/A/1700/028*** **Crew response:** **AP/1/A/1700/028** (ICS Instrument Failures) 4.6 **GO TO** the applicable section per the following table:

√	Section	Failure
	4F	Delta Tc

AP/1/A/1700/028 Section 4F (Delta Tc Failure)

NOTE

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

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

- Delta Tc controller may re-ratio loop feedwater flows
- Possible ICS RUNBACK

1. Ensure the following in HAND:
   __ 1A FDW MASTER
   __ 1B FDW MASTER
   __ DELTA Tc

CAUTION

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

2. Re-ratio feedwater flow, as required, to establish desired DELTA Tc while maintaining total feedwater flow constant
3. Notify Maintenance to perform the following:
   __ Investigate and repair the failed Delta Tc controller
4. **WHEN** notified by Maintenance that Delta Tc controller has been repaired, **THEN GO TO** OP/1/A/1102/004 A Encl (Placing ICS Stations To Auto)

Examiner Note: The OATC should simultaneously lower 1A FDW flow and raise 1B FDW flow with the FDW Masters while maintaining total FDW flow approximately constant.

This event is complete when the SRO reaches Step 4 of AP/28 Section 4F, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: 5/6 Page 1 of 4

Event Description: **Main Turbine Oil Leak (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	***AP/1/A/1700/029*** ***Booth Cue: To initiate this event, call the Control Room on 4911 and inform them as follows: "This is the WCC SRO. There is an oil leak on the north end of the Unit 1 B LP turbine. There is not a way to isolate the leak without shutting down the oil system". IF asked, respond that a fire risk does exist.*** ***Booth Cue: If needed, state that there is a significant amount of oil leaking from the LP turbine.*** ***Booth Cue: If asked for Unit 2 to handle the Spill Response procedure, respond that "Unit 2 will perform the Spill Response procedure".*** ***Booth Cue: If crew initiates AP/52 Turbine Bldg Oil Leak/Fire, call as the SM and say that "Unit 2 will perform AP/52".*** **Crew Response**: The SRO will initiate AP/29 (Rapid Unit Shutdown) in order to reduce power to take the Main Turbine off line **AP/1/A/1700/029** (Rapid Unit Shutdown) Rev 13 4.1 Initiate Encl 5.1 (Support Actions During Rapid Unit Shutdown) (**page 20**) 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 4.8 Verify ICS in AUTO **(ICS is NOT in Auto)** ***Examiner Note: Focus Brief opportunity.*** **RNO**: 1. Initiate manual power reduction to desired power level. (**page 22**) 2. **GO TO** Step 4.10 ***Note: OATC reduces power by first reducing feedwater and then inserting control rods as necessary.*** 4.10 Verify both Main FDW pumps running: **NOTE** • 1B Main FDW Pump is the preferred to be shutdown first • To lower 1B Main FDW Pump suction flow, bias is adjusted counter-clockwise. • To lower 1A Main FDW Pump suction flow, bias is adjusted clockwise.

This event is complete when Rx Power has been lowered to 18 - 20% AND Unit Auxiliaries have been transferred, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: 5/6 Page 2 of 4

Event Description: **Main Turbine Oil Leak (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	***AP/1/A/1700/029*** **AP/1/A/1700/029** (Rapid Unit Shutdown) 4.11 Adjust bias for first Main FDW pump desired to be shutdown **(1B)** until its suction flow is ≈ 1 X 10^6 lbm/hr less than remaining Main FDW pump suction flow. 4.12 **WHEN** core thermal power is < 65% FP, **THEN** continue. 4.13 **IAAT** both Main FDW pumps running, **AND** both of the following exist: __ 1B Main FDW Pump is first pump to be shut down. __ Any of the following alarms actuate and remain in alarm: • FWP B FLOW MINIMUM (1SA-16/A-3) • FWP B FLOW BELOW MIN (1SA-16/A-4) **THEN** trip 1B Main FDW Pump. 4.14 **IAAT** both Main FDW pumps running, **AND** both of the following exists: __ 1A Main FDW pump is the first pump to be shut down __ Any of the following alarms actuate and remain in alarm: • FWP A FLOW MINIMUM (1SA-16/A-1) • FWP A FLOW BELOW MIN (1SA-16/A-2) **THEN** trip 1A Main FDW Pump 4.15 Verify Turbine-Generator shutdown is required. 4.16 Start the TURBINE TURNING GEAR OIL PUMP. 4.17 Start 1A through 1E TURBINE BRNG OIL LIFT PUMPS. 4.18 Start the TURBINE MOTOR SUCTION PUMP. 4.19 **IAAT** both of the following apply: __ ICS in automatic __ NI power is ≤ 18% **THEN** deselect MAXIMUM RUNBACK. **(does NOT apply)** 4.20 Verify Turbine-Generator shutdown is required **(it is required)** 4.21 **WHEN** NI power ≤18% **THEN** depress turbine TRIP pushbutton

This event is complete when Rx Power has been lowered to 18 - 20% AND Unit Auxiliaries have been transferred, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **5/6** Page 3 of 4

Event Description: **Main Turbine Oil Leak (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	***AP/1/A/1700/029 Encl 5.1*** **AP/1/A/1700/029 Encl. 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. **(It is required)** 9. Place the following transfer switches to MAN: • 1TA AUTO/MAN • 1TB AUTO/MAN 10. Close 1TA SU 6.9 KV FDR. 11. Verify 1TA NORMAL 6.9 KV FDR opens. 12. Close 1TB SU 6.9 KV FDR. 13. Verify 1TB NORMAL 6.9 KV FDR opens. 14 Place the following transfer switches to MAN: • MFB1 AUTO/MAN • MFB2 AUTO/MAN 15. Close $E1_1$ MFB1 STARTUP FDR. 16. Verify $N1_1$ MFB1 NORMAL FDR opens. 17. Close $E2_1$ MFB2 STARTUP FDR. 18. Verify $N2_1$ MFB2 NORMAL FDR opens

This event is complete when Rx Power has been lowered to 18 - 20% AND Unit Auxiliaries have been transferred, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **5/6** Page 4 of 4

Event Description: **Main Turbine Oil Leak (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	***AP/1/A/1700/029 Encl 5.1*** 19. Notify CR SRO that Unit auxiliaries have been transferred 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 __ 1FDW-53 __ 1FDW-65 22. **IAAT** load is ≤ 550 MWe, **THEN** perform Steps 23-24 23. Ensure the following are stopped: __ 1A MSRH DRN PUMP __ 1B MSRH DRN PUMP 24. Place 1HD-37 and 1HD-52 in DUMP: 25. **WHEN** CTP is ≤ 60%, **THEN** ensure 1SSH-9 closed 26. **IAAT** load is ≤ 450 MWe, **THEN** perform Steps 27-30 27. Verify the 1C CBP operating 28. Stop the 1A and 1B CBPs 29. Place the control switch for one shutdown CBP in AUTO 30. Ensure CBP LOAD SHED DEFEAT switch to a running CBP 31. **WHEN** ≤ 400 MWe, **THEN** stop the following pumps __ 1D1 HTR DRN PUMP __ 1D2 HTR DRN PUMP 32. **WHEN** ≤ 325 MWe, **THEN** verify ≤ two HWPs operating 33. **WHEN** ≤ 225 MWe, **THEN** stop all but one HWP 34. Place control switch for one idle HWP in AUTO 35. Ensure HWP LOAD SHED DEFEAT switch is positioned to a running HWP 36. **WHEN** CTP DEMAND is < 20%, **THEN** Close 1MS-76 and 1MS-79 37. **WHEN** directed by CR SRO, **THEN EXIT** this enclosure

This event is complete when Rx Power has been lowered to 18 - 20% AND Unit Auxiliaries have been transferred, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **6** Page 1 of 1

Event Description: **Manual Power Reduction (R: OATC, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	***AP/1/A/1700/029*** **Crew response:** The SRO will initiate AP/29 (Rapid Unit Shutdown) to direct power reduction **AP/1A/1700/029** (Rapid Unit Shutdown) rev 013 4.1 Initiate Encl 5.1 (Support Actions During Rapid Unit Shutdown) 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 4.8 Verify ICS in AUTO **(ICS is NOT in Auto)** ***Examiner Note: Focus Brief opportunity.***
	OATC	**RNO**: 1. Initiate manual power reduction to desired power level. 2. **GO TO** Step 4.10 ***Examiner Note: OATC reduces power by first reducing feedwater and then inserting control rods as necessary. The CRS should give control bands for Power, Power reduction rate, RCS Tave, and RCS delta Tc.***
	SRO	***Examiner Note: Once Reactor Power has been reduced to 85%, the crew should announce SSF inoperability due to low decay heat.*** **TS 3.10.1 STANDBY SHUTDOWN FACILITY (SSF)** Conditions A-E are applicable due to Reactor power being < 85% which makes the SSF inoperable Required Action: Restore SSF systems to OPERABLE status (7 days) ***FULL TS LOCATED ON PG 44-45*** ***Examiner Note: If Pressurizer level reaches 260 inches, TS 3.4.9 will apply.*** **TS 3.4.9 PRESSURIZER** Condition A – Pressurizer water level not within limit. Required Action: Restore level to within limit (1 hour) ***FULL TS LOCATED ON PG 46-47***

This event is complete when Rx Power has been lowered to 18 - 20% AND Unit Auxiliaries have been transferred, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **7** Page 1 of 6

Event Description: **ATWS (Loss of 1TA Switchgear) (M: ALL)**

Time	Position	Applicant's Actions or Behavior

Plant Response:

- Statalarms 1SA-01/A-1, B-1, C-1, D-1 (RPS Channel A-D Trip)
- 1SA-1/A-7, B-7, C-7, D-7 (RCP/Flux Trip)

1TA lockout will occur. This will cause a loss of 6900V power to the 1A1 and 1B1 RCPs. RPS alarms will occur indicating that the Reactor should have tripped, but it will remain at power. The crew will attempt to manually trip the Reactor but it will not trip from the control room.

Crew Response:

OATC

Recognize the Reactor should have tripped and attempt to manually trip the Reactor in accordance with AD-OP-ONS-0002 Attachment 1 (< 3 RCPs operating with Reactor power > 2%). Since the Reactor will not trip from the control room, the OATC will initiate Rule 1 while performing Immediate Manual Actions (IMAs) of the EOP.

IMMEDIATE MANUAL ACTIONS

OATC

3.1 Depress REACTOR TRIP pushbutton **[Reactor will NOT trip]**

3.2 Verify reactor power < 5% FP and lowering

RNO: GO TO Rule 1 (ATWS/Unanticipated Nuclear Power Production)(**pg 28**)

BOP

The BOP will perform a symptom check.

Power Range NIs **NOT** < 5% Power Range NIs **NOT** decreasing	Rule 1, *ATWS/Unanticipated Nuclear Power Production*
Any SCM < 0°F	Rule 2, *Loss Of SCM*
Loss of Main and Emergency FDW (including unsuccessful manual initiation of EFDW)	Rule 3, *Loss of Main or Emerg FDW* Rule 4, *Initiation of HPI Forced Cooling* (Inability to feed SGs and > 2300 psig, NDT limit reached, or PZR level > 375")
Uncontrolled Main steam line(s) pressure reduction	Rule 5, *Main Steam Line Break*
CSAE Offgas alarms Process monitor alarms (RIA-40, 59,60), Area monitor alarms (RIA-16/17)	None (SGTR Tab is entered when identified SG Tube Leakage > 25 gpm)

BOP will inform the SRO:

- No symptoms to report except that Power Range NIs are > 5%, OATC is performing Rule 1.

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

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **7** Page 2 of 6

Event Description: **ATWS (Loss of 1TA Switchgear) (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	***UNPP Tab*** **Crew response:** ***Examiner Note:*** ***Rule 1 will direct the OATC to notify the CRS to go to the UNPP tab*** **UNPP Tab** rev 0 1. Ensure Rule 1 (ATWS/Unanticipated Nuclear Power Production) is in progress or complete (**page 28**) 2. Verify Main FDW is operating and in AUTO **RNO:** **IF** Main FDW is operating in MANUAL, **THEN** adjust Main FDW flow, as necessary to control RCS temperature 3. **IAAT** Main FDW is **NOT** operating, **THEN**: A. Trip the turbine-generator B. Start all available EFDW pumps C. Ensure Rule 3 (Loss of Main or Emergency FDW) is in progress or complete 4. **IAAT** all power range NIs are < 5% FP, **THEN** perform Steps 5 - 6 **RNO:** **GO TO** Step 7 5. Depress turbine TRIP pushbutton **[the turbine will NOT trip from P/B]** 6. Verify all turbine stop valves closed **RNO:** Place both EHC pumps in PULL TO LOCK 7. Verify any wide range NI > 1% FP **RNO:** **GO TO** Step 16 8. Open 1RC-4 9. Verify 1HP-5 open 10. Maximize letdown using 1HP-7 while maintaining letdown temperature < 120°F

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

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **7** Page 3 of 6

Event Description: **ATWS (Loss of 1TA Switchgear) (M: ALL)**

Time	Position	Applicant's Actions or Behavior

UNPP Tab

Crew response:

UNPP Tab

11. Verify Main FDW available
12. Adjust Main FDW flow as necessary to control RCS temperature
13. Verify overcooling in progress **[Over cooling is NOT in progress]**

RNO: GO TO Step 16

16. Secure makeup to LDST
17. **WHEN** all wide range NIs are ≤ 1% FP, **AND** decreasing, **THEN** continue
18. Control RCS temperature as follows:

    ___ Tave ≤ 555°F- Adjust SG pressure as necessary to stabilize RCS temperature using either:

    - 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

19. Throttle HPI per Rule 6 (HPI) (**page 37**)
20. **WHEN** RCS pressure < 2300 psig, **THEN** continue
21. Verify PORV closed
22. Adjust letdown flow as desired
23. Verify RCP seal injection available
24. **GO TO** Subsequent Actions (**next page**)

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

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **7** Page 4 of 6

Event Description: **ATWS (Loss of 1TA Switchgear) (M: ALL)**

Time	Position	Applicant's Actions or Behavior

SUBSEQUENT ACTIONS Tab

Crew response:

Subsequent Actions Tab rev 02

4.1 Verify all control rods in Groups 1 – 7 fully inserted

4.2 Verify Main FDW in operation

4.3 Verify either:

__ Main FDW overfeeding causing excessive temperature lowering

__ Main FDW underfeeding causing SG level lowering 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, **AND** TBVs **NOT** intentionally isolated, **THEN** manually control pressure in affected SGs using either:

__ TBVs

__ Dispatch two operators to perform Encl 5.24 (Operation of the ADVs)

4.10 Verify 1RIA-40 operable with CSAE OFF-GAS BLOWER operating

4.11 **GO TO** Step 4.14

4.14 Verify both are closed:

__ 1MS-17

__ 1MS-26

4.15 Verify ES is required

RNO: 1. Initiate Encl 5.5 (Pzr and LDST Level Control) (**Page 29**)

2. **GO TO** Step 4.17

4.17 Open:

__ PCB 20

__ PCB 21

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

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **7** Page 5 of 6

Event Description: **ATWS (Loss of 1TA Switchgear) (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		SUBSEQUENT ACTIONS Tab **Crew response:** **Subsequent Actions Tab** 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 4.25 Verify any RCP operating 4.26 Verify AP/0/A/1700/025 (SSF EOP) Encl (Unit 1 OATC Actions During Fire) in progress or complete **RNO:** Ensure SGs approaching 25" – 35" [55" – 65" acc] S/U level 4.27 Place switches in CLOSE: __ 1FDW-31 __ 1FDW-40

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

Op-Test No.: **ILT 20-1** Scenario No.: **2** Event No.: **7** Page 6 of 6

Event Description: **ATWS (Loss of 1TA Switchgear) (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC ***CT-3***	***RULE 1*** **Crew response:** **Rule 1** 1. Verify any Power Range NI ≥ 5% FP 2. Initiate manual control rod insertion to the IN LIMIT 3. Verify Main FDW is feeding the SGs 4. Notify CRS to **GO TO** UNPP tab (**Page 24**) 5. Open: __ 1HP-24 __ 1HP-25 6. Ensure at least one operating: __ 1A HPI PUMP __ 1B HPI PUMP 7. Start 1C HPI PUMP 8. Open: __ 1HP-26 **[1HP-26 will NOT open]** __ 1HP-27 **RNO:** 1. **IF** 1HP-26 will **NOT** open, **THEN** open 1HP-410 *BOUNDING CRITERIA: Take action to initiate negative reactivity addition by either rod insertion or emergency boration flow before Reactor Trip breakers are opened by local operator action.* 2. **IF** at least two HPI pumps are operating, **AND** 1HP-27 will **NOT** open **THEN**: A. Start the standby HPI pump B. Stop 1C HPI pump C. Open 1HP-409 9. Dispatch one operator without wearing Arc Flash PPE to open 600V CRD breakers: __ 1X9-5C (U-1 CRD Norm Fdr Bkr) (U1 Equipment Rm) __ 2X1-5B (U-1 CRD Alternate Fdr Bkr) (T-3/Dd-28) ***Examiner Note:*** ***When the operator is dispatched to open CRD breakers, TIMER 7A will be activated to open the CRD breakers in 4 minutes.*** 10. Verify only two HPI pumps operating 11. **EXIT**

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

Enclosure 5.5
Pzr and LDST Level Control Rev 01

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

Enclosure 5.5
Pzr and LDST Level Control

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

Enclosure 5.5
Pzr and LDST Level Control

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

Enclosure 5.5
Pzr and LDST Level Control

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10. __ **IAAT** LDST level **CANNOT** be maintained, **THEN** perform Step 11.	__ **GO TO** Step 12.
11. __ Perform the following: • Open 1HP-24. • Open 1HP-25. • Close 1HP-16.	1. __ **IF** both BWST suction valves (1HP-24 and 1HP-25) are closed, **THEN** perform the following: A. __ Start 1A LPI PUMP. B. __ Start 1B LPI PUMP. C. Open: __ 1LP-15 __ 1LP-16 __ 1LP-9 __ 1LP-10 __ 1LP-6 __ 1LP-7 D. __ **IF** two LPI Pumps are running only to provide HPI pump suction, **THEN** secure one LPI pump. E. __ Dispatch an operator to open 1HP-363 (Letdown Line To LPI Pump Suction Block) (A-1-119, U1 LPI Hatch Rm, N end). F. __ **GO TO** Step 13. 2. __ **IF** only one BWST suction valve (1HP-24 or 1HP-25) is open, **AND** three HPI pumps are operating, **THEN** secure 1B HPI PUMP.
NOTE Maintaining Pzr level > 100” [180” acc] will ensure Pzr heater bundles remain covered.	
12. __ Operate Pzr heaters as required to maintain heater bundle integrity.	

Enclosure 5.5
Pzr and LDST Level Control

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13. __ **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.).	
14. __ **IAAT** two Letdown Filters are desired, **THEN** perform the following: __ Open 1HP-17. __ Open 1HP-18	
15. __ **IAAT** all of the following exist: __ Letdown isolated __ LPSW available __ Letdown restoration desired **THEN** perform Steps 16 - 34. {41}	__ **GO TO** Step 35.
16. Open: __ 1CC-7 __ 1CC-8	1. __ Notify CR SRO that letdown **CANNOT** be restored due to inability to restart the CC system. 2. __ **GO TO** Step 35.
17. __ Ensure only one CC pump running.	
18. __ Place the non-running CC pump in AUTO.	
19. Verify both are open: __ 1HP-1 __ 1HP-2	1. __ **IF** 1HP-1 is closed due to 1HP-3 failing to close, **THEN GO TO** Step 21. 2. __ **IF** 1HP-2 is closed due to 1HP-4 failing to close, **THEN GO TO** Step 21.
20. __ **GO TO** Step 23.	
NOTE Verification of leakage requires visual observation of East Penetration Room.	
21. __ Verify letdown line leak in East Penetration Room has occurred.	**GO TO** Step 23.
22. __ **GO TO** Step 35.	

Enclosure 5.5
Pzr and LDST Level Control

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23. __ Monitor for unexpected conditions while restoring letdown.	
24. __ Verify <u>both</u> letdown coolers to be placed in service.	1. __ **IF** 1A letdown cooler is to be placed in service, **THEN** open: __ 1HP-1 __ 1HP-3 2. __ **IF** 1B letdown cooler is to be placed in service, **THEN** open: __ 1HP-2 __ 1HP-4 3. __ **GO TO** Step 26.
25. Open: __ 1HP-1 __ 1HP-2 __ 1HP-3 __ 1HP-4	
26. __ Verify <u>at least one</u> letdown cooler is aligned.	Perform the following: A. __ Notify CR SRO of problem. B. __ **GO TO** Step 35.
27. __ Close 1HP-6.	
28. __ Close 1HP-7.	
29. __ Verify letdown temperature < 125°F.	1. __ Open 1HP-13. 2. Close: __ 1HP-8 __ 1HP-9&11 3. __ **IF** <u>any</u> deborating IX is in service, **THEN** perform the following: A. __ Select 1HP-14 to NORMAL. B. __ Close 1HP-16. 4. __ Select LETDOWN HI TEMP INTLK BYP switch to BYPASS.

Enclosure 5.5
Pzr and LDST Level Control

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30. __ Open 1HP-5.	
31. __ Adjust 1HP-7 for ≈ 20 gpm letdown.	
32. __ **WHEN** letdown temperature is < 125°F, **THEN** place LETDOWN HI TEMP INTLK BYP switch to NORMAL.	
33. __ Open 1HP-6.	
34. __ Adjust 1HP-7 to control desired letdown flow.	
NOTE AP/32 (Loss of Letdown) provides direction to cool down the RCS to offset increasing pressurizer level.	
35. __ **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).	
36. __ **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.	
37. __ **IAAT** all the following conditions exist: __ Makeup from BWST **NOT** required __ LDST level > 55″ __ All control rods inserted __ Cooldown Plateau **NOT** being used **THEN** close: __ 1HP-24 __ 1HP-25	

Enclosure 5.5
Pzr and LDST Level Control

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
38. __ Verify 1CS-48 (1A BHUT Recirc) has been closed to provide additional makeup flow to LDST.	__ **GO TO** Step 40.
39. __ **WHEN** 1CS-48 (1A BHUT Recirc) is **NO** longer needed to provide additional makeup flow to LDST, **THEN** perform the following: A. __ Stop 1A BLEED TRANSFER PUMP. B. __ Locally position 1CS-48 (1A BHUT Recirc) one turn open (A-1-107, Unit 1 RC Bleed Transfer Pump Rm.). C. __ Close 1CS-46. D. __ Start 1A BLEED TRANSFER PUMP. E. __ Locally throttle 1CS-48 (1A BHUT Recirc) to obtain 90 - 110 psig discharge pressure. F. __ Stop 1A BLEED TRANSFER PUMP.	
40. __ Verify two Letdown Filters in service, **AND** only one Letdown filter is desired.	__ **GO TO** Step 42.
41. Perform one of the following: __ Place 1HP-17 switch to CLOSE. __ Place 1HP-18 switch to CLOSE.	
42. __ **WHEN** directed by CR SRO, **THEN EXIT** this enclosure.	

• • • END • • •

Rule 6 Rev 03

HPI

HPI Pump Throttling Limits

- HPI must be throttled to prevent violating the RV-P/T limit.
- HPI pump operation must be limited to two HPIPs when only one BWST suction valve (1HP-24 or 1HP-25) is open.
- HPI must be throttled ≤ 475 gpm/pump (including seal injection for A header) when only one HPI pump is operating in a header.
- Total HPI flow must be throttled ≤ 950 gpm including seal injection when 1A and 1B HPI pumps are operating with 1HP-409 open.
- Total HPI flow must be throttled < 750 gpm when all the following exist:
  - LPI suction is from the RBES
  - piggyback is aligned
  - either of the following exist:
    - only one piggyback valve is open (1LP-15 or 1LP-16)
    - only one LPI pump operating
- HPI may be throttled under the following conditions:

HPI Forced Cooling in Progress:	HPI Forced Cooling NOT in Progress:
All the following conditions must exist: • Core SCM > 0 • CETCs decreasing	All the following conditions must exist: • All WR NIs ≤ 1% • Core SCM > 0 • Pzr level increasing • CRS concurrence required if throttling following emergency boration

HPI Pump Minimum Flow Limit

- Maintain ≥ 170 gpm indicated/pump. This is an instrument error adjusted value that ensures a real value of ≥ 65 gpm/pump is maintained. HPI pump flow less than minimum is allowed for up to 4 hours.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

LCO 3.4.1 RCS DNB parameters for loop pressure, loop average temperature, and RCS total flow rate shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1 during steady state operation.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more RCS DNB parameters not within limits.	A.1 Restore RCS DNB parameter(s) to within limit.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 2.	12 hours

3.3 INSTRUMENTATION

3.3.7 Engineered Safeguards Protective System (ESPS) Automatic Actuation Output Logic Channels

LCO 3.3.7 Eight ESPS Automatic Actuation Output Logic Channels shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,
MODES 3 and 4 when associated engineered safeguard (ES) equipment is required to be OPERABLE.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each automatic actuation output logic channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more automatic actuation output logic channels inoperable.	A.1 Place associated component(s) in ES configuration. OR A.2 Declare the associated component(s) inoperable.	1 hour 1 hour

3.7 PLANT SYSTEMS

3.7.7 Low Pressure Service Water (LPSW) System

LCO 3.7.7 For Unit 1 or Unit 2, three LPSW pumps and one flow path shall be OPERABLE.

For Unit 3, two LPSW pumps and one flow path shall be OPERABLE.

The LPSW Waterhammer Prevention System (WPS) shall be OPERABLE.

----------NOTE----------
With either Unit 1 or Unit 2 defueled and appropriate LPSW loads secured on the defueled Unit, such that one LPSW pump is capable of mitigating the consequences of a design basis accident on the remaining Unit, only two LPSW pumps for Unit 1 or Unit 2 are required.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One required LPSW pump inoperable.	A.1	Restore required LPSW pump to OPERABLE status.	72 hours
B. LPSW WPS inoperable.	B.1	Restore the LPSW WPS to OPERABLE status.	7 days
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 AND C.2	Be in MODE 3. Be in MODE 5.	12 hours 60 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Leakage Detection Instrumentation

LCO 3.4.15 The following RCS leakage detection instrumentation shall be OPERABLE:

a. One containment normal sump level indication; and

b. One containment atmosphere radioactivity monitor (gaseous or particulate).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

----------NOTE----------
LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Containment sump level indication inoperable.	A.1	----------NOTE---------- Not required until 12 hours after establishment of steady state operation. ---------- Perform SR 3.4.13.1.	Once per 24 hours
	AND		
	A.2	Restore containment sump level indication to OPERABLE status.	30 days

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required containment atmosphere radioactivity monitor inoperable.	B.1.1 Analyze grab samples of the containment atmosphere. OR B.1.2 ----------NOTE---------- Not required until 12 hours after establishment of steady state operation. ---------- Perform SR 3.4.13.1. AND B.2 Restore required containment atmosphere radioactivity monitor to OPERABLE status.	Once per 24 hours Once per 24 hours 30 days
C. --------NOTE---------- Only applicable when the containment atmosphere gaseous radiation monitor is the only OPERABLE monitor. ---------- Containment sump level indication inoperable.	C.1 Analyze grab samples of the containment atmosphere. AND C.2 Restore containment sump level indication to OPERABLE status.	Once per 12 hours 7 days
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	12 hours 36 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Both required instrument functions inoperable.	E.1 Enter LCO 3.0.3.	Immediately

3.10 STANDBY SHUTDOWN FACILITY

3.10.1 Standby Shutdown Facility (SSF)

LCO 3.10.1 The SSF Instrumentation and the following SSF Systems shall be OPERABLE:

a. SSF Auxiliary Service Water System;

b. SSF Portable Pumping System;

c. SSF Reactor Coolant Makeup System; and

d. SSF Power System.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTE----------
LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SSF Auxiliary Service Water System inoperable.	A.1 Restore SSF Auxiliary Service Water System to OPERABLE status.	7 days
B. SSF Portable Pumping System inoperable.	B.1 Restore SSF Portable Pumping System to OPERABLE status.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. SSF Reactor Coolant Makeup System inoperable.	C.1	Restore SSF Reactor Coolant Makeup System to OPERABLE status.	7 days
D. SSF Power System inoperable.	D.1	Restore SSF Power System to OPERABLE status.	7 days
E. SSF Instrumentation inoperable.	E.1	Restore SSF Instrumentation to OPERABLE status.	7 days
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met when SSF Systems or Instrumentation are inoperable due to maintenance.	F.1	Restore to OPERABLE status.	----------NOTE---------- Not to exceed 45 days cumulative per calendar year ---------- 45 days from discovery of initial inoperability
G. Required Action and associated Completion Time of Condition F not met. OR Required Action and associated Completion Time of Condition A, B, C, D, or E not met for reasons other than Condition F.	G.1 AND G.2	Be in MODE 3. Be in MODE 4.	12 hours 84 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE with:

a. Pressurizer water level ≤ 285 inches; and

b. A minimum of 400 kW of pressurizer heaters OPERABLE and capable of being powered from an emergency power supply.

APPLICABILITY: MODES 1 and 2,
MODE 3 with RCS temperature > 325°F.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Pressurizer water level not within limit.	A.1	Restore level to within limit.	1 hour
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 3 with RCS temperature ≤ 325°F.	18 hours
C. Capacity of pressurizer heaters capable of being powered by emergency power supply less than limit.	C.1	Restore pressurizer heater capability.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. AND D.2 Reduce RCS temperature to ≤ 325°F.	12 hours 18 hours

CRITICAL TASKS

CT-1 Any Event: Causing an unnecessary plant trip or ESF actuation may constitute a CT failure. Actions taken by the applicant(s) will be validated using the methodology for critical tasks in Appendix D to NUREG-1021. (CT-1)

CT-2 Event 2: Restore CC cooling before two CRD temperatures exceed 180 °F (manual Rx Trip required). (CT-2) (page 6)

CT-3 Event 7: Take action to initiate negative reactivity addition by either rod insertion or emergency boration flow before Reactor Trip breakers are opened by local operator action. (CT-3) (page 28)

SAFETY: Take a Minute

UNIT 0 (SM)

SSF Operable: Yes PSW Operable: Yes	KHU's Operable: U1 - OH, U2 - UG	LCTs Operable: 0 (CT-5 OOS)	Fuel Handling: No

UNIT STATUS (CRS)

Unit 1 Simulator	Other Units	
Mode: 1	**Unit 2**	**Unit 3**
Reactor Power: 97%	Mode: 1	Mode: 1
Gross MWE: 829	100% Power	100% Power
RCS Leakage: 0.01 gpm No WCAP Action	EFDW Backup: Yes	EFDW Backup: Yes
RBNS Rate: 0.01 gpm		

Technical Specifications/SLC Items (CRS)

Component/Train	OOS Date/Time	Restoration Required Date/Time	TS/SLC #
AMSAC/DSS	Today / 0300	7 Days	SLC 16.7.2
LEE/CENTRAL Alternate Power Path	Today / 0500	N/A	SLC 16.8.6

Shift Turnover Items (CRS)

Primary

- 1RIA-3 and 5 removed from RB
- SASS is in Manual for calibration
- Rx power ≈ 97% stable and ready for the BOP to perform PT/1/A/0290/003 (Turbine Valve Movement) Encl 13.2 for CV3 & CV4 only. Encl. 13.2 (Control Valve Movement at Power) is in progress and complete up to Step 2.5
- Unit 1 will be maintaining 97% until Rx Engineering updates the maneuvering plan

Secondary

- AMSAC/DSS bypassed for calibration
- Unit 2 is supplying the AS header
- 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.

Electrical

- CT-5 OOS for line maintenance

Reactivity Management (CRS)

RCS Boron 43 ppmB	Gp 7 Rod Position: 89% Withdrawn	Batch additions as required for volume control. (OATC)

Human Performance Emphasis (SM)

Procedure Use and Adherence

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

Examiners: _____ Operators: _____ **SRO**

_____ _____ **OATC**

_____ _____ **BOP**

Initial Conditions:

- Reactor Power = Critical below POAH

Turnover:

- U1 RBNS level high. Lower RBNS level to ~3" per OP/1/A/1104/007 Encl 4.1
- Unit startup in progress. Raise Reactor power from below the POAH to ≈ 3.0% and place ICS in Auto per OP/1/A/1102/001 Encl 4.7

Event No.	Malfunction No.	Event Type*	Event Description
1	Override	N: BOP, SRO **(TS)**	Pump the RBNS
2		R: OATC, SRO	Raise Power to ≈ 3.0% and Place ICS in Auto
3	Override	C: BOP, SRO	1B FWPT Auxiliary Oil Pump Trip
4	Override	C: BOP, SRO **(TS)**	'A' LPSW Pump OB Bearing Temperature High
5	Override	C: OATC, SRO	1RC-1 (PZR Spray Valve) Fails Open **(CT-2)**
6	MCR022 MCR028	C: OATC, SRO	Two Dropped Control Rod(s) Requiring a Reactor Trip
7	MPS400 MPS400D Override	M: ALL	Small Break LOCA that evolves into a Large Break LOCA **(CT-3, CT-4)** • 1A LPI Pump Fails • 1B LPI Pump Fails (requires 1C LPIP alignment)

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

SCENARIO 3 EVENT SUMMARY

Event 1: When the crew takes the shift, the SRO will direct the BOP will lower the level in the RBNS to ~ 3 inches using OP/1/A/1104/007 Enclosure 4.1. 1LWD-1 will fail open requiring TS 3.6.3 entry.

Event 2: The OATC will raise power from below the POAH to ≈ 3.0% and place ICS in automatic.

Event 3: The Auxiliary Oil Pump for the 1B FWPT will trip causing the Emergency Oil Pump to start. Per the Alarm Response Guide (ARG), the BOP will attempt to start the Auxiliary Oil Pump, which will fail. Shortly afterwards, the alarm for FWPT 1B Emergency Oil Pump Overload will alarm. This will require the candidate to attempt to start the Auxiliary Oil Pump. Not being able to start the pump, the ARG will direct the BOP to stop the Turning Gear Motor to prevent damaging the Feedwater Pump.

Event 4: An OAC alarm will indicate that the 'A' LPSW pump Outboard Bearing temperature is high. The BOP will refer to the alarm response which will refer to OP/1/A/1104/010 (Low Pressure Service Water) to secure the pump. Enclosure 4.39 (LPSW Pump Operations) will be used to start the 'C' LPSW pump and secure the 'A' LPSW pump. The SRO will refer to TS 3.7.7.

Event 5: The 1RC-1 (Pressurize Spray Valve) will fail open causing RCS pressure to unexpectedly decrease. The operator will be required to close 1RC-3 (Pressurizer Spray Block Valve) in order to stop the pressure decrease and prevent tripping the Reactor.

Event 6: Two control rods will drop into the core requiring a manual Reactor trip. Once the Reactor is manually tripped in accordance with AD-OP-ONS-0002 Attachment 1 (Licensed Operator Memory Items), Event 7 will automatically initiate.

Event 7: Upon receiving a Reactor Trip, a Small Break LOCA will develop. Following the completion of Rule 2, the leak evolves into a Large Break LOCA. The 1A and 1B LPI Pumps will fail requiring the operator to manually align and start the 1C LPI Pump to maintain core cooling.

Op-Test No.: **ILT 20-1** Scenario No.: 3 Event No.: **1** Page 1 of 1

Event Description: **Lower RBNS level to ~ 3 inches (N: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP	***OP/1/A/1104/007 Encl 4.1*** **Crew response:** SRO directs the BOP to pump the Reactor Building Normal Sump to approximately 3 inches in accordance with OP/1/A/1104/007 Enclosure 4.1. **OP/1/A/1104/007, Encl. 4.1** (Pumping RBNS to ≥ 1 inch) rev 30 2.1 Verify required to lower RBNS to ≥ 1” 3.1 Verify MWHUT level adequate to receive waste volume. 3.2 Position the following: • Ensure open 1LWD-1 (RB NORMAL SUMP ISOLATION) • Ensure open 1LWD-2 (RB NORMAL SUMP ISOLATION) 3.3 Start **one** or **both** of the following: • 1A RB NORM SUMP PUMP • 1B RB NORM SUMP PUMP **NOTE** Changes in LAWT levels may occur during pumping. RIA Alarms may be indicative of gas leakage. If RBNS level was above 14" when pumps were started, a level increase following securing the RBNS pumps may occur. During outages, it is desirable to maintain RBNS > 6” for shielding to decrease dose rates in RBNS area. 3.4 **WHEN** RBNS is at desired level **OR** at 1" (low level alarm), ensure the following: • 1A RB NORMAL SUMP PUMP "OFF". • 1B RB NORMAL SUMP PUMP "OFF". 3.5 **IF** required to close the valves, position the following: • Close 1LWD-1 (RB NORMAL SUMP ISOLATION) (**failed open**) • Close 1LWD-2 (RB NORMAL SUMP ISOLATION)
	SRO	**TS 3.6.3 (Containment Isolation Valves)** Condition A (4 hours) 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. **AND** (31 Days) Verify the affected penetration flow path is isolated. ***FULL TS LOCATED ON PG 39-41***

This event is complete when CRS has evaluated TS 3.6.3, or when directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: 3 Event No.: **2** Page 1 of 2

Event Description: **Increase Power to ≈ 3% and Place ICS in Auto (R: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO	***Examiner Note:*** ***During the power increase, the Unit 2 CRS will have oversight of the Control Room and the Unit 1 CRS will assume the role of the dedicated Reactivity SRO.*** ***Examiner Cue:*** ***If the crew asks whether they should increase power, respond as the SM and notify the crew to continue the power increase as directed on the Turnover sheet.*** ***OP/1/A/1102/001 Encl 4.7*** **Crew Response:** • SRO directs the OATC to increase power to ≈ 3% using OP/1/A/1102/001 (Controlling Procedure for Unit Startup), Encl. 4.7, starting at step 3.38
	OATC	**OP/1/A/1102/001 (Controlling Procedure for Unit Startup) Encl. 4.7 Step 3.38** rev 317 **NOTE:** • Point Of Adding Heat (POAH) is normally achieved from 0.05 to 0.15% power on Wide Range Indications • When POAH is achieved: TBVs will begin to open, 1HP-120 will begin to close, TAVE will increase, and SUR will decrease with negative Moderator Temperature Coefficient • Wide Range indications are used since Source Range NIs saturate 3.38 Begin reactor power increase to 0.5 - 1.0 % at ≤ 0.5 DPM SUR 3.39 **WHEN** above POAH, begin reactor power increase to 2.5 - 3.5% 3.40 **WHILE** power increases, begin increasing 1HP-120 (RC VOLUME CONTROL) setpoint to establish 215" to 225" PZR Level **NOTE:** • TAVE error is blocked when on Low Level Limit and TAVE is < setpoint • Core reactivity effects are minimized with Rx in automatic 3.41 **WHEN** at 2.5 - 3.5 % Power, perform the following: (R.M.) 3.41.1 Ensure TURBINE MASTER Setpoint to 880-890 psig. 3.41.2 **WHEN** Turbine Header pressure has reached setpoint, perform the following: A. Place DIAMOND to "AUTO" B. Place REACTOR MASTER to AUTO 3.42 Perform the following: • Ensure complete Enclosure "Prior To Entry Into MODE 1" of PT/1/A/0630/001 (Mode Change Verification) • Review mechanical maneuvering rates and allowable ramp rates in PT/0/A/1103/020 (Power Maneuvering Guidelines)

This event is complete when power is ≈ 3% and ICS is in Auto (Step 3.41), or when directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: **2** Page 2 of 2

Event Description: **Increase Power to ≈ 3% and Place ICS in Auto (R: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	OATC	***OP/1/A/1102/001 Encl 4.7*** **Crew Response:** 3.43 **IF AT ANY TIME** all the following: • All operable T Cold indications > 550°F • SSF inoperable **only** due to low decay heat, Notify SM the SSF is Available for Unit 1 SM notified:_____ Time/Date:_____ 3.44 Ensure acceptable point status for plant startup for MODE 1: • OAC Alarm Screen Review • OAC Point Processing Log • Statalarms in alarm • Statalarms removed from service

This event is complete when power is ≈ 3% and ICS is in Auto (Step 3.41), or when directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: **3** Page 1 of 2

Event Description: **1B FWPT Auxiliary Oil Pump Trip (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Plant Response:** • 1SA-8/B-7 FWPT "B" HYDRAULIC PRESSURE LOW • 1SA-8/C-6 FWPT "B" EMERGENCY OIL PUMP RUN in alarm • FWPT B Emergency Oil Pump starts **Crew Response:** SRO will direct the BOP to refer to 1SA-08/C-6 *1SA-08/C-6* **1SA-08/C-6 FWPT "B" EMERGENCY OIL PUMP RUN** rev 39 3.1 Verify 1B FWPT Emergency Oil Pump is running 3.2 **IF** applicable, verify 1B FWPT is still on turning gear **[It will be]** 3.3 Try to restart 1B FWPT auxiliary oil pump **[It will fail to start]** 3.4 **IF** restart fails, notify Maintenance for repairs ***Examiner Note: Approximately 3 minutes after activating timer 3, the Emergency Oil Pump will trip and cause 1SA-08/C-7, (FWPT "B" EMERGENCY OIL PUMP OVERLOAD) to alarm.*** ***Booth Cue: If dispatched as an AO to investigate 1B FWPT, once the EBOP has tripped, notify the crew that all oil pumps are off and the FWPT is on the turning gear. Report that the TG motor is much noisier than normal.*** *1SA-08/C-7* **1SA-08/C-7 FWPT "B" EMERGENCY OIL PUMP OVERLOAD** 3.1 **IF** available, start Auxiliary Oil Pump and stop Emergency Oil Pump 3.2 **IF** AOP is **NOT** available, stop Turning Gear Motor and Emergency Bearing Oil Pumps 3.3 Notify Maintenance for repairs 3.4 As soon as EBOP **OR** Auxiliary Oil Pump becomes available, start pump and place Turbine on Turning Gear

This event is complete when Turning Gear Motor is secured, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: **3** Page 2 of 2

Event Description: **1B FWPT Auxiliary Oil Pump Trip (C: BOP, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	***1SA-08/E-6*** ***Examiner Note: Bearing temperature alarms on 1B FWPT are due to loss of cooling since the oil pumps are secured. The alarms will take several minutes to come in after all lube oil pumps are secured.*** **1SA-08/E-6 FWPT "B" HP/LP BEARING DRAIN TEMPERATURE HIGH** 3.1 Verify bearing drain temperature is high using a surface pyrometer OR by feeling drain piping. 3.2 Manually open 1RCW-64 (FWPT Oil Cooler 1B Temperature Control Bypass) and regulate to control bearing oil temperature less that 180°F, avoiding any rapid change of oil temperature. Do NOT exceed 50°F ΔT across bearing. 3.3 Check 1B FWPT bearing for excessive vibration. 3.4 IF the automatic temperature controller appears to be malfunctioning, operate the manual bypass until repairs can be completed. 3.5 IF Cooler appears to be dirty, valve in Spare Cooler. 3.6 Ensure that the supplemental temporary cooler for FWPT Oil Cooler 1B is installed AND placed in service, as needed, to control oil cooler discharge temperature per MP/0/A/3007/088 (Temporary Cooling of FDWPT Oil with Air Cooled Cooler). 3.7 IF bearing oil temperature CANNOT be maintained below 180°F, remove 1B FWPT from service per OP/1/A/1106/002 B (FDWPT Operation) and repair system. 3.8 Refer to OP/1/A/1102/004 (Operation at Power).

This event is complete when Turning Gear Motor is secured, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: **4** Page 1 of 2

Event Description: **'A' LPSW Pump OB Bearing Temperature High (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	**Plant response:** • OAC Alarm O1A1336 (LPSW PUMP A OB BEARING TEMP) **Crew response:** The BOP will refer to OAC alarm response for O1A1336 **HI-HI - If non-emergency:** 1) Refer to OP/1/A/1104/010 (Low Pressure Service Water) to remove 1A LPSW Pump from service 2) Refer to TS 3.7.7 3) Notify system engineer **If emergency situation:** 1) Evaluate removing the 1A LPSW Pump from service **HI -** 1) Display graphic for 'A' LPSW pump and monitor temperature 2) Dispatch operator to check pump oil levels ***Booth Cue: If contacted as an AO and/or maintenance to investigate the 'A' LPSW pump OB bearing temperature, wait 2 minutes and notify the crew that the 'A' LPSW pump OB bearing temperature is very hot to the touch.*** ***OP/1/A/1104/010 Enclosure 4.39*** **OP/1/A/1104/010 (Low Pressure Service Water)** Enclosure 4.39 (LPSW Pump Operations rev 151 1.1 Review Limits and Precautions **NOTE:** LPSW Leakage Accumulator level is a function of LPSW System pressure. When an additional LPSW Pump is started, LPSW Leakage Accumulator level will increase and may exceed the limits of SR 3.7.7.1 until the pump swap is complete. As a result, momentary entry into TS 3.7.7 Condition 'B' may be necessary. 2.1 **IF** in MODE 1, 2, 3, **OR** 4, enter TS 3.7.7 Condition 'B' for the following: __ Unit 1 __ Unit 2

This event is complete when the 'A' LPSW pump is secured and 'C' LPSW pump is started, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: **4** Page 2 of 2

Event Description: **'A' LPSW Pump OB Bearing Temperature High (C: BOP, SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP	***OP/1/A/1104/010 Enclosure 4.39*** **Crew response:** **OP/1/A/1104/010 (Low Pressure Service Water)** Enclosure 4.39 (LPSW Pump Operations rev 151 2.2 Perform appropriate section as required 2.3 Notify CRS to evaluate exiting TS 3.7.7 Condition 'B' **3. To Start an LPSW Pump** 3.1 Start _____ LPSW Pump 3.2 Verify proper operation of LPSW Pump started **4. To Stop an LPSW Pump** 4.1 Ensure required LPSW Pump(s) in operation 4.2 Stop _____ LPSW Pump **5. To Swap LPSW Pumps** 5.1 Start _____ LPSW Pump 5.2 Verify proper operation of LPSW Pump started 5.3 Stop _____ LPSW Pump
	SRO	**TS 3.7.7 (LOW PRESSURE SERVICE WATER SYSTEM)** Condition A (72 hours) Restore required LPSW pump to OPERABLE status. Condition B (7 days) Restore the LPSW WPS to OPERABLE status. ***FULL TS LOCATED ON PG 42*** ***Examiner Note:*** ***The crew may decide to place the Standby LPSW Auto-Start Circuit in Disable which would require entry into TS 3.3.28. This is up to the discretion of the SRO.*** **TS 3.3.28 (LOW PRESSURE SERVICE WATER (LPSW) STANDBY PUMP AUTO-START CIRCUITRY** Condition A (7 days) Restore LPSW standby pump auto-start circuitry to OPERABLE status. ***FULL TS LOCATED ON PG 43***

This event is complete when the 'A' LPSW pump is secured and 'C' LPSW pump is started, or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: **5** Page 1 of 3

Event Description: **Spray Valve Fails Open (C: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	***AP/1/A/1700/044*** **Plant Response:** • 1RC-1 indicates open • O1D1047 1RC-1 PZR Spray Control Valve "Not Closed" • RCS pressure decreasing **Crew Response:** • OATC should recognize that RCS pressure is below the Pzr Spray Valve setpoint (2155 psig) and attempt to close the Pzr Spray Valve (1RC-1). When this doesn't work, the OATC should close Pzr Spray Block Valve (1RC-3). These are Immediate Manual Actions from AP/44 Abnormal Pressurizer Pressure Control. • SRO should enter AP/1/A/1700/044 **AP/1/A/1700/044 Abnormal Pressurizer Pressure Control** rev 04 **Immediate Manual Actions** 3.1 **IAAT** PORV is open, **AND** RC pressure is < setpoint (2400 psig (HIGH) or 480 psig (LOW)), **THEN** close 1RC-4 **(N/A)** 3.2 **IAAT** RC pressure < 2155 psig, **AND** 1RC-1 indicates open, **THEN** select 1RC-1 to CLOSE **(Won't close)** 3.3 **IAAT** all the following conditions exist: __ RC pressure < 2155 psig __ RC pressure decreasing without a corresponding decrease in PZR level ***CT-2*** **THEN** close 1RC-3 *(BOUNDING CRITERIA: Control Pressurizer Pressure such that manual or automatic Rx Trip is not required due to lowering Pressurizer Pressure.)* *NOTE: If not isolated, Reactor will trip on Low RCS pressure in ~3 minutes.* **Subsequent Actions** 4.1 Announce AP entry using the PA system 4.2 **GO TO** the applicable step per the following table:

√	Failure Caused RCS Pressure	Step
	Decrease	4.3
	Increase	4.18

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

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: **5** Page 2 of 3

Event Description: **Spray Valve Fails Open (C: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	***AP/1/A/1700/044*** **Crew Response:** 4.3 Verify 1RC-4 is closed **RNO:** **IF** PORV is open, **AND** 1RC-4 has failed to close, **THEN** perform the following: A. Dispatch an operator to open 1DIB Panelboard breaker #24 B. Manually trip the reactor C. Initiate AP/02 (Excessive RCS Leakage) 4.4 Verify 1RC-3 is closed **NOTE** 1RC-3 must **NOT** be allowed to be closed for ≥ 36 minutes at a time to avoid a thermal transient in piping between 1RC-3 and the PZR spray nozzle. 4.5 Position 1RC-3 as required to maintain RC pressure within desired band 4.6 **GO TO** Step 4.13 4.13 Verify PZR heaters maintaining RCS pressure within desired band 4.14 Notify SPOC to repair malfunctioning component

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

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: **5** Page 3 of 3

Event Description: **Spray Valve Fails Open (C: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	***AP/1/A/1700/044*** **Crew Response:** 4.15 Ensure requirements of following are met: __ TS 3.4.1 (RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling Limits) __ TS 3.4.9 (Pressurizer) __ TS 3.4.12 (Low Temperature Overpressure Protection System) __ SLC 16.5.1 (Reactor Coolant System Vents) 4.16 **WHEN** repairs complete, **THEN** place following components in desired position for current plant conditions as determined by CR SRO: __ 1RC-1 __ 1RC-3 __ 1RC-4 __ PZR heater bank #1 __ PZR heater bank #2 __ PZR heater bank #3 __ PZR heater bank #4 4.17 **WHEN** directed by CR SRO, **THEN EXIT** this procedure

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

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: **6** Page 1 of 1

Event Description: **Two Dropped Control Rod(s) Requiring a Reactor Trip (C: OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	***AP/1/A/1700/001*** **Plant Response:** • Group 6 Rod 3 drops into the core • Group 6 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-5/A-5 (1A RPS TROUBLE) • Statalarm 1SA-5/B-5 (1B RPS TROUBLE) • Statalarm 1SA-5/D-5 (1D RPS TROUBLE) **Crew Response:** • Crew should recognize 2 dropped control rods and trip the reactor in accordance with AD-OP-ONS-0002 (OCONEE SPECIFIC ABNORMAL OPERATIONS GUIDANCE) ***Examiner Note: Event 8 will auto actuate when the Reactor is tripped.*** **If the crew does not recognize the 2nd dropped control rod, they will enter AP/1/A/1700/001 (Unit Runback)** **AP/1/A/1700/001** (Unit Runback) rev16 **NOTE** • If more than one runback condition exists, ICS will respond by selecting the fastest runback rate and the lowest load limit. The most limiting runback will be the one with the fastest runback rate and the shortest duration. • It is possible for a FDWP to become unable to feed the SGs but not be tripped. In this case a signal would not be sent to RPS or the EFDWP start circuit. 4.1 **GO TO** the most limiting section per the following table: √ | 4H | Asymmetric Control Rod (1% / min to 55% power) **AP/1A/1700/001 Section 4H** (Asymmetric Control Rod) 1. **IAAT** a more limiting runback occurs, **THEN GO TO** Subsequent Actions Step 4.1. 2. **IAAT** more than one control rod is dropped or misaligned ≥ 6.5% (9″) from the group average, **THEN** trip the Rx.

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

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: 7 Page 1 of 13

Event Description: **Small Break LOCA that evolves into a Large Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	**Crew Response:** The SRO will direct the BOP to perform a Symptoms Check **(AD-OP-ONS-0002)**

Power Range NIs **NOT** < 5% Power Range NIs **NOT** decreasing	Rule 1, *ATWS/Unanticipated Nuclear Power Production*
Any SCM < 0°F	Rule 2, *Loss Of SCM*
Loss of Main and Emergency FDW (including unsuccessful manual initiation of EFDW)	Rule 3, *Loss of Main or Emerg FDW* Rule 4, *Initiation of HPI Forced Cooling* (Inability to feed SGs and > 2300 psig, NDT limit reached, or PZR level > 375")
Uncontrolled Main steam line(s) pressure decrease	Rule 5, *Main Steam Line Break*
CSAE Offgas alarms Process monitor alarms (RIA-40, 59,60), Area monitor alarms (RIA-16/17)	None (SGTR Tab is entered when identified SG Tube Leakage > 25 gpm)

After verifying IMAs, the SRO will transfer to the **Subsequent Actions Tab** and review the Parallel Action page. **(page 27)**

Examiner Note: ***Core SCM will indicate 0°F or superheated during this transient depending on when CFTs and LPI flow injects into the core. When the SRO reaches the decision point in the SA parallel action page, if superheated he should transfer to the Inadequate Core Cooling (ICC) tab (page 18) or if saturated, he should transfer to the Loss of Subcooling Margin (LOSCM) tab (next page).***

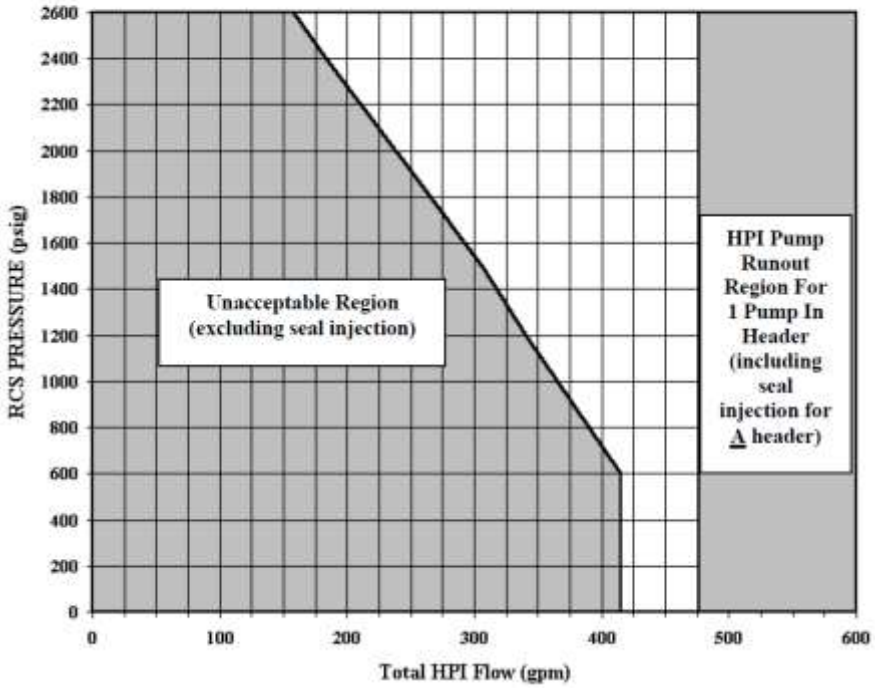
The SRO will direct one of the ROs to perform Rule 2 (Loss of SCM) (**page 22**) and (Enclosure 5.1 (ES Actuation) (**page 31)**

Examiner Note: ***Following the completion of Rule 2 Step 49 (Notify CRS of SG feed status), at Lead Examiner's direction, the Small Break LOCA will transition to a Large Break LOCA.***

This event is complete when the SRO has transferred to the LOCA CD Tab or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: 7 Page 2 of 13

Event Description: **Small Break LOCA that evolves into a Large Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	***LOSCM Tab*** **Crew Response:** **LOSCM Tab** Rev. 01 1. Ensure Rule 2 (Loss of SCM) is in progress or complete. 2. Verify LOSCM caused by excessive heat transfer. **RNO: GO TO** Step 4. 4. **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** LOCA CD tab. (**page 21**) 5. Verify SSF activated per AP/25 with SSF RC Makeup required. **RNO: GO TO** Step 7. 7. Verify all exist: • **NO** RCPs operating • HPI flow in both HPI headers • Adequate total HPI flow per Figure 1 (Total Required HPI Flow). Figure 1 Total Required HPI Flow 

This event is complete when the SRO has transferred to the LOCA CD Tab or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: 7 Page 3 of 13

Event Description: **Small Break LOCA that evolves into a Large Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		LOSCM Tab
		Crew Response:
		LOSCM tab (continued)
		8. **GO TO** Step 104.
		104. Open 1AS-40 while closing 1MS-47.
		105. Verify HPI forced cooling in progress.
		RNO: Close 1RC-4
		106. Close 1GWD-17, 1HP-1, 1HP-2, and 1RC-3
		107. Verify either: • Core superheated • Rx vessel head level at 0″
		RNO: GO TO Step 109
	OATC	109. **IAAT** BWST level is ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES).
		CAUTION If TDEFDWP is being used for SG feed, reducing SG pressure below ≈ 250 psig can result in reduced pumping capability
		110. Maintain SG pressure < RCS pressure utilizing either: __ TBVs __ ADVs
	BOP	111. Verify any SG available for feeding/steaming.
		112. Initiate Encl 5.16 (SG Tube-to-Shell ΔT Control).
		113. Verify indications of SGTR exist.
		RNO: GO TO Step 116
		116. Verify HPI forced cooling in progress.
		RNO: GO TO Step 118

This event is complete when the SRO has transferred to the LOCA CD Tab or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: 7 Page 4 of 13

Event Description: **Small Break LOCA that evolves into a Large Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		LOSCM Tab **Crew Response:** **NOTE** If in boiler condenser cooling, the CETCs may have a saw tooth pattern, sometimes increasing and sometimes decreasing. The overall trend should be used to make this determination. 118. Verify CETCs trend decreasing. 119. Verify primary to secondary heat transfer is excessive. **RNO: GO TO** Step 121 121. Verify indications of SGTR ≥ 25 gpm. **RNO: GO TO** Step 123 123. Verify required RCS makeup flow within normal makeup capability. **RNO: GO TO** LOCA CD tab **(page 21)**

This event is complete when the SRO has transferred to the LOCA CD Tab or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: 7 Page 5 of 13

Event Description: **Small Break LOCA that evolves into a Large Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	*ICC Tab* **Crew Response:** **ICC Tab** (ICC Parallel Actions on **page 30)** Rev. 02 **CAUTION** ICC conditions should not exist unless multiple equipment and system failures have occurred. Some of the equipment used in this section may be the same equipment that has failed. It is expected that attempts to restore equipment operations will continue throughout this section. It is also expected that transition to OSAG will occur whenever conditions requiring the transition exist. 1. **IAAT** CETCs > 1200°F, **THEN GO TO** EG/1/A/OSAM/SAG-1 (Main Control Room Severe Accident Guideline Initial Response) 2. Ensure full HPI and control per Rule 6 (HPI). (**page 38)** 3. **IAAT** RCS pressure is ≤ 550 psig, **OR** RB pressure is ≥ 3 psig, **THEN** perform Steps 4 - 8. 4. Open: __ 1LP-21 __ 1LP-17 5. Start 1A LPI pump. (***The 1A LPI pump will not start)*** **RNO**: 1. **IF** 1C LPI Pump is operating, **THEN GO TO** Step 8. 2. Close 1LP-17. 6. Open: __ 1LP-22 __ 1LP-18 7. Start 1B LPI pump. (***The 1A LPI pump will not start).*** **RNO**: 1. **IF** 1C LPI Pump is operating, **THEN GO TO** Step 8. 2. Close 1LP-18 8. Verify two LPI pumps operating. **RNO: IF** LPI/HPI piggyback is aligned, **THEN** maximize total LPI flow by throttling HPI flow as follows: **(N/A)** • 1C LPI pump only < 2900 gpm • 1A or 1B LPI pump only < 3100 gpm

This event is complete when the SRO has transferred to the LOCA CD Tab or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: 7 Page 6 of 13

Event Description: **Small Break LOCA that evolves into a Large Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior

Crew Response: *ICC Tab*

9. **IAAT** all 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

10. Open:
    - __ 1LP-9
    - __ 1LP-10
    - __ 1LP-6
    - __ 1LP-7
    - __ 1LP-17
    - __ 1LP-18
    - __ 1LP-21
    - __ 1LP-22

11. Start 1C LPI Pump
12. Verify LPI supplying HPI pump suction through piggyback alignment.

RNO: GO TO Step 14

14. Verify open:
    - __ 1CF-1
    - __ 1CF-2

RNO: IF CFTs **NOT** isolated for nitrogen injection considerations, THEN open:

- __ 1CF-1
- __ 1CF-2

15. **IAAT** core SCM is ≥ 0°F, **THEN GO TO** LOCA CD tab **(page 21)**

Note: ***Core SCM will return to 0°F at some point after LPI flow has been established***.

This event is complete when the SRO has transferred to the LOCA CD Tab or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: 7 Page 7 of 13

Event Description: **Small Break LOCA that evolves into a Large Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior

Crew Response: *ICC Tab*

16. **IAAT** any injection sources available:
    - __ Full flow from at least one HPI pump exists
    - __ LPI available
    - __ CFTs available

    THEN perform Steps 17 - 19
17. Open:
    - __ 1RC-4
    - __ PORV
18. Locally close breakers (Unit 1 Cable Room):
    - __ 1SKJ-08 (1RC-155/1RC-156)
    - __ 1SKK-08 (1RC-157/1RC-158)
    - __ 1SKL-08 (1RC-159/1RC-160)
19. Open:
    - __ 1RC-155
    - __ 1RC-156
    - __ 1RC-157
    - __ 1RC-158
    - __ 1RC-159
    - __ 1RC-160
20. Close:
    - __ 1GWD-17
    - __ 1HP-1
    - __ 1HP-2
    - __ 1RC-3
21. **IAAT** SSF-ASW is the only source available to feed SGs (**N/A**)
22. **IAAT NO** SG is being fed with feedwater (Main or Emergency FDW), **AND** any of the following exists: **(N/A – RNO GO TO** Step 28**)**
    - __ Unit 1 EFDW available
    - __ EFDW aligned from another unit
    - __ Main FDW available

    THEN perform steps 23 – 27.

This event is complete when the SRO has transferred to the LOCA CD Tab or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: 7 Page 8 of 13

Event Description: **Small Break LOCA that evolves into a Large Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior

LOCA Cooldown Tab

Crew Response:

LOCA COOLDOWN Tab **Rev 0**

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 ≥ 3400gpm
    - 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:
    __ Remove white tag and close 1XO-F5C (1CF-1 Bkr (1A CFT Outlet))
    __ Remove white tag and close 1XP-F5C (1CF-2 Bkr (1B CFT Outlet))
    __ Close 1XS2-F3D (1LP-104 Bkr (Post LOCA Boron Dilute))
13. **IAAT** breakers for 1CF-1 **AND** 1CF-2 are closed,
    THEN close 1CF-1 and 1CF-2
14. Dispatch an operator to perform Encl 5.28 (Local SG Isolation) to isolate both SGs
15. **IAAT** Spent Fuel Cooling indicates:
    __ Abnormal temperature increase
    __ Abnormal level change
    __ Abnormal SFC flow

    THEN initiate AP/35
16. Verify 1MS-24 and 1MS-33 are closed
17. Initiate Encl 5.25 (SG Isolation) to isolate both SGs.
18. Initiate Encl 5.36 (Equipment Alignment for Plant Shutdown).
19. Verify core SCM ≤ 0°F.
20. **WHEN** CETCs are ≤ 400°F, **THEN** continue this procedure.

This event is complete when the SRO has transferred to the LOCA CD Tab or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: 7 Page 9 of 13

Event Description: **Small Break LOCA that evolves into a Large Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
		Rule 2
		Examiner Note: Following the completion of Rule 2 Step 49 (Notify CRS of SG feed status), at Lead Examiner's direction, the Small Break LOCA will transition to a Large Break LOCA.
		Crew Response:
		Rule 2 LOSCM **Rev 03**
		1. **IAAT** all exist: • Any SCM ≤ 0°F • Rx power ≤ 1% • ≤ 2 minutes elapsed since loss of SCM **THEN** perform Steps 2 and 3.
	CT-3	2. Stop all RCPs. *(BOUNDING CRITERIA: Stop RCPs within 2 minutes of Loss of SCM)*
		3. Notify CR SRO of RCP status.
		4. Verify Blackout exists.
		RNO: GO TO Step 6.
		6. Open: • 1HP-24 • 1HP-25
		7. Start all available HPI pumps.
		8. **GO TO** Step 13.
		13. Open: • 1HP-26 • 1HP-27
		14. Verify at least two HPI pumps are operating using two diverse indications.
		15. **IAAT** ≥ 2 HPI pumps operating, **AND** HPI flow in any header is in the Unacceptable Region of Figure 1 **THEN** perform Steps 16-21.
		RNO: GO TO Step 17

This event is complete when the SRO has transferred to the LOCA CD Tab or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: 7 Page 10 of 13

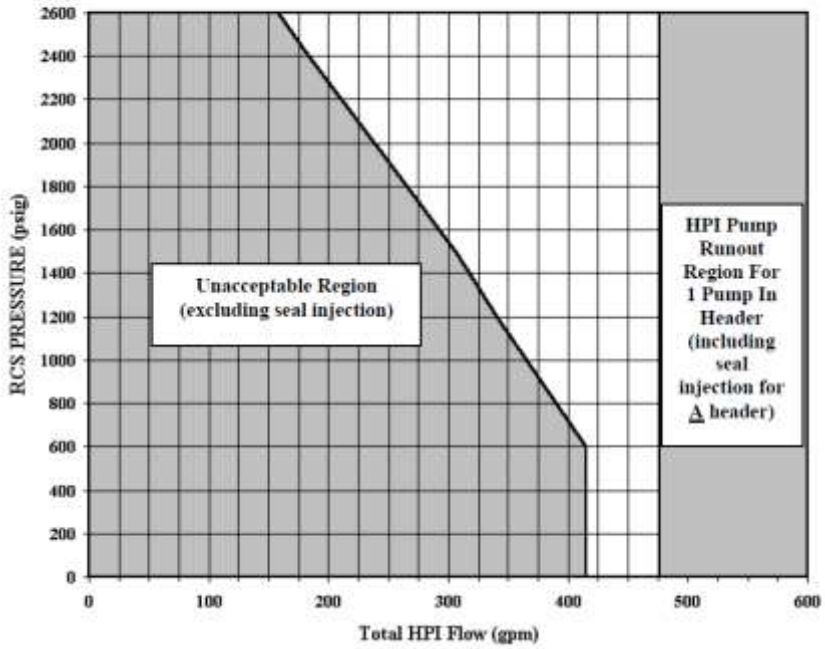
Event Description: **Small Break LOCA that evolves into a Large Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	***Rule 2***

16. Open in the affected header:

	1A Header		1B Header
	1HP-410		1HP-409

Figure 1
Total Required HPI Flow



17. **IAAT** flow limits are exceeded,

Pump Operation	Limit
1HPI 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.

This event is complete when the SRO has transferred to the LOCA CD Tab or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: 7 Page 11 of 13

Event Description: **Small Break LOCA that evolves into a Large Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	***Rule 2*** 19. Perform both: • Place ES CH 1 in MANUAL. • Place ES CH 2 in MANUAL. 20. Throttle HPI to maximize flow ≤ flow limit. 21. Notify CRS of HPI status. 22. Verify RCS pressure > 550 psig. **RNO:** Ensure ES Channels 3 and 4 actuated. 23. **IAAT** either exists: • LPI FLOW TRAIN A plus LPI FLOW TRAIN B ≥ 3400 gpm • Only one LPI header in operation with header flow ≥ 2900 gpm **THEN GO TO** Step 24. **RNO: GO TO** Step 35. **(see next page)** ***Examiner Note: If the 1C LPI pump has not yet been started per EOP Encl 5.1, LPI flow will be < 2900 gpm and the RO will perform the RNO step and continue to Step 35 (next page). Once it is recognized that LPI flow is ≥ 2900 gpm, the RO will return to IAAT Step 23 and then continue to Step 24.*** ***Examiner Note: If the 1C LPI pump has been started by this point, LPI flow will be ≥ 2900 gpm and the RO will continue to Step 24 below.*** 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 LBLOCA. 26. **WHEN** directed by CRS, **THEN EXIT**

This event is complete when the SRO has transferred to the LOCA CD Tab or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: 7 Page 12 of 13

Event Description: **Small Break LOCA that evolves into a Large Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	***Rule 2*** 35. **IAAT** TBVs are unavailable, **THEN**: **(does NOT apply)** A. Dispatch <u>two</u> operators to perform Encl 5.24 (Operation of ADVs) B. Notify CRS that ADVs are being aligned for use 36. Verify 1SA-2/C-8 (AFIS HEADER A INITIATIED) lit **RNO:** Select OFF for <u>both</u> digital channels on AFIS HEADER A 37. Verify 1SA-2/D-8 (AFIS HEADER B INITIATIED) lit **RNO:** Select OFF for <u>both</u> digital channels on AFIS HEADER B 38. Verify <u>any</u> EFDW pump operating **RNO:** Place in MANUAL and close: __ 1FDW-315 __ 1FDW-316 39. Start MD EFDW pumps on <u>all</u> <u>intact</u> SGs __ 1A MD EFDWP __ 1B MD EFDWP 40. Verify <u>any</u> EFDW pump operating 41. Verify <u>both</u> SGs <u>intact</u> 42. Establish 300 gpm EFDW flow to each SG: __ 1A SG __ 1B SG 43. Verify <u>both</u> MD EFDWPs operating 44. Place 1 TD EFDW PUMP in PULL TO LOCK 45. Trip <u>both</u> Main FDW pumps 46. Place FDW block valve switches in CLOSE: __ 1FDW-33 __ 1FDW-31 __ 1FDW-42 __ 1FDW-40

This event is complete when the SRO has transferred to the LOCA CD Tab or as directed by the Lead Examiner.

Op-Test No.: **ILT 20-1** Scenario No.: **3** Event No.: 7 Page 13 of 13

Event Description: **Small Break LOCA that evolves into a Large Break LOCA (M: ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	***Rule 2*** **NOTE** • SG levels must continue to increase until the SG Level Control Point is reached. • If Main FDW is feeding any SG, Rule 7 provides a different SG Level Control Point. • TS cooldown rates are ≤ 50°F/½ hr when T_{cold} ≥ 270°F and ≤ 25°F/½ hr when T_{cold} < 270°F 47. Begin feeding all available SGs to the appropriate SG Level Control Point in Rule 7 (SG Feed Control) using available feed sources: EFDW/Main FDW 48. **IAAT** SG Level Control Point is reached, **THEN** maintain SG Level Control Point by feeding and steaming as necessary 49. Notify CRS of SG feed status **CAUTION** If 1 TD EFDW PUMP is being used for SG feed and Unit 1 is supplying the Auxiliary Steam header, reducing SG pressure below ≈ 250 psig can result in reduced pumping capacity. 50. **IAAT** SG pressure is > RCS pressure, **THEN** reduce SG pressure < RCS pressure using either: __ TBVs __ Dispatch two operators to perform Encl 5.24 (Operation of the ADVs) (**PS**) 51. Verify any Main FDW pump operating **RNO: GO TO** Step 58 58. Ensure Rule 3 (Loss of Main or Emergency FDW) is in progress or complete 59. **WHEN** directed by CRS, **THEN EXIT** ***Booth Cue: Following the completion of Rule 2 Step 49 (Notify CRS of SG feed status), at Lead Examiner's direction, ACTIVATE TIMER 7A to transition to a Large Break LOCA.***

This event is complete when the SRO has transferred to the LOCA CD Tab or as directed by the Lead Examiner.

Subsequent Actions

Parallel Actions

EP/**1**/A/1800/001
Page 1 of 1

CONDITION	ACTIONS	
1. PR NIs ≥ 5% FP **OR** NIs **NOT** decreasing	**GO TO** UNPP tab.	**UNPP**
2. All 4160V SWGR de-energized {13}	**GO TO** Blackout tab.	**BLACKOUT**
3. Core SCM indicates superheat	**GO TO** ICC tab.	**ICC**
4. Any SCM = 0°F	**GO TO** LOSCM tab.	**LOSCM**
5. Both SGs intentionally isolated to stop excessive heat transfer	**GO TO** EHT tab.	**LOHT**
6. Loss of heat transfer (including loss of all Main and Emergency FDW)	**GO TO** LOHT tab.	
7. Heat transfer is or has been excessive	**GO TO** EHT tab.	**EHT**
8. Indications of SGTR ≥ 25 gpm	**GO TO** SGTR tab.	**SGTR**
9. Turbine Building flooding **NOT** caused by rainfall event	**GO TO** TBF tab.	**TBF**
10. Inadvertent ES actuation occurred	Initiate AP/1/A/1700/042 (Inadvertent ES Actuation).	**ES**
11. Valid ES actuation has occurred or should have occurred	Initiate Encl 5.1 (ES Actuation).	**ES**
12. Power lost to all 4160V SWGR and any 4160V SWGR re-energized	• Initiate AP/11 (Recovery from Loss of Power). • **IF** Encl 5.1 (ES Actuation) has been initiated, **THEN** reinitiate Encl 5.1.	**ROP**
13. RCS leakage > 160 gpm with letdown isolated	Notify plant staff that Emergency Dose Limits are in affect using PA system.	**EDL**
14. Individual available to make notifications	• Announce plant conditions using PA system. • Notify SM to reference the E-Plan and AD-LS-ALL-0006 (Notification/Reportability Evaluation). • **IF** required, **THEN** notify Security to implement comp. actions for SSF degrade	**NOTIFY**

LOSCM

Parallel Actions

EP/**1**/A/1800/001 0D
Page 1 of 1

CONDITION	ACTIONS	
1. PR NIs ≥ 5% FP **OR** NIs **NOT** decreasing	**GO TO** UNPP tab.	**UNPP**
2. All 4160V SWGR de-energized {13}	**GO TO** Blackout tab.	**BLACKOUT**
3. Core SCM indicates superheat	**GO TO** ICC tab.	**ICC**
4. Inadvertent ES actuation occurred	Initiate AP/1/A/1700/042 (Inadvertent ES Actuation).	**ES**
5. Valid ES actuation has occurred or should have occurred	Initiate Encl 5.1 (ES Actuation).	**ES**
6. Power lost to all 4160V SWGR and any 4160V SWGR re-energized	• Initiate AP/11 (Recovery from Loss of Power). • **IF** Encl 5.1 (ES Actuation) has been initiated, **THEN** reinitiate Encl 5.1.	**ROP**
7. RCS leakage > 160 gpm with letdown isolated **OR** SGTR > 25 gpm	Notify plant staff that Emergency Dose Limits are in affect using PA system.	**EDL**
8. Individual available to make notifications	• Announce plant conditions using PA system. • Notify SM to reference the Emergency Plan and AD-LS-ALL-0006 (Notification/Reportability Evaluation).	**NOTIFY**

LOCA CD
Parallel Actions

EP/**1**/A/1800/001 0I
Page 1 of 1

CONDITION	ACTIONS	
1. PR NIs ≥ 5% FP **OR** NIs **NOT** decreasing	**GO TO** UNPP tab.	**UNPP**
2. All 4160V SWGR de-energized {13}	**GO TO** Blackout tab.	**BLACKOUT**
3. Core SCM indicates superheat	**GO TO** ICC tab.	**ICC**
4. Inadvertent ES actuation occurred	Initiate AP/1/A/1700/042 (Inadvertent ES Actuation).	**ES**
5. Valid ES actuation has occurred or should have occurred	Initiate Encl 5.1 (ES Actuation).	**ES**
6. Power lost to all 4160V SWGR and any 4160V SWGR re-energized	• Initiate AP/11 (Recovery from Loss of Power). • **IF** Encl 5.1 (ES Actuation) has been initiated, **THEN** reinitiate Encl 5.1.	**ROP**
7. RCS leakage > 160 gpm with letdown isolated **OR** SGTR > 25 gpm	Notify plant staff that Emergency Dose Limits are in affect using PA system.	**EDL**
8. Individual available to make notifications	• Announce plant conditions using PA system. • Notify SM to reference the Emergency Plan and AD-LS-ALL-0006 (Notification/Reportability Evaluation).	**NOTIFY**

ICC

Parallel Actions

EP/**1**/A/1800/001 0C
Page 1 of 1

CONDITION	ACTIONS	
1. All 4160V SWGR de-energized after ICC tab is entered {13}	**GO TO** Blackout tab.	**BLACKOUT**
2. Inadvertent ES actuation occurred	Initiate AP/1/A/1700/042 (Inadvertent ES Actuation)	**ES**
3. Valid ES actuation has occurred or should have occurred	Initiate Encl 5.1 (ES Actuation).	**ES**
4. Power lost to all 4160V SWGR and any 4160V SWGR re-energized	• Initiate AP/11 (Recovery from Loss of Power). • **IF** Encl 5.1 (ES Actuation) has been initiated, **THEN** reinitiate Encl 5.1.	**ROP**
5. Individual available to make notifications	• Announce plant conditions using PA system. • Notify SM to reference the Emergency Plan and AD-LS-ALL-0006 (Notification/Reportability Evaluation). • Notify plant staff that Emergency Dose Limits are in affect using PA system.	**NOTIFY and EDL**

EOP Enclosure 5.1 (ES Actuation) Rev. 01

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1. ___ Determine <u>all</u> ES channels that <u>should</u> have actuated based on <u>RCS pressure and RB pressure</u>:	

✓	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 <u>all</u> ES channels associated with actuation setpoints have actuated.	**NOTE** Voter OVERRIDE extinguishes the TRIPPED light on the associated channels that have <u>auto</u> actuated. Pressing TRIP on channels previously actuated will reposition components that may have been throttled or secured by this Enclosure. ___ Depress TRIP on <u>affected</u> ES logic channels that have **NOT** previously been actuated.
3. ___ **IAAT** <u>additional</u> ES actuation setpoints are exceeded, **THEN** perform Steps 1 - 2.	
4. ___ Place Diverse HPI in BYPASS.	___ Place Diverse HPI in OVERRIDE.
5. Perform <u>both</u>: ___ Place ES CH 1 in MANUAL. ___ Place ES CH 2 in MANUAL.	**NOTE** • Voter OVERRIDE affects all channels of the <u>affected</u> ODD and/or EVEN channels. • In OVERRIDE, all components on the <u>affected</u> ODD and/or EVEN channels can be manually operated from the component switch. 1. ___ **IF** ES CH 1 fails to go to MANUAL, **THEN** place ODD voter in OVERRIDE. 2. ___ **IF** ES CH 2 fails to go to MANUAL, **THEN** place EVEN voter in OVERRIDE.

EOP Enclosure 5.1 (ES Actuation) Rev. 01

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6. ___ **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.	
7. ___ Verify Rule 2 in progress or complete.	___ **GO TO** Step 74.
8. ___ Verify any RCP operating.	___ **GO TO** Step 10.
9. Open: ___ 1HP-20 ___ 1HP-21	
10. ___ **IAAT** ES Channels 5 or 6 is actuated, **THEN** perform Steps 11 - 15.	___ **GO TO** Step 16.
11. Perform the following for actuated channels: ___ Place ES CH 5 in MANUAL. ___ Place ES CH 6 in MANUAL.	**NOTE** • Voter OVERRIDE affects all channels of the affected ODD and/or EVEN channels. • In OVERRIDE, all components on the affected ODD and/or EVEN channels can be manually operated from the component switch. 1. ___ **IF** ES CH 5 fails to go to MANUAL, **THEN** place ODD voter in OVERRIDE. 2. ___ **IF** ES CH 6 fails to go to MANUAL, **THEN** place EVEN voter in OVERRIDE.
12. ___ Verify any RCP is operating.	___ **GO TO** Step 16.
13. Open: ___ 1CC-7 ___ 1CC-8 ___ 1LPSW-15 ___ 1LPSW-6	
14. ___ Ensure only one CC pump operating.	
15. ___ Ensure Standby CC pump in AUTO.	

EOP Enclosure 5.1 (ES Actuation) Rev. 01

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16. ___ **IAAT** ES Channels 3 & 4 are actuated, **THEN GO TO** Step 17.	___ **GO TO** Step 54.
17. ___ Place Diverse LPI in BYPASS.	___ Place Diverse LPI in OVERRIDE.
18. Perform both: ___ Place ES CH 3 in MANUAL. ___ Place ES CH 4 in MANUAL.	**NOTE** • Voter OVERRIDE affects all channels of the affected ODD and/or EVEN channels. • In OVERRIDE, all components on the affected ODD and/or EVEN channels can be manually operated from the component switch. 1. ___ **IF** ES CH 3 fails to go to MANUAL, **THEN** place ODD voter in OVERRIDE. 2. ___ **IF** ES CH 4 fails to go to MANUAL, **THEN** place EVEN voter in OVERRIDE.

CAUTION

LPI pump damage may occur if operated in excess of 30 minutes against a shutoff head. {6}

19. ___ **IAAT** any LPI pump is operating against a shutoff head, **THEN** at the CR SRO's discretion, stop affected LPI pumps. {6, 22}	
20. ___ **IAAT** RCS pressure is < LPI pump shutoff head, **THEN** perform Steps 21 - 22.	___ **GO TO** Step 23.
21. Perform the following: ___ Open 1LP-17. ___ Start 1A LPI PUMP.	1. ___ Stop 1A LPI PUMP. 2. ___ Close 1LP-17.
22. Perform the following: ___ Open 1LP-18. ___ Start 1B LPI PUMP.	1. ___ Stop 1B LPI PUMP. 2. ___ Close 1LP-18.

EOP Enclosure 5.1 (ES Actuation) Rev. 01

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23. ___ **IAAT** 1A and 1B LPI PUMPs are off / tripped, **AND** all exist: ___ RCS pressure < LPI pump shutoff head ___ 1LP-19 closed ___ 1LP-20 closed **THEN** perform Steps 24 - 25.	___ **GO TO** Step 26.
24. Open: ___ 1LP-9 ___ 1LP-10 ___ 1LP-6 ___ 1LP-7 ___ 1LP-17 ___ 1LP-18 ___ 1LP-21 ___ 1LP-22	
25. ___ Start 1C LPI PUMP.	
26. ___ **IAAT** 1A LPI PUMP fails while operating, **AND** 1B LPI PUMP is operating, **THEN** close 1LP-17.	
27. ___ **IAAT** 1B LPI PUMP fails while operating, **AND** 1A LPI PUMP is operating, **THEN** close 1LP-18.	
28. Start: ___ A OUTSIDE AIR BOOSTER FAN ___ B OUTSIDE AIR BOOSTER FAN	***CT-4*** (BOUNDING CRITERIA: Start A and B Outside Air Booster Fans within 30 minutes of a LOCA for Control Room Habitability)
29. Notify Unit 3 to start: ___ 3A OUTSIDE AIR BOOSTER FAN ___ 3B OUTSIDE AIR BOOSTER FAN	

EOP Enclosure 5.1 (ES Actuation) Rev. 01

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30. Verify open: ___ 1CF-1 ___ 1CF-2	___ **IF** CR SRO desires 1CF-1 and 1CF-2 open, **THEN** open: ___ 1CF-1 ___ 1CF-2
31. ___ Verify 1HP-410 closed.	1. ___ Place 1HP-120 in HAND. 2. ___ Close 1HP-120.
32. ___ Secure makeup to the LDST.	
33. ___ Verify <u>all</u> ES channel 1 - 4 components are in the ES position.	1. ___ **IF** 1HP-3 fails to close, **THEN** close 1HP-1. 2. ___ **IF** 1HP-4 fails to close, **THEN** close 1HP-2. 3. ___ **IF** 1HP-20 fails to close, **AND NO** RCPs operating, **THEN** close: ___1HP-228 ___1HP-226 ___1HP-232 ___1HP-230 4. ___ Notify SRO to evaluate components **NOT** in ES position <u>and</u> initiate action to place in ES position if desired.
34. ___ Verify Unit <u>2</u> turbine tripped.	___ **GO TO** Step 37.
35. ___ Close <u>2</u>LPSW-139.	
36. ___ Verify <u>total</u> LPSW flow to Unit <u>2</u> LPI coolers ≤ 6000 gpm.	___ Reduce LPSW to Unit <u>2</u> LPI coolers to obtain <u>total</u> LPSW flow ≤ 6000 gpm.
37. ___ Close 1LPSW-139.	
38. Place in FAIL OPEN: ___ 1LPSW-251 FAIL SWITCH ___ 1LPSW-252 FAIL SWITCH	
39. ___ Start <u>all available</u> LPSW pumps.	

EOP Enclosure 5.1 (ES Actuation) Rev. 01

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
40. Verify either: ___ Three LPSW pumps operating ___ Two LPSW pumps operating when Tech Specs only requires two operable	___ **GO TO** Step 42.
41. Open: ___ 1LPSW-4 ___ 1LPSW-5	___ **IF** both are closed: ___1LPSW-4 —1LPSW-5 **THEN** notify SRO to initiate action to open at least one valve prior to BWST level ≤ 19'.
42. ___ **IAAT** BWST level ≤ 19', **THEN** initiate Encl 5.12 (ECCS Suction Swap to RBES).	1. ___ Display BWST level using OAC Turn-on Code "SHOWDIG O1P1600". 2. ___ Notify crew of BWST level IAAT step.
43. ___ Dispatch an operator to perform Encl 5.2 (Placing RB Hydrogen Analyzers In Service). (**PS**)	
44. ___ Select DECAY HEAT LOW FLOW ALARM SELECT switch to ON.	
45. ___ **IAAT** ES channels 5 & 6 have actuated, **THEN** perform Step 46.	___ **GO TO** Step 47.

NOTE

RBCU transfer to low speed will **NOT** occur until 3 minute time delay is satisfied.

46.___Verify all ES channel 5 & 6 components are in the ES position.	___ Notify SRO to evaluate components **NOT** in ES position and initiate action to place in ES position if desired.

EOP Enclosure 5.1 (ES Actuation) Rev. 01

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
47. ___ **IAAT** ES channels 7 & 8 have actuated, **THEN** perform Steps 48 - 49.	___ **GO TO** Step 50.
48. Perform all: ___ Place ES CH 7 in MANUAL. ___ Place ES CH 8 in MANUAL.	**NOTE** • Voter OVERRIDE affects all channels of the affected ODD and/or EVEN channels. • In OVERRIDE, all components on the affected ODD and/or EVEN channels can be manually operated from the component switch. 1. ___ **IF** ES CH 7 fails to go to MANUAL, **THEN** place ODD voter in OVERRIDE. 2. ___ **IF** ES CH 8 fails to go to MANUAL, **THEN** place EVEN voter in OVERRIDE.
49. ___ Verify all ES channel 7 & 8 components are in the ES position.	___ Notify SRO to evaluate components **NOT** in ES position and initiate action to place in ES position if desired.
50. ___ Notify U2 CR SRO that SSF is inoperable due to OTS1-1 open.	
51. ___ Ensure any turnover sheet compensatory measures for ES actuation are complete as necessary.	
52. ___ **IAAT** conditions causing ES actuation have cleared, **THEN** initiate Encl 5.41 (ES Recovery).	
53. ___ **WHEN** CR SRO approves, **THEN EXIT**.	

Rule 6 rev 03 **EP/1/A/1800/001 0L**
HPI **Page 1 of 1**

- HPI must be throttled to prevent violating the RV-P/T limit.
- HPI pump operation must be limited to two HPIPs when only one BWST suction valve (1HP-24 or 1HP-25) is open.
- HPI must be throttled ≤ 475 gpm/pump (including seal injection for A header) when only one HPI pump is operating in a header.
- Total HPI flow must be throttled ≤ 950 gpm including seal injection when 1A and 1B HPI pumps are operating with 1HP-409 open.
- Total HPI flow must be throttled < 750 gpm when all the following exist:

  - LPI suction is from the RBES
  - piggyback is aligned
  - either of the following exist:
    - only one piggyback valve is open (1LP-15 or 1LP-16)
    - only one LPI pump operating
- HPI may be throttled under the following conditions:

HPI Forced Cooling in Progress:	HPI Forced Cooling NOT in Progress:
All the following conditions must exist: • Core SCM > 0 • CETCs decreasing	All the following conditions must exist: • All WR NIs ≤ 1% • Core SCM > 0 • Pzr level increasing • SRO concurrence required if throttling following emergency boration

HPI Pump Minimum Flow Limit

- Maintain ≥ 170 gpm indicated/pump. This is an instrument error adjusted value that ensures a real value of ≥ 65 gpm/pump is maintained. HPI pump flow less than minimum is allowed for up to 4 hours.

3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves

LCO 3.6.3 Each containment isolation valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

----------NOTES----------

1. Penetration flow paths except for 48 inch purge valve penetration flow paths may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each penetration flow path.
3. Enter applicable Conditions and Required Actions for system(s) made inoperable by containment isolation valves.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Only applicable to penetration flow paths with two containment isolation valves. ---------- One or more penetration flow paths with one containment isolation valve inoperable.	A.1 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. AND	4 hours (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 ----------NOTE---------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
B. ----------NOTE---------- Only applicable to penetration flow paths with two containment isolation valves. ---------- One or more penetration flow paths with two containment isolation valves inoperable.	B.1 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, or blind flange.	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. ----------NOTE---------- Only applicable to penetration flow paths with only one containment isolation valve and a closed system. ---------- One or more penetration flow paths with one containment isolation valve inoperable.	C.1	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, or blind flange.	4 hours
	AND		
	C.2	----------NOTE---------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	Once per 31 days
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	12 hours
	AND		
	D.2	Be in MODE 5.	36 hours

3.7 PLANT SYSTEMS

3.7.7 Low Pressure Service Water (LPSW) System

LCO 3.7.7 For Unit 1 or Unit 2, three LPSW pumps and one flow path shall be OPERABLE.

For Unit 3, two LPSW pumps and one flow path shall be OPERABLE.

The LPSW Waterhammer Prevention System (WPS) shall be OPERABLE.

----------NOTE----------
With either Unit 1 or Unit 2 defueled and appropriate LPSW loads secured on the defueled Unit, such that one LPSW pump is capable of mitigating the consequences of a design basis accident on the remaining Unit, only two LPSW pumps for Unit 1 or Unit 2 are required.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One required LPSW pump inoperable.	A.1	Restore required LPSW pump to OPERABLE status.	72 hours
B. LPSW WPS inoperable.	B.1	Restore the LPSW WPS to OPERABLE status.	7 days
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 AND C.2	Be in MODE 3. Be in MODE 5.	12 hours 60 hours

3.3 INSTRUMENTATION

3.3.28 Low Pressure Service Water (LPSW) Standby Pump Auto-Start Circuitry

LCO 3.3.28 LPSW Standby Pump Auto-Start Circuitry shall be OPERABLE.

----------NOTE----------
LPSW Standby Pump auto-start circuit is not required to be OPERABLE on running LPSW pumps.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. LPSW standby pump auto-start circuitry inoperable.	A.1	Restore LPSW standby pump auto-start circuitry to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 5.	60 hours

CRITICAL TASKS

CT-1 Any Event: Causing an unnecessary plant trip or ESF actuation may constitute a CT failure. Actions taken by the applicant(s) will be validated using the methodology for critical tasks in Appendix D to NUREG-1021. (CT-1)

CT-2 Event 6: Control Pressurizer Pressure such that manual or automatic Rx Trip is not required due to lowering Pressurizer Pressure. (CT-2). (**page 10**)

CT-3 Event 8**:** Stop RCPs within 2 minutes of a Loss of SCM (CT-3). (**page 22**)

CT-4 Event 8: Implementation of Control Room Habitability Guidance: Start A and B Outside Air Booster Fans within 30 minutes of a LOCA. (CT-4). (**page 34**)

SAFETY: Take a Minute

UNIT 0 (SM)

SSF Operable: No Yes for U2 and U3	KHU's Operable: U1 - OH, U2 - UG	LCTs Operable: 2	Fuel Handling: No

UNIT STATUS (CRS)

Unit 1 Simulator	Other Units	
Mode: 2	**Unit 2**	**Unit 3**
Reactor Power: Below POAH	Mode: 1	Mode: 1
Gross MWE: 0	100% Power	100% Power
RCS Leakage: 0.01 gpm No WCAP Action	EFDW Backup: Yes	EFDW Backup: Yes
RBNS Rate: 0.01 gpm		

Technical Specifications/SLC Items (CRS)

Component/Train	OOS Date/Time	Restoration Required Date/Time	TS/SLC #
SSF	2 days ago / 0400	5 days / 0400	TS 3.10.1 Cond A,B,C,D,E

Shift Turnover Items (CRS)

Primary

- 1RIA-3 and 5 removed from RB.
- After turnover, the BOP is to lower the RBNS to ≈ 3 inches per OP/1/A/1104/007, Encl. 4.1. Then OATC is to continue in OP/1/A/1102/001 Encl 4.7 to raise Rx power.
- Raise Reactor power to ≈ 3% per OP/1/A/1102/001 Encl. 4.7 beginning at step 3.38. Once Rx power is ≈ 3% and step 3.41 is complete, hold further power escalation and CRS return to oversight role until Rx Engineering updates the maneuvering plan.
- During the Reactor power escalation, Unit 2 CRS will assume the oversight role for Unit 1. The Unit 1 CRS will provide dedicated Reactivity oversight.

Secondary

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

Reactivity Management (CRS)

RCS Boron 1865 ppmB	Gp 7 Rod Position: 4% Withdrawn	Batch additions as required per maneuvering plan (OATC)

Human Performance Emphasis (SM)

Procedure Use and Adherence

REGION II
JOB PERFORMANCE MEASURE
OCONEE

RO-P404a

Align ECCS Suction to the Emergency Sump

Administrative: No

Classroom/Simulator/Plant: Simulator

Alternate Path: Yes

Alt Path Description: _1LP-21 fails to close requiring 1A LPIP, 1A BS Pump to be secured and 1LP-19 closed_

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Align ECCS Suction to the Emergency Sump

Task Number :

Alternate Path: Yes

Time Critical: No

Validation Time: 15 minutes

K/A Rating(s):
System: EPE011
K/A: EA1.11
Rating: 4.2/4.2

Task Standard:
Enclosure 5.12 ECCS Suction Swap to RBES is properly completed to align ECCS to the Emergency Sump by performing the following sequence:

- WHEN BWST level is < 15', THEN stop 1A, 1B, and 1C HPI pumps.
- Open 1LP-19 and 1LP-20
- Close 1LP-22
- Stop 1A LPIP, 1A RBS Pump, and close 1LP-19
- Dispatch operator to close 1LP-28

References:
EOP Enclosure 5.12 ECCS Suction Swap to RBES Rev 00
EP/1/A/1800/001 LOCA CD Tab Rev 00

Tools/Equipment/Procedures Needed:
EOP Enclosure 5.12 ECCS Suction Swap to RBES Rev 00

(Note: Below this line is used only for Initial NRC Exams)

==========

Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

==========

Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

Directions with IC:

1. **LOAD:** JPM 'a' files *(IC-387)*
2. **ENSURE** clean copy of EOP Enc. 5.12 is available to the candidate
3. **ENSURE** BWST Level is on the OAC (Showdig O1P1600)
4. Place the simulator in **RUN** and allow BWST Level to update to 18.9' then go to **FREEZE**
5. Go to **RUN** when directed by the Lead Examiner

==========

Directions without an IC:

1. Recall IC-1
2. Set an AOR of 'insert LP01LP_LP21_ATFASIS 1' to fail 1LP-21 while it is OPEN
3. Insert a LB LOCA
4. Perform Rule 2 and Enc. 5.1 actions to put the plant in the proper position
5. Insert LP01LP_LPITK0001TAZTLIL 19 to place BWST at 19 feet (15, 9, 6)
6. Ackowledge statalarms and place simulator in FREEZE

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

A large break LOCA has occurred which is depleting the BWST

INITIATING CUE

The Control Room SRO directs you to align ECCS suction to the Emergency Sump per Enc. 5.12, ECCS Suction Swap to RBES, of the EOP.

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	**Enc. 5.12 Step 1**	Start: __ 1A LPI PUMP __ 1B LPI PUMP **STANDARD:** Candidate locates control switches for 1A and 1B LPI Pumps on 1UB2 and observes red ON lights are illuminated and pump amps indicated. **COMMENTS:**	___ SAT ___ UNSAT
2	**2**	Verify either: __ LPI FLOW TRAIN A plus LPI FLOW TRAIN B ≥ 3400 gpm __ Only one LPI header is operating, **AND** flow in that header is ≥ 2900 gpm **STANDARD:** Candidate should determine that step is met since LPI Flow A plus LPI Flow B is ≥ 3400 gpm. Flow gauges are on 1UB2 **COMMENTS:**	___ SAT ___ UNSAT
3	**3**	**GO TO** Step 52. **STANDARD:** GO TO Step 52 **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
4	52	**WHEN** BWST level is ≤ 15', **THEN** stop all HPI pumps. **STANDARD:** Candidate determines BWST level gauges on 1UB2, OAC point, or ICCM displays indicate ≤ 15 feet, then the candidate will place the control switches for 1A/1B/1C HPI Pumps in the trip position and observes red lights not illuminated **Booth Cue: Call to inform candidate "for the purpose of the JPM, we are exercising time compression, standby"… ACTIVATE TIMER 1…"you may now resume performance in real time".** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
5	53	**NOTE** RB level of ≥ 2' is expected when BWST level reaches 9'. **WHEN** BWST level ≤ 9', **AND** RB level is rising, **THEN** continue procedure. **STANDARD:** Candidate observes BWST level ≤ 9 feet on 1UB2 guages, OAC point, or ICCM monitors. **Booth Cue: Call to inform candidate "for the purpose of the JPM, we are exercising time compression, standby"… ACTIVATE TIMER 2…"you may now resume performance in real time".** **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
6	54	Simultaneously open: __ 1LP-19 __ 1LP-20 **STANDARD:** Candidate locates the control switches for 1LP-19 and 1LP-20 ('1A'/'1B' RX. BLDG. SUCTION) on 1UB2 and rotates the switches in the OPEN direction. Observes red OPEN lights come on, and green CLOSED lights go off. **Examiner Note: The candidate should operate both valves at the same time. Opening both valves is critical, however simultaneous operation is not.** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
7	55	**IAAT** BWST level is ≤ 6', **THEN** perform Steps 56 - 59. **STANDARD:** Candidate verifies BWST level ≤ 6' using: BWST level gauges on 1UB2, BWST level from the OAC, at 1UB1, 1UB2, or STA monitor. ICCM monitors on 1UB1. When BWST level is ≤ 6' go to the IAAT step and then perform Steps 56 through 59 **Booth Cue: Call to inform candidate "for the purpose of the JPM, we are exercising time compression, standby"… ACTIVATE TIMER 3…"you may now resume performance in real time".** **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
8	**56**	Verify 1LP-19 open. **STANDARD:** Locates the control switch for 1LP-19 on 1UB2 and observes red OPEN light illuminated. **COMMENTS:**	___ SAT ___ UNSAT
9	**57**	Verify 1LP-20 open. **STANDARD:** Locates the control switch for 1LP-20 on 1UB2 and observes red OPEN light illuminated. **COMMENTS:**	___ SAT ___ UNSAT
10	**58**	Simultaneously close: __ 1LP-21 __ 1LP-22 **STANDARD:** The candidate locates the control switches for 1LP-21 and 1LP-22 on 1UB2 and rotates them in the CLOSE direction. **Examiner NOTE: 1LP-21 will not close. Simultaneous operation of both valves is not critical.** Candidate recognizes that 1LP-21 did not close by observing green closed light off and red open light on. Continue to Step 58 RNO **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
11	**58** **RNO**	**ALTERNATE PATH** **IF** 1LP-21 fails to close, **THEN**: A. __ Stop 1A LPI PUMP. B. __ Stop 1A RBS PUMP. C. __ Close 1LP-19. **STANDARD**: Locates LPI Pump "A" control on 1UB2 and turns pump switch to "off". Red light is observed off and white light on. Locates RB Spray Pump "A" control on 1UB2. RB Spray Pump "A" switch is rotated to the OFF position. Green OFF light is lit and the red RUN light is off. Locates 1LP-19 switch and rotates to the close position. Observes GREEN light lit and RED light off. **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
12	**59**	Dispatch an operator to close 1LP-28 (BWST Outlet) (East of Unit 1 BWST). **STANDARD:** An operator is dispatched to close 1LP-28 (BWST Outlet) (East of Unit 1 BWST). **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
13	**60**	Verify <u>any</u> are open: • 1LPSW-4 • 1LPSW-5 **<u>STANDARD</u>:** Verifies 1LPSW-4 or 1LPSW-5 are open by verifying the Red light ON and green light OFF. (located on 1VB2) **<u>COMMENTS</u>:**	___ SAT ___ UNSAT
14	**61**	Verify <u>both</u> are open: • 1LPSW-4 • 1LPSW-5 **<u>STANDARD</u>:** Verifies 1LPSW-4 and 1LPSW-5 are open by verifying the Red light ON and green light OFF. (located on 1VB2) **<u>COMMENTS</u>:**	___ SAT ___ UNSAT
15	**62**	**GO TO** Step 67. **<u>STANDARD</u>:** Candidate goes to Step 67. **<u>COMMENTS</u>:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
16	**67**	**IAAT** an operating LPI Pump (1A OR 1B) fails, THEN perform Steps 68-74. **STANDARD:** Candidate confirms that neither 1A nor 1B LPI Pump has failed and proceeds to Step 67 RNO. **COMMENTS:**	___ SAT ___ UNSAT
17	**67** **RNO**	**GO TO** Step 75. **STANDARD:** Candidate goes to Step 75. **COMMENTS:**	___ SAT ___ UNSAT
18	**75**	Open: • 1HP-939 • 1HP-940 **STANDARD:** Candidate rotates switch to the open position for both 1HP-939 and 1HP-940. Candidate verifies open by Red lights ON and green lights OFF. (located on 1VB2) **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
19	**76**	Notify Chemistry to periodically sample LPI discharge for boron concentration. **STANDARD:** Candidate notifies Chemistry to periodically sample LPI discharge for boron concentration. **COMMENTS:**	___ SAT ___ UNSAT
20	**77**	Close: • 1LP-15 • 1LP-16 **STANDARD:** Candidate verifies that 1LP-15 and 1LP-16 are closed by Red lights OFF and green lights ON. (located on 1VB2) **COMMENTS:**	___ SAT ___ UNSAT
21	**78**	**WHEN** 1LP-28 is closed, THEN continue in this enclosure. **STANDARD:** Candidate waits on notification that 1LP-28 is closed. **COMMENTS:** **END TASK**	___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
4	Protects HPI pumps
6	Aligns LPI Pump suction to Reactor Building Emergency Sump.
10	Secures LPI Pump suction from the BWST.
11	1A LPI and 1A RBS pumps are secured to prevent damage.
12	Close 1LP-28 (BWST Isolation) - Isolates suction from the BWST.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

A large break LOCA has occurred which is depleting the BWST

INITIATING CUE

The Control Room SRO directs you to align ECCS suction to the Emergency Sump per Enc. 5.12, ECCS Suction Swap to RBES, of the EOP.

REGION II
JOB PERFORMANCE MEASURE
OCONEE

RO-607

Alignment of CT-5 per AP/48

Administrative: No

Classroom/Simulator/Plant: Simulator

Alternate Path: No

Alt Path Description: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Alignment of CT-5 per AP/48

Task Number :

Alternate Path: No

Time Critical: No

Validation Time: 10 minutes

K/A Rating(s):

System: 062
K/A: A2.05
Rating: 2.9/3.3*

Task Standard:

Perform AP/48, Loss of Startup Transformer, to align CT-5 by performing the following sequence:

- Closing SL1 and SL2 breakers
- Placing both CT-5 transfer switches in AUTO.

References:

AP/0/A/1700/048 (Loss of a Startup Transformer)

Tools/Equipment/Procedures Needed:

AP/0/A/1700/048 (Loss of a Startup Transformer) Rev 00

(Note: Below this line is used only for Initial NRC Exams)

==========

Candidate: _____ Time Start: _____

NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____

NAME SIGNATURE DATE

==========

Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

Directions with IC:

1. **RECALL IC:** *384 (RO-607)*
2. **ENSURE** clean copy of AP/0/A/1700/048 available for the candidate
3. Place the simulator in RUN and acknowledge alarms then go to **FREEZE**
4. Go to **RUN** when directed by the Lead Examiner

==========

Directions without an IC:

1. Recall IC-1
2. Use browser malfunction menu under electrical to cause PCB 17 & 18 Lockout
3. Ackowledge statalarms and place simulator in FREEZE

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 is 100% power

A lockout of CT-1 has just occurred

You are the Unit 2 RO

The Unit 1 CRS has entered AP/0/A/1700/048 (Loss of a Startup Transformer)

INITIATING CUE

The Control Room SRO directs you to perform AP/0/A/1700/048 (Loss of a Startup Transformer).

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	4.1	**NOTE** This procedure is normally performed by Unit 2 RO for <u>any</u> affected unit's CT transformer, unless directed otherwise by CRS. Verify <u>both</u>: • STBY BUS de-energized (0 Volts) • <u>Affected</u> unit's generator online **<u>STANDARD</u>:** Candidate determines that the STBY BUS is de-energized by observing gauges on 2AB3. Candidate determines that the affected unit's generator is online by observing MWATTs or output breaker postion on 1UB2. Candidate continues to Step 2 **<u>COMMENTS</u>:**	___ SAT ___ UNSAT
2	4.2	Announce AP entry using the PA system **<u>STANDARD</u>:** Candidate announces the AP entry using any Control Room area phone Candidate continues to Step 3 **<u>COMMENTS</u>:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
3	**4.3**	Verify CT-5 indicates ≈ 4160 volts **STANDARD:** Candidate verifies ≈ 4160 volts on CT-5 gauge on 1AB1 Candidate continues to Step 4 **COMMENTS:**	___ SAT ___ UNSAT
4	**4.4**	Ensure the following open: • SK1 CT-4 STBY BUS 1 FEEDER • SK2 CT-4 STBY BUS 2 FEEDER **STANDARD:** Candidate determines that SK1 CT-4 STBY BUS 1 FEEDER is open by observing the white light on 2AB3. Candidate determines that SK2 CT-4 STBY BUS 2 FEEDER is open by observing the white light on 2AB3. Candidate continues to Step 5 **COMMENTS:**	___ SAT ___ UNSAT
5	**4.5**	Initiate logging entry in TS 3.8.1 Condition D for all units in MODES 1-4 **STANDARD:** Candidate informs the SRO to initiate logging entry into TS 3.8.1 Condition D Candidate continues to Step 6 ***Examiner Cue: SRO has entered TS 3.8.1 Condition D*** **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
6	**4.6**	Ensure the following in MAN: • CT-5 Bus 1 AUTO/MAN • CT-5 Bus 2 AUTO/MAN **STANDARD:** Candidate verifies CT-5 Bus 1 AUTO/MAN transfer switch in MAN located on 2AB3. Candidate verifies CT-5 Bus 2 AUTO/MAN transfer switch in MAN located on 2AB3. Candidate continues to Step 7 **COMMENTS:**	___ SAT ___ UNSAT
7	**4.7**	Ensure the following switches in the CENTRAL position • SL1 & SL2 TRIP INTERLOCK DEFEAT CH 1 • SL1 & SL2 TRIP INTERLOCK DEFEAT CH 2 **STANDARD:** Candidate verifies SL1 & SL2 TRIP INTERLOCK DEFEAT CH1 in CENTRAL located on 2AB3. Candidate verifies SL1 & SL2 TRIP INTERLOCK DEFEAT CH2 in CENTRAL located on 2AB3. Candidate continues to Step 8 **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
8	**4.8**	Close the following: • SL1 CT-5 STBY BUS 1 FEEDER • SL2 CT-5 STBY BUS 2 FEEDER **STANDARD:** Candidate closes SL1 CT-5 STBY BUS 1 FEEDER located on 2AB3. Candidate closes SL2 CT-5 STBY BUS 2 FEEDER located on 2AB3. Candidate continues to Step 9 **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
9	**4.9**	Verify ≈ 4160 volts on the following: • Standby Bus 1 • Standby Bus 2 **STANDARD:** Candidate determines that the STBY BUS is reading ≈ 4160 volts by observing gauges on 2AB3. Candidate continues to Step 10 **COMMENTS:**	___ SAT ___ UNSAT
10	**4.10**	Notify all unit's CRS that the Standby Busses are powered from Central Substation via CT-5 **STANDARD:** Candidate notifies all 3 unit CRS about the Standby Busses being powered from Central Substation via CT-5 Candidate continues to Step 11 **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
11	4.11	Ensure the following in AUTO: • CT-5 Bus 1 AUTO/MAN • CT-5 Bus 2 AUTO/MAN **STANDARD:** Candidate places CT-5 Bus 1 AUTO/MAN transfer switch in AUTO located on 2AB3. Candidate places CT-5 Bus 2 AUTO/MAN transfer switch in AUTO located on 2AB3. **COMMENTS:** **END TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
8	This step is required to energize the Standby Busses from CT-5. If performed incorrectly the busses will remain de-energized.
11	This step is required to provide undervoltage protection for SL1 and SL2 breakers. If performed incorrectly the breakers will not open under degraded voltage conditions.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 is 100% power

A lockout of CT-1 has just occurred

You are the Unit 2 RO

The Unit 1 CRS has entered AP/0/A/1700/048 (Loss of a Startup Transformer)

INITIATING CUE

The Control Room SRO directs you to perform AP/0/A/1700/048 (Loss of a Startup Transformer).

REGION II
JOB PERFORMANCE MEASURE
OCONEE

RO-306a

Perform Rule 5 for EHT

Administrative: No

Classroom/Simulator/Plant: Simulator

Alternate Path: Yes

Alt Path Description: ES-2 fails to go to Manual, which will require placing the EVEN Voters in Override

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Perform Rule 5 for EHT

Task Number :

Alternate Path: Yes

Time Critical: No

Validation Time: 10 minutes

K/A Rating(s):
System: BW/E05
K/A: EA1.1
Rating: 4.2/4.2

Task Standard:
Mitigate the Excessive Heat Transfer event on the 1A SG, in accordance with Rule 5, by performing the following alignments:

- On AFIS HEADER A, depress CH. 1 INIT
- On AFIS HEADER A, depress CH. 2 INIT
- Close 1FDW-315
- Place 1FDW-33 switch to CLOSE
- Place 1FDW-31 switch to CLOSE
- Place Diverse HPI in BYPASS
- Place ES Ch 1 in MANUAL
- Place EVEN Voter in OVERRIDE
- Throttle HPI (Secure HPI injection flow in 1B header by either stopping 1C HPI pump or closing 1HP-27. Secure HPI injection flow in the 1A HPI header by closing 1HP-26).

References:
EP/1/A/1800/001 Rule 5 (Main Steam Line Break) Rev 03

Tools/Equipment/Procedures Needed:
EP/1/A/1800/001 Rule 5 (Main Steam Line Break) Rev 03

(Note: Below this line is used only for Initial NRC Exams)

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

Directions with IC:

1. **RECALL IC:** *390 (RO-306a)*
2. **ENSURE** clean copy of Rule 5 available for the candidate
3. Go to **RUN** when directed by the Lead Examiner

==========

Directions without an IC:

1. Recall IC-1
2. AOR: On the soft panel, select ES-2 AUTO pushbutton as being selected
3. Insert a Main Steam Line Break on 1A SG (15%)
4. Freeze the simulator following the Reactor Trip

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 was operating at 100% power

The reactor has just tripped following a Main Steam Line Break on the 1A SG

Immediate Manual Actions (IMAs) and Symptoms Check are complete

INITIATING CUE

The Control Room SRO directs you to perform Rule 5 for excessive heat transfer on the 1A SG

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	Rule 5 Step 1	Perform on the affected headers: ✓ **A Header** *On AFIS HEADER A, depress CH. 1 INIT. *On AFIS HEADER A, depress CH. 2 INIT. Select OFF for 1A MD EFDWP. Trip both Main FDWPTs. *Close 1FDW-315. *Place 1FDW-33 switch to CLOSE. *Place 1FDW-31 switch to CLOSE. Close 1PSW-22. Close 1PSW-23. ✓ **B Header** On AFIS HEADER B, depress CH. 1 INIT. On AFIS HEADER B, depress CH. 2 INIT. Select OFF for 1B MD EFDWP. Trip both Main FDWPTs. Close 1FDW-316. Place 1FDW-42 switch to CLOSE. Place 1FDW-40 switch to CLOSE. Close 1PSW-24. Close 1PSW-25. **STANDARD:** Candidate should perform the isolation steps for the 1A SG ONLY. The 'A' Header isolations are located on 1UB1. **COMMENTS:**	***CRITICAL STEP** ___ SAT ___ UNSAT
2	2	Verify 1 TD EFDW PUMP operating. **STANDARD:** Candidate verifies that the 1TD EFDW Pump is not running by looking at status lights and discharge pressure on 1UB1. Candidate continues to Step 2 RNO. **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
3	2 RNO	**IF** MD EFDWP for the intact SG is operating, **THEN** GO TO Step 5. **STANDARD:** Candidate verifies that the 1B MDEFDWP is running using red lights and flow or discharge pressure on 1UB1 and proceeds to Step 5 **COMMENTS:**	___ SAT ___ UNSAT
4	5	Verify 1B SG is an affected SG. **STANDARD:** Candidate verifies that 1A SG is the affected SG by looking at Steam Pressure and proceeds to the RNO. **COMMENTS:**	___ SAT ___ UNSAT
5	5 RNO	**GO TO** Step 7 **STANDARD:** Candidate goes to Step 7 **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
6	7	**WHEN** overcooling is stopped, **THEN** adjust steaming of unaffected SG to maintain CETCs constant using either: __ TBVs __ Dispatch two operators to perform Encl 5.24 (Operation of the ADVs). (PS) **STANDARD:** Candidate determines that overcooling has stopped by either observing stable RCS temperature or by verifying that the 1A SG is dry (<12 inches) and not being fed (1UB1). Candidate should then adjust steaming of 1B SG by rotating the setpoint knob on the ICS Turbine Master in the counter-clockwise direction to cause 1B TBVs to open. **COMMENTS:**	___ SAT ___ UNSAT
7	8	**CAUTION** Thermal shock conditions may develop if HPI is NOT throttled and RCS pressure NOT controlled **WHEN** all exist: __ Core SCM > 0°F __ Rx Power ≤ 1% __ Pzr level increasing **THEN** continue. **STANDARD:** Candidate verifies Core SCM on or above the ICCM Monitors, verifies Rx Power on WR or PR meters, and verifies PZR level on the dixons. All indications are on 1UB1. **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
8	**9**	Verify ES HPI actuated. **STANDARD:** Candidate verifies that ES HPI has actuated on looking at Statalarms (1SA-1), ES channel indications under the plexiglass cover, or by looking at the AUTO/MANUAL lights. **COMMENTS:**	___ SAT ___ UNSAT
9	**10**	Place Diverse HPI in BYPASS **STANDARD:** Candidate pushes Diverse HPI BYPASS pushbutton on 1UB1 and verifies status light changes and Statalarm (1SA-1) comes in. **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
10	**11**	Perform both: __ Place ES CH 1 in MANUAL. __ Place ES CH 2 in MANUAL. **STANDARD:** Candidate pushes 'MANUAL' pushbutton for ES CH 1 and 2 on 1UB2 and verifies AUTO light (blue) goes out on CH 1 only. **ES CH 2 fails to go to MANUAL. Candidate proceeds to step 11 RNO.** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
11	**11 RNO**	**ALTERNATE PATH** **IF** ES CH 2 fails to go to MANUAL, **THEN** place EVEN voter in OVERRIDE. **STANDARD:** Candidate determines that ES CH 2 failed to go to MANUAL (blue AUTO light still lit) and presses the EVEN Voter OVERRIDE pushbutton on 1UB2. This will clear the statalarm for ES CH 2 actuation on 1SA-1. **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
12	**12**	Perform the following to stabilize RCS P/T: __ Throttle HPI.* __ Reduce 1HP-120 setpoint to control at >100″ [180″ acc]. __ Adjust steaming of unaffected SG as necessary to maintain CETCs constant. **STANDARD:** Candidate stabilizes RCS P/T and throttles HPI to prevent thermal shock by performing the following on 1UB1: *Securing HPI flow in the 1B HPI Header by either: • Securing 1C HPIP and verifying either Red lights OFF or amps have gone to zero. • Closing 1HP-27 and verifying Green light ON and Red light OFF. *Limiting HPI flow in the 1A HPI Header to flow through 1HP-120 by closing 1HP-26 and verifying Green light ON and Red light OFF. Candidate adjusts the thumbwheel (setpoint) on 1HP-120 to >100 inches (>25% on the dial). Candidate will adjust TURBINE MASTER thumbwheel (setpoint) OR use TBVs in Manual to stabilize CETCs. **COMMENTS:** **END TASK**	***CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
1	This step is required to isolate the correct SG. Isolating the wrong SG will lead to a LOHT
9	This step is required to gain manual control of HPI to allow throttling
10	This step is required to gain manual control of HPI to allow throttling
11	This step is required to gain manual control of HPI to allow throttling
12	This step is required to prevent thermal shock conditions due to low RCS Temperature and high RCS Pressure

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 was operating at 100% power

The reactor has just tripped following a Main Steam Line Break on the 1A SG

Immediate Manual Actions (IMAs) and Symptoms Check are complete

INITIATING CUE

The Control Room SRO directs you to perform Rule 5 for excessive heat transfer on the 1A SG

REGION II
JOB PERFORMANCE MEASURE
OCONEE

RO-105

Perform Control Rod Movement PT for Group 1

Administrative: No

Classroom/Simulator/Plant: Simulator

Alternate Path: No

Alt Path Description: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Perform Control Rod Movement PT for Group 1

Task Number :

Alternate Path: No

Time Critical: No

Validation Time: 10 minutes

K/A Rating(s):
System: 001
K/A: A4.08
Rating: 3.7/3.4

Task Standard:
Perform Control Rod Movement PT for Group 1 in accordance with PT/1/A/0600/015 Enc. 13.2 (Control Rod Movement at Power) by:

- Ensure SEQ OR is ON
- Ensure SAFETY RODS OUT BYPASS is ON
- Ensure GROUP SELECT SWITCH to 1
- Insert Group 1 until all 100% Out lights are OFF
- Withdraw Group 1 to 100% until CRD TRAVEL "Out" light is OFF
- Ensure SEQ is ON
- Ensure GROUP SELECT SWITCH to OFF
- Ensure SAFETY RODS OUT BYPASS is OFF.

References:
PT/1/A/0600/015 Control Rod Movement Rev 29
OP/1/A/1102/004 A ICS Operation Rev 14

Tools/Equipment/Procedures Needed:
PT/1/A/0600/015 Control Rod Movement Rev 29
OP/1/A/1102/004 A ICS Operation Rev 14

(Note: Below this line is used only for Initial NRC Exams)

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

Directions with IC:

1. **LOAD:** *JPM 'd' files (IC-385)*
2. **ENSURE** Control Room reactivity rope in place
3. **ENSURE** clean copy of Rod Movement PT Enc. 13.2 available for student
4. Place the simulator in RUN and acknowledge alarms then go to **FREEZE**
5. Go to **RUN** when directed by the Lead Examiner

==========

Directions without an IC:

1. Recall IC-1
2. Perform PT/1/A/0600/015 up through Step 3.2 of Enc. 13.2
3. Ackowledge statalarms and place simulator in FREEZE

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 at 100% power

PT/1/A/0600/015 (Control Rod Movement) in progress for Group 1 ONLY

Enclosure 13.2 (Control Rod Movement at Power) complete up to Step 3.3

INITIATING CUE

The CRS directs you to complete Enc. 13.2 (Control Rod Movement PT) for Group 1 beginning at Step 3.3.

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	Enc. 13.2 Step 3.3	**IF AT ANY TIME** contingency actions directed by CRS, perform Section 4 (Contingency Actions) **STANDARD:** Candidate circles the IAAT step and moves on to Step 3.4 **COMMENTS:**	___ SAT ___ UNSAT
2	3.4	**NOTE:** When operating switches on Diamond, maintain switch depressed until light indication changes state. Perform the following: (R.M.) • Ensure SEQ OR is ON.* • Ensure SAFETY RODS OUT BYPASS is ON.* • Ensure RUN is ON. • Ensure SINGLE SELECT SWITCH selected to ALL. **STANDARD:** Candidate will select the pushbuttons on the Rod Control panel until the indication is lit for SEQ OR and SAFETY RODS OUT BYPASS. RUN is verified ON. The SINGLE SELECT SWITCH is verified in ALL. **COMMENTS:**	***CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
3	3.5	**NOTE:** CRD Groups 1-6 are required to be ≥95% withdrawn for Shutdown Margin Calculation at Power enclosure of PT/1/A/1103/015 (Reactivty Balance Procedure) to be valid. **IF AT ANY TIME** any CRD Group 1-6 reaches 95% during insertion, stop inserting associated group. **STANDARD:** Candidate monitors Group 1 rods for 95% and stops inserting as necessary **COMMENTS:**	___ SAT ___ UNSAT
4	3.6.1	Perform the following to test CRD Group 1: Ensure GROUP SELECT SWITCH to 1. **STANDARD:** Candidate rotates GROUP SELECT SWITCH to 1. **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
5	3.6.2	Ensure Group 1 CONTROL ON lights are ON. (PI panel) **STANDARD:** Candidate determines that the Group 1 CONTROL ON lights are ON (PI panel). **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
6	3.6.3	**NOTE:** 1SA-2/C/10 “CRD Safety Rods Not at Upper Limit” will alarm when Safety Groups are inserted. Control rods should **NOT** be left inserted. Rod withdrawal should commence immediately after insertion is complete. Perform the following: A. Insert CRD Group 1. B. WHEN all 100% lights OFF, stop insertion. C. Withdraw Group 1 to 100% until CRD TRAVEL "Out" light OFF. **STANDARD:** Candidate inserts CRD Group 1 using the “Joy Stick”on the Diamond. Monitor the 100% lights on the PI Panel and when they are OFF (or any rod reaches 95%), stop inserting. Withdraw Group 1 to 100% using “Joy Stick” until the CRD TRAVEL “Out” light is OFF. **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
7	3.6.4	Verify all 100% lights are ON for Group 1. (PI Panel) **STANDARD:** Candidate determines that all 100% lights are ON for Group 1 (PI Panel) **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
8	3.6.5	Verify unit is stable **STANDARD:** Monintor reactor power, Tave, and RCS pressure to determine that the unit is stable. **COMMENTS:**	___ SAT ___ UNSAT
9	3.14	**NOTE:** When operating switches on Diamond, maintain switch depressed until light indication changes state. Perform the following: (R.M.) • Ensure SEQ is ON. • Ensure GROUP SELECT SWITCH to OFF. • Ensure SAFETY RODS OUT BYPASS is OFF. **STANDARD:** Depress the SEQ/SEQ OR pushbutton and verity the SEQ light is lit. Rotate the GROUP SELECT SWITCH to OFF Depress the SRO BYPASS switch and verity the light is OFF. ***Examiner Cue: Another RO will complete this procedure.*** **COMMENTS:** **END TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
2	Step is required to test Group 1
4	Step is required to test Group 1
6	Step is required to test Group 1
9	Step is required to return the system to Normal operation

d

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 at 100% power

PT/1/A/0600/015 (Control Rod Movement) in progress for Group 1 ONLY

Enclosure 13.2 (Control Rod Movement at Power) complete up to Step 3.3

INITIATING CUE

The CRS directs you to complete Enc. 13.2 (Control Rod Movement PT) for Group 1 beginning at Step 3.3.

REGION II
JOB PERFORMANCE MEASURE
OCONEE

RO-S408

Feed Both SGs with one MD EFDW pump

Administrative: No

Classroom/Simulator/Plant: Simulator

Alternate Path: No

Alt Path Description: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Feed Both SGs with one MD EFDW pump

Task Number :

Alternate Path: No

Time Critical: No

Validation Time: 6 minutes

K/A Rating(s):
System: 061
K/A: A2.04
Rating: 3.4/3.8

Task Standard:
Feed both SGs with only operable MD EFDWP by performing the following alignment:

- Place 1FDW-316 in Manual and closed
- Locally open 1FDW-313 and 1FDW-314
- Throttle 1FDW-316 to establish appropriate level per Rule 7

References:
EOP Enclosure 5.9 Extended EFDW Operation Rev 01
EP/1/A/1800/001 Rule 3 Rev 03

Tools/Equipment/Procedures Needed:
EOP Enclosure 5.9 Extended EFDW Operation Rev 01

(Note: Below this line is used only for Initial NRC Exams)

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

Directions with IC:

1. **RECALL IC:** *391 (JPM 'e' files)*
2. **ENSURE** copy of EOP Enc. 5.9 in progress at Step 3 is available to the candidate
3. **ENSURE** a clean copy of Rule 7 in sleeve on Control Board
4. Place the simulator in RUN and acknowledge alarms then go to **FREEZE**
5. Go to **RUN** when directed by the Lead Examiner

==========

Directions without an IC:

1. Recall IC-1
2. Insert failures of the TD EFDWP (MSS330), the 1B MD EFDWP, and both MFDWPS (MSS010, MSS020)
3. Adjust 1HP-120 setpoint to ~25% (100 inches)
4. Ackowledge statalarms and place simulator in FREEZE

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

- The Reactor has tripped
- The 1B MD EFDW Pump failed to start in AUTO or MANUAL
- The TD EFDWP tripped
- Enclosure 5.9 (Extended EFDW Operations) is in progress up to step 3

INITIATING CUE

Continue in EOP Enclosure 5.9, beginning at step 3, to feed both SGs with the 1A MD EFDWP.

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	**Enc. 5.9** **Step 3**	__ **IAAT** feeding both SGs with one MD EFDWP is desired, **THEN** perform Steps 4 - 7. **STANDARD**: Student determines that it is desired to feed both SGs with the 1A MD EFDW pump from the cue sheet. Continues to Step 4 **COMMENTS:**	___ SAT ___ UNSAT
2	**4**	Place EFDW control valve on SG with **NO** EFDW flow to MANUAL and closed: ✓ **1A SG** ✓ **1B SG** 1FDW-315 1FDW-316* **STANDARD**: Student determines 1B SG has no EFDW flow and places 1FDW-316 controller in manual and adjusts valve demand to 0% or less such that the valve closes. Confirms closed by observing green closed light lit and red open lit extinguished. Continues to Step 5 **COMMENTS:**	***CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
3	5	Locally open: __ 1FDW-313 (1A EFDW Line Disch To1A S/G X-Conn) (T-1, 1' N of M-16,18' up) __ 1FDW-314 (1B EFDW Line Disch To1B S/G X-Conn) (T-1, 3' S of M-24,10' up) **STANDARD**: Student dispatches an Operator via phone or radio to locally open 1FDW-313 and 1FDW-314. ***BOOTH CUE: When contacted to open 1FDW-313 and 1FDW-314, ACTIVATE TIMER 01*** ***Report back to control room operator that: "Using Time Compression, 1FDW-313 and 1FDW-314 are open."*** Continues toStep 6 **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
4	6	__ Ensure a MD EFDWP is operating. **STANDARD**: Student observing control board indications determines that the 1A MD EFDW pump is operating. Continue to Step 7 **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
5	7	Throttle EFDW control valve on SG with **NO** EFDW flow to establish appropriate level per Rule 7 (SG Feed Control): ✓ **1A SG** ✓ **1B SG** 1FDW-315 1FDW-316* **STANDARD**: Student will throttle open 1FDW-316 to establish flow to the 1B SG. The student will limit total EFDW flow to ≤ 600 gpm which is the Rule 7 limit (Table 3) for one MDEFDWP. The student will raise level in the 1B SG towards 30 inches per Table 4. ***Examiner Note**: **Critical step is met when EFDW flow to the 1B SG is established and SG level is rising toward 30".*** **COMMENTS:** **END TASK**	***CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
2	Required to gain positive control of EFDW flow to the 1B SG
3	Required to establish heat transfer in the 1B SG
5	Required to establish heat transfer in the 1B SG

e

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

- The Reactor has tripped
- The 1B MD EFDW Pump failed to start in AUTO or MANUAL
- The TD EFDWP tripped
- Enclosure 5.9 (Extended EFDW Operations) is in progress up to step 3

INITIATING CUE

Continue in EOP Enclosure 5.9, beginning at step 3, to feed both SGs with the 1A MD EFDWP.

REGION II
JOB PERFORMANCE MEASURE
OCONEE

RO-803a

ALIGN INTAKE CANAL FOR RECIRC ON DAM FAILURE

Administrative: No

Classroom/Simulator/Plant: Simulator

Alternate Path: Yes

Alt Path Description: _CCW-9 Fails closed. Requires candidate to secure CCW pump, dispatch AO to open CCW-9, then re-start CCW pump_____

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title: Align Intake Canal for Recirc on Dam Failure

Task Number: N/A

Alternate Path: Yes

Time Critical: No

Validation Time: 20 min

K/A Rating(s):

System: 075
K/A: A2.02
Rating: 2.5/2.7

Task Standard:
Align the Intake Canal for recirc during a dam failure by performing the following:

- Stop the operating CCW pump after determining CCW-9 did not open.
- Dispatch operator to manually open CCW-9
- Dispatching an operator to close 1CCW-12 if starting 1C or 1D CCWP.
- Start a CCW Pump

References:

"CCW LAKE LEVEL LOW" statalarm (1SA-9/B-10)

AP/1/A/1700/13, (Dam Failure)

Tools/Equipment/Procedures Needed:

AP/1/A/1700/13, (Dam Failure) Rev 35

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. **FIRST RUN ONLY – RECALL IC-1, depress CCW Dam Failure Pushbutton, place simulator in FREEZE.**
   - **For subsequent runs, start at step 2.**

2. **IMPORT** RO-803a files

3. **PLACE** simulator in **RUN** and acknowledge the initial alarms, then place the simulator in **FREEZE**.

4. **PROVIDE** a copy of AP/1/A/1700/013 (Dam Failure) with steps 4.1 through 4.59 signed off

5. **GO** to **RUN** when directed by Lead Examiner.

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

The SM has confirmed Condition 'A' for Little River Dam

Unit 1 has been manually tripped

The Intake Canal is intact

The RCPs have been secured

AP/1/A/1700/13 (Dam Failure) has been completed up to step 4.60

The Unit 2 Control Room has directed Unit 1 to supply CCW recirculation

INITIATING CUE

Control Room Supervisor directs you to align the CCW Intake Canal for recirculation following a dam failure using the 1C CCW pump. Begin at step 4.60 of AP/1/A/1700/013 (Dam Failure)

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	**4.60**	**NOTE** Unit 2 CRS will decide which unit will establish CCW recirculation. Unit 1 will only supply CCW recirculation when directed by Unit 2. **IAAT** Unit 2 CRS has directed Unit 1 to supply CCW recirculation, **THEN** perform Steps 4.61 – 4.76 to start one CCW Pump and establish recirculation. **STANDARD:** The candidate determines from the Initial Conditions that Unit 2 CRS has directed Unit 1 to supply CCW recirculation and proceeds to Step 4.61. **COMMENTS:**	___ SAT ___ UNSAT

<table>
<tr>
<td>2</td>
<td>4.61</td>
<td>
<u>NOTE</u>
• At least one CCW Pump discharge valve is required to remain open prior to establishing forced flow.
• The adjacent CCW Pumps discharge valve must be closed to prevent excessive torque on the starting pumps discharge valve. The 1A <u>and</u> 1B CCW Pumps are adjacent, and the 1C <u>and</u> 1D CCW Pumps are adjacent

Determine which CCW Pump will be started
<table>
<tr><th>√</th><th>CCW Pump</th></tr>
<tr><td></td><td>1A</td></tr>
<tr><td></td><td>1B</td></tr>
<tr><td></td><td>1C</td></tr>
<tr><td></td><td>1D</td></tr>
</table>
<u>STANDARD</u>: The candidate determines from the initial conditions that 1C CCW Pump will be started and continues to Step 4.62.

<u>COMMENTS</u>:
</td>
<td>___ SAT

___ UNSAT</td>
</tr>
<tr>
<td>3</td>
<td>4.62</td>
<td>
Verify the 1A <u>or</u> 1B CCW Pump is to be started

<u>STANDARD</u>: The candidate was cued to start the 1C CCW Pump in the initial conditions. Therefore, the candidate will utilize step 4.62 RNO and GO TO Step 4.65.

<u>COMMENTS</u>:
</td>
<td>___ SAT

___ UNSAT</td>
</tr>
</table>

4	**4.65**	Verify <u>both</u> of the following CCW pump discharge valves are closed **Pump** | √ | **Valve** 1C | | 1CCW-12 1D | | 1CCW-13 **<u>STANDARD</u>**: Candidate verifies that 1CCW-12 indicates open by observing the red open light illuminated and the green closed light OFF on 1AB3 **<u>OR</u>** by OAC indications. Candidate verifies that 1CCW-13 is closed by observing the green closed light illuminated and red open light OFF on 1AB3 **<u>OR</u>** by OAC indications. Candidate determines that both valves are <u>NOT</u> closed and proceeds to Step 4.65 **RNO.** **<u>COMMENTS</u>:**	___ SAT ___ UNSAT

5	**4.65** **RNO**	Locally close <u>all</u> open discharge valves from the breaker switch (Unit 1 Equipment Rm). **Pump** | √ | **Valve** | **Breaker** 1C | | 1CCW-12 | 1XS3-2E 1D | | 1CCW-13 | 1XS1-F3C **<u>STANDARD</u>***:* The candidate dispatches an operator to Unit 1 Equipment Room to close 1CCW-12. ***Booth Operator:*** ***After the candidate has dispatched an operator to Unit 1 Equipment Room to close 1CCW-12, FIRE TIMER 1 TO CLOSE 1CCW-12. 1CCW-13 is already closed.*** ***Booth Cue:*** ***Inform the candidate that 1CCW-12 indicates closed in the equipment room.*** Candidate continues to Step 4.66 **<u>COMMENTS</u>:**	___ SAT ___ UNSAT

6	**4.66**	**NOTE** CCW pump amps and temperatures will read higher than normal when started with this plant configuration. CCWP motor stator temperature limit is 284°F. Start the selected CCW pump **STANDARD**: The candidate locates the control switch for the 1C CCW Pump on 1AB3 and rotates the control switch to the close position. The candidate observes that the 1C CCW pump discharge valve starts to travel open and when approx. 20% open, the 1C CCW pump starts as indicated by red run light illuminated and ≈ 275 motor amps indicated. **COMMENTS:**	___ SAT ___ UNSAT
7	**4.67**	Verify operating CCW pump discharge valve is open **STANDARD**: The candidate verifies 1C CCW Pump discharge valve (1CCW-12) indicates OPEN by observing the red open light illuminated and the green closed light OFF on 1AB3. The candidate may also verify selected discharge valve open by OAC indications **COMMENTS:**	___ SAT ___ UNSAT

8	**4.68**	Ensure CCWP LOAD SHED DEFEAT switch is positioned to a running CCWP. **STANDARD**: Candidate locates the CCWP LOAD SHED DEFEAT switch on 1VB1 and verifies switch aligned to the 1C CCW pump **COMMENTS:**	___ SAT ___ UNSAT
9	**4.69**	**[ALTERNATE PATH]** Verify CCW-9 is open **STANDARD**: Candidate observes CCW-9 indication on 2AB3 and determines that CCW-9 is closed by the red OPEN light OFF and the green CLOSED indication illuminated Candidate determines CCW-9 is closed and proceeds to step 4.69 **RNO** ***Examiner Note: CCW-9 is failed closed*** **COMMENTS:**	___ SAT ___ UNSAT

10	**4.69** **RNO**	1. *Stop the operating CCW pump. 2. Notify Security to meet an operator at Gate 23 (CCW Intake) to provide access to CCW-9. 3. Dispatch an operator to perform the following: A. Obtain the CCW-9 Gate Key from the security box in Unit 3 Control Room storage area. B. Access the area between fences at Gate 23 leading to CCW intake. C. *Open CCW-9 (EMERGENCY CCW DISCHARGE TO INTAKE) (between protected area fences). D. Notify Unit 1 CRS when CCW-9 is open. 4. **WHEN** notified that CCW-9 is open, **THEN GO TO** Step 4.61 to restart a CCW pump. **STANDARD**: Candidate locates the control switch for the 1C CCW Pump on 1AB3 and rotates the control switch to the trip position and observes the red ON lights OFF and the white OFF light illuminated. Candidate notifies Security to meet an operator at Gate 23 to provide access to CCW-9. Candidate dispatches an operator to obtain the CCW-9 Gate Key from the Security box in the Unit 3 Control Room storage area. The operator, along with Security, proceeds between the Protected Area fences in order to open CCW-9. ***Booth cue: FIRE TIMER 2 to open CCW-9, and using time compression, inform the candidate that CCW-9 open.*** Candidate returns to step 4.61 to restart a CCW pump. **COMMENTS:**	***CRITICAL STEP** ___ SAT ___ UNSAT

NOTE

- At least one CCW Pump discharge valve is required to remain open prior to establishing forced flow.
- The adjacent CCW Pumps discharge valve must be closed to prevent excessive torque on the starting pumps discharge valve. The 1A and 1B CCW Pumps are adjacent, and the 1C and 1D CCW Pumps are adjacent

11 **4.61**

Determine which CCW Pump will be started

√	CCW Pump
	1A
	1B
	1C
	1D

STANDARD: The candidate should determine from the initial conditions that 1C CCW Pump will be started and continues to Step 4.62.

Examiner Note: The candidate may choose to start the 1A or 1B CCWP because both 1CCW-10 (1A CCWP Discharge Valve) and 1CCW-11 (1B CCWP Discharge Valve) are closed. This is permissible since it is allowed by procedure.

COMMENTS:

___ SAT

___ UNSAT

12	**4.62**	Verify the 1A <u>or</u> 1B CCW Pump is to be started **<u>STANDARD</u>***:* The candidate should determine the 1C CCW Pump is to be started and proceed to Step 4.62 RNO. ***Examiner Note: The candidate may choose to start the 1A or 1B CCWP because both 1CCW-10 (1A CCWP Discharge Valve) and 1CCW-11 (1B CCWP Discharge Valve) are closed. This is permissible since it is allowed by procedure.*** ***If starting 1A or 1B CCWP, the candidate should proceed to Step 4.63.*** ***If starting 1C or 1D CCWP, the candidate should proceed to Step 4.62 RNO.*** **<u>COMMENTS</u>:**	___ SAT ___ UNSAT
13	**4.62 RNO**	**GO TO** Step 4.65. **<u>STANDARD</u>***:* Candidate proceeds to Step 4.65. **<u>COMMENTS</u>:**	___ SAT ___ UNSAT

<table>
<tr>
<td>14</td>
<td>4.63</td>
<td>Verify <u>both</u> of the following CCW pump discharge valves are closed

<table>
<tr><th>Pump</th><th>√</th><th>Valve</th></tr>
<tr><td>1A</td><td></td><td>1CCW-10</td></tr>
<tr><td>1B</td><td></td><td>1CCW-11</td></tr>
</table>

<u>STANDARD</u>: Candidate verifies that 1CCW-10 is closed by observing the green closed light illuminated and the red open light OFF on 1AB3 <u>OR</u> by OAC indications.

Candidate verifies that 1CCW-11 is closed by observing the green closed light illuminated and the red open light OFF on 1AB3 <u>OR</u> by OAC indications.

Candidate proceeds to Step 4.64.

<u>COMMENTS</u>:</td>
<td>___ SAT

___ UNSAT</td>
</tr>
<tr>
<td>15</td>
<td>4.64</td>
<td>GO TO Step 4.66

<u>STANDARD</u>: Candidate proceeds to Step 4.66

<u>COMMENTS</u>:</td>
<td>___ SAT

___ UNSAT</td>
</tr>
</table>

16	**4.65**	Verify <u>both</u> of the following CCW pump discharge valves are closed **Pump** | √ | **Valve** 1C | | 1CCW-12 1D | | 1CCW-13 **<u>STANDARD</u>**: Candidate verifies that 1CCW-12 indicates open by observing the red open light illuminated and the green closed light OFF on 1AB3 **<u>OR</u>** by OAC indications. Candidate verifies that 1CCW-13 is closed by observing the green closed light illuminated and red open light OFF on 1AB3 **<u>OR</u>** by OAC indications. Candidate determines that both valves are <u>NOT</u> closed and proceeds to Step 4.65 **RNO.** **<u>COMMENTS</u>:**	___ SAT ___ UNSAT

17	**4.65** **RNO**	Locally close <u>all</u> open discharge valves from the breaker switch (Unit 1 Equipment Rm). **Pump** | √ | **Valve** | **Breaker** 1C | | 1CCW-12 | 1XS3-2E 1D | | 1CCW-13 | 1XS1-F3C **<u>STANDARD</u>**: The candidate dispatches an operator to Unit 1 Equipment Room to close 1CCW-12 if starting 1C or 1D CCWP. ***Booth Operator:*** ***After the candidate has dispatched an operator to Unit 1 Equipment Room to close 1CCW-12, FIRE TIMER 3 TO CLOSE 1CCW-12. 1CCW-13 is already closed.*** ***Booth Cue:*** ***Inform the candidate that 1CCW-12 indicates closed in the equipment room.*** ***Examiner Note:*** ****Dispatching an operator to close 1CCW-12 is critical if starting 1C or 1D CCWP.*** Candidate continues to Step 4.66 **<u>COMMENTS</u>:**	***CRITICAL STEP** ___ SAT ___ UNSAT

18	**4.66**	**NOTE** CCW pump amps and temperatures will read higher than normal when started with this plant configuration. CCWP motor stator temperature limit is 284°F. Start the selected CCW pump **STANDARD**: The candidate locates the control switch for one of the CCW Pumps on 1AB3 and rotates the control switch to the close position and observes that the CCW pump discharge valve starts to travel open and when approx 20% open, the CCW pump starts as indicated by red run light illuminated and ≈ 375 motor amps indicated. ***Examiner Note: The critical step is to start a CCW pump to provide Recirc of the intake. Any CCW pump is allowed by procedure and is therefore permissible.*** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
19	**4.67**	Verify operating CCW pump discharge valve is open. **STANDARD**: The candidate verifies the operating CCW pump discharge valve indicates OPEN by observing the red open light illuminated and the green closed light OFF on 1AB3. The candidate may also verify selected discharge valve open by OAC indications **COMMENTS:**	___ SAT ___ UNSAT

20	**4.68**	Ensure CCWP LOAD SHED DEFEAT switch is positioned to a running pump **STANDARD***:* Candidate locates the CCWP LOAD SHED DEFEAT switch on 1VB1 and verifies switch aligned to the operating CCW pump. **COMMENTS:**	___ SAT ___ UNSAT
21	**4.69**	Verify CCW-9 is open **STANDARD***:* Candidate observes CCW-9 indication on 2AB3 and determines that CCW-9 is open by the red OPEN light illuminated and the green CLOSED indication OFF. **COMMENTS:**	___ SAT ___ UNSAT
22	**4.70**	Verify CCW-8 is closed. **STANDARD***:* Candidate observes CCW-8 indication on 2AB3 and determines that CCW-8 is closed by the red OPEN light OFF and the green CLOSED indication illuminated. **COMMENTS:**	___ SAT ___ UNSAT

23	**4.71**	**NOTE** CCW-8 must be de-energized prior to submersion by lake water. This should be accomplished within 1 hour of initiation of the event. Verify an operator has been dispatched to open 1DP-F5C (CCW-8 Bkr (Emerg CCW Disch to Tailrace)) (T-3/L-24). **STANDARD:** Candidate determines an operator has NOT been dispatched to open 1DP-F5C (CCW-8 Bkr (Emerg CCW Disch to Tailrace)) (T-3/L-24) and proceeds to the RNO. **COMMENTS:**	___ SAT ___ UNSAT
24	**4.71 RNO**	Dispatch an operator to open 1DP-F5C (CCW-8 Bkr (Emerg CCW Disch to Tailrace)) (T-3/L-24). **STANDARD:** Candidate dispatches an operator to open 1DP-F5C (CCW-8 Bkr (Emerg CCW Disch to Tailrace)) (T-3/L-24). **COMMENTS:**	___ SAT ___ UNSAT

<table>
<tr>
<td>25</td>
<td>4.72</td>
<td>Ensure the discharge valves on <u>all</u> stopped CCW pumps are closed:

<table>
<tr><th>CCW Pump</th><th></th><th>Valve</th></tr>
<tr><td>1A</td><td></td><td>1CCW-10</td></tr>
<tr><td>1B</td><td></td><td>1CCW-11</td></tr>
<tr><td>1C</td><td></td><td>1CCW-12</td></tr>
<tr><td>1D</td><td></td><td>1CCW-13</td></tr>
</table>

<u>STANDARD:</u> Candidate ensures the discharge valves on <u>all</u> stopped CCW pumps are closed by observing the green closed light illuminated and the red open light OFF on 1AB3 <u>OR</u> by OAC indications.</td>
<td>___ SAT

___ UNSAT</td>
</tr>
<tr>
<td>26</td>
<td>4.73</td>
<td>Notify Unit 2 <u>and</u> Unit 3 to ensure the following:

• <u>All</u> CCW pump discharge valves are closed.
• <u>All</u> Condenser Outlet Valves are in HAND.

END TASK</td>
<td>___ SAT

___ UNSAT</td>
</tr>
</table>

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
10	Step is critical to ensure the operating CCW pump is stopped and CCW-9 is opened manually to align CCW recirculation flow.
17	Step is critical to start 1C or 1D CCW pump.
18	Step is critical to start a CCW pump.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

The SM has confirmed Condition ‘A’ for Little River Dam

Unit 1 has been manually tripped

The Intake Canal is intact

The RCPs have been secured

AP/1/A/1700/13 (Dam Failure) has been completed up to step 4.60

The Unit 2 Control Room has directed Unit 1 to supply CCW recirculation

INITIATING CUE

Control Room Supervisor directs you to align the CCW Intake Canal for recirculation following a dam failure using the 1C CCW pump. Begin at step 4.60 of AP/1/A/1700/013 (Dam Failure)

REGION II
JOB PERFORMANCE MEASURE
OCONEE

RO-505a

PERFORM EOP ENCLOSURE 5.35

Administrative: No

Classroom/Simulator/Plant: Simulator

Alternate Path: Yes

Alt Path Description: 1HP-20 fails to close requiring 1HP-228, 226, 232, 230 to be closed to isolate containment

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Perfom EOP Enclosure 5.35

Task Number:

Alternate Path: Yes

Time Critical: No

Validation Time: 15 minutes

K/A Rating(s):
System: APE069
K/A: AA1.01
Rating: 3.5/3.7

Task Standard:
Perform EOP Enc. 5.35 (Containment Isolation) by doing the following:

- Closing 1HP-3 and 1HP-4
- Closing 1PR-7 – 1PR-10
- Closing 1HP-21
- Closing 1CC-7 and 1CC-8
- Closing 1LPSW-6 and 1LPSW-15
- Closing 1HP-226, 1HP-228, 1HP-230, 1HP-232
- Rotating Switch closed for 1LPSW-1054, 1LPSW-1055, 1LPSW-1061, 1LPSW-1062

References:
EP/1/A/1800/001 (Unit 1 Emergency Operating Procedure) Enc. 5.35 (Containment Isolation) Rev 01

Tools/Equipment/Procedures Needed:
EP/1/A/1800/001 (Unit 1 Emergency Operating Procedure) Enc. 5.35 (Containment Isolation) Rev 01

(Note: Below this line is used only for Initial NRC Exams)

==========

Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

==========

Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

Directions with IC:

1. **RECALL IC:** *388 (JPM 'g')*
2. **ENSURE** a clean copy of EOP Enc. 5.35 is available
3. Place the simulator in RUN and acknowledge alarms then go to **FREEZE**
4. Go to **RUN** when directed by the Lead Examiner

==========

Directions without an IC:

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 Reactor tripped from 100% power due to a loss of all RCPs.

RCS leak of 190 gpm occurred as result of the trip.

EOP LOCA CD tab is in progress.

ES Actuation has NOT occurred.

INITIATING CUE

The Control Room SRO directs you to perform EOP Enclosure 5.35 (Containment Isolation)

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	**ENC 5.35 Step 1**	Verify Encl 5.1 (ES Actuation) is in progress or complete. **STANDARD:** Candidate determines that ES has NOT actuated from the Initial Conditions and continues to Step 1 RNO. **COMMENTS:**	___ SAT ___ UNSAT

<table>
<tr><th>SEQ STEP</th><th>PROC STEP</th><th>DESCRIPTION</th><th></th></tr>
<tr>
<td>2</td>
<td>1

RNO</td>
<td>1. Close the following ES operated RB isolation valves:
<table>
<tr><th>√</th><th>ES Chan 1</th><th>√</th><th>ES Chan 2</th></tr>
<tr><td></td><td>1HP-3*</td><td></td><td>1HP-5</td></tr>
<tr><td></td><td>1HP-4*</td><td></td><td></td></tr>
<tr><td></td><td>1GWD-12</td><td></td><td>1GWD-13</td></tr>
<tr><td></td><td>1LWD-1</td><td></td><td>1LWD-2</td></tr>
<tr><td></td><td>1CS-5</td><td></td><td>1CS-6</td></tr>
<tr><td></td><td>1PR-1</td><td></td><td>1PR-2</td></tr>
<tr><td></td><td>1PR-6</td><td></td><td>1PR-3</td></tr>
<tr><td></td><td></td><td></td><td>1PR-4</td></tr>
<tr><td></td><td></td><td></td><td>1PR-5</td></tr>
<tr><td></td><td>1PR-7*</td><td></td><td>1PR-8*</td></tr>
<tr><td></td><td>1PR-9*</td><td></td><td>1PR-10*</td></tr>
<tr><td></td><td>1RC-5</td><td></td><td>1RC-7</td></tr>
<tr><td></td><td>1RC-6</td><td></td><td></td></tr>
<tr><td></td><td>1FDW-105</td><td></td><td>1FDW-106</td></tr>
<tr><td></td><td>1FDW-107</td><td></td><td>1FDW-108</td></tr>
<tr><td></td><td></td><td></td><td>1FDW-103</td></tr>
<tr><td></td><td></td><td></td><td>1FDW-104</td></tr>
</table>
<u>STANDARD</u>: Candidate rotates the switches in the closed direction for 1HP-3, 1HP-4, 1PR-7, 1PR-8, 1PR-9, and 1PR-10 and verifies green lights on, red lights off on the control board OR closed indication on the Component Staus Panel, OR closed indication on the OAC, for each of the valves listed above.

<u>COMMENTS</u>:
</td>
<td>*CRITICAL STEP

___ SAT

___ UNSAT</td>
</tr>
</table>

SEQ STEP	PROC STEP	DESCRIPTION	
3	**1 RNO**	2. **IF** 1HP-3 fails to close, **THEN** close 1HP-1 3. **IF** 1HP-4 fails to close, **THEN** close 1HP-2 4. **IF** 1HP-5 fails to close, **THEN** close: __1HP-7 __1HP-6 **STANDARD:** Candidate determines that 1HP-3, 1HP-4, and 1HP-5 are closed by observing the green closed lights on and red lights off on the control board OR closed indication on the Component Status Panel, OR closed indication on the OAC. **COMMENTS:**	___ SAT ___ UNSAT
4	**2**	Verify all RCPs off. **STANDARD:** Candidate determines that all RCPs are off by verifying red lights off and white lights on, and/or verifying 0 amps indicated. **COMMENTS:**	___ SAT ___ UNSAT
5	**3**	Stop both CC pumps. **STANDARD:** Candidate rotates CC Pump switches to trip and verifies green lights on, red lights off. **COMMENTS:**	___ SAT ___ UNSAT

<table>
<tr><th>SEQ STEP</th><th>PROC STEP</th><th>DESCRIPTION</th><th></th></tr>
<tr><td>6</td><td>4</td><td>Close the following ES operated RB isolation valves:

<table>
<tr><th>✓</th><th>ES Chan 1</th><th>✓</th><th>ES Chan 2</th></tr>
<tr><td></td><td>1HP-20</td><td></td><td>*1HP-21</td></tr>
</table>

<table>
<tr><th>✓</th><th>ES Chan 5</th><th>✓</th><th>ES Chan 6</th></tr>
<tr><td></td><td>*1CC-7</td><td></td><td>*1CC-8</td></tr>
<tr><td></td><td>*1LPSW-15</td><td></td><td>*1LPSW-15</td></tr>
<tr><td></td><td>*1LPSW-6</td><td></td><td>*1LPSW-6</td></tr>
</table>

<u>STANDARD</u>: Candidate determines that 1HP-20 does not close. All other valves in the table close properly as indicated by green lights on and red lights off. Candidate proceeds to Step 4 RNO.

Examiner NOTE: 1HP-20 will not close
<u>COMMENTS</u>:</td><td>*CRITICAL STEP

___ SAT

___ UNSAT</td></tr>
<tr><td>7</td><td>4 RNO</td><td>[ALTERNATE PATH]
IF 1HP-20 fails to close, THEN close <u>all</u> the following:
__1HP-228
__1HP-226
__1HP-232
__1HP-230

<u>STANDARD</u>: Candidate closes all 4 valves evidenced by all green lights on and red lights off.

<u>COMMENTS</u>:</td><td>CRITICAL STEP

___ SAT

___ UNSAT</td></tr>
</table>

SEQ STEP	PROC STEP	DESCRIPTION	
8	5	Rotate switches to the closed position for the following components: __ 1LPSW-1054 __ 1LPSW-1055 __ 1LPSW-1061 __ 1LPSW-1062 **STANDARD:** Candidate rotates the above switches to the closed position located on 1VB3. ***Examiner Note: Close [1LPSW-1054 or 1LPSW-1055] and [1LPSW-1061 or 1LPSW-1062] to satisfy the critical step.*** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
9	6	Verify the following components indicate closed: __ 1LPSW-1054 __ 1LPSW-1055 __ 1LPSW-1061 __ 1LPSW-1062 **STANDARD:** Candidate verifies the above valves indicate closed by observing the green lights on and red lights off on 1VB3. **COMMENTS:**	___ SAT ___ UNSAT
10	7	**EXIT** this enclosure. **STANDARD:** Candidate exits the enclosure **COMMENTS:** **END TASK**	___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
2	This step is critical to isolate the Reactor Building.
6	This step is critical to isolate the Reactor Building.
7	This step is critical since 1HP-20 is failed open 1HP-228, 226, 232, 230 must be closed to isolate this pathway.
8	This step is critical to isolate the Reactor Building.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 Reactor tripped from 100% power due to a loss of all RCPs.

RCS leak of 190 gpm occurred as result of the trip.

EOP LOCA CD tab is in progress.

ES Actuation has NOT occurred.

INITIATING CUE

The Control Room SRO directs you to perform EOP Enclosure 5.35 (Containment Isolation)

REGION II
JOB PERFORMANCE MEASURE
OCONEE

RO-203

PRESSURE MAKEUP TO CFT

Administrative: No

Classroom/Simulator/Plant: Simulator

Alternate Path: No

Alt Path Description: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Pressure Makeup to CFT

Task Number :

Alternate Path: No

Time Critical: No

Validation Time: 10 minutes

K/A Rating(s):
System: 006
K/A: A1.13
Rating: 3.5/3.7

Task Standard:
Use OP/1/A/1104/001 (Core Flooding System) to increase 1A CFT pressure to ~600 (595-605) psig by performing the following alignment:

- Notify operator to open 1N-137
- Open 1N-298
- When pressurization complete, close 1N-298

References:
OP/1/A/1104/001 (Core Flooding System) Rev 82

Tools/Equipment/Procedures Needed:
OP/1/A/1104/001 (Core Flooding System) Enc. 4.7 (Pressure Makeup to CFTs Using Nitrogen)

(Note: Below this line is used only for Initial NRC Exams)

==========

Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

==========

Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

Directions with IC:

1. **RECALL IC:** *386 (JPM 'h' files)*
2. **ENSURE** copy of OP/1/A/1104/001 Enc. 4.7 in progress at Step 2.1 is available
3. Place the simulator in RUN to allow 1A CFT Pressure to update and then go to **FREEZE**
4. Go to **RUN** when directed by the Lead Examiner

==========

Directions without an IC:

1. Recall IC-1
2. Vent 1A CFT pressure using OP/1/A/1104/001 Enc. 4.12 Lowering CFT Pressure
3. Stop venting when 1A CFT pressure is in low alarm and save IC.
4. Ackowledge statalarms and place simulator in FREEZE

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 is operating at 100% power

Core Flood Tank low pressure Statalarm actuated

OP/1/A/1104/001 (Core Flooding System) Enclosure 4.7 (Pressure Makeup To CFTs Using Nitrogen) is in progress

INITIATING CUES

The CR SRO directs you to pressurize the 1A CFT to ≈ 600 (595-605) psig beginning at Step 2.1 of Enclosure 4.7

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	2.1	Notify operator to open 1N-137 (CFTs Supply). (A-2-Hallway) **STANDARD:** The candidate directs an AO to open 1N-137, communicate when the valve is open, and standby for further instruction. ***Booth Cue:*** ***When contacted, ACTIVATE TIMER 1 and inform student that 1N-137 is OPEN and you are standing by for further instructions.*** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
2	2.2	**IF** required to increase pressure in 1A CFT: **STANDARD:** Determine that 1A CFT has low pressure by observing either: The computer point for Core Flood Tank "1A" on the Operator Aid Computer. **OR** "1A" Core Flood Tank pressure gauge located on 1VB2. **OR** Statalarm 1SA-8/A-11 (CF TANK A PRESS HIGH/LOW) Continue to step 2.2.1 **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
3	2.2.1	**NOTE:** TS 3.6.3 Condition 'B' requires penetration flow path to be isolated within one hour. A check valve with flow secured through the valve is considered operable. Enter Technical Specification 3.6.3 Condition 'A' and 'B'. **STANDARD:** Candidate notifies the CRS to enter Technical Specification 3.6.3 Condition 'A' and 'B'. ***Examiner Cue: Inform candidate that Tech Spec 3.6.3 Conditions 'A' and 'B' have been entered and step 2.2.1 can be signed off as complete.*** **COMMENTS:**	___ SAT ___ UNSAT
4	2.2.2	Open 1N-298 (N2 FILL CORE FLOOD TANK 1A). **STANDARD:** Open 1N-298 (N2 FILL CORE FLOOD TANK 1A) located on 1VB2. Verify RED OPEN indicating light lit; Green CLOSED light off. **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
5	2.2.3	**IF** 1N-128 (CFT 1A Supply) is closed, throttle 1N-128 (CFT 1A Supply) for a rate of ≤ 100 psig per 15 minutes (≈ 6.6 psig/min). (A-4-409) **STANDARD:** Determine 1N-128 is NOT closed. Continue to Step 2.2.4. ***Examiner Cue: If asked, inform candidate that 1N-128 is NOT closed.*** **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
6	2.2.4	Monitor 1A CFT pressure. **STANDARD:** Observe computer point or pressure gauge for "1A" Core Flood Tank on 1VB2 and verify Core Flood Tank pressure is increasing. **COMMENTS:**	___ SAT ___ UNSAT
7	2.2.5	**IF AT ANY TIME** ES actuation occurs, close 1N-298 (N2 FILL CORE FLOOD TANK 1A). **STANDARD:** Determine ES actuation has not occurred by observing: Statalarm Panel 1SA-1 Alarms 10 and 11 on rows A thru D NOT in alarm **COMMENTS:**	___ SAT ___ UNSAT
8	2.2.6	**IF AT ANY TIME** 1N-298 fails to close, notify operator to close 1N-137 (CFTs Supply). (A-2-Hallway). **STANDARD:** Acknowledges the IAAT step to notify an operator to close 1N-137 if 1N-298 fails to close. **COMMENTS:**	___ SAT ___ UNSAT
9	2.2.7	**WHEN** pressurization of 1A CFT complete, close 1N-298 (N2 FILL CORE FLOOD TANK 1A). **STANDARD:** Close 1N-298 located on 1VB2 when Core Flood Tank pressure is approximately 600 psig (595 to 605 psig). Verify CFT pressure stops increasing. ***Examiner Note: It is critical to close 1N-298 prior to exceeding 625 psig in the 1A CFT.*** **COMMENTS:** **END TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
1	1N-137 must be opened to supply Nitrogen to pressurize the CFT.
4	1N-298 must be opened to supply Nitrogen to pressurize the CFT.
9	1N-298 must be closed to prevent over pressurizing the CFT.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 is operating at 100% power

Core Flood Tank low pressure Statalarm actuated

OP/1/A/1104/001 (Core Flooding System) Enclosure 4.7 (Pressure Makeup To CFTs Using Nitrogen) is in progress

INITIATING CUES

The CR SRO directs you to pressurize the 1A CFT to ≈ 600 (595-605) psig beginning at Step 2.1 of Enclosure 4.7

REGION II
JOB PERFORMANCE MEASURE

AO-501

PLACE THE REACTOR BUILDING HYDROGEN ANALYZERS IN SERVICE

Administrative: No

Classroom/Simulator/Plant: Plant

Alternate Path: No

Alt Path Failure: _____

Time Critical: Yes

Time Critical Criteria: 90 minutes to align the RB Hydrogen analyzers

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title: Place the 1A and 1B Reactor Building Hydrogen Analyzers In Service

Task Number: N/A

Alternate Path: No

Time Critical: Yes

Validation Time: 12 minutes

K/A Rating(s):
System: 028
K/A: A4.03
Rating: 3.1/3.3

Task Standard:
Reactor Building Hydrogen Analyzers are placed in service by procedure within 90 minutes by performing the following alignment:

- Notify the CR to Open 1PR-81 and 1PR-84
- Notify the CR to Open 1PR-87 and 1PR-90
- At 1A H2 ANALYZER (RP), perform the following:
  - Position SAMPLE VALVE SEL SW to PR-71 (Top Of Containment Sample)
  - Position OFF / STANDBY / ANALYZE switch to ANALYZE
  - Depress REMOTE SELECTOR pushbutton to ensure control is from the Remote Panel.
- At 1B H2 ANALYZER (RP), perform the following:
  - Position SAMPLE VALVE SEL SW to PR-76 (Top Of Containment Sample)
  - Position OFF / STANDBY / ANALYZE switch to ANALYZE
  - Depress REMOTE SELECTOR pushbutton to ensure control is from the Remote Panel
- IAAT either RB Hydrogen Analyzer Train indicates < 2.25% Hydrogen, AND the meter reading stabilizes, THEN push the ALARM RESET pushbutton to reset the COMMON ALARM on appropriate train:
  - 1A RB Hydrogen Analyzer Train
  - 1B RB Hydrogen Analyzer Train

References:
EP/1/A/1800/001 EOP Enclosure 5.2, “Placing RB Hydrogen Analyzers in Service”

Tools/Equipment/Procedures Needed:
EOP Enclosure 5.2 “Placing RB Hydrogen Analyzers in Service” Rev. 001

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

None

READ TO OPERATOR

DIRECTION TO TRAINEE

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

A LOCA has occurred on Unit 1.

Engineered Safeguards Channels 1 and 2 have actuated.

Enclosure 5.1 (ES Actuation) of the EOP is in progress.

The 1A and 1B RB Hydrogen Analyzer Trains are aligned in the standby mode.

INITIATING CUES

The Control Room SRO directs you to place both trains of the RB Hydrogen Analyzers in service on Unit 1 per EOP Enclosure 5.2 (**PS**), (Placing RB Hydrogen Analyzers in Service).

THIS JPM IS TIME CRITICAL

START TIME: _____ (TIME CRITICAL – 90 Minutes)

SEQ STEP	PROC STEP	DESCRIPTION	
1	1	**NOTE** Hydrogen analyzer (RP) panels are located in A-6-602, Vent Equipment Rm, col Q73 West. At 1A H2 ANALYZER (RP), perform the following: __ Ensure POWER ON light is on __ Position H2 DUAL RANGE SW to H2 0 -10% Range __ Position FUNCTION SELECTOR switch to SAMPLE Depress the OFF button for the following: __ 1PR-83 (BYP TO POST AC 1SV220) __ 1PR-86 (BYP TO POST AC 1SV221) **STANDARD:** Red "Power On" light on remote panel is verified to be ON at the Remote RB Hydrogen Analyzer Panel (Train "A"). ***Examiner Cue: Indication is as you see it.*** H2 DUAL RANGE Sw. on the Remote Panel is verified to be positioned to the "0-10%" scale. ***Examiner Cue: Indication is as you see it.*** FUNCTION SELECTOR SWITCH on the Remote Panel is verified to be positioned in the "SAMPLE" position. ***Examiner Cue: Indication is as you see it.*** At the remote panel, the "OFF" button is pushed for the following valves: __ 1PR-83 (BYP TO POST AC 1SV220) __ 1PR-86 (BYP TO POST AC 1SV221) ***Examiner Cue: OFF button is depressed and indications are as you see them.*** **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
2	**2**	At 1B H2 ANALYZER (RP), perform the following: __ Ensure POWER ON light is on __ Position H2 DUAL RANGE SW to H2 0 -10% Range __ Position FUNCTION SELECTOR switch to SAMPLE Depress the OFF button for the following: __ 1PR-89 (BYP TO POST AC 1SV222) __ 1PR-92 (BYP TO POST AC 1SV223) **STANDARD:** Red "Power On" light on remote panel is verified to be ON at the Remote RB Hydrogen Analyzer Panel (Train "B"). ***Examiner Cue: Indication is as you see it.*** H2 DUAL RANGE Sw. on the Remote Panel is verified to be positioned to the "0-10%" scale. ***Examiner Cue: Indication is as you see it.*** FUNCTION SELECTOR SWITCH on the Remote Panel is verified to be positioned in the "SAMPLE" position. ***Examiner Cue: Indication is as you see it.*** At the remote panel, the "OFF" button is pushed for the following valves: __ 1PR-89 (BYP TO POST AC 1SV222) __ 1PR-92 (BYP TO POST AC 1SV223) ***Examiner Cue: OFF button is depressed and indications are as you see them.*** **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
3	**3**	Notify the Control Room to perform the following: __ Open 1PR-81 and 1PR-84 __ Open 1PR-87 and 1PR-90 **STANDARD:** *Unit 1 Control Room personnel are notified to open 1PR-81, 1PR-84, 1PR-87, and 1PR-90 to align the Reactor Building Hydrogen Analyzer to the Reactor Building.* ***Examiner Cue:*** ***After notification has been made, indicate to student that the red OPEN indication lights for all four valves located at the Remote Panel are ON and green lights are off.*** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
4	4	**NOTE** When ANALYZE is selected, the indication will go up scale, possibly causing a HIGH HYDROGEN ALARM in the Analyzer Panel, the Remote Panel, and the Control Room. It should return down scale to the correct reading in ≈ 3 minutes. At 1A H2 ANALYZER (RP), perform the following: __ Position SAMPLE VALVE SEL SW to PR-71 (Top Of Containment Sample). __ Position OFF / STANDBY / ANALYZE switch to ANALYZE. __ Depress REMOTE SELECTOR pushbutton to ensure control is from the Remote Panel. **STANDARD**: The SAMPLE VALVE SEL switch is positioned to PR-71. ***Examiner Cue: Point to the Sample Valve Selector Switch and state switch is in the PR-71 position and the red light is illuminated.*** The OFF / STANDBY / ANALYZE switch is placed to the ANALYZE position. ***Examiner Cue: Point to the Off/Standby/Analyze Switch and state the switch is in Analyze position. The Hydrogen Concentration Meter reads approximately 3% hydrogen and the Yellow COMMON ALARM Light and Yellow HIGH HYDROGEN ALARM Lights are ON.*** The REMOTE SELECTOR Pushbutton is depressed. ***Examiner Cue: Pushbutton is depressed.*** ***Examiner Cue: Inform candidate that using time compression approximately three minutes have elapsed.*** ***Examiner Cue: Inform the candidate that the Hydrogen Concentration Meter indicating 0% hydrogen concentration.*** ***Examiner Cue: Inform the candidate that the High alarm is extinguished and the Common alarm is still illuminated.*** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
5	5	**NOTE** When ANALYZE is selected, the indication will go up scale, possibly causing a HIGH HYDROGEN ALARM in the Analyzer Panel, the Remote Panel, and the Control Room. It should return down scale to the correct reading in ≈ 3 minutes. At 1B H2 ANALYZER (RP), perform the following: __ Position SAMPLE VALVE SEL SW to PR-76 (Top Of Containment Sample). __ Position OFF / STANDBY / ANALYZE switch to ANALYZE. __ Depress REMOTE SELECTOR pushbutton to ensure control is from the Remote Panel. **STANDARD**: The SAMPLE VALVE SEL switch is positioned to PR-76. ***Examiner Cue: Point to the Sample Valve Selector Switch and state switch is in the PR-76 position and the red light is illuminated.*** The OFF / STANDBY / ANALYZE switch is placed to the ANALYZE position. ***Examiner Cue: Point to the Off/Standby/Analyze Switch and state the switch is in Analyze position. The Hydrogen Concentration Meter reads approximately 3% hydrogen and the Yellow COMMON ALARM Light and Yellow HIGH HYDROGEN ALARM Lights are ON.*** The REMOTE SELECTOR Pushbutton is depressed. ***Examiner Cue: The Remote Selector Pushbutton is depressed.*** ***Examiner Cue: Inform candidate that using time compression approximately three minutes have elapsed.*** ***Examiner Cue: Inform the candidate that the Hydrogen Concentration Meter is indicating 0% hydrogen concentration.*** ***Examiner Cue: Inform the candidate that the High alarm is extinguished and the Common alarm is still illuminated.*** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
6	6	**IAAT** <u>either</u> RB Hydrogen Analyzer Train indicates < 2.25% Hydrogen, **AND** the meter reading stabilizes, **THEN** push the ALARM RESET pushbutton to reset the COMMON ALARM on appropriate train: __ 1A RB Hydrogen Analyzer Train __ 1B RB Hydrogen Analyzer Train **<u>STANDARD</u>***:* The ALARM RESET Pushbutton is depressed for both trains. ***Examiner Cue: Indicate that the Hydrogen reading is ≈ 0 percent on both trains.*** ***Examiner Cue: Indicate to student that both yellow alarm lights are out after the ALARM RESET Pushbutton is depressed for each train.*** **CRITICAL TIME STOP: _____ (<90 MINUTES)** **<u>COMMENTS</u>:**	**CRITICAL STEP** ___ SAT ___ UNSAT
7	7	**WHEN** HIGH HYDROGEN alarm has been reset on <u>both</u> 1A and 1B RB Hydrogen Analyzer Trains, **THEN** notify Unit 1 Control Room that 1A and 1B Hydrogen Analyzer Trains are in service. **<u>STANDARD</u>***:* Phone/radio is located and control room personnel are notified that the RB Hydrogen Analyzers are in service. ***Examiner Cue: Indicate to student that Unit 1 Control Room has been notified that 1A and 1B Hydrogen Analyzer Trains are in service.*** **<u>COMMENTS</u>:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
8	8	**EXIT** this enclosure. **STANDARD**: The enclosure is exited. **COMMENTS:** **END TASK**	___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
3	This step opens the block valves to the 1A and 1B H2 analyzers.
4	This step starts the Analyzer pump and the sampling process for the 1A H2 Analyzer.
5	This step starts the Analyzer pump and the sampling process for the 1B H2 Analyzer.
6	This step is required to enable the Control Room to detect an increase in H2 concentration.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

A LOCA has occurred on Unit 1.

Engineered Safeguards Channels 1 and 2 have actuated.

Enclosure 5.1 (ES Actuation) of the EOP is in progress.

The 1A and 1B RB Hydrogen Analyzer Trains are aligned in the standby mode.

INITIATING CUES

The Control Room SRO directs you to place both trains of the RB Hydrogen Analyzers in service on Unit 1 per EOP Enclosure 5.2 (**PS**), (Placing RB Hydrogen Analyzers in Service).

THIS JPM IS TIME CRITICAL

REGION II
JOB PERFORMANCE MEASURE

AO-S404a

MS-87, MS-126 & MS-129 ISOLATION

Administrative: No

Classroom/Simulator/Plant: Plant

Alternate Path: Yes

Alt Path Failure: 1MS-125 will not close

Time Critical: No

Time Critical Criteria: ____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title: MS-87, MS-126 & MS-129 Isolation

Task Number:

Alternate Path: Yes

Time Critical: No

Validation Time: 15 min

K/A Rating(s):

System: SYS039
K/A: A4.01
Rating: 2.9/2.8

Task Standard:

1MS-87, 1MS126 & 1MS-129 are isolated in accordance with AP/0/A/1700/025 Enclosure 5.13 by performing the following:

- Close 1MS-86
- Close 1MS-127
- Close 1MS-128

References:

AP/0/A/1700/025 (SSF Emergency Operating Procedure) Rev 64

Tools/Equipment/Procedures Needed:

AP/0/A/1700/025 Enclosure 5.13 (*MS-87, *MS-126 & *MS-129 Isolation)

(Note: Below this line is used only for Initial NRC Exams)

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

None

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

The SSF has been activated for a Challenging Fire that occurred in the Unit 1 Control Room

SSF RCMU and SSF ASW feed have been established for Unit 1

AP/0/A/1700/025 (SSF Emergency Operating Procedure) is in progress and Step 4.27 directs an operator to perform Enclosure 5.13 (*MS-87, *MS-126 & *MS-129 Isolation)

INITIATING CUE

The CRS directs you to perform AP/25 Enclosure 5.13 for Unit 1 only

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	1	**NOTE** • Each affected units *MS-87, *MS-126 & *MS-129 must be isolated within 2 hours • Perform steps on affected unit only Locally close the following on the affected units: __ ***1MS-86 (MS To TD EFDWP Control Inlet Block) (T-3/NW of D-15)** __ 2MS-86 (MS To TD EFDWP Control Inlet Block) (T-1/12' E of C-38) __ 3MS-86 (MS To EFDWPT Control Inlet Block) (T-1/12' E of C-52) **STANDARD:** Candidate determines that Unit 1 is the affected unit from the initial conditions and locates 1MS-86 and simulates rotating the handwheel clockwise to a hard stop. ***Examiner Cue:*** ***Inform candidate that the valve is closed following handwheel rotation in the clockwise direction.*** **COMMENTS:**	***CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
2	2	Locally close the following on the affected units: __ **1MS-125 (MS To Aux Steam Inlet Block) (T-3/L-15)** __ 2MS-125 (MS To Aux Steam Control Inlet Blk) (T-3/Between L-40 & M-40) __ 3MS-125 (MS To Aux Steam Control Inlet Block) (T-3/K-55) **STANDARD:** Candidate determines that Unit 1 is the affected unit from the initial conditions and locates 1MS-125 and attempts to operate the valve. ***Examiner Cue:*** ***After the candidate attempts to operate 1MS-125, state that the valve handwheel will NOT move.*** Candidate continues to Step 2 RNO. **COMMENTS:**	___ SAT ___ UNSAT
3	2 RNO	**ALTERNATE PATH** **IF** the affected unit's *MS-125 will **NOT** close, **THEN** close the following on the affected units: __ ***1MS-127 (MS To Aux Steam Control Outlet Block) (T-3/Between L-15 & M-15)** __ 2MS-127 (MS To Aux Steam Control Outlet Block) (T-3/L-40) __ 3MS-127 (MS To Aux Steam Control Outlet Block) (T-3/Between K-55 & K-56) **STANDARD:** Candidate determines that Unit 1 is the affected unit from the initial conditions and locates 1MS-127 and simulates rotating the handwheel clockwise to a hard stop ***Examiner Cue:*** ***Inform candidate that the valve is closed following handwheel rotation in the clockwise direction.*** **COMMENTS:**	***CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
4	3	Locally close the following on the affected units: __ ***1MS-128 (MS To Aux Steam Regulator Inlet Block) (T-3/M-15)** __ 2MS-128 (MS To Aux Steam Regulator Inlet Block) (T-3/Between L-40 & M-40) __ 3MS-128 (MS To Aux Steam Regulator Inlet Blk) (T-3/K-55) **STANDARD:** Candidate determines that Unit 1 is the affected unit from the initial conditions and locates 1MS-128 and simulates rotating the handwheel clockwise to a hard stop. ***Examiner Cue: Inform candidate that the valve is closed following handwheel rotation in the clockwise direction.*** **COMMENTS:**	***CRITICAL STEP** ___ SAT ___ UNSAT
5	4	**EXIT** this enclosure **STANDARD:** Candidate exits the enclosure. ***Examiner Cue: Inform candidate that the task is complete.*** **COMMENTS:** **END TASK**	___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
1	This step is required to help ensure RCS overcooling does not occur which could interrupt natural circulation while SSF ASW is feeding the SGs.
3	This step is required to help ensure RCS overcooling does not occur which could interrupt natural circulation while SSF ASW is feeding the SGs.
4	This step is required to help ensure RCS overcooling does not occur which could interrupt natural circulation while SSF ASW is feeding the SGs.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

The SSF has been activated for a Challenging Fire that occurred in the Unit 1 Control Room

SSF RCMU and SSF ASW feed have been established for Unit 1

AP/0/A/1700/025 (SSF Emergency Operating Procedure) is in progress and Step 4.27 directs an operator to perform Enclosure 5.13 (*MS-87, *MS-126 & *MS-129 Isolation)

INITIATING CUE

The CRS directs you to perform AP/25 Enclosure 5.13 for Unit 1 only

REGION II
JOB PERFORMANCE MEASURE

AO-802

ISOLATE HPSW AND LPSW DURING AN AB FLOOD

Administrative: No

Classroom/Simulator/Plant: Plant

Alternate Path: No

Alt Path Failure: _____

Time Critical: Yes

Time Critical Criteria: 45 minutes to complete actions to control AB Flooding

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Isolate HPSW and LPSW during an AB Flood

Task Number : N/A

Alternate Path: No

Time Critical: Yes

Validation Time: 15 minutes

K/A Rating(s):

System: BW/A07
K/A: AA2.2
Rating: 3.3/3.7

Task Standard:

Isolate portions of the HPSW and LPSW systems during an AB Flood, within 45 minutes, in accordance with AP/3/A/1700/030 Auxiliary Building Flood by performing the following:

- Close HPSW-959
- Close 3LPSW-844
- Close 3LPSW-770
- Close 3LPSW-500

References:

AP/3/A/1700/030 Auxiliary Building Flood Rev 20

Tools/Equipment/Procedures Needed:

AP/3/A/1700/030 Enc 5.1 (HPSW AB Flood Isolation) and Enc 5.2 (LPSW Turbine Building Isolations)

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

None

READ TO OPERATOR

DIRECTION TO TRAINEE

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

All 3 units are at 100% power

Unit 3 Auxiliary Building flooding is occurring

The source of flood water has not yet been determined

INITIATING CUES

The Control Room Supervisor directs you to perform AP/3/A/1700/030 Encl. 5.1 (HPSW AB Flood Isolation) AND Encl. 5.2 (LPSW Turbine Building Isolations)

THIS JPM IS TIME CRITICAL

START TIME: _____ (TIME CRITICAL: 45 MINUTES)

SEQ STEP	PROC STEP	DESCRIPTION	
1		**Examiner Note: If candidate performs Enclosure 5.2 first, it begins on SEQ Step 6.**	
2	ENC 5.1 Step 1	**IAAT** the source of flooding is isolated, **THEN** notify Control Room. **STANDARD:** The candidate notes the source of flooding is not isolated. ***Examiner Cue: If asked, flooding is still occurring*.** Candidate continues to step 2. **COMMENTS:**	__SAT __UNSAT
3	2	**NOTE** Keys for valve locks are available in any Emergency Equipment cabinet. Close HPSW-959 (HPSW SUPPLY TO FLOW LIMITER BLOCK VALVE) (T-1/M-21 south, west of RCW Heat Exchangers). **STANDARD:** The candidate locates and closes HPSW-959 rotating it in the clockwise direction until it stops. ***Examiner Note: Operators would normally carry keys to these locks.*** ***Examiner Cue: When the candidate simulates rotating the hand wheel in the clockwise direction, inform the candidate that the valve is fully clockwise and on the hard stop.*** Candidate continues to step 3. **COMMENTS:**	**CRITICAL STEP** __SAT __UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
4	**3**	Notify Control Room HPSW isolation is complete. **STANDARD:** The candidate notifies the Unit 3 Control Room that HPSW isolation is complete. ***Examiner Cue: Notify candidate that U3 Control Room has been notified.*** Candidate continues to step 4. **COMMENTS:**	__SAT __UNSAT
5	**4**	**EXIT** this enclosure. **STANDARD:** The candidate EXITS Enc 5.1 and proceeds to Enc 5.2 **COMMENTS:**	__SAT __UNSAT
6	**ENC 5.2 Step 1**	**IAAT** the source of flooding is isolated, **THEN** notify Control Room. **STANDARD:** The candidate notes the source of flooding is not isolated. ***Examiner Cue: If asked, flooding is still occurring.*** Candidate continues to step 2. **COMMENTS:**	__SAT __UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
7	2	Close 3LPSW-844 (Aux Bldg AHU Supply) (T-1/M-46, 6' SE). **STANDARD:** The candidate locates and closes 3LPSW-844 by rotating it in the clockwise direction until it stops. ***Examiner Cue: When the candidate simulates rotating the hand wheel in the clockwise direction, inform the candidate that the valve is fully clockwise and on the hard stop.*** Candidate continues to step 3. **COMMENTS:**	**CRITICAL STEP** __SAT __UNSAT
8	3	Close 3LPSW-770 (Aux Bldg AHU Supply) (T-1/M-46, 8' S). **STANDARD:** The candidate locates and closes 3LPSW-770 by rotating it in the clockwise direction until it stops. ***Examiner Cue: When the candidate simulates rotating the hand wheel in the clockwise direction, inform the candidate that the valve is fully clockwise and on the hard stop.*** Candidate continues to step 4. **COMMENTS:**	**CRITICAL STEP** __SAT __UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
9	**4**	Open 3LPSW-501 (Unit 3 AHU return to Storm Drains) (T-1/L-47, NW 12' up on chain). **STANDARD:** The candidate locates and opens 3LPSW-501 by rotating it in the counter-clockwise direction until it stops. ***Examiner Cue: When the candidate simulates rotating the hand wheel in the counter-clockwise direction, inform the candidate that the valve is fully counter-clockwise and on the hard stop.*** Candidate continues to step 5. **COMMENTS:**	__SAT __UNSAT
10	**5**	**IAAT** 3LPSW-501 (Unit 3 AHU return to Storm Drains) is open, **THEN** close 3LPSW-500 (Unit 3 AHU return to CCW Discharge) (T-1/L-47, NW 12' up on chain) **STANDARD:** The candidate locates and closes 3LPSW-500 by rotating it in the clockwise direction until it stops. ***Examiner Cue: When the candidate simulates rotating the hand wheel in the clockwise direction, inform the candidate that the valve is fully clockwise and on the hard stop.*** **TIME CRITICAL STOP _____ (45 MINUTES)** Candidate continues to step 6. **COMMENTS:**	**CRITICAL STEP** __SAT __UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
11	6	Notify Control Room of the following: __LPSW Turbine Building isolation status __Monitor operating HPI pump motor temperatures **STANDARD:** The candidate contacts the control room by phone or radio and informs them that Turbine Building LPSW is isolated and to Monitor operating HPI pump motor temperatures ***Examiner Cue: Notify candidate that U3 Control Room has been notified.*** Candidate continues to step 7. **COMMENTS:**	__SAT __UNSAT
12	7	**EXIT** this enclosure. **STANDARD:** The candidate EXITS Enc 5.2 and returns CUE Sheet to examiner **COMMENTS:** **END OF TASK**	__SAT __UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
3	Step ensures proper isolation of HPSW leak.
7	Step ensures proper isolation of LPSW leak.
8	Step ensures proper isolation of LPSW leak.
10	Step ensures proper isolation of LPSW leak.

k

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

All 3 units are at 100% power

Unit 3 Auxiliary Building flooding is occurring

The source of flood water has not yet been determined

INITIATING CUES

The Control Room Supervisor directs you to perform AP/3/A/1700/030 Encl. 5.1 (HPSW AB Flood Isolation) AND Encl. 5.2 (LPSW Turbine Building Isolations)

THIS JPM IS TIME CRITICAL

REGION II
JOB PERFORMANCE MEASURE
OCONEE

ADM-114

Manually Calculate Shutdown Margin

To be performed on the same day as SRO ADM-S111

Administrative: Yes

Classroom/Simulator/Plant: Classroom

Alternate Path: No

Alt Path Description: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title: Manually Calculate Shutdown Margin

Task Number:

Alternate Path: No

Time Critical: No

Validation Time: 25 minutes

K/A Rating(s):
System: Gen
K/A: 2.1.43
Rating: (4.1/4.3)

Task Standard: Candidate correctly calculates Shutdown Margin by performing the following:

- references Enclosure 13.10 curve on page 1 or Table on page 2 for 300F and 300 EFPD and determines that shutdown boron is 1305 (1300 – 1310)
- determines that step 2.6.1 (1425 ppmB) – 100 ppmB = 1325 ppmB
- determines that step 2.6.1 (1325 ppmB) – Step 2.5.1 (1305 ppmB) = 20 ppmB
- determines that step 2.6.3 (20 ppmB) * Enc 13.8 value (-.00814% ΔK/K) – 1.00% ΔK/K = -1.163% ΔK/K (-1.122% to -1.204% ΔK/K)

References:
PT/1/A/1103/015 (Reactivity Balance Procedure (Unit 1)) Rev 79

Tools/Equipment/Procedures Needed:
PT/1/A/1103/015 (Reactivity Balance Procedure (Unit 1)) Rev 79
Calculator
Straight Edge (ruler or transparency paper)

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. **N/A**

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 has been shutdown for 15 days for leak repair. The following conditions exist:

- Cycle burnup = 300 EFPD
- RCS temperature = 300°F
- Control Rod Group 1 at 0% withdrawn
- Control Rod Group 8 at 35% withdrawn
- No credit is to be taken for Xenon and Samarium worth
- The calculation is NOT being performed for a Control Rod Trip Time test.
- RCS Boron 1425 ppm
- The RHOCALC program is NOT available

INITIATING CUES

1) The CRS directs you to perform the Original manual calculation of SDM using PT/1/A/1103/015, Reactivity Balance Procedure.
    - Carry ALL calculations out to five (5) decimal places.
    - Express your final answer of SDM to three (3) decimal places.

CALCULATED SDM:_____

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	2.1	This enclosure must be performed twice – the second is the separate verification. Indicate whether this is the original or the verification. **STANDARD:** Candidate checks 'Original Calculation' **COMMENTS:**	___ SAT ___ UNSAT
2	2.2	Enter the conditions for which this calculation is effective: Core Burnup:_____EFPD RCS Temperature_____°F CRD Grp 1 Posn:_____%wd CRD Grp8 Posn:_____%wd **NOTE**: The Xe/Sm time interval is normally 12 hours. However, any time interval may be used. This time interval is only required if credit is to be taken for Xenon/Samarium. Xenon/Samarium time interval valid from: Date/Time:_____to Date/Time:_____ **STANDARD:** Candidate enters the following data: Core Burnup:_300_EFPD RCS Temperature_300_°F CRD Grp 1 Posn:__0__%wd CRD Grp8 Posn:__35_%wd Candidate marks N/A for Xenon/Samarium date/time. **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
3	2.3	Obtain reference Shutdown Boron Concentration using the effective Burnup and RCS Temp from Step 2.2 by performing <u>one</u> of the following: • Enclosure 13.10 (Shutdown Boron Concentration vs. Burnup (Group 1 @ 0% wd)) if CRD Groups 1-7 are at 0% wd **<u>OR</u>** • Enclosure 13.11 (Shutdown Boron Concentration vs Burnup (Group 1 @ 50% wd)) if CRD Group 1 is at 50% and Group 2-7 are at 0% wd _____ppmB positive **<u>STANDARD:</u>** Candidate references Enclosure 13.10 curve on page 1 or Table on page 2 for 300F and 300 EFPD and determines that shutdown boron is: **1305 ppmB (1300-1310)** **<u>COMMENTS:</u>**	**CRITICAL STEP** ___ SAT ___ UNSAT
4	**2.4.1 to 2.4.4**	Adjust for non-referenced conditions as follows: **<u>STANDARD</u>***:* Candidate should determine from the INITIAL CONDITIONS that no adjustments are required. Steps 2.4.1 through 2.4.4 are N/A **<u>COMMENTS:</u>**	___ SAT ___ UNSAT
5	**2.4.5**	Sum steps 2.4.1 + 2.4.2 + 2.4.3 + 2.4.4 = _____ **<u>STANDARD</u>***:* Candidate should determine sum is 0 (zero) **<u>COMMENTS:</u>**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
6	2.4.6	Obtain boron concentration adjustment by dividing Step 2.4.5 by Differential Boron Worth from Enc. 13.8 (Differential Worth vs Burnup) **STANDARD**: Candidate should determine sum is 0 (zero) **COMMENTS:**	___ SAT ___ UNSAT
7	2.4.7	If Group 8 is NOT at its nominal postion as noted in Enc. 13.14 (Required Group 8 Position and Designed Cycle Length), subtract 50 ppmB from step 2.4.6 **STANDARD**: Candidate determines that step is N/A **COMMENTS:**	___ SAT ___ UNSAT
8	2.5.1	Determine required shutdown boron concentration as follows: Subtract Step 2.4.7 (IF Step 2.4.7 applicable) or Step 2.4.6 (IF Step 2.4.7 NOT applicable) from Step 2.3 to obtain the required Boron concentration for 1.00% ΔK/K shutdown margin (assumes worst rod stuck out): • Step 2.3 ppmB – Step 2.4.6 ppmB = _____ppmB **STANDARD**: Determine the required boron is: **1305 ppmB – 0 ppmB = 1305 ppmB (1300 – 1310)** **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
9	**2.5.2**	Obtain minimum RCS Boron Concentration for SSF operability from Enclosure 13.19 (Minimum RCS Boron Concentration to Maintain SSF Operability) using the Minimum Xenon from the effective time period: Minimum RCS Boron for SSF operability = _____ppmB **STANDARD:** Candidate references Enclosure 13.19 curve on page 1 or Table on page 2 for 300 EFPD and No Xenon and determines that Minimum RCS Boron is: **991 ppmB (980 - 1000)** **COMMENTS:**	___ SAT ___ UNSAT
10	**2.5.3**	Determine the minimum RCS Boron Concentration by recording the **GREATER** of Step 2.5.1 or Step 2.5.2: Minimum RCS Shutdown Boron Concentration = _____ppmB **STANDARD:** Candidate determines that Step 2.5.1 (1305) is greater than Step 2.5.2 (991) **Minimum RCS Shutdown Boron Concentration = 1305 ppmB** **COMMENTS:**	___ SAT ___ UNSAT
11	**2.6.1**	If desired, calculate actual shutdown margin as follows: Record actual RCS conditions: • RCS Boron Concentration:_____ppmB • RCS Temperature_____°F **STANDARD***:* Candidate records Actual RCS Boron Concentration (**1425 ppm**) and RCS Temperature (**300°F**) **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
12	2.6.2	Calculate the B10 corrected boron concentration by subtracting the 100 ppmB B10 depleation penalty from the measured boron concentration in Step 2.6.1: • (Step 2.6.1) ___ppmB – 100 ppmB (B10 penalty) = ___ppmB **STANDARD:** Candidate determines that step 2.6.1 (1425 ppmB) – 100 ppmB = 1325 ppmB **1325 ppmB** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
13	2.6.3	Subtract the required Boron concentration in Step 2.5.1 from the actual Boron concentration in Step 2.6.2: • (Step 2.6.2)____ppmB – (Step 2.5.1)____ppmB = ____ppmB **STANDARD:** Candidate determines that step 2.6.1 (1325 ppmB) – Step 2.5.1 (1305 ppmB) = 20 ppmB **20 ppmB (15 to 25 ppmB)** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
14	**2.6.4**	Calculate the actual shutdown margin by multiplying Step 2.6.3 by the Differential Boron Worth from Enc. 13.8 (Differential Boron Worth vs. Burnup) and subtracting 1.00% ΔK/K: • ((Step 2.6.3) ____ppmB * (Enc 13.8) ____%ΔK/K/ppmB) – **1.00% ΔK/K** = ____% ΔK/K **STANDARD:** Candidate determines that step 2.6.3 (20 ppmB) * Enc 13.8 value (-.00814% ΔK/K) – 1.00% ΔK/K = -1.163% ΔK/K **-1.163% ΔK/K (-1.122% to -1.204% ΔK/K)** **COMMENTS:** **END TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
3	Step is required to calculate SDM
12	Step is required to calculate SDM
13	Step is required to calculate SDM
14	Step is required to calculate SDM

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 has been shutdown for 15 days for leak repair. The following conditions exist:

- Cycle burnup = 300 EFPD
- RCS temperature = 300°F
- Control Rod Group 1 at 0% withdrawn
- Control Rod Group 8 at 35% withdrawn
- No credit is to be taken for Xenon and Samarium worth
- The calculation is NOT being performed for a Control Rod Trip Time test.
- RCS Boron 1425 ppm
- The RHOCALC program is NOT available

INITIATING CUES

2) The CRS directs you to perform the Original manual calculation of SDM using PT/1/A/1103/015, Reactivity Balance Procedure.
    - Carry ALL calculations out to five (5) decimal places.
    - Express your final answer of SDM to three (3) decimal places.

CALCULATED SDM:_____

REGION II
JOB PERFORMANCE MEASURE
OCONEE

ADM-116

Determine Time for SFP to Reach 200°F

Administrative: Yes

Classroom/Simulator/Plant: Classroom

Alternate Path: No

Alt Path Description: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Determine time for SFP to reach 200°F

Task Number :

Alternate Path: No

Time Critical: No

Validation Time: 15 min

K/A Rating(s):

System: Gen
K/A: 2.1.25
Rating: 3.9/4.2

Task Standard: AP/35 Encl. 5.4 is correctly performed and the following parameters determined:
- Time (Days) = 55 days
- Actual SFP Temperature = 106 degrees F
- Table 11, 110 degrees F column selected
- Table 11, 54 days row selected
- 9.6 hours determined as time-to-reach 200 degrees F

References:

AP/1-2/A/1700/035 (Loss of SFP Cooling And/Or Level) Rev 24

Tools/Equipment/Procedures Needed:

AP/1-2/A/1700/035 Encl. 5.4 (Unit 1-2 SFP Time to Reach 180ºF, 200 ºF) Rev 24

(Note: Below this line is used only for Initial NRC Exams)

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. **N/A**

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

- Unit 1 is at 100% stable
- Unit 1 EFPD = 278
- Unit 2 EFPD = 35
- Unit 2 was operating at 100% when it experienced a Unit blackout
- SSF has been activated for Unit 2
- Unit 2 RCMUP is aligned and operating
- U2 letdown is aligned to the SFP per AP/25
- AP/1-2/A/1700/035 (Loss of SFP Cooling And/Or Level) has been initiated
- Unit 1 & 2 SFP level = 0.0 ft stable
- Unit 1 & 2 SFP temperature = 105ºF

INITIATING CUES

CRS has directed you to utilize AP/35 Enclosure 5.4 and determine the time for Unit 1&2 SFP to reach 200 ºF. Document your answer below.

Time for Unit 1&2 SFP to reach 200 ºF = _____

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	1-3	Refer to tables A, B, and C below. Only one row from one table below applies Check the row in Table A, B, or C that applies to current conditions, and then use Tables listed on subsequent pages of Enc. 5.4, as directed, to calculate SFP heat up times. **STANDARD:** Candidate selects Table B and then chooses to use Table 11 based upon: • SSF Event in progress for U1 or U2 with Unit letdown going to SFP • U1 and U2 each have 177 Fuel Assemblies in RB **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
2	4	**NOTE** • Steps 4 and 5 below are used to determine Time (days). Time (days) is the number of days since Reactor shutdown associated with the most recent batch of Spent Fuel discharged to the SFP. • Steps 7 and 8 provide guidance on how to round off current SFP temperature and Time (days), as determined by steps 4 or 5 and Step 6; to the most conservative value. **IF** any: • U1 is in a Refueling Shutdown Outage • U2 is in a Refueling Shutdown Outage **THEN** perform following: A. IF either Unit has discharged fuel to U1-2 SFP during current Refueling outage, **THEN**: Time (days) = Total number of days elapsed since first Fuel Assembly dischared to U1-2 SFP. B. **IF NO** Unit has discharged fuel to U1-2 SFP during current Refueling outage, **THEN**: Time (days) = (Determine U1 and U2 Core EFPD. Use smaller of the two numbers.) + 20 Days **STANDARD:** Candidate determines step 4 is N/A and proceeds to step 5 **COMMENTS:**	___ SAT ___ UNSAT
3	5	**IF** U1 and U2 are **NOT** in a Refueling outage, **THEN**: Time (Days) = (Determine U1 and U2 Core EFPD. Use smaller of the two numbers.) + 20 Days. **STANDARD:** Candidate selects the Unit with the lower EFPD (Unit 2, EFPD = 35) and adds 20. 35 + 20 = **55 days** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
4	6	**NOTE** Initial SFP temperatures in the tables are given as Actual SFP Temperatures; instrument uncertainty needs to be considered when using these tables. This is accomplished by adding +1°F to the Indicated SFP temperature reading prior to entering tables to determine time to reach the various temperatures covered by the tables. Actual SFP Temperature = Indicated SFP Temperature _____ +1°F (instrument uncertainty). **STANDARD**: Candidate refers to the cue sheet and determines indicated SFP temperature = 105°F. Candidate adds 1°F to 105°F and determines Actual (corrected) SFP temperature = **106°F**. **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
5	7	**IF** Actual SFP temperature is between values in table, **THEN** use higher temperature in table. **STANDARD**: Candidate determines that the actual SFP Temperature of 106°F is between the 105°F and 110°F columns and uses the higher (**110°F**) column **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
6	**8**	**IF** Actual Time (days) is between times in table, **THEN** use shorter time in Table **STANDARD**: Candidate determines that the Time in Days (55 Days) is between the 54 and 57 rows and uses the lower (**54 days**) row **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
7	**Table 11**	Determine the time for U1 & U2 SFP to reach 200°F based upon Table 11. **STANDARD**: Candidate reads Table 11 using 110°F SFP Temperature and 54 Days and determines the time required to reach 200°F is **9.6 hours.** **COMMENTS:** **END TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
1	Step is required to determine the time to reach 200°F
3	Step is required to determine the time to reach 200°F
4	Step is required to determine the time to reach 200°F
5	Step is required to determine the time to reach 200°F
6	Step is required to determine the time to reach 200°F
7	Step is required to determine the time to reach 200°F

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

- Unit 1 is at 100% stable
- Unit 1 EFPD = 278
- Unit 2 EFPD = 35
- Unit 2 was operating at 100% when it experienced a Unit blackout
- SSF has been activated for Unit 2
- Unit 2 RCMUP is aligned and operating
- U2 letdown is aligned to the SFP per AP/25
- AP/1-2/A/1700/035 (Loss of SFP Cooling And/Or Level) has been initiated
- Unit 1 & 2 SFP level = 0.0 ft stable
- Unit 1 & 2 SFP temperature = 105ºF

INITIATING CUES

CRS has directed you to utilize AP/35 Enclosure 5.4 and determine the time for Unit 1&2 SFP to reach 200 ºF. Document your answer below.

Time for Unit 1&2 SFP to reach 200 ºF = _____

REGION II
JOB PERFORMANCE MEASURE
OCONEE

ADM-204

Perform SG Downcomer Temperature Surveillance

Administrative: Yes

Classroom/Simulator/Plant: Classroom

Alternate Path: No

Alt Path Description: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Perform SG Downcomer Temperatue Surveillance

Task Number :

Alternate Path: No

Time Critical: No

Validation Time: 15 minutes

K/A Rating(s):

System: Gen
K/A: 2.2.12
Rating: 3.7/4.1

Task Standard:
Perform SG Downcomer Temperature Surveillance by procedure as follows:

- Determines that OAC points O1E2008, O1E2009, O1E2012, O1E2013 do **NOT** agree within 3°F of each other, and continues to Enclosure 4.19 (Channel Check of OTSG Downcomer Temperatures).
- Determine 1A SG saturation temperature by interpolating the values using the table in Section 4 on the 75% power row and the 880 (532.8°F) and 890 (534.1°F) psig columns, to be 533.45°F (533.4 – 533.5°F).
- Determine O1E2008 (528.87°F) is within ± 4.9°F of 1A SG saturation temperature (533.45°F).
- Determine O1E2009 (538.97°F) is NOT within ± 4.9°F of 1A SG saturation temperature (533.45°F) and entry into Condition A of SLC 16.7.5 for OTSG Overfill protection is required.
- Determine 1B SG saturation temperature using the table in Section 4 on the 75% power row and the 890 psig column to be 534.1°F.
- Determine O1E2012 (532.77°F) is within ± 4.9°F of 1B SG saturation temperature (534.1°F).
- Determine O1E2013 (533.63°F) is within ± 4.9°F of 1B SG saturation temperature (534.1°F).

References:

OP/1/A/1105/014 (Control Room Instrumentation Operation And Information) Encl 4.1 (Mode 1 & 2) and Encl. 4.19 (Channel Check Of OTSG Downcomer Temperatures) Rev 48
SLC 16.7.5 Steam Generator Overfill Protection Rev 11/15/12

Tools/Equipment/Procedures Needed:

OP/1/A/1105/014 (Control Room Instrumentation Operation And Information)
OAC Screen capture image for SG information
SLC 16.7.5 Steam Generator Overfill Protection

(Note: Below this line is used only for Initial NRC Exams)

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Candidate: _____ Time Start: _____

NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____

NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. **N/A**

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 Reactor power = 75%

INITIATING CUE

The CRS directs you to perform OP/1/A/1105/014 (Control Room Instrumentation Operation And Information) Encl. 4.1 (Mode 1 & 2) component check for the SG Downcomer Temperatures. Document your results below and list all deficiencies found, if any.

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	Enc 4.1	Verify All SG Downcomer Temperature computer points agree within 3°F of each other. **IF** All SG Downcomer Temperatures **DO NOT** agree within 3°F of each other, then perform Enclosure 4.19, (Channel Check Of OTSG Downcomer Temperatures). **STANDARD:** Candidate observes OAC computer points on the handout provided. O1E2008 – 528.87°F O1E2009 – 538.97°F O1E2012 – 532.77°F O1E2013 – 533.63°F Determines that the above OAC points do **NOT** agree within 3°F of each other, and continues to Enclosure 4.19, (Channel Check of OTSG Downcomer Temperatures). **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
2	Enc 4.19 3.1.1	Determine saturation temperature for 1A OTSG based on power level and 1A OTSG outlet pressure as follows: Step 3.1.1 Determine 1A OTSG outlet pressure using any one of the following computer points: • O1E2281 – 885 psig • O1E2283 – 885 psig • O1E2031 – 885 psig • O1E2032 – 885 psig **STANDARD:** Using the OAC handout, determines that 1A OTSG pressure is 885 psig. **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
3	3.1.2	Using table in Section 4, determine the 1A OTSG saturation temperature based on power level and 1A OTSG Outlet Pressure obtained in step 3.1.1. _____ 1A OTSG saturation temperature **STANDARD:** Candidate determines that 1A OTSG saturation temperature is ≈ 533.45°F **(533.4 – 533.5°F)** by using the table in section 4. ***Examiner Note: Candidate must interpolate the values in Table 4. One way to do this is to determine the values at 75% power for 880 (532.8) and 890 (534.1).*** ***534.1 - 532.8 = 1.3*** ***1.3 divided by 10 = .13*** ***.13 x 5 = 0.65 (1A SG Outlet press = 885)*** ***0.65 + 532.8 = 533.45°F (Add to value for 880)*** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
4	3.1.3	Compare O1E2008 SG Lower Downcomer Temperature Loop A to the 1A OTSG saturation temperature determined in step 3.1.2: **STANDARD**: Candidate compares OAC point O1E2008 (528.87°F) to value calculated in step 3.1.2 (533.45°F). **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
5	3.1.4	**IF** O1E2008 SG Lower Downcomer Temperature Loop A is **NOT** within ± 4.9°F of the 1A OTSG saturation temperature, then enter Condition A of SLC 16.7.5 for OTSG overfill protection system inoperable. **STANDARD**: Candidate determines that O1E2008 SG Lower Downcomer Temperature Loop A (528.87°F) is within ± 4.9°F (difference is 4.58°F) of the 1A OTSG saturation temperature (533.45°F), and the step is N/A. **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
6	3.1.5	Compare O1E2009 SG Lower Downcomer Temperature Loop A to the 1A OTSG saturation temperature determined in step 3.1.2 **STANDARD**: Candidate compares OAC point O1E2009 (538.97°F) to value calculated in step 3.1.2 (533.45°F). **COMMENTS:**	___ SAT ___ UNSAT
7	3.1.6	**IF** O1E2009 SG Lower Downcomer Temperature Loop A is **NOT** within ± 4.9°F of the 1A OTSG saturation temperature, then enter Condition A of SLC 16.7.5 for OTSG overfill protection system inoperable. **STANDARD**: Candidate determines that O1E2009 SG Lower Downcomer Temperature Loop A (538.97) is **NOT** within ± 4.9°F (difference is 5.52°F) of the 1A OTSG saturation temperature (533.45°F), and entry into Condition A of SLC 16.7.5 for OTSG overfill protection system inoperable is required. **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
8	**Enc 4.19 3.2.1**	Determine saturation temperature for 1B OTSG based on power level and 1B OTSG outlet pressure as follows: Step 3.2.1 Determine 1B OTSG outlet pressure using <u>any</u> <u>one</u> of the following computer points: • O1E2282 – 890 psig • O1E2284 – 890 psig **<u>STANDARD</u>:** Using the OAC handout, determines that 1B OTSG pressure is 890 psig. **<u>COMMENTS:</u>**	___ SAT ___ UNSAT
9	**3.2.2**	Using table in Section 4, determine the 1B OTSG saturation temperature based on power level and 1B OTSG Outlet Pressure obtained in step 3.2.1. _____ 1B OTSG saturation temperature **<u>STANDARD:</u>** Candidate determines that 1B OTSG saturation temperature is **534.1°F** by using the table in section 4. **<u>COMMENTS:</u>**	**CRITICAL STEP** ___ SAT ___ UNSAT
10	**3.2.3**	Compare O1E2012 SG Lower Downcomer Temperature Loop B to the 1B OTSG saturation temperature determined in step 3.2.2: **<u>STANDARD</u>***:* Candidate compares OAC point O1E2012 (532.77°F) to value calculated in step 3.2.2 (534.1°F). **<u>COMMENTS:</u>**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
11	**3.2.4**	**IF** O1E2012 SG Lower Downcomer Temperature Loop B is **NOT** within ± 4.9°F of the 1B OTSG saturation temperature, then enter Condition A of SLC 16.7.5 for OTSG overfill protection system inoperable. **STANDARD**: Candidate determines that O1E2012 SG Lower Downcomer Temperature Loop B (532.77°F) is within ± 4.9°F (difference is 1.33°F) of the 1B OTSG saturation temperature (534.1°F), and the step is N/A. **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
12	**3.2.5**	Compare O1E2013 SG Lower Downcomer Temperature Loop B to the 1B OTSG saturation temperature determined in step 3.2.2 **STANDARD**: Candidate compares OAC point O1E2013 (533.63°F) to value calculated in step 3.2.2 (534.1°F). **COMMENTS:**	___ SAT ___ UNSAT
13	**3.2.6**	**IF** O1E2013 SG Lower Downcomer Temperature Loop B is **NOT** within ± 4.9°F of the 1B OTSG saturation temperature, then enter Condition A of SLC 16.7.5 for OTSG overfill protection system inoperable. **STANDARD**: Candidate determines that O1E2013 SG Lower Downcomer Temperature Loop B (533.63) is within ± 4.9°F (difference is 0.47°F) of the 1B OTSG saturation temperature (534.1°F), and the step is N/A. **COMMENTS:** **END TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
1	Step is required to complete the surveillance.
3	Step is required to complete the surveillance.
5	Step is required to complete the surveillance.
7	Determining that the computer points in Step 3.1.6 are out of the allowable band is critical to ensure that SLC 16.7.5 Condition A is entered.
9	Step is required to complete the surveillance.
11	Step is required to complete the surveillance.
13	Step is required to complete the surveillance.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 Reactor power = 75%

INITIATING CUE

The CRS directs you to perform OP/1/A/1105/014 (Control Room Instrumentation Operation And Information) Encl. 4.1 (Mode 1 & 2) component check for the SG Downcomer Temperatures. Document your results below and list all deficiencies found, if any.

REGION II
JOB PERFORMANCE MEASURE
OCONEE

ADM-307

1RIA-40 Setpoint Calculation

Administrative: Yes

Classroom/Simulator/Plant: Classroom

Alternate Path: No

Alt Path Description: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title: 1RIA-40 Setpoint Calculation

Task Number:

Alternate Path: No

Time Critical: No

Validation Time: 20 min

K/A Rating(s):
System: Gen
K/A: 2.3.15
Rating: (2.9/3.1)

Task Standard:
Candidate correctly calculates 1RIA-40 Alert and High setpoints as follows:

- Determines CSAE offgas flow = 62 ft^3/min (12.0+15.5+13.5+21)
- Calculates 1RIA-40 Alert setpoint of 112 – 114 cpm.
- Calculates 1RIA-40 High setpoint of 678 - 682 cpm.

References:
PT/0/A/0230/001 Radiation Monitor Check Rev 176

Tools/Equipment/Procedures Needed:
PT/0/A/0230/001 Radiation Monitor Check Enc. 13.3 (1RIA-40 Setpoints)
PT/0/A/0230/001 Radiation Monitor Check Enc. 13.4 (1RIA-40 Setpoints and Primary to Secondary Leak Rate Calculations)
Calculator

==========

Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

N/A

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 is at 100% Reactor Power

1RIA-40 is available

1RIA-40 view node indicates 87 cpm

U1 CSAEs are in service

- 1A CSAE flow: 12.0 ft^3/min
- 1B CSAE flow: 15.5 ft^3/min
- 1C CSAE flow: 13.5 ft^3/min

AP/1/A/1700/031 (Primary to Secondary Leakage) is **NOT** in effect

RP reports reportable activity present in CSAE offgas:

- CSAE Ar-41: 2.13 E-6 µCi/ml

Primary Chemistry reports the following sample results:

- RCS Xe-133: 0.289 µCi/ml
- RCS Ar-41: 0.372 µCi/ml

INITIATING CUES

The CRS directs you to perform PT/0/A/0230/001 Encl. 13.3 (1RIA-40 Setpoints) through Step 2.2.

NOTE: Calculation of Primary to Secondary Leak Rate is NOT required.

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	Encl. 13.3 2.1	Determine 1RIA-40 High and Alert setpoints from one of the following: • Enclosure 13.4 (1RIA-40 Setpoints and Primary To Secondary Leak Rate Calculations) • AP/1/A/1700/031 (Primary To Secondary Leakage) **STANDARD:** Candidate selects Enclosure 13.4 per the Initial Conditions **COMMENTS:**	___ SAT ___ UNSAT
2	Encl. 13.4 1.1	Verify one of the following: • CSAEs are in service • CSAEs are ready to be placed in service **STANDARD:** Candidate determines that CSAEs are in service per the Initial Conditions **COMMENTS:**	___ SAT ___ UNSAT
3	1.2	1RIA-40 available **STANDARD:** Candidate determines that 1RIA-40 is available from Initial Conditions **COMMENTS:**	___ SAT ___ UNSAT
4	1.3	AP/1/A/1700/031 (Primary to Secondary Leakage) **NOT** in effect. **STANDARD:** Candidate should determine from the INITIAL CONDITIONS that AP/31 is not in effect **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
5	1.4	Enclosure 13.3 (1RIA-40 Setpoints) in progress **STANDARD**: The candidate started Enclosure 13.3 based upon SRO direction. **COMMENTS:**	___ SAT ___ UNSAT
6	2.1	**IF** RP reports **NO** reportable activity present in CSAE offgas: **STANDARD**: Candidate should determine that step is N/A based upon Initial Conditions **COMMENTS:**	___ SAT ___ UNSAT
7	2.2 & 2.2.1	**IF** RP reports reportable activity present in CSAE offgas: Record current RCS and CSAE sample results: From Primary Chemistry: RCS Ar-41:_____µCi/ml From RP: CSAE Ar-41:_____µCi/ml **STANDARD**: Candidate should determine RCS Ar-41 is 0.372 µCi/ml and CSAE Ar-41 is 2.13 E-6 µCi/ml from Initial Conditions **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
8	**2.2.2**	Identify 1RIA-40 current value count rate from view node: _____CPM **STANDARD***:* Candidate determines 87 cpm RIA view node indication from the Initial Conditions. **COMMENTS:**	___ SAT ___ UNSAT
9	**2.2.3**	Perform the following calculations: • 1RIA-40 Setpoints per Section 3 • Primary To Secondary Leak Rate per Section 4 **STANDARD:** Candidate will perform Section 3 to determine setpoints. Section 4 is not required to be performed per the cue sheet. **COMMENTS:**	___ SAT ___ UNSAT
10	**3.1**	Perform one of the following as required to obtain "CSAE flow ft^3/min" • If all three CSAE readings on scale (≤ 20 scfm (ft^3/min), calculate "CSAE flow ft^3/min" as follows: Total Unit 1 CSAE flow provided from operator rounds = _____ft^3/min + _____ft^3/min + _____ft^3/min = _____ft^3/min CSAE 1A CSAE 1B CSAE 1C Total CSAE flow ft^3/min = Total Unit 1 CSAE flow provided from Operator rounds + 21 ft^3/min CSAE flow ft^3/min = _____ ft^3/min **STANDARD:** Candidate adds offgas flows (12.0 + 15.5 + 13.5) to 21 and gets **62** ft^3/min CSAE flow ft^3/min **= 62** ft^3/min **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
11	3.2	Perform the following equations: Alert Setpoint = (1RIA-40 CPM) (RCS Ar-41 µCi/ml) (4.61 E-4 ft^3/min) / (CSAE flow ft^3/min) (CSAE Ar-41 µCi/ml) Alert Setpoint = (_____) CPM X (_____) µCi/ml (RCS Ar-41) X 4.61 E-4 ft^3/min / ( ) ft^3/min ( ) µCi/ml (CSAE Ar-41) Alert Setpoint = _____ CPM High Setpoint = (1RIA-40 CPM) (RCS Ar-41 µCi/ml) (2.77 E-3 ft^3/min) / (CSAE flow ft^3/min) (CSAE Ar-41 µCi/ml) High Setpoint = (_____) CPM X (_____) µCi/ml (RCS Ar-41) X 2.77 E-3 ft^3/min / ( ) ft^3/min ( ) µCi/ml (CSAE Ar-41) High Setpoint = _____ CPM **STANDARD**: Candidate performs the following: Alert Setpoint = (87 CPM) X (0.372 µCi/ml) X (4.61 E-4 ft^3/min) / (62 ft^3/min) (2.13 E-6 µCi/ml) **Alert Setpoint = 112.977 (112 – 114)** High Setpoint = (87 CPM) X (0.372 µCi/ml) X (2.77 E-3 ft^3/min) / (62 ft^3/min) (2.13 E-6 µCi/ml) **High Setpoint = 678.845 (678 – 682)** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
12	3.3	Record 1RIA-40 setpoints on Enclosure 13.3 (1RIA-40 Setpoints) **STANDARD:** Candidate records the Alert setpoint (**112 – 114**) and the High setpoint (**678 – 682**) on Step 2.2 of Encl. 13.3 **COMMENTS:** **END TASK**	___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
10	Step is required to calculate 1RIA-40 setpoint
11	Step is required to calculate 1RIA-40 setpoint

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 is at 100% Reactor Power

1RIA-40 is available

1RIA-40 view node indicates 87 cpm

U1 CSAEs are in service

- 1A CSAE flow: 12.0 ft^3/min
- 1B CSAE flow: 15.5 ft^3/min
- 1C CSAE flow: 13.5 ft^3/min

AP/1/A/1700/031 (Primary to Secondary Leakage) is **NOT** in effect

RP reports reportable activity present in CSAE offgas:

- CSAE Ar-41: 2.13 E-6 µCi/ml

Primary Chemistry reports the following sample results:

- RCS Xe-133: 0.289 µCi/ml
- RCS Ar-41: 0.372 µCi/ml

INITIATING CUES

The CRS directs you to perform PT/0/A/0230/001 Encl. 13.3 (1RIA-40 Setpoints) through Step 2.2.

NOTE: Calculation of Primary to Secondary Leak Rate is NOT required.

REGION II
JOB PERFORMANCE MEASURE
OCONEE

ADM-S111

Manually Calculate Shutdown Margin and Determine Any Required Actions

To be performed on the same day as RO ADM-114

Administrative: Yes

Classroom/Simulator/Plant: Classroom

Alternate Path: No

Alt Path Description: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Manually Calculate Shutdown Margin and Determine Any Required Actions

Task Number :

Alternate Path: No

Time Critical: No

Validation Time: 30 minutes

K/A Rating(s):
System: Gen
K/A: 2.1.43
Rating: 4.1/4.3

Task Standard:
Candidate correctly calculates SDM and determines required actions as follows:

- references Enclosure 13.10 curve on page 1 or Table on page 2 for 300°F and 300 EFPD and determines that shutdown boron is 1300 – 1310.
- determines that step 2.6.1 (1385 ppmB) – 100 ppmB = 1285 ppmB
- determines that step 2.6.1 (1285 ppmB) – Step 2.5.1 (1300 - 1310 ppmB) = -15 to -25 ppmB
- determines that step 2.6.3 (-15 to -25 ppmB) * Enc 13.8 value (-.00814% ΔK/K) – 1.00% ΔK/K = -.837% ΔK/K (-.879% to -.795% ΔK/K)
- determines that TS LCO 3.1.1 is NOT met since SDM of -.795 to -.879 is less than 1% as required by the COLR. Enters TS 3.1.1 Condition A – Required Action: Initiate boration within 15 minutes to restore SDM.

References:
PT/1/A/1103/015 (Reactivity Balance Procedure (Unit 1)) Rev 79

Tools/Equipment/Procedures Needed:
PT/1/A/1103/015 (Reactivity Balance Procedure (Unit 1)) Rev 79
TS 3.1.1 Rev 374
Calculator
Straight Edge (ruler or transparency paper)

(Note: Below this line is used only for Initial NRC Exams)

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Candidate: _____ Time Start: _____

NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____

NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. **N/A**

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 has been shutdown for 15 days for leak repair. The following conditions exist:

- Cycle burnup = 300 EFPD
- RCS temperature = 300°F
- Control Rod Group 1 at 0% withdrawn
- Control Rod Group 8 at 35% withdrawn
- No credit is to be taken for Xenon and Samarium worth
- The calculation is NOT being performed for a Control Rod Trip Time test.
- RCS Boron 1385 ppm
- The RHOCALC program is NOT available

INITIATING CUES

1) The CRS directs you to perform the Original manual calculation of SDM using PT/1/A/1103/015, Reactivity Balance Procedure.

2) Evaluate the calculated SDM and determine all Tech Specs and SLCs that apply, if any, including all/any REQUIRED ACTIONS and COMPLETION TIMES.
   - Carry ALL calculations out to five (5) decimal places.
   - Express your final answer of SDM to three (3) decimal places.

   SDM: _____

   IF required:

   TS/SLC: _____

   - Required Action: _____
   - Completion Time: _____

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	2.1	This enclosure must be performed twice – the second is the separate verification. Indicate whether this is the original or the verification. **STANDARD:** Candidate checks 'Original Calculation' **COMMENTS:**	___ SAT ___ UNSAT
2	2.2	Enter the conditions for which this calculation is effective: Core Burnup:_____EFPD RCS Temperature_____°F CRD Grp 1 Posn:_____%wd CRD Grp 8 Posn:_____%wd **NOTE**: The Xe/Sm time interval is normally 12 hours. However, any time interval may be used. This time interval is only required if credit is to be taken for Xenon/Samarium. Xenon/Samarium time interval valid from: Date/Time:_____to Date/Time:_____ **STANDARD:** Candidate enters the following data: Core Burnup: 300 EFPD RCS Temperature 300 °F CRD Grp 1 Posn: 0 %wd CRD Grp 8 Posn: 35 %wd Candidate marks N/A for Xenon/Samarium date/time. **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
3	2.3	Obtain reference Shutdown Boron Concentration using the effective Burnup and RCS Temp from Step 2.2 by performing <u>one</u> of the following: • Enclosure 13.10 (Shutdown Boron Concentration vs. Burnup (Group 1 @ 0% wd)) if CRD Groups 1-7 are at 0% wd **<u>OR</u>** • Enclosure 13.11 (Shutdown Boron Concentration vs Burnup (Group 1 @ 50% wd)) if CRD Group 1 is at 50% and Group 2-7 are at 0% wd _____ppmB positive **<u>STANDARD:</u>** Candidate references Enclosure 13.10 curve on page 1 or Table on page 2 for 300°F and 300 EFPD and determines that shutdown boron is: **1305 ppmB (1300-1310)** **<u>COMMENTS:</u>**	**CRITICAL STEP** ___ SAT ___ UNSAT
4	2.4.1 to 2.4.4	Adjust for non-referenced conditions as follows: **<u>STANDARD</u>***:* Candidate should determine from the INITIAL CONDITIONS that no adjustments are required. Steps 2.4.1 through 2.4.4 are N/A **<u>COMMENTS:</u>**	___ SAT ___ UNSAT
5	2.4.5	Sum steps 2.4.1 + 2.4.2 + 2.4.3 + 2.4.4 = _____ **<u>STANDARD</u>***:* Candidate should determine sum is 0 (zero) **<u>COMMENTS:</u>**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
6	**2.4.6**	Obtain boron concentration adjustment by dividing Step 2.4.5 by Differential Boron Worth from Enc. 13.8 (Differential Worth vs Burnup) **STANDARD**: Candidate should determine sum is 0 (zero) **COMMENTS:**	___ SAT ___ UNSAT
7	**2.4.7**	If Group 8 is NOT at its nominal postion as noted in Enc. 13.14 (Required Group 8 Position and Designed Cycle Length), subtract 50 ppmB from step 2.4.6 **STANDARD**: Candidate determines that step is N/A **COMMENTS:**	___ SAT ___ UNSAT
8	**2.5.1**	Determine required shutdown boron concentration as follows: Subtract Step 2.4.7 (IF Step 2.4.7 applicable) or Step 2.4.6 (IF Step 2.4.7 NOT applicable) from Step 2.3 to obtain the required Boron concentration for 1.00% ΔK/K shutdown margin (assumes worst rod stuck out): • Step 2.3 ppmB – Step 2.4.6 ppmB = _____ppmB **STANDARD**: Determine the required boron is: **1305 ppmB – 0 ppmB = 1305 ppmB (1300 – 1310)** **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
9	**2.5.2**	Obtain minimum RCS Boron Concentration for SSF operability from Enclosure 13.19 (Minimum RCS Boron Concentration to Maintain SSF Operability) using the Minimum Xenon from the effective time period: Minimum RCS Boron for SSF operability = _____ppmB **STANDARD:** Candidate references Enclosure 13.19 curve on page 1 or Table on page 2 for 300 EFPD and No Xenon and determines that Minimum RCS Boron is: **991 ppmB (980 - 1000)** **COMMENTS:**	___ SAT ___ UNSAT
10	**2.5.3**	Determine the minimum RCS Boron Concentration by recording the **GREATER** of Step 2.5.1 or Step 2.5.2: Minimum RCS Shutdown Boron Concentration = _____ppmB **STANDARD:** Candidate determines that Step 2.5.1 (1305) is greater than Step 2.5.2 (991) **Minimum RCS Shutdown Boron Concentration = 1305 ppmB** **COMMENTS:**	___ SAT ___ UNSAT
11	**2.6.1**	If desired, calculate actual shutdown margin as follows: Record actual RCS conditions: • RCS Boron Concentration:_____ppmB • RCS Temperature_____°F **STANDARD***:* Candidate records Actual RCS Boron Concentration (**1385 ppm**) and RCS Temperature (**300°F**) **COMMENTS:**	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
12	2.6.2	Calculate the B10 corrected boron concentration by subtracting the 100 ppmB B10 depleation penalty from the measured boron concentration in Step 2.6.1: • (Step 2.6.1) ___ppmB – 100 ppmB (B10 penalty) = ___ppmB **STANDARD:** Candidate determines that step 2.6.1 (1385 ppmB) – 100 ppmB = 1285 ppmB **1285 ppmB** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
13	2.6.3	Subtract the required Boron concentration in Step 2.5.1 from the actual Boron concentration in Step 2.6.2: • (Step 2.6.2)____ppmB – (Step 2.5.1)____ppmB = ____ppmB **STANDARD:** Candidate determines that step 2.6.2 (1285 ppmB) – Step 2.5.1 (1305 ppmB) = -20 ppmB **-20 ppmB (-15 to -25 ppmB)** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
14	**2.6.4**	Calculate the actual shutdown margin by multiplying Step 2.6.3 by the Differential Boron Worth from Enc. 13.8 (Differential Boron Worth vs. Burnup) and subtracting 1.00% ΔK/K: • ((Step 2.6.3) ____ppmB * (Enc 13.8) ____%ΔK/K/ppmB) – **1.00% ΔK/K** = ____% ΔK/K **STANDARD:** Candidate determines that step 2.6.3 (-20 ppmB) * Enc 13.8 value (-.00814% ΔK/K) – 1.00% ΔK/K = -.837% ΔK/K **-.837% ΔK/K (-.879% to -.795% ΔK/K)** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
15	**TS 3.1.1**	Evaluate the calculated SDM **STANDARD:** Candidate determines that TS LCO 3.1.1 is NOT met since SDM of -.795 to -.879 is less than 1% as required by the COLR. **REQUIRED ACTION: Initiate boration to restore SDM to within limit with a COMPLETION TIME of 15 Minutes per TS 3.1.1 Condition A** **COMMENTS:** **END OF TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
3	Step is required to calculate SDM
12	Step is required to calculate SDM
13	Step is required to calculate SDM
14	Step is required to calculate SDM
15	Step is required to determine corrective actions based upon not meeting SDM

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 has been shutdown for 15 days for leak repair. The following conditions exist:

- Cycle burnup = 300 EFPD
- RCS temperature = 300°F
- Control Rod Group 1 at 0% withdrawn
- Control Rod Group 8 at 35% withdrawn
- No credit is to be taken for Xenon and Samarium worth
- The calculation is NOT being performed for a Control Rod Trip Time test.
- RCS Boron 1385 ppm
- The RHOCALC program is NOT available

INITIATING CUES

3) The CRS directs you to perform the Original manual calculation of SDM using PT/1/A/1103/015, Reactivity Balance Procedure.

4) Evaluate the calculated SDM and determine all Tech Specs and SLCs that apply, if any, including all/any REQUIRED ACTIONS and COMPLETION TIMES.
   - Carry ALL calculations out to five (5) decimal places.
   - Express your final answer of SDM to three (3) decimal places.

   SDM: _____

   IF required:

   TS/SLC: _____

   - Required Action: _____
   - Completion Time: _____

REGION II
JOB PERFORMANCE MEASURE
OCONEE

ADM-S112

Manually Calculate Core Tilt Due to Loss of the OAC and Determine Any Required Actions and Completion Times

Administrative: Yes

Classroom/Simulator/Plant: Classroom

Alternate Path: No

Alt Path Description: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Manually Calculate Core Tilt Due to Loss of the OAC and Determine Any Required Actions and Completion Times

Task Number :

Alternate Path: No

Time Critical: No

Validation Time: 35 minutes

K/A Rating(s):
System: Gen
K/A: 2.1.25
Rating: 3.9/4.2

Task Standard:
Calculate Core Tilt by procedure within ± 0.02% of the values given on the key as follows:

- Candidate fills in table on Enc. 13.4 with Recorder and Core Location per ATTACHED KEY
- Candidate performs calculations per the ATTACHED KEY and determines the following tilt values:
  - WX Quadrant = 2.07% (2.05 to 2.09%)
  - XY Quadrant = 5.14% (5.12 to 5.16%)
  - YZ Quadrant = -3.93% (-3.91 to -3.95%)
  - ZW Quadrant = -3.28% (-3.26 to -3.30%)
- Refer to the COLR and determine that the highest positive tilt is 5.14%, which is above the Transient limit of 3.63 but less than the Maximum limit of 10.07.
- Refer to TS 3.2.3 (Quadrant Power Tilt) and determine TS 3.2.3 Condition D must be entered.
  - REQUIRED ACTION: Reduce THERMAL POWER to < 60% of the ALLOWABLE THERMAL POWER with a COMPLETION TIME of 2 hours…**AND**...Reduce nuclear overpower trip setpoints, based on flux and flux/flow imbalance to < 65.5% of the ALLOWABLE THERMAL POWER.

References:
PT/0/A/1103/019 Backup Incore Detector System Rev 07
OP/1/A/1105/014 Control Room Instrumentation Operation and Information Rev 48
PT/1/A/0600/001 Periodic Instrument Surveillance Rev 342
Unit 1 COLR Cycle 31 Rev 01
TS 3.2.3 QPT

Tools/Equipment/Procedures Needed:
PT/0/A/1103/019 Backup Incore Detector System
OP/1/A/1105/014 Control Room Instrumentation Operation and Information
PT/1/A/0600/001 Periodic Instrument Surveillance
Unit 1 COLR Cycle 31
TS 3.2.3 QPT
Calculator

(Note: Below this line is used only for Initial NRC Exams)

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Candidate: _____ Time Start: _____

NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____

NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. **N/A**

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 has been operating at 100% power for 4 days. The following conditions exist:

- On the OAC the Computer Reactor Calculation Package for Incore Detector data calculations is OOS
- Backup Incore Chart Recorder "A" points are ALL operable
- Backup Incore Chart Recorder “B” is OOS
- 1NI-7 has just failed
- All Controls Rods are normal
- The CRS has verified per OP/1/A/1105/014, Control Room Instrumentation Operation And Information, (Encl. 4.13, Reactor Parameter information; Step 3.2.4) that Axial Imbalance and QPT surveillances must be performed using the Backup Incore Detectors.
- PT/0/A/1103/019, (Backup Incore Detector System) in progress:
  - Enclosure 13.3 (Axial Power Imbalance Calculation Sheet) has been calculated and verified.
  - Enclosure 13.4 (Quadrant Power Tilt Calculation Sheet) has been calculated but NOT verified.

INITIATING CUES

- The CRS directs you, as the verifier, to calculate quadrant power tilt using PT/0/A/1103/019, Backup Incore Detector System, Enclosure 13.4 (Quadrant Power Tilt Calculation Sheet) using the attached data sheet.
- Evaluate the calculated quadrant power tilt and determine all Tech Specs and SLCs that apply, if any, including all/any REQUIRED ACTIONS and COMPLETION TIMES.

QPT: _____

IF required:

TS/SLC: _____

Required Action(s): _____

Completion Time(s): _____

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	**Enc 13.4 2.1**	Using Enclosure 13.2 (Required Backup Recorder Points for Calculating Quadrant Power Tilt) choose an acceptable set of recorder points for which all points are operable, **AND** record the point identifications (recorder, detector location) in the tables below. **STANDARD:** Candidate fills in table on Enc. 13.4 with Recorder and Core Location. **SEE ATTACHED KEY** **COMMENTS:**	___ SAT ___ UNSAT
2	**2.2**	Record the backup recorder readings (R) on the blanks provided below. **STANDARD:** Candidate fills in table on Enc. 13.4 with Recorder and Core Location. **SEE ATTACHED KEY** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
3	**2.3**	Calculate quadrant power tilt as indicate below: **STANDARD:** Candidate performs calculations using data from the Table. **SEE ATTACHED KEY** **WX Quadrant = 2.07%** **XY Quadrant = 5.14%** **YZ Quadrant = -3.93%** **ZW Quadrant = -3.28%** ***Examiner Note: Answers must be within ± 0.02%*** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
4	TS COLR	Determine any TS required actions and completion times. **STANDARD**: Refer to the COLR and determine that Quadrant Power Tilt Setpoints are as follows: • Backup Incore Steady State (30-100) = 2.58 • Backup Incore Transient (30-100) = 3.63 • Backup Incore Maximum (>0) = 10.07 Refer to TS 3.2.3 (Quadrant Power Tilt) and determine that the highest positive tilt is 5.14% and is above the Transient limit but less than the Maximum limit. **TS 3.2.3 Condition D** must be entered REQUIRED ACTION: Reduce THERMAL POWER to < 60% of the ALLOWABLE THERMAL POWER with a COMPLETION TIME of 2 hours…**AND**...Reduce nuclear overpower trip setpoints, based on flux and flux/flow imbalance to < 65.5% of the ALLOWABLE THERMAL POWER. **COMMENTS:** **END OF TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
2	Data must be entered correctly to ensure the proper tilt is calculated.
3	Calculation must be performed correctly to determine the tilt value.
4	Required to determine TS actions and completion times.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 has been operating at 100% power for 4 days. The following conditions exist:

- On the OAC the Computer Reactor Calculation Package for Incore Detector data calculations is OOS
- Backup Incore Chart Recorder "A" points are ALL operable
- Backup Incore Chart Recorder “B” is OOS
- 1NI-7 has just failed
- All Controls Rods are normal
- The CRS has verified per OP/1/A/1105/014, Control Room Instrumentation Operation And Information, (Encl. 4.13, Reactor Parameter information; Step 3.2.4) that Axial Imbalance and QPT surveillances must be performed using the Backup Incore Detectors.
- PT/0/A/1103/019, (Backup Incore Detector System) in progress:
  - Enclosure 13.3 (Axial Power Imbalance Calculation Sheet) has been calculated and verified.
  - Enclosure 13.4 (Quadrant Power Tilt Calculation Sheet) has been calculated but NOT verified.

INITIATING CUES

1) The CRS directs you, as the verifier, to calculate quadrant power tilt using PT/0/A/1103/019, Backup Incore Detector System, Enclosure 13.4 (Quadrant Power Tilt Calculation Sheet) using the attached data sheet.
2) Evaluate the calculated quadrant power tilt and determine all Tech Specs and SLCs that apply, if any, including all/any REQUIRED ACTIONS and COMPLETION TIMES.

   QPT: _____

   IF required:

   TS/SLC: _____

   Required Action(s): _____

   Completion Time(s): _____

BACKUP INCORE CHART "A"		
Point #	**%**	**Location**
1	132.7	G09-L2
2	138.0	G09-L4
3	133.3	G09-L6
4	145.6	E09-L2
5	145.3	E09-L4
6	142.5	E09-L6
7	128.8	G05-L2
8	133.8	G05-L6
9	126.3	M07-L2
10	122.9	M07-L6
11	127.5	K11-L2
12	122.2	K11-L6
13	144.4	F13-L2
14	145.0	D05-L2
15	143.1	F13-L4
16	142.5	C06-L2
17	144.5	C06-L6
18	133.6	F13-L6
19	133.8	O10-L6
20	135.5	L03-L6
21	136.1	L03-L2
22	135.6	D05-L6
23	133.8	O10-L2
24	142.5	D05-L4

REGION II
JOB PERFORMANCE MEASURE

ADM-S203

COMPLETE PLANT CONFIGURATION SHEET (TIME TO CORE BOIL) AND DETERMINE ANY REQUIRED ACTIONS

Administrative: Yes

Classroom/Simulator/Plant: Classroom

Alternate Path: No

Alt Path Description: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title: Complete Plant Configuration Sheet (Time to Core Boil) and Determine Any Required Actions

Task Number:

Alternate Path: No

Time Critical: No

Validation Time: 20 minutes

K/A Rating(s):
System: GEN
K/A: 2.2.18
Rating: 2.6/3.9

Task Standard:
Candidate correctly determines Time to Core Boil and required actions as follows:

- Refer to enclosure 4.1 of OP/0/A/1108/001 A, and determine Table 9 (Initial Temp = 120ºF) (24-120 Hours); Time to Boiling, Min. is to be used.
- Determine the reactor has been shut down for 50 Hours.
- Determines time to boil is **15.7 minutes** by using the 50 hours row and 70" column for LT-5 level.
- Candidate determines the equipment hatch must be closed since the Configuration Sheet indicates that the Equipment Hatch is Open and time to Core Boil is less than 16 minutes.

References:
OP/0/A/1108/001 A (Reactor Core and SFP Loss of Cooling Heatup Tables) Enclosure 4.1 (Total Loss of DHR Time to Boil) Rev 07
SD 1.3.5 (Shutdown Protection Plan) Attachment 9.2 (Plant Configuration Sheet) Rev 39

Tools/Equipment/Procedures Needed:
OP/0/A/1108/001 A (Reactor Core and SFP Loss of Cooling Heatup Tables) Enclosure 4.1 (Total Loss of DHR Time to Boil) Rev 07
SD 1.3.5 (Shutdown Protection Plan) Attachment 9.2 (Plant Configuration Sheet) Rev 39

(Note: Below this line is used only for Initial NRC Exams)

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

==========

Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. **N/A**

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

- Unit 1 was shutdown on 12/01 at 0400
- Site Directive 1.3.5 (Shutdown Protection Plan) Attachment 9.2 is being prepared for this shift
- LPI aligned for Normal Decay Heat Removal

INITIATING CUE

Current Date/Time: 12/03 at 0615

The CRS instructs you to determine the “Time To Core Boil” utilizing OP/0/A/1108/001 A, (Reactor Core and SFP Loss of Cooling Heatup Tables), and perform any required actions based on the results, in accordance with Site Directive 1.3.5 (Shutdown Protection Plan) Attachment 9.2. Document your answers below.

Time to Core Boil: _____

Required Action (if any): _____

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1		Refer to Enclosure 4.1 of OP/0/A/1108/001 A. Choose the correct Table **STANDARD:** Refer to enclosure 4.1 of OP/0/A/1108/001 A, Table 9 (Initial Temp = 120ºF) (24-120 Hours); Time to Boiling, Min. table. **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
2		Determine the number of hours the reactor has been shutdown. **STANDARD:** Candidate determines the reactor has been shut down for 50 Hours: • shutdown 12/01 at 0400 • current date/time is 12/03 at 0615 • 50 hours and 15 minutes (rounded down to most recent whole hour) ***EXAMINER NOTE: For tables that have time since Rx was shut down measured in hours, select the most recent whole hour (per Encl. 4.1, step 1.5)*** ***Time (Hours since S/D) = 50 hours*** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

3		Determine time to boil. **STANDARD:** Candidate determines time to boil is **15.7 minutes** by using 50 hours and 70 inches on LT-5. • LT-5 level is 76 inches per Attachment 9.2.A • Next lower level is 70 inches ***EXAMINER NOTE: If RCS level is at some point between the columns provided, use the column for the next lower level (per Encl. 4.1, step 1.4)*** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
4		Ensure equipment hatch is closed. **STANDARD**: Candidate determines the equipment hatch must be closed since the Configuration Sheet indicates that the Equipment Hatch is Open and time to Core Boil is less than 16 minutes. **COMMENTS:** **END TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
1	Required to determine the time for core boil.
2	Required to determine the time for core boil.
3	Required to determine the time for core boil.
4	Required to determine actions required as a result of the time to core boil

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

- Unit 1 was shutdown on 12/01 at 0400
- Site Directive 1.3.5 (Shutdown Protection Plan) Attachment 9.2 is being prepared for this shift
- LPI aligned for Normal Decay Heat Removal

INITIATING CUE

Current Date/Time: 12/03 at 0615

The CRS instructs you to determine the “Time To Core Boil” utilizing OP/0/A/1108/001 A, (Reactor Core and SFP Loss of Cooling Heatup Tables), and perform any required actions based on the results, in accordance with Site Directive 1.3.5 (Shutdown Protection Plan) Attachment 9.2. Document your answers below.

Time to Core Boil: _____

Required Action (if any): _____

REGION II
JOB PERFORMANCE MEASURE
OCONEE

ADM-S301

Determine RIA Setpoints and Approval Level Required for GWD Tank Release

Administrative: Yes

Classroom/Simulator/Plant: Classroom

Alternate Path: No

Alt Path Description: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Determine RIA Setpoints and Approval Level Required for GWD Tank Release

Task Number :

Alternate Path: No

Time Critical: No

Validation Time: 25 min

K/A Rating(s):

System: GEN
K/A: 2.3.6
Rating: 2.0/3.8

Task Standard:

Determine setpoints for 1RIA-37, 1RIA-38, 1RIA-45 and approval level required to release A GWD Tank as follows:

- Determine the setpoints for 1RIA-45 per PT/0/A/0230/001 (Radiation Monitor Check):
  - Alert: 4.66 E4 CPM
  - High: 1.40 E5 CPM
- Determine 1RIA-37 Alert and High setpoints by adding 4.68 E5 to 1RIA-37 background (4.25 E2):
  - Alert: 4.68 E5 to 4.69 E5 CPM
  - High: 4.68 E5 to 4.69 E5 CPM
- Determine 1RIA-38 Alert and High setpoints by adding 3.82 E2 to 1RIA-38 background (2.4 E1):
  - Alert: 4.06 E2
  - High: 4.06 E2
- Determine the approval level for 2 GWRs in progress at 1/3 Station Limit each is the **SM.**

References:

OP/1-2/1104/018 (GWD System) Rev. 78
PT/0/A/0230/001 (Radiation Monitor Check) Rev. 176

Tools/Equipment/Procedures Needed:

OP/1-2/A/1104/018 Encl. 4.9 (GWD Tank Release) Rev. 78
OP/1-2/A/1104/018 Encl. 4.10 (GWD Tank Sample Request) Rev. 78

(Note: Below this line is used only for Initial NRC Exams)

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Candidate: _____ Time Start: _____

NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____

NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

N/A

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 in Mode 1 at 100% power

Unit 2 in Mode 1 at 100% power

Unit 3 in Mode 5 with RB Purge in progress at 1/3 Station Limit

OP/1-2/A/1104/018 Encl. 4.9 (GWD Tank Release) in progress at step 3.1 for release of A GWD Tank.

Steps for prior to GWD Tank release in PT/1-2/A/0230/002 (GWD Tank Release) are complete.

1RIA-37 background reading = 425 cpm

1RIA-38 background reading = 24 cpm

A GWD Tank pressure = 70 psig

GWD piping is purged

INITIATING CUE

1. Continue in OP/1-2/A/1104/018 Encl. 4.9 beginning at step 3.1 to determine the setpoints for 1RIA-37, 1RIA-38, and 1RIA-45. Another operator will input the setpoints, once determined, into the RIAs as required by the procedure.

   Document your answers below:

1RIA-37 Setpoints	1RIA-38 Setpoints	1RIA-45 Setpoints
Alert:	Alert:	Alert:
High:	High:	High:

2. Determine the MINIMUM approval level required to release A GWD Tank in accordance with OP/1-2/A/1104/018 (GWD System).

   Document your answer below:

MINIMUM approval level required to release A GWD Tank. _____

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	**3.1**	Determine any other GWR(s) in progress at station: Releases in Progress Release Rate of Station Limit Unit 1 __ Yes __ No _____ Unit 2 __ Yes __ No _____ Unit 3 __ Yes __ No _____ **STANDARD:** Candidate determines a release is in progress on Unit 3 at 1/3 Station Limit from the cue sheet. **COMMENTS:**	___ SAT ___ UNSAT
2	**3.2**	Perform steps for prior to GWD Tank release in PT/1-2/A/0230/002 (GWD Tank Release). **STANDARD:** Candidate determines steps for prior to GWD Tank release in PT/1-2/A/0230/002 (GWD Tank Release) are complete from the cue sheet. **COMMENTS:**	___ SAT ___ UNSAT
3	**3.3**	Ensure RIA setpoints adjusted for GWD Tank release per RIA-45 Setpoints For Unit 1&2 GWD Tank Release enclosure of PT/0/A/0230/001 (Radiation Monitor Check). **STANDARD:** Candidate determines the setpoints for 1RIA-45 as follows: **ALERT: 4.66 E4 CPM** **HIGH: 1.40 E5 CPM** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
4	3.4	Perform the following on Enclosure 4.10 (GWD Tank Sample Request): 3.4.1 Record Initial GWD Tank Pressure **AND** GWD Tank Volume 3.4.2 Record Start Date **AND** Time 3.4.3 Record background readings for 1RIA-37 **AND** 1RIA-38 **STANDARD**: Determine A GWD tank pressure is **70** psig by referring to the cue sheet and record on Enclosure 4.10. Determine GWD Tank Volume is **≈ 6300** Ft^3 (**6200 – 6400)** by using the curve in OP/1108/001 (General Curves and Information) and record on Enclosure 4.10. Determine background readings for 1RIA-37 & 1RIA-38 by referring to the cue sheet and record on Enclosure 4.10. • 1RIA-37 Background reading is **425 or 4.25E2 cpm** • 1RIA-38 Background reading is **24 or 2.4E1 cpm** Continue to Step 3.5 **COMMENTS**:	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
5	3.5	Record recommended 1RIA-37 and 38 Alert and High setpoints from Enclosure 4.10 (GWD Tank Sample Request): • 1RIA-37 **4.68 E5** cpm above background • 1RIA-38 **3.82 E2** cpm above background **STANDARD**: Obtain this information from the sample request and record in the procedure. Continue to Step 3.6 **COMMENTS**:	___ SAT ___ UNSAT
6	3.6	**NOTE:** If N_2 was added to the most recently released GWD tank until 1RIA-37 indicated < 700 cpm, OR if the tanks' radioactivity was < 2.1E-05µCi/ml when it was released, the GWD piping is considered "purged". **IF** 1RIA-37 is out-of-service **OR** GWD piping **NOT** purged, verify the following per Enclosure 4.10 (GWD Tank Sample Request): • Independent Data Entry Checks completed • Independent Sample agrees with initial sample **STANDARD**: Determine step does not apply and N/A the step. Continue to Step 3.7 ***Examiner Cue: If asked, inform the candidate that the GWD piping is purged.*** **COMMENTS**:	___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
7	3.7	**NOTE:** If N_2 was added to the most recently released GWD tank until 1RIA-37 indicated < 700 cpm, OR if the tanks' radioactivity was < 2.1E-05µCi/ml when it was released, the GWD piping is considered "purged". **IF** GWD piping purged, calculate actual setpoints as follows: 3.7.1 **IF** 1RIA-37 Operable, calculate Alert and High setpoints as follows: **4.25E2** cpm (1RIA-37 background) + **4.68E5** ('Add to background' value from Step 3.5) = **4.68E5** cpm (1RIA-37 Alert and High alarm setpoints) **STANDARD**: Calculate set points using formula above. **(4.68E5 to 4.69E5)** Continue to Step 3.8 **COMMENTS**:	**CRITICAL STEP** ___ SAT ___ UNSAT
8	3.8	**IF** 1RIA-38 Operable, calculate Alert and High setpoints as follows: **2.4E1** cpm (1RIA-38' background) + **3.82E2** (Add to background' value from Step 3.5) = **4.06E2** cpm (1RIA-38 Alert and High alarm setpoints) **STANDARD**: Calculate set points using formula above **(4.06E2).** **COMMENTS**:	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
9		Determine approval level required for the release of A GWD Tank. **STANDARD**: Candidate determines the approval level for 2 GWRs in progress at 1/3 Station Limit each is the **SM.** **COMMENTS:** **END OF TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
3	This step is required to determine the setpoints for 1RIA-45.
7	This step is required to determine the setpoints for 1RIA-37.
8	This step is required to determine the setpoints for 1RIA-38.
9	This step is required to determine the approval level required for the release.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 in Mode 1 at 100% power

Unit 2 in Mode 1 at 100% power

Unit 3 in Mode 5 with RB Purge in progress at 1/3 Station Limit

OP/1-2/A/1104/018 Encl. 4.9 (GWD Tank Release) in progress at step 3.1 for release of A GWD Tank.

Steps for prior to GWD Tank release in PT/1-2/A/0230/002 (GWD Tank Release) are complete.

1RIA-37 background reading = 425 cpm

1RIA-38 background reading = 24 cpm

A GWD Tank pressure = 70 psig

GWD piping is purged

INITIATING CUE

1. Continue in OP/1-2/A/1104/018 Encl. 4.9 beginning at step 3.1 to determine the setpoints for 1RIA-37, 1RIA-38, and 1RIA-45. Another operator will input the setpoints, once determined, into the RIAs as required by the procedure.

   Document your answers below:

1RIA-37 Setpoints	1RIA-38 Setpoints	1RIA-45 Setpoints
Alert:	Alert:	Alert:
High:	High:	High:

2. Determine the MINIMUM approval level required to release A GWD Tank in accordance with OP/1-2/A/1104/018 (GWD System).

   Document your answer below:

MINIMUM approval level required to release A GWD Tank. _____

REGION II
JOB PERFORMANCE MEASURE
OCONEE

ADM-S408

Determine the Appropriate Emergency Action Level

Administrative: Yes

Classroom/Simulator/Plant: Classroom

Alternate Path: No

Alt Path Description: _____

Time Critical: Yes

Time Critical Criteria: 15 minutes to classify

Prepared By:		Date:
EP Review By:		Date:
Reviewed By:		Date:
Approved By:		Date:

REGION II
JOB PERFORMANCE MEASURE

Task Title : Determine the Appropriate Emergency Action Level

Task Number :

Alternate Path: No

Time Critical: Yes

Validation Time: 15 minutes

K/A Rating(s):

System: Gen
K/A: 2.4.38
Rating: 2.4/4.4

Task Standard:

The appropriate classification is made within 15 minutes by determining the following:

- The Reactor Coolant System (RCS) Barrier status is "LOSS"
- The Fuel Clad (FC) Barrier status is "LOSS"
- The Containment (CMT) Barrier has neither a "LOSS" or "POTENTIAL LOSS".
- The Emergency Action Level is SAE (FS1.1)

References:

CSD-EP-ONS-0101-02 (WALLCHART) Rev 000
AD-EP-ALL-0101 Emergency Classification Rev 1
CSD-EP-ONS-0101-01 Bases Rev 000

Tools/Equipment/Procedures Needed:

CSD-EP-ONS-0101-02 (WALLCHART) Rev 000
AD-EP-ALL-0101 Emergency Classification Rev 1
CSD-EP-ONS-0101-01 Bases Rev 000

(Note: Below this line is used only for Initial NRC Exams)

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

==========

Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. **N/A**

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Time = 0800:

- Unit 3 Reactor Power = 100%
- SBLOCA occurs
- MANUAL Reactor Trip initiated
- ES Channels 1 and 2 actuated
- ALL SCMs = 0°F
- LOSCM tab initiated

Time = 0835:

- ALL SCMs = 0°F
- 3RIA-57 indicates 100 R/hr slowly rising
- 3RIA-58 indicates 45 R/hr slowly rising

INITIATING CUE

At Time = 0835, the CRS directs you to determine the appropriate Emergency Action Level.

Inform the examiner when you have made the classification

THIS IS A TIME CRITICAL JPM

Note: Do not use Emergency Coordinator's judgment as the basis for classifying the event

---

Operator Note: Complete ALL blanks below.

OPERATOR NAME: _____

EAL CLASSIFICATION: (Include EAL #)_____

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1		Determine the Reactor Coolant System (RCS) Barrier status is "LOSS" **STANDARD:** Candidate refers to the EAL Wallchart Table F-1 Fission Product Barrier Threshold Matrix for the RCS Barrier and determines that either: • A.1 under 'LOSS' applies. (An automatic ES actuation required by UNISOLABLE RCS leakage) • C.1 under 'LOSS' applies. (3RIA-57/58 >1 R/hr) ***Examiner Note: Sequence Steps 1, 2, and 3 can be performed in any order.*** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT
2		Determine the Fuel Clad (FC) Barrier status is "LOSS" **STANDARD:** Candidate refers to the EAL Wallchart Table F-1 Fission Product Barrier Threshold Matrix for the Fuel Clad Barrier and determines that C.1 under 'LOSS' applies. (Per Table F-2 if Time After S/D (Hrs) is 0.5 - < 2.0 then the 3RIA-57 threshold for FC Loss is 80 R/hr and the 3RIA-58 threshold for FC Loss is 40 R/hr) ***Examiner Note: Sequence Steps 1, 2, and 3 can be performed in any order.*** **COMMENTS:**	**CRITICAL STEP** ___ SAT ___ UNSAT

SEQ STEP	PROC STEP	DESCRIPTION	
3		Evaluate the Containment (CMT) Barrier and determine that neither a "LOSS" nor a "POTENTIAL LOSS" exists. **STANDARD:** Candidate refers to the EAL Wallchart Table F-1 Fission Product Barrier Threshold Matrix for the Containment Barrier and determines that neither a "LOSS" nor a "POTENTIAL LOSS" exists. ***Examiner Note: Sequence Steps 1, 2, and 3 can be performed in any order.*** ***Failure of the critical step will occur if the candidate determines a "LOSS" or POTENTIAL LOSS" of the Containment Barrier exists.*** **COMMENTS:**	***CRITICAL STEP** ___ SAT ___ UNSAT
4		Determine the Emergency Action Level **STANDARD:** Candidate refers to the EAL Wallchart Fission Product Barriers (F) and determines that FS1.1 (Loss or potential loss of any two barriers (Table F-1)) applies. **SAE (FS1.1)** Candidate must list the correct EAL, which is **SAE (FS1.1)** within **15 minutes** of the start time. **STOP TIME:** _____ **COMMENTS:** **END OF TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

SEQ STEP #	Explanation
1	This step is required for the candidate to utilize the EAL Wallchart and determine the conditions meet a Site Area Emergency classification within 15 minutes.
2	This step is required for the candidate to utilize the EAL Wallchart and determine the conditions meet a Site Area Emergency classification within 15 minutes.
3	This step is required for the candidate to utilize the EAL Wallchart and determine the conditions meet a Site Area Emergency classification within 15 minutes.
4	This step is required for the candidate to utilize the EAL Wallchart and determine the conditions meet a Site Area Emergency classification within 15 minutes.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Time = 0800:

- Unit 3 Reactor Power = 100%
- SBLOCA occurs
- MANUAL Reactor Trip initiated
- ES Channels 1 and 2 actuated
- ALL SCMs = 0°F
- LOSCM tab initiated

Time = 0835:

- ALL SCMs = 0°F
- 3RIA-57 indicates 100 R/hr slowly rising
- 3RIA-58 indicates 45 R/hr slowly rising

INITIATING CUE

At Time = 0835, the CRS directs you to determine the appropriate Emergency Action Level.

Inform the examiner when you have made the classification

THIS IS A TIME CRITICAL JPM

Note: Do not use Emergency Coordinator's judgment as the basis for classifying the event

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Operator Note: Complete ALL blanks below.

OPERATOR NAME: _____

EAL CLASSIFICATION: (Include EAL #)_____