

October, 2010

Facility: Oconee	Scenario No.: 2 AG	Op-Test No.: 1
Examiners: _____	Operators: _____	SRO
_____	_____	OATC
_____	_____	BOP
Initial Conditions:		
<ul style="list-style-type: none"> • 75% reactor power EOL, Unit 2: 100%, Unit 3: 100% 		
Turnover:		
<ul style="list-style-type: none"> • AMSAC/DSS bypassed for I&E testing • SASS in MANUAL • 1B GWD Tank release in progress 		

Event No.	Malfunction No.	Event Type*	Event Description
0a	Pre-Insert		AMSAC/DSS bypassed
0b	Pre-Insert		SASS in MANUAL
0c	Pre-Insert		PORV Fails to close after opening
0d	Pre-Insert		1FDW-316 Fails CLOSED
0e	Pre-Insert		Rx Manual pushbutton blocked
1	Override	I, BOP, SRO, (TS)	1RIA-37 and 38 fails to terminate GWR
2	MPS090	C, OATC, SRO	1HP-120 (RC Volume Control) fails CLOSED
3	Override MSS450	C, BOP, SRO, (TS)	Seismic event (PRA) 1A RBCU rupture STAR Module failure
4	Override	C, OATC, SRO	PZR Spray Valve (1RC-1) Fails OPEN
5	MPS400	C, BOP, SRO, (TS)	RCS Leak, 100 gpm
6		R, OATC, SRO	Manual power reduction due to RCS Leak
7	MSS010 MSS020 Override	M, ALL	Both Main FDW Pumps Trip Main Turbine Trip ATWS PORV Fails to close after opening

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

Event Description: 1RIA-37 and 38 Fail to Terminate GWR: (I, BOP/SRO)

Time	Position	Applicant's Actions or Behavior
	<p>BOP</p> <p>SRO</p> <p>BOP</p> <p>SRO</p>	<p>Plant response:</p> <ul style="list-style-type: none"> • 1SA-9/A-4, (GWD DISCH RADIATION INHIBIT) • 1SA-8/B-9, (RM AREA MONITOR HIGH) <p>Crew response:</p> <p>1. Refer to ARG for 1SA-9/A-4</p> <p>3.1 Verify automatic action has taken place (They have not)</p> <p>Note: SRO may invoke OMP1-18 to close 1GWD-5</p> <ul style="list-style-type: none"> • Refer to OP/1-2/A/1104/018 (GWD Tank Release) • Refer to AP/1/A/1700/018 (Abnormal Release of Radioactivity) <p>2. Complete Encl. 4.9 of OP/1-2/A/1104/018 (GWD Tank Release)</p> <p>3.30.1 Close GWR Discharge Flow Controller</p> <p>3.30.2 Record maximum cpm of RIA-37 or 38</p> <p>3.30.4 IF desired to terminate release. <u>Go To</u> Section 4 (GWR Termination).</p> <p>Section 4. GWR Termination:</p> <p>4.4.1 Close GWD-99 (Tank 1B Discharge Block), GWD-100 (Decay Tanks Discharge Header Block), and GWD-5 (B GWD Tank Discharge)</p> <p>3. Refer to AP/18, Abnormal Release of Radioactivity</p> <ul style="list-style-type: none"> • IAAT RIA is in High alarm, THEN verify Automatic Systems Actions in Section 2 have occurred. • Initiate manual actions to fulfill the Automatic Functions listed in Section 2 for RIAs reaching High alarm setpoint. • Close 1GWD-5 <p>4. SRO should refer to SLC 16.11.3, Radioactive Effluent Monitoring Instrumentation, Required Action C-1 and Table 16.11.3-2. and enter Condition I and comply with Required Action</p>
		<p>When the GWD release is terminated or when directed by the lead Examiner this event is completed.</p>

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

Note: This failure will occur during Event 1.

Time	Position	Applicant's Actions or Behavior
	SRO BOP	<p>Crew response:</p> <p>Crew may elect to refer to ARG 1SA-02/B1, HP LETDOWN TANK LEVEL HIGH/LOW.</p> <p>3.1 Instrument Failed:</p> <p>3.1.1 Compare alternate channels to verify alarm validity:</p> <ul style="list-style-type: none"> • O1A1042 LDST LEVEL 1 • O1A1043 LDST LEVEL 2 <p>3.2 Verify LDST pressure does not exceed LDST level/pressure operability requirement per OP/1/A/1104/002, (HPI System).</p> <p>3.3 IF High Level alarm is received:</p> <p>3.3.1 Bleed as required by OP/1/A/1103/004 (Soluble Poison Concentration Control).</p> <p><u>OP/1/1103/004, (Soluble Poison Concentration Control)</u></p> <p>Refer to Enclosure 4.8 Reducing RCS Inventory:</p> <p>2.1 Verify HPI System operating</p> <p>2.2 Ensure open 1CS-26 (LETDOWN TO RC BHUT).</p> <p>2.3 Ensure open 1CS-41 (1A RC BHUT INLET).</p> <p>2.4 Position 1HP-14 (LDST BYPASS) to "BLEED".</p> <p>2.5 WHEN desired LDST level achieved, position 1HP-14 (LDST BYPASS) to "NORMAL".</p>
		<p>When PZR level has been returned to normal band (210-220") or when directed by the lead examiner this event is completed.</p>

Event Description:

Seismic event (PRA)**1A RBCU rupture (C, BOP/SRO) (TS)****Star Module Failure**

Time	Position	
	SRO	<p>Refer to AP/28</p> <p>4.1 Provide control bands as required.</p> <ul style="list-style-type: none"> • NI Power $\pm 1\%$ not to exceed the pre-transient or allowable power. If at the pre-transient or allowable level, band is NI Power - 1%. • Current Tave $\pm 2^\circ\text{F}$ • Current SG Outlet Pressure ± 10 PSIG • Delta Tc $0^\circ\text{F} \pm 2^\circ\text{F}$ <p>4.2 Initiate notifications</p> <p>4.3 Verify any power transient has occurred.</p> <p>4.4 Notify Rx Engineering and discuss the need for a maneuvering plan.</p> <p><i>Booth Cue: When contacted, SPOC will request RX Diamond and both FDW Masters in hand per maintenance trouble shooting procedure.</i></p> <p>4.5/4.6 GO TO section 4M (ICS Star or Memory Module)</p> <ol style="list-style-type: none"> 1. Notify SPOC 2. WHEN notified by SPOC that the failed ICS module has been repaired and returned to service, THEN GO TO Encl 5.1 (Placing ICS in AUTO). <p><u>Refer To AP/0/A/1700/005, EARTHQUAKE:</u></p> <p>4.1 Announce AP entry using the PA system</p> <p>4.2. IAAT any of the following occur:</p> <ul style="list-style-type: none"> • Re-flash of Seismic Trigger (1SA-9, E-1) and/or (3SA-9, E-1) • Re-flash of computer alarm: SEISMIC RECORDER (01D0201) on Unit 1 • Aftershocks felt at ONS <u>or</u> Keowee Hydro Station <p>THEN GO TO Step 4.3</p> <p>4.3 IAAT major visible damage is observed, THEN evaluate Rx trip on <u>all affected</u> units.</p>
		<p>When the RBCU has been isolated, or at the direction of the Lead Examiner this event is completed.</p>

Op-Test No.: _____

Scenario No.: 2

Event No.: 3

Page 3 of 3

Event Description: **Seismic event (PRA)
1A RBCU rupture (C, BOP/SRO) (TS)
Star Module Failure**

Time	Position	Applicant's Actions or Behavior
	SRO	<p>4.4 Notify Keowee operating personnel to initiate AP/0/A/2000/001 (Natural Disaster).</p> <p>4.5 Notify Hydro Central.</p> <p>4.6 Dispatch operators to perform the following enclosures:</p> <ul style="list-style-type: none">• Encl 5.1 (Outside Inspections)• Encl 5.2 (AB Inspections)• Encl5.3 (LPSW Inspections) <p>4.7 IAAT any Oconee unit is shutdown, THEN dispatch an operator to perform Encl 5.4 (RB Inspections).</p> <p><i>Booth cue: If asked, Unit 2 will take over the completion of AP/5.</i></p>
		<p>When the RBCU has been isolated, or at the direction of the Lead Examiner this event is completed.</p>

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

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	<p>Plant response:</p> <ul style="list-style-type: none"> • RCS pressure will decrease • 1SA-2/D-3, (RC PRESS HIGH/LOW) <p>Crew response:</p> <ol style="list-style-type: none"> 1. Refer to ARG <ol style="list-style-type: none"> 3.1.1 Refer to AP/44 (Abnormal Pressurizer Pressure Control) 2. AP/44 Immediate Manual Action <ol style="list-style-type: none"> 3.2 IAAT all of the following conditions exist: <ul style="list-style-type: none"> • RC pressure < 2155 psig • RC pressure decreasing without a corresponding decrease in PZR Level • PZR heaters unable to maintain RCS pressure. <p>THEN close the following:</p> <ul style="list-style-type: none"> • 1RC-1 • 1RC-3 <p>Note: If the block valve is not closed, the reactor will trip on variable low pressure and ES actuation will occur.</p> <p>Note: The PZR spray valve will remain failed for the remainder of the scenario.</p> <ol style="list-style-type: none"> 4.1 Announce AP entry using the PA system. 4.2 GO TO the applicable step per the following table: RCS Press Decrease-Step 4.3 4.3 Verify the following: <ul style="list-style-type: none"> • 1RC-4 failed to close • PORV open <p>RNO: GO TO Step 4.5</p> 4.5 Verify 1RC-1 failed OPEN

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

Time	Position	Applicant's Actions or Behavior
	SRO/OATC	<p>4.6 Position the following to maintain RC Pressure within desired band, as required:</p> <ul style="list-style-type: none"> • 1RC-1 • 1RC-3 <p>4.7 Verify RC pressure decreasing Uncontrollably. RNO: GO TO Step 4.14.</p> <p>4.14 Verify PZR heaters maintaining RCS pressure within desired band.</p> <p>4.15 Notify SPOC to repair malfunctioning component.</p>
		<p>When RCS pressure decrease has been stopped and Pzr Lvl is stable at ~220", or when directed by the lead examiner this event is completed.</p>

Event Description: **RCS Leak (100 gpm): (C, BOP/SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Plant response:</p> <p>Alarms:</p> <ul style="list-style-type: none"> • OAC RB Normal Sump Temp HI HI • 1SA-9/A-6 (RB NORMAL SUMP HIGH/LOW) • 1SA-8/B-9 (RM Process Monitor Radiation HIGH) <p>Control Board indications:</p> <ul style="list-style-type: none"> • PZR and LDST level decreasing • RC makeup flow increasing <p>Crew response:</p> <p>The SRO may refer to TS 3.4.13 (RCS Operational Leakage) and determine that Condition A, Reduce leakage to within limits within 4 hours and Condition B, Be in MODE 3 in 12 hours are in effect. This is for an unidentified leak > 1 gpm.</p> <p>Note: SRO may not refer to TS during the scenario due to other events occurring.</p> <p>Note: SRO may refer to AP/1/A/1700/018, Abnormal Release of Radioactivity, Section 4H. refer to page 12 for steps.</p> <p>SRO enters AP/2 (Excessive RCS Leakage):</p> <p>3.1 Verify HPI operating.</p> <p>3.2 IAAT RC makeup flow is > 100 gpm, AND Pzr level is decreasing, THEN close 1HP-5.</p> <p>3.3 IAAT all the following exist:</p> <ul style="list-style-type: none"> • HPI flow is > NORMAL MAKEUP CAPABILITY(≈ 160 gpm) with letdown isolated • Pzr level decreasing • SG Tube Leakage NOT indicated • LPI DHR NOT in service <p>THEN perform the following:</p> <ul style="list-style-type: none"> A. Ensure Rx is tripped. B. Initiate Unit 1 EOP.
	BOP	

Event Description: **RCS Leak (100 gpm): (C, BOP/SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Crew response:</p> <p>4.1 Initiate Pzr and LDST level makeup using Unit 1 EOP Encl 5.5 (Pzr and LDST Level Control), as necessary.</p> <p>1. Utilize the following as necessary to maintain desired PZR level:</p> <ul style="list-style-type: none"> • 1A HPI Pump • 1B HPI Pump • 1HP-26 • 1HP-7 • 1HP-120 setpoint or valve demand • 1HP-5 <p>2. IAAT makeup to the LDST is desired, THEN makeup from 1A BHUT</p> <p>4.2 Announce AP entry using the PA system.</p> <p>4.3 IAAT LPI DHR in service...</p> <p>4.4 Initiate the following notifications:</p> <ul style="list-style-type: none"> • OSM to reference the following: RP/0/B/1000/001 (Emergency Classification), OMP 1-14 (Notifications), Encl 5.9 (Oversight Guidelines) • STA • RP <p>4.5 Monitor the following trends to determine leak area (AB or RB) and trend for degradation:</p> <ul style="list-style-type: none"> • "T6 AP02" • "T6 WASTE" • RIAs <p>4.6 Verify specific leak location is identified. (in RB)</p> <p>4.7 Initiate Encl 5.1 (Leak Rate Determination).(One of the following methods used)</p> <ul style="list-style-type: none"> • Calculation of RCS Volume Loss: $\text{Leak Rate} = \frac{\text{MU}}{\text{SI}} + \frac{\text{LD}}{\text{TSR}} = \text{_____}$ <p>Where: MU = makeup Flow SI = Seal Inlet Hdr Flow LD = Letdown Flow TSR = Total Seal Return Flow</p> <p>4.8 WHEN leak area/failure is identified, THEN GO TO applicable step 4.53</p>
		<p>When the SRO has made the decision to shutdown, or when directed by the lead examiner the event is completed.</p>

Event Description: **RCS Leak (100 gpm): (C, BOP/SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Crew response: 4.53 IAAT in MODE 1 AND leak is > LDST makeup capability from 1A BHUT, THEN initiate a shutdown using AP/29 (Rapid Unit Shutdown).</p> <p>Crew may elect to refer to AP/1/A/1700/018, ABNORMAL RELEASE OF RADIOACTIVITY:</p> <p><u>Section 4H:</u></p> <ol style="list-style-type: none"> 1. IAAT 1RIA-49 or 1RIA-49A reaches the High set point, THEN ensure 1LWD-2 closed. 2. Verify MODE 5, 6, or NO MODE. RNO: GO TO STEP 10 10. IAAT 1RIA-49 or 1RIA-49A reaches the High set point, AND personnel are inside Rx Bldg, THEN perform Step 11. RNO: GO TO STEP 12. 12. Monitor RCS for unexpected increase in leakage by any of the following: <ul style="list-style-type: none"> • Makeup flow rate increase • Pzr level decrease • LDST level decrease • RBNS rate increase 13. Verify RCS leakage indicated 14. Verify AP/2 (Excessive RCS Leakage) entry conditions met. 15. Initiate AP/2 (Excessive RCS Leakage). 16. Notify RP to perform the following: <ol style="list-style-type: none"> A. Evaluate RB airborne activity. B. Provide recommendation on RIA set point change and/or iodine cartridge change. 17. WHEN conditions permit, THEN EXIT
		<p>When the SRO has made the decision to shutdown, or when directed by the lead examiner the event is completed.</p>

Event Description: **Unit Shutdown (R, OATC)**

Time	Position	Applicant's Actions or Behavior
	<p>SRO</p> <p>OATC</p> <p>BOP</p>	<p>Crew response:</p> <p>SRO directs shutdown per AP/29 (Rapid Unit Shutdown):</p> <p>4.1 Initiate Encl 5.1 (Support Actions During Rapid Unit Shutdown) (Details next page)</p> <p>4.2 Announce AP entry using the PA System.</p> <p>4.3 IAAT both of the following apply...</p> <p style="padding-left: 40px;">RNO: GO TO Step 4.8</p> <p>4.8 Verify ICS in AUTO.</p> <p>4.8 RNO Initiate manual power reduction to desired power level. GO TO Step 4.10</p> <p>4.10 Verify both Main FDW pumps running</p> <p>4.11 Adjust bias for first Main FDW pump desired to be shutdown until suction flow is $\approx 1 \times E6$ lbm/hr less than remaining Main FDW pump suction flow</p> <p>4.12 WHEN core thermal power is < 65% FP, THEN continue</p> <p>4.13 IAAT both Main FDW pumps running, AND both of the following exist:</p> <ul style="list-style-type: none"> • 1B Main FDW Pump is first pump to be shut down • Any of the following alarms occur: <ul style="list-style-type: none"> ➤ FWP B FLOW MINIMUM (1SA-16/A-3) ➤ FWP B FLOW BELOW MIN (1SA-16/A-4) <p style="padding-left: 40px;">THEN trip 1B Main FDW Pump</p> <p>4.14 IAAT both Main FDW pumps running...</p> <p>4.15 Verify Turbine-Generator shutdown is required</p> <p>4.16 Start the TURBINE TURNING GEAR OIL PUMP</p> <p>4.17 Start 1A through 1E TURBINE BRNG OIL LIFT PUMPS</p> <p>4.18 Start the TURBINE MOTOR SUCTION PUMP</p> <p>4.19 IAAT both of the following apply...</p> <p>4.20 Verify Turbine-Generator shutdown is required.</p> <p>4.21 WHEN NI power $\leq 18\%$, THEN depress turbine TRIP pushbutton.</p>

Event Description: **Unit Shutdown (R, OATC)**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Encl 5.1 (Support Actions During Rapid Unit Shutdown)</p> <ol style="list-style-type: none"> 1. Notify WCC SRO to initiate Encl 5.2 (WCC SRO Support During Rapid Unit Shutdown) 2. Start the following pumps: <ul style="list-style-type: none"> • 1A/1B FDWP SEAL INJECTION PUMP • 1A/1B FDWP AUXILIARY OIL PUMP 3. WHEN CTP is $\leq 80\%$, THEN continue 4. Stop 1E1 HTR DRN PUMP. 5. Place 1HD-254 switch to OPEN. 6. Stop 1E2 HTR DRN PUMP. 7. Place 1HD-276 switch to OPEN. 8. Verify Turbine-Generator shutdown is required. 9. Place the following transfer switches to MAN: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • MFB1 AUTO/MAN • MFB2 AUTO/MAN 15. Close E1₁ MFB1 STARTUP FDR. 16. Verify N1₁ MFB1 NORMAL FDR opens. 17. Close E2₁ MFB1 STARTUP FDR. 18. Verify N2₁ MFB1 NORMAL FDR opens.
		<p>When a unit shutdown of > 5% has occurred or when directed by the lead examiner this event is concluded.</p>

Event Description: **Both Main FDW Pumps and Main Turbine Trip (M, ALL)
ATWS – 1FDW-316 failed CLOSED**

Time	Position	Applicant's Actions or Behavior
	OATC	<p>Event should be started after transfer of auxiliaries is complete to preclude a loss of power during the event.</p> <p>Plant response:</p> <ul style="list-style-type: none"> • Both Main FDW Pumps Trip • Turbine trip • Statalarm 1SA-01/A1, B1, C1, D1 (RP Channel A-D Trip) • PORV will open (will not reseal) • 1SA-18/A-1, PRESSURIZER RELIEF VALVE FLOW <p>Crew response:</p> <ol style="list-style-type: none"> 1. The OATC will perform IMAs. <ul style="list-style-type: none"> • Depress REACTOR TRIP pushbutton • Verify reactor power < 5% FP and decreasing • Perform Rule 1 (ATWS/ Unanticipated Nuclear Power Production) 2. Rule 1 will: (CT-24) <ol style="list-style-type: none"> 1. Verify any Power Range NI \geq 5% FP. 2. Insert control rods 3. Notify the SRO to GO TO UNPP tab 4. Open 1HP-24 and 1HP-25 5. Ensure 1A or 1B HPI pump operating 6. Start 1C HPI Pump 7. Open 1HP-26 and 1HP-27 8. Dispatch operator to OPEN CRD breakers <p>Note: CRD breakers will open in 4 minutes.</p> <ol style="list-style-type: none"> 9. Verify only two HPI pumps operating

Event Description: **Both Main FDW Pumps and Main Turbine Trip (M, ALL)
ATWS – 1FDW-316 failed CLOSED**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Crew response:</p> <p>3. The BOP will perform a symptoms check.</p> <ul style="list-style-type: none"> • Perform Rule 3 due to loss of Main FDW <p><u>Rule 3:</u></p> <p>1. Verify loss of Main FDW/EFDW is due to Turbine Building Flooding.</p> <p>RNO: GO TO Step 3.</p> <p>3. IAAT NO SGs can be fed with FDW (Main/CBP/Emergency), AND any of the following exist:</p> <ul style="list-style-type: none"> • RCS pressure reaches 2300 psig OR NDT limit • Pzr level reaches 375" [340" acc] THEN PERFORM Rule 4 (Initiation of HPI Forced Cooling). <p>4. Start operable EFDW pumps, as required, to feed all intact SGs.</p> <p>5. Verify any EFDW pump operating.</p> <p>6. GO TO Step 37.</p> <p>37. IAAT an EFDW valve CANNOT control in AUTO, OR manual operation of EFDW valve is desired to control flow/level, THEN perform Steps 38 - 42. (1FDW-316 failed closed)</p> <p>38. Place EFDW valve in MANUAL.</p> <p>39. Control EFDW flow with EFDW valve in MANUAL. RNO: GO TO Step 41.</p> <p>41. Notify CR SRO that Encl 5.27 (Alternate Methods for Controlling EFDW Flow) is being initiated.</p> <p>42. Initiate Encl 5.27.</p> <p>Enclosure 5.27 (Alternate Methods for Controlling EFDW Flow):</p> <p>1. Identify the failure: 1FDW-316 failed closed. GO TO Step 39.</p> <p>39. Verify 1B MD EFDWP operating.</p> <p>40. Stop 1B MD EFDWP.</p>

Event Description: **Both Main FDW Pumps and Main Turbine Trip (M, ALL)
ATWS – 1FDW-316 failed CLOSED**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Crew response:</p> <ol style="list-style-type: none"> 41. Verify 1A MD EFDWP is operating. 42. Place 1 TD EFDW PUMP in PULL TO LOCK. 43. Place 1FDW-44 in HAND and set demand to 0% 44. Close 1FDW-42 45. Verify 1B MD EFDWP will be used 46. Open 1FDW-384 47. Verify the following: <ul style="list-style-type: none"> • 1FDW-45 closed • 1FDW-47 closed 48. Start 1B MD EFDWP 49. Verify <u>either</u> of the following exists: <ul style="list-style-type: none"> • HPI Forced Cooling is maintaining core cooling • CBP feed providing SG feed <p>RNO:</p> <ol style="list-style-type: none"> 1. IF <u>any</u> SG is being fed, THEN perform the following: <ol style="list-style-type: none"> A. Throttle 1FDW-44 to establish 100 gpm. B. Throttle 1FDW-44 to obtain desired SG level per Rule 7 (SG Feed Control). 4. Notify CR SRO of SG feed status. 5. GO TO Step 51. 51. IAAT proper SG level is reached per Rule 7 (SG Feed Control), AND SG level permits auto level control, THEN place 1FDW-35 in AUTO. 52. WHEN directed by the CR SRO, THEN EXIT this enclosure.

CRITICAL TASKS

1. CT-24, Shutdown Reactor - ATWS
2. CT-11, Control SG pressure to Maintain RC Temperature Constant.
3. CT-3, Isolate Possible RCS Leaks

SAFETY: Take a Minute			
UNIT 0 (OSM)			
SSF Operable: Yes	KHU's Operable: U1 - OH, U2 - UG	LCTs Operable: 2	Fuel Handling: No
UNIT STATUS (CR SRO)			
Unit 1 Simulator		Other Units	
Mode: 1		Unit 2	Unit 3
Reactor Power: 75%		Mode: 1	Mode: 1
Gross MWE: 675		100% Power	100% Power
RCS Leakage: +.025 gpm (No WCAP action level)		EFDW Backup: Yes	EFDW Backup: Yes
RBNS Rate: .01 gpm			
Technical Specifications/SLC Items (CR SRO)			
Component/Train	OOS Date/Time	Restoration Required Date/Time	TS/SLC #
AMSAC/DSS Bypassed	Today / 06:30	7days	SLC 16.7.2 Cond. A&B
Shift Turnover Items (CR SRO)			
Primary			
<ul style="list-style-type: none"> Power was reduced 2 hours ago. Xenon is building in. Rx engineering is preparing a maneuvering plan. AMSAC/DSS bypassed for I&E testing. Testing expected to take 12 hours. SASS in MANUAL for I&E testing 1B GWD Tank release in progress 			
Secondary			
<ul style="list-style-type: none"> 1SSH-1, 1SSH-3, 1SD-2, 1SD-5, 1SD-140, 1SD-303, 1SD-355, 1SD-356 and 1SD-358 are closed with power supply breakers open per the Startup Procedure for SSF Overcooling Event. 			
Reactivity Management (CR SRO)			
RCS Boron: 30 ppmB	Gp 7 Rod Position: 80%		
Human Performance Emphasis (OSM)			
Procedure Use and Adherence			

October, 2010

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

 Operators: _____ **SRO**
 _____ **OATC**
 _____ **BOP**

Initial Conditions:

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

Turnover:

- AMSAC/DSS bypassed for I&E testing
- SASS in Manual for I&E testing
- Pump QT to 1A BHUT and sample. OP/1/A/1104/017 Encl. 4.1 (Pumping QT To 1A BHUT) in progress. Begin at step 2.

Event No.	Malfunction No.	Event Type*	Event Description
0a	Pre-Insert Updater		AMSAC/DSS bypassed
0b	Pre-Insert Updater		SASS in Manual
0c	MPI300		Reactor fails to trip automatically Can be tripped from the CR
1		N, BOP, SRO	Pump QT to 1A BHUT
2	MSS200	C, BOP, SRO	Vacuum leak
3	MPI 281 @ 68%	I, OATC, SRO	ΔT_c Controller Fails HIGH ('A' Loop Hot)
4	Override	C, BOP, OATC, SRO (TS)	Inadvertent ES Channel 2 actuation
5	MPS010	SRO,(TS)	1A SGTL 55 gpm
6		R, OATC, SRO	Manual Plant Shutdown
7	MSS190	C, OATC, SRO	Spurious Turbine Trip, Reactor fails to automatically trip
8	Override MEL170 MEL180	M, ALL	Blackout CT-1 Lockout KHU 2 Emergency Lockout Regain power from Keowee Unit 1 1HP-24 and 1HP-25 fail CLOSED

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

Event Description: **Pump Quench Tank: (N, BOP/SRO)**

Time	Position	Applicant's Actions or Behavior
	<p>SRO</p> <p>BOP</p>	<p>Crew response:</p> <p>Direct the BOP to pump the QT using OP/1/A/1104/017 Encl. 4.1 (Pumping QT)</p> <p>2.1 Ensure open:</p> <ul style="list-style-type: none"> • 1CS-5 (COMPONENT DRN PUMP SUCTION). • 1CS-6 (COMPONENT DRN PUMP SUCTION). <p>2.2 IF QT level will be maintained in normal operating band:</p> <p>2.2.1 IF desired, start COMPONENT DRAIN PUMP.</p> <p>2.2.2 IF desired, start QUENCH TANK DRAIN PUMP.</p> <p>2.2.3 At desired level:</p> <ul style="list-style-type: none"> • Ensure stopped COMPONENT DRAIN PUMP. • Ensure stopped QUENCH TANK DRAIN PUMP. <p>2.2.4 IF pump(s) automatically stop, ensure QT level ≈ 80 inches.</p> <p>2.3 IF QT level is to be reduced below low level setpoint of 80 inches: (N/A)</p> <p>2.4 Perform the following:</p> <ul style="list-style-type: none"> • Close 1CS-5 (COMPONENT DRN PUMP SUCTION). • Close 1CS-6 (COMPONENT DRN PUMP SUCTION). <p>2.5 IF 1A BHUT sample required, perform the following: (R.M.)</p> <p>2.5.1 Verify closed 1CS-46 (1A RC BLEED XFER PUMP DISCHARGE).</p> <p>2.5.2 Dispatch NEO to observe 1A Bleed Transfer Pump discharge pressure.</p> <p>2.5.3 Start 1A BLEED TRANSFER PUMP.</p> <p>2.5.4 Perform the following:</p> <p>Cue: When asked, using time compression, report discharge pressure of 103 psig on 1A Bleed Transfer Pump discharge pressure gauge.</p> <p>A. Have NEO report 1A Bleed Transfer Pump discharge pressure.</p> <p>B. IF discharge pressure requires adjustment, throttle 1CS-48 (1A BHUT Recirc) to obtain 90-110 psig on 1A Bleed Transfer Pump discharge pressure gauge. (AB-1, U#1 BTP Room)</p> <p>2.5.5 Request 1A BHUT sample from Chemistry.</p> <p>2.5.6 WHEN recirc of 1A BHUT is no longer desired, stop 1A BLEED TRANSFER PUMP.</p>
		<p>The event is complete when 1A BHUT sample has been requested or when determined by the Lead Examiner.</p>

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

Time	Position	Applicant's Actions or Behavior
	BOP SRO BOP	<p>Plant response:</p> <ul style="list-style-type: none"> • 1SA-03/A-6 (COND VACUUM LOW) • OAC alarm, Main Condenser Vacuum LOW <p>Crew response:</p> <p>Refer to the ARG and AP/27 (Loss of Condenser Vacuum).</p> <p>4.1 Announce AP entry using PA system.</p> <p>4.2 IAAT condenser vacuum is ≤ 22" Hg, THEN trip RX.</p> <p>4.3 Dispatch operators to perform Encl. 5.1 (Main Vacuum Pump Alignment) and look for vacuum leaks.</p> <p>Booth cue: Notify CR that USING TIME COMPRESSION, Main Vacuum Pumps are aligned per Encl. 5.1.</p> <p>4.4 Ensure all available Main Vacuum Pumps are running.</p> <p>4.5 Ensure 1V-186 is closed.</p> <p>4.6 Ensure Stm to Stm Air Eject A, B, C > 255 psig.</p> <p>4.7 Verify Stm Seal Hdr Press > 1.5 psig.</p> <p>4.8 Ensure all available CCW pumps operating.</p> <p>Booth cue: Call Control Room as the NEO and report that a leak was found on the 1B Main FDW Pump pumping trap sight glass and has been isolated.</p> <p>4.9 Verify Condensate flow ≥ 2300 gpm.</p> <p>4.10 WHEN condenser vacuum is stable, AND Encl 5.1 (Main Vacuum Pump Alignment) is complete, THEN EXIT this procedure.</p>
		The event is complete when Vacuum returns to normal or when determined by the Lead Examiner.

Event Description: **ΔTc CONTROLLER FAILS HIGH: (I, OATC/SRO)**

Time	Position	Applicant's Actions or Behavior
	OATC	<p>Plant response:</p> <ul style="list-style-type: none"> • Statalarm 1SA-2/B-5, (RC COLD LEG DIFF TEMPERATURE HIGH) OAC alarm (SG 1A FDW MASS FLOW HIGH) <p>Crew response:</p> <p>When Statalarm is received, the candidates should utilize the "Plant Transient Response" process to stabilize the plant.</p> <ul style="list-style-type: none"> • Verbalize to the SRO reactor power level and direction of movement. • Place the Diamond and both FDW Masters in manual and position as necessary to stabilize the plant. Decrease FDW to pre-transient levels. • The SRO should: <ul style="list-style-type: none"> ➤ Refer to AP/28 (ICS Instrument Failures) ➤ Contact SPOC to repair Delta Tc. <p>Note: The ICS will remain in manual for the remainder of the scenario.</p> <p>AP/28, ICS Instrument Failures</p> <p>4.1 Provide control bands as required.</p> <p>4.2 Initiate notification of the following:</p> <ul style="list-style-type: none"> • OSM to reference the following: <ul style="list-style-type: none"> ➤ OMP 1-14 (Notifications) ➤ Emergency Plan • STA <p>4.3 Verify any power transient has occurred.</p> <p>4.4 Notify Rx Engineering and discuss the need for a maneuvering plan.</p> <p>4.5 Use the following, as necessary, to determine the applicable section from table in Step 4.6:</p> <ul style="list-style-type: none"> • OAC alarm video • OAC display points • Control Board indications • SPOC assistance, as needed <p>GO TO the applicable section per the following table: Section 4F: Delta Tc Failure</p>
	SRO	
	SRO	

Event Description: **ΔTc CONTROLLER FAILS HIGH: (I, OATC/SRO)**

Position	Applicant's Actions or Behavior
SRO	<p>Crew response: AP/28: Section 4F (Delta Tc Failure)</p> <ol style="list-style-type: none"> 1. Ensure the following in HAND: <ul style="list-style-type: none"> • 1A FDW MASTER • 1B FDW MASTER • DELTA Tc 2. Re-ratio feedwater flow, as required, to establish desired DELTA Tc while maintaining total feedwater flow constant. 3. Notify SPOC to perform the following: <ul style="list-style-type: none"> • Investigate and repair the failed Delta Tc controller.. 4. WHEN notified by SPOC that Delta Tc controller has been repaired, THE GO TO Encl 5.1 (Placing ICS in AUTO). <p>Note: The ICS will remain in manual for remainder of scenario.</p>
	<p>The event is complete when SPOC is notified or when determined by the Lead Examiner.</p>

Event Description: Inadvertent ES Channels 2 actuation: (C, OATC/BOP/SRO)

Time	Position	Applicant's Actions or Behavior
	<p data-bbox="331 972 396 1003">SRO</p> <p data-bbox="331 1121 396 1152">BOP</p> <p data-bbox="321 1617 402 1648">OATC</p>	<p data-bbox="492 348 708 380">Plant response:</p> <p data-bbox="492 415 646 447">Statalarms:</p> <ul data-bbox="492 468 993 499" style="list-style-type: none"> • 1SA-1/B-10 (ES CHANNEL 2 TRIP) <p data-bbox="492 516 850 548">Control Board indications:</p> <ul data-bbox="492 569 873 751" style="list-style-type: none"> • ES Channel 2 actuate • HPI Injection in "B" header • Letdown isolated • Keowee emergency start <p data-bbox="492 768 708 800">Crew response:</p> <ul data-bbox="492 837 1354 1003" style="list-style-type: none"> • Determine that ES actuation was NOT valid and inform the SRO. • Crew may perform Plant Transient Response. • The SRO should enter AP/42 (Inadvertent ES Actuation) <p data-bbox="492 1041 1053 1073">AP/42 (Inadvertent ES Actuation) Actions:</p> <p data-bbox="492 1104 1040 1136">4.1 Verify ES Channel 1 or 2 has actuated.</p> <p data-bbox="492 1157 1341 1188">4.2 Place HPI on the affected channels in MANUAL on RZ Modules</p> <p data-bbox="492 1209 1027 1241">4.3 Throttle HPI (secure the 1C HPI pump)</p> <p data-bbox="492 1262 1341 1293">4.4 Verify ES Channel 5 or 6 has actuated. RNO GO TO Step 4.7</p> <p data-bbox="492 1314 776 1346">4.7 Close the following</p> <ul data-bbox="537 1356 683 1434" style="list-style-type: none"> • 1HP-24 • 1HP-25 <p data-bbox="492 1455 1430 1518">4.8 Ensure AP/42 Encl 5.1 (Side Board Actions) is in progress. (BOP will perform)</p> <p data-bbox="492 1539 1268 1570">4.9 Initiate announcement of AP Entry using the PA system.</p> <p data-bbox="492 1591 1060 1623">4.10 Verify ES Channel 1 or 2 has actuated.</p> <p data-bbox="492 1644 1365 1707">4.11 Ensure AP/42 Encl 5.2 (Letdown Restoration) is in progress or complete. (OATC will perform)</p>

Event Description: **Inadvertent ES Channels 2 actuation: (C, OATC/BOP/SRO)**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Crew response:</p> <p>BOP will perform Encl. 5.1 (Side Board Action)</p> <ol style="list-style-type: none"> 1. Verify ES Channel 5 or 6 has actuated. RNO: GO TO Step 5. 5. Verify ES Channel 7 or 8 has actuated. RNO: GO TO Step 9. 9. Verify ES Channel 1 or 2 has actuated. 10. Open 1HP-20 and 1HP-21 (Seal Return) 11. Open 1HP-228, 226, 232, and 230 (Seal Return Stop) 12. Place the following in MANUAL on each ES Channel that has actuated: <ul style="list-style-type: none"> • 1PR-7, 1PR-9 (RB RIAs) • 1PR-8, 1PR-10 (RB RIAs) 13. Open the following to restore RB RIAs on each ES Channel that has actuated: <ul style="list-style-type: none"> • 1PR-8 • 1PR-10 <p>From the ENABLE CONTROLS screen on the RIA View Node, perform the following:</p> <ul style="list-style-type: none"> • Select OFF for RB RIA sample pump. • Start the RB RIA sample pump. 14. Verify ES Channel 1 actuated. <p>RNO: GO TO Step 16.</p> <ol style="list-style-type: none"> 16. EXIT this enclosure.

Event Description: Inadvertent ES Channels 2 actuation: (C, OATC/BOP/SRO)

Time	Position	Applicant's Actions or Behavior
	OATC	<p>Crew response:</p> <p>OATC will perform Encl. 5.2 (Letdown Restoration)</p> <ol style="list-style-type: none"> 1. Verify CC pump operating 2. Verify letdown is isolated 3. Close 1HP-5 (LETDOWN ISOLATION) 4. Verify it is desired to place both letdown coolers in service. 5. Open 1HP-1, 1HP-2, 1HP-3, and 1HP-4 (1A and 1B Letdown Cooler Inlet and Outlet) 6. Close 1HP-6 (LETDOWN ORIFICE STOP) 7. Close 1HP-7 (LETDOWN CONTROL) 8. Verify letdown temperature < 135°F. 9. Open 1HP-5 (LETDOWN ISOLATION) 10. Adjust 1HP-7 for ≈ 20 gpm letdown 11. WHEN letdown temperature < 130°F, THEN place LETDOWN HI TEMP INTLK BYP switch in NORMAL 12. Open 1HP-6 (LETDOWN ORIFICE STOP) 13. Adjust 1HP-7 to control desired letdown flow (75 gpm)

Event Description: **Inadvertent ES Channels 2 actuation: (C, OATC/BOP/SRO)**

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Crew response: AP/42 (Inadvertent ES Actuation) Actions (Continued)</p> <p>4.12 Verify the Rx is at power.</p> <p>4.13 Verify ICS in AUTO. RNO</p> <p>4.13 RNO:</p> <ol style="list-style-type: none"> 1. IF both SGs are on Low Level Limits, <ul style="list-style-type: none"> • 1SA-2/E-8 (STM GEN "A" LEVEL LOW LIMIT) • 1SA-2/E-9 (STM GEN "B" LEVEL LOW LIMIT) <p>THEN GO TO Step 4.15.</p> 2. Manually reduce CTP, as necessary, to stabilize Tave. 3. GO TO Step 4.15. <p>4.15 Notify Chemistry for RCS and LDST boron sample</p> <p>4.16 Notify Rx Engineering to develop a maneuvering plan</p> <p>4.17 Verify ES Channel 1 has actuated. RNO GO TO Step 4.20.</p> <p>4.20 Verify ES Channels 3 or 4 actuated. RNO GO TO Step 4.23.</p> <p>4.23 Notify SPOC to investigate and repair the cause of the inadvertent ES actuation, as necessary.</p> <p>4.24 Initiate logging TS/SLC Entry/Exit as applicable, IAW Encl. 5.4 (TS/SLC Requirements) (TS)</p> <ul style="list-style-type: none"> • TS 3.3.7 – ESPS Digital Automatic Actuation Logic Channels Condition A; Place associated component(s) in ES configuration OR Declare the associated component(s) inoperable within 1 hour. • TS 3.3.6 – ESPS Manual Instrumentation Condition A; Restore channel to OPERABLE status within 72 hours • TS 3.4.15 – RCS Leakage Detection Instrumentation Condition B; Analyze grab samples of the containment atmosphere once per 24 hours. (can be exited once Encl. 5.1, Side Board Actions completed) • TS 3.4.9 – Pressurizer Condition A; Restore level within limit within 1 hour <p>Note: Should enter ONLY if Pzr level exceeds 260 inches</p>
		<p>When plant is stable and Letdown has been restored, or when directed by the Lead Examiner the event is completed.</p>

Event Description: **Manual plant shutdown (R, OATC/SRO)**

Time	Position	Applicant's Actions or Behavior
	OATC	<p>13. Verify ICS in AUTO. RNO Initiate manual power reduction to < 15%. GO TO Step 15.</p> <ul style="list-style-type: none"> • Use control rods and lead with FDW masters.
	BOP	<p>15. Initiate Encl 5.19 (Control of Plant Equipment During Shutdown for SGTR).</p> <ol style="list-style-type: none"> 1. Monitor RIAs to identify all SGs with a tube rupture: <ul style="list-style-type: none"> • 1RIA-16/17 • 1RIA-59/60 when Rx power > 40% <p>Inform CR SRO of results.</p> 2. Place 1TA and 1TB AUTO/MAN transfer switch in MAN. 3. Close 1TA and 1TB SU 6.9 KV FDR. 4. Place MFB1 AUTO/MAN transfer switch in MAN. 5. Place MFB2 AUTO/MAN transfer switch in MAN. 6. Close E1₁ MFB1 STARTUP FDR. 7. Close E2₁ MFB2 STARTUP FDR. 8. Notify CR SRO that unit auxiliaries have been transferred. 9. Start the TURBINE TURNING GEAR OIL PUMP, 1A through 1E TURBINE BRNG OIL LIFT PUMPS, TURBINE MOTOR SUCTION PUMP 10. Start the A/B OUTSIDE AIR BOOSTER FANS (CT-27) (within 30 minutes of entry condition to the EOP for a SGTR (>25 gpm leak)) 11. Notify Unit 3 to start the 3A/3B OUTSIDE AIR BOOSTER FANS 12. Stop the 1A/1B MSRHR DRN PUMPS 13. Place 1FDW-53/65 in manual and close. 14. Place 1HD-37/52 in DUMP. 15. Place 1A/1B FDWP SEAL INJECTION PUMP switch to START. Start 1A/1B FDWP AUXILIARY OIL PUMP. 16. WHEN Rx power is ≤ 80%, THEN stop the 1E1/1E2 HTR DRN PUMPS
		<p>Event is complete when reactor power has been reduced by 5% or when directed by the lead examiner.</p>

Event Description: **Blackout: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC/SRO	<p>Plant response:</p> <ul style="list-style-type: none"> • KHU #2 Emergency Lockout • CT-1 Lockout • MFBs will de-energize <p>Crew response:</p> <p>Perform <u>Immediate Manual Actions</u> (IMAs)</p> <ul style="list-style-type: none"> • Depress REACTOR TRIP pushbutton. <p>NOTE: Reactor will trip when the pushbutton is depressed.</p> <ul style="list-style-type: none"> • Verify reactor power < 5% FP and decreasing. • Depress turbine TRIP pushbutton. • Verify all turbine stop valves closed. • Verify RCP seal injection available. <ul style="list-style-type: none"> • IF CC is unavailable, THEN immediately perform the following: <ul style="list-style-type: none"> • Stop all RCPs. • Notify CR SRO to initiate AP/25 (Standby Shutdown Facility Emergency Operating Procedure). <p>AP/25</p> <p>4.1 Verify any of the following required due to loss of function:</p> <ul style="list-style-type: none"> • SSF RCMU feed • SSF ASW feed to SGs <p>4.2 Stop all RCPs</p> <p>4.3 Verify a Licensed Operator staged in SSF and available to perform AP/0/A/1700/025 (Standby Shutdown Facility Emergency Operating Procedure). (One is NOT)</p> <p>4.3 RNO</p> <ol style="list-style-type: none"> 1. Obtain the following items: <ul style="list-style-type: none"> • Vital area access key ring • Flashlight • Respirator (if Security Event) 2. Proceed to the SSF. <p>NOTE: BOP will be stopped before leaving the control room and informed that Unit 2 RO will perform SSF actions.</p>
	BOP	
	OATC/BOP	

Event Description: **Blackout: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC	<p>Crew response:</p> <p>Perform <u>Symptom Check</u></p> <ul style="list-style-type: none"> • Power Range NIs NOT < 5% • Power Range NIs NOT decreasing • Any SCM < 0°F • <u>Loss of Main and Emergency FDW</u> (including unsuccessful manual initiation of EFDW) • Uncontrolled Main Steam line(s) pressure decrease • SGTR <ul style="list-style-type: none"> • CSAE Off gas alarms • Process monitor alarms (RIA-40, 59, 60) • Area monitor alarms (RIA-16/17) <p>Rule 3 (Loss of Main or Emergency Feedwater)</p> <ol style="list-style-type: none"> 1. Verify loss of Main FDW.EFDW is due to Turbine Building Flooding. RNO GO TO Step 3 3. IAAT NO SGs can be fed with FDW (Main/CBP/Emergency), AND any of the following exist: <ul style="list-style-type: none"> • RCS pressure reaches 2300 psig OR NDT limit • Pzr level reaches 375" [340" acc] THEN PERFORM Rule 4 (Initiation of HPI Forced Cooling). 4. Start operable EFDW pumps to feed <u>all intact</u> SGs. 5. Verify any EFDW pump operating. 6. GO TO Step 37. 37. IAAT an EFDW valve CANNOT control in AUTO... RNO GO TO Step 43 43. Verify any SCM ≤ 0°F. 44. IAAT Unit 1 EFDW is in operation, THEN initiate Encl 5.9 (Extended EFDW Operation). 45. WHEN directed by CR SRO, THEN EXIT this rule.

Event Description: **Blackout: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO/BOP OATC	<p>Crew response: SRO will transfer to the BLACKOUT tab.</p> <ul style="list-style-type: none"> • Notify plant staff Emergency Dose limits are in affect. • Direct and RO to announce plant conditions using the plant page and notify the OSM to reference EP and NSD 202 (reportability). <ol style="list-style-type: none"> 1. Verify two ROs available to perform Control Room actions. 2. Notify one RO to perform Encl 5.38 (Restoration of Power). <p>Note: Enclosure 5.38 steps located on page 17.</p> <ol style="list-style-type: none"> 3. Verify any SG is being fed. 4. Verify any MD EFDWP operating 5. Feed and steam available SGs as necessary to stabilize RCS P/T. <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>NOTE: Feeding SGs with EFDW is desired above HPI Forced Cooling. Step 6 should be performed prior to re-performing Rule 3.</p> </div> <ol style="list-style-type: none"> 6. IAAT NO SGs are being fed, AND any source of EFDW (Unit 1 or another unit) becomes available, THEN perform the following: <ol style="list-style-type: none"> A. Establish 100 gpm to each intact SG. (Feeding to 240" XSUR) B. Perform one of the following: <ul style="list-style-type: none"> • $T_c > 550^\circ\text{F}$- Initiate cool down to $T_c 540^\circ\text{F} - 550^\circ\text{F}$ by feeding and steaming intact SGs at a rate that prevents RCS saturation. • $T_c \leq 550^\circ\text{F}$- Feed and steam intact SGs to stabilize $T_c \leq 550^\circ\text{F}$. 7. IAAT EFDW from any source is insufficient to maintain stable RCS P/T, THEN notify SSF operator that feeding SGs with SSF ASW is required. 8. IAAT power is restored to 1TC, 1TD, 1TE THEN GO TO Step 9 <p>Note: Power may not be restored at this point. In which case the crew will route to RNO: GO TO Step 78, which continues on page 19.</p> <ol style="list-style-type: none"> 9. Initiate AP/11 (Recovery from Loss of Power). 10. GO TO Subsequent Actions tab. <p>SRO will transfer to the SGTR tab via Parallel Actions page. (Steps on page 21)</p>
	SRO	

Event Description: **Blackout: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	<p>Crew response:</p> <p>RO will perform Enclosure 5.38 (Restoration of Power) (CT-8) (Not met if Encl. 5.38 completed with power NOT restored.)</p> <ol style="list-style-type: none"> 1. Verify power has been restored. RNO GO TO Step 3 3. Place 1HP-31 in HAND <u>and</u> reduce demand to 0. 4. Close 1HP-21. 5. Verify MFB1/2 energized RNO: GO TO Step 8 8. Verify CT-1 indicates \approx 4160 volts. RNO: GO TO Step 18 18. Verify both Standby Bus #1 and Standby Bus #2 are de-energized. 19. Verify <u>both</u> Keowee units operating. RNO: <ol style="list-style-type: none"> 1. Emergency start Keowee units: <ul style="list-style-type: none"> KEOWEE EMER START CHANNEL A KEOWEE EMER START CHANNEL B 2. IF NO Keowee units are operating, (KHU 1 operating) THEN GO TO Step 36. 20. Verify <u>both</u> Keowee units in Oconee Control (statalarms on): <ul style="list-style-type: none"> • UNIT 1 OCONEE CONTROL (2SA-17/E-1) • UNIT 2 OCONEE CONTROL (2SA-18/E-1) <p>RNO: Notify Keowee Operator to place both Keowee units Master Transfer switches to remote.</p> 21. Verify <u>both</u> Keowee units operating. RNO: <ol style="list-style-type: none"> 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. 22. Ensure one of the following is closed for an operating Keowee unit: <ul style="list-style-type: none"> • UNIT 1 EMER FDR • ACB 3 23. Verify CT-4 indicates \approx 4160 volts.

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	<p>Crew response:</p> <ol style="list-style-type: none"> 24. Place the following transfer switches in MAN: <ul style="list-style-type: none"> • CT4 BUS 1 AUTO/MAN • CT4 BUS 2 AUTO/MAN 25. Place the following switches in ON: <ul style="list-style-type: none"> • STBY BUS 1 SYNCHRONIZING • STBY BUS 2 SYNCHRONIZING 26. Close the following breakers: <ul style="list-style-type: none"> • SK1 CT4 STBY BUS 1 FEEDER • SK2 CT4 STDY BUS 2 FEEDER 27. Place the following switches in OFF: <ul style="list-style-type: none"> • STBY BUS 1 SYNCHRONIZING • STBY BUS 2 SYNCHRONIZING 28. Verify Standby Bus #1 energized. 29. Notify CR SRO in each unit where a blackout exists that Standby Bus #1 is energized. 30. Place the following switches in MAN: <ul style="list-style-type: none"> • MFB1 and MFB2 AUTO/MAN • STANDBY 1 and STANDBY 2 AUTO/MAN 31. Open the following breakers: <ul style="list-style-type: none"> • N₁ MFB1 NORMAL FDR • N₂ MFB2 NORMAL FDR • E₁ MFB1 STARTUP FDR • E₂ MFB2 STARTUP FDR 32. Close the following breakers: <ul style="list-style-type: none"> • S₁ STBY BUS 1 TO MFB1 • S₂ STBY BUS 2 TO MFB2 33. Verify any of the following energized: 1TC, 1TD, 1TE. 34. Notify Unit 1 CR SRO of status of 4160 SWGR 35. EXIT this enclosure.

Event Description: **Blackout: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	<p>Crew response:</p> <p>Note: These steps continued from page 16 Step 8 RNO in the event that power has not been restored to 1TC, 1TD, 1TE</p> <p>11. Verify Encl 5.38 (Restoration of Power) in progress or complete</p> <p>12. IAAT all 4160V SWGR (1TC, 1TD, 1TE) are de-energized, AND Standby Bus #1 is energized, THEN GO TO Step 13. RNO: GO TO Step 78</p> <p>78. IAAT all 4160V SWGR (1TC, 1TD, 1TE) are de-energized for 1½ hours, THEN dispatch an operator to perform Encl 5.17 (Generator Emergency Hydrogen Purge).</p> <p>79. Verify blackout exists on all three units. (Unit 1 only) RNO: GO TO Step 81</p> <p>81. Verify both of the following de-energized:</p> <ul style="list-style-type: none"> • MFB1 • MFB2 <p>82. WHEN Encl 5.38 (Restoration of Power) is complete, THEN continue this procedure</p>

Event Description: **Blackout: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	<p>Crew response:</p> <p>AP/11 (Recovery from Loss of Power)</p> <p>4.1 Announce AP entry using the PA system.</p> <p>4.2 IAAT Pzr level > 80" [180" acc], AND Pzr heaters are desired, THEN position Pzr heaters to AUTO</p> <p>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</p> <p>4.9 Verify load shed has initiated as indicated by either of the following statalarms on:</p> <ul style="list-style-type: none"> • 1SA-15/D-4 (EL LOAD SHED CHNL A LOGIC INITIATE) • 1SA-14/D-4 (EL LOAD SHED CHNL B LOGIC INITIATE) <p>4.10 Verify load shed is complete as indicated by LOAD SHED COMPLETE on any ES Module (Channel 1 or 2).</p> <p>4.11 Close the following breakers:</p> <ul style="list-style-type: none"> • 1TC INCOMING FDR BUS 1/2 • 1TD INCOMING FDR BUS 1/2 • 1TE INCOMING FDR BUS 1/2 <p>4.12 Verify a 230KV Switchyard Isolation has occurred. RNO: GO TO Step 4.15.</p> <p>4.15 Verify load shed was initiated as indicated by either of the following statalarms on:</p> <ul style="list-style-type: none"> • 1SA-15/D-4 (EL LOAD SHED CHNLA LOGIC INITIATE) • 1SA-14/D-4 (EL LOAD SHED CHNLB LOGIC INITIATE)

Event Description: **Blackout: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	<p>4.16 Verify ES has occurred. RNO GO TO Step 4.18</p> <p>4.18 Simultaneously press RESET on both of the following pushbuttons to reset Main Feeder Bus Monitor Panel Load Shed Circuitry:</p> <ul style="list-style-type: none"> • MFB UNDERVOLTAGE CHANNEL 1/2 RESET <p>4.19 Verify load shed signal reset as indicated by both of the following statalarms off:</p> <ul style="list-style-type: none"> • 1SA-15/D-4 (EL LOAD SHED CHNL A LOGIC INITIATE) • 1SA-14/D-4 (EL LOAD SHED CHNL B LOGIC INITIATE) <p>4.20 IAAT electrical loads are added, AND any MFB is powered from a Lee Gas Turbine, THEN notify Lee Steam Station to adjust frequency as necessary.</p> <p>4.21 Verify both:</p> <ul style="list-style-type: none"> • Condensate flow has been lost for < 25 minutes • Condensate system operation desired <p>4.22 Place all HWP control switches to OFF.</p> <p>4.23 Place all CBP control switches to OFF.</p> <p>4.24 Place 1FDW-53/65 in MANUAL and close.</p> <p>4.25 Place 1C-10 FAIL SWITCH in MANUAL.</p> <p>4.26 Close 1C-10.</p> <p>4.27 Make a plant page to clear TB Basement and TB third floor of non-essential personnel.</p> <p>4.28 Start one HWP.</p> <p>RO will make up to RCS per <u>Encl. 5.5</u> (Pzr and LDST Level Cont)</p> <p>1. Utilize the following as necessary to maintain desired Pzr level:</p> <ul style="list-style-type: none"> • Standby HPI pump • 1HP-26 • 1HP-7 • 1HP-5 • 1HP-120 setpoint or valve demand <p>6. IAAT 1C HPI PUMP is required, THEN perform Steps 7-9. RNO: GO TO Step 10.</p>

Event Description: **Blackout: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	ALL	<p>Crew response: SGTR tab</p> <ol style="list-style-type: none"> 1. Verify Rx tripped. 2. Maintain Pzr level 140" - 180" 3. Start A and B Outside Air Booster Fan (CT-27) 4. Notify Unit 3 to start 3A and 3B Outside Air Booster Fans 5. Monitor RIAs 16 and 17 to identify all SGs with a tube rupture. 6. Dispatch an operator to open both of the TBS pump breakers 7. Notify RP to survey both MS lines for radiation. 8. GO TO Step 27 27. Secure any unnecessary offsite release paths. (Main Vacuum Pumps, TDEFDWP, Emergency Steam Air Ejector, etc.) 29. Open the following: <ul style="list-style-type: none"> • 1HP-24 • 1HP-25 <p>Note: 1HP-24 and 1HP-25 fail closed.</p> <p>29 RNO IF both BWST suction valves (1HP-24 and 1HP-25) are closed, THEN perform the following:</p> <ol style="list-style-type: none"> A. Start 1A LPI PUMP. B. Start 1B LPI PUMP. C. Open the following: <ul style="list-style-type: none"> • 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)

Event Description: **Blackout: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Crew response:</p> <p>30. Secure makeup to LDST.</p> <p>31. Maintain both SG pressures < 950 psig using either of the following:</p> <ul style="list-style-type: none"> • TBVs • Dispatch two operators to perform Encl 5.24 (Operation of the ADVs) <p>32. IAAT all exist:</p> <ul style="list-style-type: none"> • All SCMs > 0°F • ES Bypass Permit satisfied • RCS pressure controllable. <p>THEN bypass ES as necessary</p> <p>34. Maintain RCP NPSH during the reduction of SCM;</p> <ul style="list-style-type: none"> • OAC • Encl. 5.18 (P/T Curves) <p style="text-align: center;">NOTE</p> <p>If normal pZR spray is available, efforts should be made to minimize core SCM ≤ 15°F IF allowed by RCP NPSH requirements.</p> <p>If normal pZR spray is NOT available, minimize core SCM as low as safely achievable.</p> <p>35. Minimize core SCM using the following methods: (CT-7) (Will fail CT if SCM is lost due to reduction in SCM. Progress must be made in reducing SCM.)</p> <ul style="list-style-type: none"> • De-energize all PZR heaters • Use PZR spray • Maintain PZR level 140" - 180" <p>36. IAAT RCS de-pressurization methods are inadequate in minimizing core SCM, THEN perform Step 37 - 30</p> <p>37. Verify PZR spray nozzle ΔT ≥ 410°F</p> <p>38. Close 1LWD-1 and 1LWD-2</p> <p>39. Cycle PORV as necessary</p>
		<p>When crew takes action to minimize SCM or when directed by the lead examiner, the event is complete.</p>

CRITICAL TASKS

1. CT-24, ATWS
2. CT-8, Electrical Power Alignment
3. CT-27, Implementation of Control Room Habitability Guidance
4. CT-7, Minimize SCM

SAFETY/PRA RISK (OSM)

SAFETY: Take a Minute

UNIT 0 (OSM)

SSF Operable: Yes	KHU's Operable: U1 - OH, U2 - UG	LCTs Operable: 2	Fuel Handling: No
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UNIT STATUS (CR SRO)

Unit 1 Simulator	Other Units	
	Unit 2	Unit 3
Mode: 1	Mode: 1	Mode: 1
Reactor Power: 100%	100% Power	100% Power
Gross MWE: 898	EFDW Backup: Yes	EFDW Backup: Yes
RCS Leakage: +0.025 gpm (No WCAP action level)		
RBNS Rate: 0.01 gpm		

Technical Specifications/SLC Items (CR SRO)

Component/Train	OOS Date/Time	Restoration Required Date/Time	TS/SLC #
AMSAC/DSS Bypassed	Today / 06:30	7days	SLC 16.7.2 Cond. A&B

Shift Turnover Items (CR SRO)

Primary

- AMSAC/DSS bypassed for I&E testing. Testing expected to take 12 hours.
- SASS in MANUAL for I&E testing
- Pump QT to 1A BHUT and sample. OP/1/A/1104/017 Encl. 4.1 (Pumping QT To 1A BHUT) in progress. Begin at step 2.

Secondary

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

Reactivity Management (CR SRO)

RCS Boron: 30 ppmB	Gp 7 Rod Position: 92%
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Human Performance Emphasis (OSM)

Procedure Use and Adherence

October, 2010

Facility: **Oconee**Scenario No.: **4a AG**Op-Test No.: **1**

Examiners: _____

Operators: _____ **SRO**

_____ **OATC**

_____ **BOP**

Initial Conditions:

- 0.01% (below POAH) , Unit 2: 100%, Unit 3: 100%

Turnover:

- Unit 1 startup in progress
- SASS in manual
- Stop 1C RBCU and start 1B RBCU
- Startup procedure at step 3.29 of Enclosure 4.7

Event No.	Malfunction No.	Event Type*	Event Description
0a	Pre-insert		SASS in manual
0b	Override		1C HPI Pump fails to start
1	Override	N, BOP, SRO (TS)	Swap operating RBCUs, High Vibration (Stop 1C RBCU and start 1B RBCU)
2		R, OATC, SRO	Increase power to 3% and place ICS in AUTO
3	MPI150	I, OATC, SRO (TS)	PZR "A" RTD Fails LOW
4	MCR061	C, OATC, SRO	Continuous Rod Withdrawal
5	MPS400	M, ALL	SBLOCA 1B and 1C HPI Pump fails to start requiring rapid RCS C/D due to degraded HPI
6	MPS400	M, ALL	LBLOCA

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

October, 2010

Op-Test No.: _____

Scenario No.: 4a

Event No.: 1

Page 1 of 2

Event Description: **Swap operating RBCUs: (N, BOP/SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	<p>OP/1/A/1104/015 Enclosure 4.3 (Reactor Building Cooling system)</p> <p>3.1 Verify RB pressure within limits of PT/1/A/0600/001 (Periodic Instrument Surveillance). (- 2.45 psig - 1.2 psig)</p> <p>3.2 Begin monitoring the following:</p> <ul style="list-style-type: none"> • RB pressure • RB temperature <p>3.3 Place desired switch to "OFF":</p> <ul style="list-style-type: none"> • 1C RBCU <p>BOP will start the B RBCU per Enclosure 4.3 section 4.</p> <p>4.1 Verify RB pressure within limits of PT/1/A/0600/001 (Periodic Instrument Surveillance).</p> <p>4.2 Begin monitoring the following:</p> <ul style="list-style-type: none"> • RB pressure • RB temperature <p>4.4 Place desired switch to "HIGH":</p> <ul style="list-style-type: none"> • 1B RBCU <p>Plant response:</p> <p>OAC alarm "High Vibration 1B RBCU"</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE:</p> <p>Reactor Building Cooling System (OP/1/A/1104/015) Limit & Precaution: If RBCU vibration alarms are received after RBCU is in operation and CANNOT be promptly cleared, Immediately stop the affected RBCU.</p> <p>Once selected to "OFF" RBCU must remain "OFF" for 30 minutes before restarting except in emergencies.</p> </div>

October, 2010

Op-Test No.: _____ Scenario No.: **4a**Event No.: **1**

Page 2 of 2

Event Description: **Swap operating RBCUs: (N, BOP/SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	<p>BOP</p> <p>SRO</p>	<p>Crew response:</p> <ul style="list-style-type: none"> • BOP will attempt to reset vibration alarm (Panel 1AB3) • BOP should secure the 1B RBCU • Contact engineering <p>SRO should refer to TS 3.6.5, Reactor Building Spray and Cooling Trains.</p> <p>Condition B: Restore to operable within 7 days</p> <p>Note: Crew may attempt to restart 1C RBCU after 30 minutes.</p>
		<p>When the 1B RBCU has been secured and SRO has referred to TS or when directed by the lead examiner this event is completed.</p>

October, 2010

Op-Test No.: _____ Scenario No.: **4a** Event No.: **2** Page 1 of 1
 Event Description: **Increase reactor power to 3% and place ICS in AUTO: (R, OATC, SRO)**

Time	Position	Applicant's Actions or Behavior
		<p>Crew response: OP/1/A/1102/001 Section 4.7 (Controlling Procedure for Unit Startup)</p> <p>NOTE: POAH is normally achieved from 0.05 to 0.15% power on Wide Range Indications.</p> <p>When POAH is achieved: TBVs will begin to open, 1HP-120 will begin to close, TAVE will increase, & SUR will decrease with negative Moderator Temperature Coefficient.</p> <p>SRO/OATC 3.29 Begin reactor power increase to 0.5 - 1.0 % at ≤ 0.5 DPM SUR.</p> <p>3.30 WHEN above POAH, begin reactor power increase to 2.5 - 3.5%. (Manual Control Rod Withdrawal).</p> <p>BOP 3.31 WHILE power increases, begin increasing 1HP-120 (RC VOLUME CONTROL) setpoint to establish 215" to 225" PZR Level</p> <p>OATC 3.32 WHEN at 2.5 - 3.5 % Power, perform the following:</p> <p>3.32.1 Place REACTOR MASTER to "AUTO".</p> <p>3.32.2 Place DIAMOND to "AUTO".</p> <p>3.32.3 Ensure TURBINE MASTER Setpoint to 880 - 890 psig.</p>
		<p>Event is complete when ICS is placed in AUTO or when directed by the lead examiner.</p>

October, 2010

Op-Test No.: _____ Scenario No.: **4a**Event No.: **3**

Page 1 of 2

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

Time	Position	Applicant's Actions or Behavior
	<p>OATC</p> <p>SRO</p> <p>OATC</p>	<p>Booth Cue: Call the BOP to request the following: "This is the Secondary Chemist requesting the value of Steam Flow to the E Htrs" (This will ensure OATC will take actions for the PZR RTD failure)</p> <p>Plant response: Statalarms:</p> <ul style="list-style-type: none"> • 1SA-2/C-3 (RC Pressurizer Level Hi/Low) • OAC (RC PZR level 1&3 mismatch) • OAC (RC PZR level 2&3 mismatch) <p>Board indications:</p> <ul style="list-style-type: none"> • PZR level 1 and 2 indicates ≈ 133 inches • PZR level 3 indicates ≈ 220 inches and slowly increasing <p>Crew response: Refer to ARG 1SA-02 C-3:</p> <p>3.1 Check alternate PZR level indications..</p> <p>3.2 Check for proper Makeup/Letdown flows and adjust to restore proper level.</p> <ul style="list-style-type: none"> • RO may take 1HP-120 to manual to control PZR level. <p>3.4 Refer to Technical Specification 3.4.9, Pressurizer.</p> <p>3.5 Refer to Technical Specification 3.3.8, PAM Instrumentation.</p> <ul style="list-style-type: none"> • Condition A applies <p>3.6 Refer to OP/1/A/1105/014 Enclosure 4.9, Control Room Instrumentation Operation And Information, SASS Information.</p>
		<p>This event is complete when PZR level 3 has been selected and 1HP-120 returned to AUTO or when directed by the lead examiner.</p>

October, 2010

Op-Test No.: _____

Scenario No.: 4a

Event No.: 3

Page 2 of 2

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

Time	Position	Applicant's Actions or Behavior
	BOP	<p>OP/1/A/1105/014</p> <p>3.2 SASS (Smart Automatic Signal Selector) Manual Operation</p> <p>3.2.1 IF "MISMATCH" light is on and "TRIP 'A'" or "TRIP 'B'" light is on, a SASS trip has occurred.</p> <p>A. Controlling signal will be selected from CR keyswitch (for parameters in ICS Cabinet #8).</p> <p>B. Select valid signal as controlling signal by positioning CR keyswitch or pushbutton for Pzr level to valid signal (for parameters in ICS Cabinet #8).</p> <p>3.2.2 IF "MISMATCH" light is on, a mismatch has occurred.</p> <p>A. Controlling signal will be signal selected from CR keyswitch (for parameters in ICS Cabinet #8).</p> <p>B. Select valid signal as controlling signal by positioning CR keyswitch or pushbutton for Pzr level to valid signal (Select Pzr level #3)</p> <p>3.2.3 Initiate a Work Request to repair faulty signal.</p> <p>Note: If the SRO has not addressed the TS for this event continue to next event and ask the TS as a follow up question.</p>
		<p>This event is complete when PZR level 3 has been selected and 1HP-120 returned to AUTO or when directed by the lead examiner.</p>

October, 2010

Op-Test No.: _____

Scenario No.: 4a

Event No.: 5

Page 1 of 6

Event Description: SBLOCA: (M, ALL)

Time	Position	Applicant's Actions or Behavior
	<p>ALL</p> <p>OATC</p> <p>BOP</p> <p>SRO</p>	<p>Plant response:</p> <p>Control board indications:</p> <ul style="list-style-type: none"> • 1SA-2/D-3 (RC PRESS HI/LOW) • RCS Pressure and PZR level decreasing • ES 1-6 actuate • Reactor Trip • RCS subcooling margin will indicate 0°F <p>Crew response:</p> <ul style="list-style-type: none"> • Trip the Reactor due to MU being beyond "Normal Makeup Capability" (160 gpm). • The SRO will direct the OATC to perform IMAs and the BOP a symptom check. • OATC will perform IMAs <ul style="list-style-type: none"> 3.1 Depress REACTOR TRIP pushbutton. 3.2 Verify reactor power < 5% FP and decreasing. 3.3 Depress turbine TRIP pushbutton. 3.4 Verify all turbine stop valves closed. 3.5 Verify RCP seal injection available. • The BOP will perform a symptom check and will have no symptoms to report. <p>SRO will transfer to the Subsequent Actions Tab.</p> <p>NOTE: As RCS pressure decreases and PZR level decreases, the RCS will Saturate.</p> <p>SA tab:</p> <ul style="list-style-type: none"> 4.1 Verify all control rods fully inserted. 4.2 Verify Main FDW in operation 4.3 Verify either of the following: <ul style="list-style-type: none"> • Main FDW overfeeding causing excessive temperature decrease. • Main FDW underfeeding causing SG level decrease below setpoint. <p>RNO GO TO Step 4.5</p>

October, 2010

Op-Test No.: _____

Scenario No.: **4a**Event No.: **5**

Page 1 of 7

Event Description: **SBLOCA: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	<p>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</p> <p>4.9 IAAT TBVs CANNOT control SG pressure at desired setpoint...</p> <p>4.10 Verify 1RIA-40 operable with CSAE OFF-GAS BLOWER operating.</p> <p>4.11 GO TO Step 4.14.</p> <p>4.14 Dispatch an operator with Encl 5.29 (MSRV Locations) to verify all MSRVs have reseated.</p> <p>4.15 Verify ES is required. RNO</p> <ul style="list-style-type: none"> • Initiate Encl 5.5 (Pzr and LDST Level Control). • GO TO Step 4.17. <p>4.17 Open PCB 20 and 21</p> <p>Note: ALL SA action steps will not be performed. The SRO will transfer to the LOSCM tab when SCM is lost. (See page 18)</p>

October, 2010

Op-Test No.: _____

Scenario No.: **4a**Event No.: **5**

Page 2 of 7

Event Description: **SBLOCA: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	<p>RCS saturates; obtain SRO concurrence to perform Rule 2</p> <p><u>Rule 2 (Loss of SCM)</u></p> <p>1. IAAT all the following exist:</p> <ul style="list-style-type: none"> ➤ Any SCM $\leq 0^{\circ}\text{F}$ ➤ Rx power $\leq 1\%$ ➤ ≤ 2 minutes elapsed since loss of SCM <p>THEN perform</p> <p>2. Stop all RCPs CT-1: (Trip ALL RCPs within 2 minutes)</p> <p>3. Notify CR SRP of RCP status</p> <p>4. Verify Blackout exists. RNO: GO TO Step 6</p> <p>6. Open 1HP-24/25</p> <p>7. Start all <u>available</u> HPI pumps. (Only 1A HPIP will be left)</p> <p>8. Open 1HP-26/27</p> <p>9. Verify at least two HPI pumps are operating using two diverse indications. RNO: GO TO Step 19</p> <p>19. Verify at least two HPI pumps are operating. RNO: RNO: Maximize HPI flow ≤ 475 gpm (including seal injection for A hdr)</p> <p>20. Verify RCS pressure >550 psig.</p> <p>21. IAAT either of the following exists: LPI FLOW TRAIN A plus LPI FLOW TRAIN B ≥ 3400 gpm Only one LPI header in operation with header flow ≥ 2900 gpm THEN GO TO Step 26.</p> <p>22. Dispatch two operators to align ADVs</p> <p>23/24. Select OFF on both Digital Channels on AFIS HEADER A&B</p> <p>25. Notify CR SRO to:</p> <ul style="list-style-type: none"> ➤ Suspend Rule 3 until directed by LOSCM tab ➤ Degraded HPI exists <p>26. EXIT this rule</p>
	OATC/BOP	

October, 2010

Op-Test No.: _____ Scenario No.: **4a**Event No.: **5**

Page 6 of 7

Event Description: **SBLOCA: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	<p>SRO/BOP OATC</p> <p>OATC/BOP</p>	<p>16. Initiate full depressurization of both SGs utilizing either of the following;</p> <ul style="list-style-type: none"> ➤ TBVs ➤ ADVs <p>17. Initiate feed to all available SGs to the LOSCM setpoint at maximum allowable rate (per Table 3, Emergency FDW Pump and Header Maximum Flow Limits) of Rule 7 (SG Feed Control) (CT-10, Establish EFDW flow and Feed SGs)</p> <p>18. Trip Both Main FDW Pumps</p> <p>19. Place block valve switches in close:</p> <ul style="list-style-type: none"> • 1FDW-33 • 1FDW-31 • 1FDW-42 • 1FDW-40 <p>20. Open 1AS-40 while closing 1MS-47</p> <p>21. Ensure Rule 3 (Loss of Main or Emergency FDW) is in progress or complete</p> <p>22. GO TO Step 34</p> <p>34. IAAT RCS pressure reaches 2450 psig... RNO Close 1RC-4 GO TO Step 37</p> <p>37. Close 1GWD-17, 1HP-1, 1HP-2, and 1RC-3</p> <p>38. Verify either of the following</p> <ul style="list-style-type: none"> • Core superheated • Rx vessel head level at 0" <p>RNO GO TO Step 40</p> <p>40. IAAT BWST level is $\leq 19'$, THEN initiate Encl 5.12 (ECCS Suction Swap to RBES)</p>

October, 2010

Op-Test No.: _____

Scenario No.: **4a**Event No.: **5**

Page 7 of 7

Event Description: **SBLOCA: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	<p>41. WHEN all SCMs are > 0°F, OR all the following exist:</p> <ul style="list-style-type: none"> • NO RCPs operating • HPI flow in both HPI headers • Adequate total HPI flow per Figure 1 (Total Required HPI Flow) <p>THEN maintain SG pressure < RCS pressure utilizing either of the following:</p> <ul style="list-style-type: none"> • TBVs • ADVs
	BOP/OATC	<p><u>Rule 3</u> (Loss of Main or Emergency Feedwater)</p> <ul style="list-style-type: none"> • Initiate Encl 5.9 (Extended EFDW Operation) <ul style="list-style-type: none"> 8. Perform the following to maintain UST level > 7.5': <ul style="list-style-type: none"> • Makeup with demin water • Place CST pumps in AUTO 11. Start TD EFDWP BEARING OIL COOLING PUMP. 12. Notify CR SRO to set priority based on the NOTE above and EOP activities.
		<p>When the SRO reaches the WHEN step above or when directed by the lead examiner this event is completed.</p>

October, 2010

Op-Test No.: _____

Scenario No.: **4a**Event No.: **6**

Page 1 of 1

Event Description: **LBLOCA (M, All)**

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	<p>Plant Response:</p> <p>RCS pressure decreases rapidly</p> <p>Core and Loop Subcooling Margins indicate '0' or '-0' (flashing)</p> <p>ES Channels 1-8 if not previously actuated will now actuate</p> <p>Crew response:</p> <ul style="list-style-type: none"> • RO performing Encl. 5.1, ES Actuation, must recognize that the <u>IAAT Step 14</u> will need to be performed and LPI Pumps restarted. (CT-4, Initiate LPI) • SRO may direct an RO to perform a Symptoms Check: • RO performs Symptom Check • Crew should recognize LOSCM IAAT Step 6 now exists. <p><u>LOSCM IAAT Step 6:</u></p> <ul style="list-style-type: none"> • IAAT either of the following exists: <ul style="list-style-type: none"> ➤ LPI FLOW TRAIN A plus LPI FLOW TRAIN B \geq 3400 gpm ➤ Only one LPI header in operation with hdr flow \geq 2900 gpm <p>THEN GO TO LOCA CD tab.</p> <p><u>LOCA CD tab</u></p> <ol style="list-style-type: none"> 1. IAAT BWST level is \leq 19', THEN initiate Encl 5.12 (ECCS Suction Swap to RBES). 2. Verify ES actuated. 3. GO TO Step 7 7. Perform the following: <ul style="list-style-type: none"> ➤ 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 12. Dispatch an operator to remove the tags and close the Core Flood Tank Isolation valves 14. Dispatch operators to locally isolate the SGs 19. WHEN CETCs are \leq 400°F, THEN continue in this procedure.
		<p>When transfer to LOCA Cooldown tab or when directed by the lead examiner, this event is completed</p>

October, 2010**CRITICAL TASKS**

1. CT-1, Trip ALL RCPs
2. CT-10, Establish EFDW flow and Feed SGs
3. CT- 27, Implementation of Control Room Habitability Guidance
4. CT-4, Initiate LPI

SAFETY: Take a Minute			
UNIT 0 (OSM)			
SSF Operable: Yes	KHU's Operable: U1 - OH, U2 - UG	LCTs Operable: 2	Fuel Handling: No
UNIT STATUS (CR SRO)			
Unit 1 Simulator		Other Units	
Mode: 1		Unit 2	Unit 3
Reactor Power: 0.01%		Mode: 1	Mode: 1
Gross MWE: 0		100% Power	100% Power
RCS Leakage: +.025 gpm (No WCAP action level)		EFDW Backup: Yes	EFDW Backup: Yes
RBNS Rate: .01 gpm			
Technical Specifications/SLC Items (CR SRO)			
Component/Train	OOS Date/Time	Restoration Required Date/Time	TS/SLC #
Shift Turnover Items (CR SRO)			
<i>Primary</i>			
<ul style="list-style-type: none"> SASS in MANUAL for I&E testing Swap operating RBCU's (Stop 1C RBCU and start 1B RBCU) Increase power to 3% and place ICS in AUTO. OP/1/A/1102/001 (Controlling Procedure For Unit Startup) Encl. 4.7 beginning at Step 3.29. After ICS is in AUTO, hold power increase for about 1 hour so Rx Engineering can collect data. When in MODE 2, evaluate or restrict evolutions involving MS, FDW, and EFDW to minimize changes to RCS temperature and reactor power. 			
<i>Secondary</i>			
<ul style="list-style-type: none"> ISSH-1, ISSH-3, 1SD-2, 1SD-5, 1SD-140, 1SD-303, 1SD-355, 1SD-356 and 1SD-358 are closed with power supply breakers open per the Startup Procedure for SSF Overcooling Event. 			
Reactivity Management (CR SRO)			
RCS Boron: 1688 ppmB	Gp 6 Rod Position: 49%		
Human Performance Emphasis (OSM)			
Procedure Use and Adherence			

October, 2010

Facility: **Oconee**Scenario No.: **4 AG**Op-Test No.: **1**

Examiners: _____

Operators: _____ **SRO**_____ **OATC**_____ **BOP**

Initial Conditions:

- 0.01% (below POAH) , Unit 2: 100%, Unit 3: 100%

Turnover:

- Unit 1 startup in progress
- SASS in manual
- Stop 1C RBCU and start 1B RBCU
- Startup procedure at step 3.29 of Enclosure 4.7

Event No.	Malfunction No.	Event Type*	Event Description
0a	Pre-insert		SASS in manual
0b	Pre-insert MPS350		1A RBCU fails to receive ES signal
1	Override	N, BOP, SRO (TS)	Swap operating RBCUs, High Vibration (Stop 1C RBCU and start 1B RBCU)
2		R, OATC, SRO	Increase power to 3% and place ICS in AUTO
3	MPI150	I, OATC, SRO (TS)	PZR "A" RTD Fails LOW
4	MPS120 Override	C, BOP, SRO (TS)	1A HPI Pump sheared shaft and standby HPI pump fails to start
5	MPS247	C, BOP, SRO	1B1 RCP Lower Seal Failure
6	MCR061	C, OATC, SRO	Continuous Rod Withdrawal
7	MPS400	M, ALL	SBLOCA 1C HPI Pump fails to start requiring rapid RCS C/D due to degraded HPI
8	MPS400	M, ALL	LBLOCA

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

October, 2010

Op-Test No.: _____ Scenario No.: 4 Event No.: 1 Page 1 of 2
 Event Description: **Swap operating RBCUs: (N, BOP/SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	<p>OP/1/A/1104/015 Enclosure 4.3 (Reactor Building Cooling system)</p> <p>3.1 Verify RB pressure within limits of PT/1/A/0600/001 (Periodic Instrument Surveillance). (- 2.45 psig - 1.2 psig)</p> <p>3.2 Begin monitoring the following:</p> <ul style="list-style-type: none"> • RB pressure • RB temperature <p>3.3 Place desired switch to "OFF":</p> <ul style="list-style-type: none"> • 1C RBCU <p>BOP will start the B RBCU per Enclosure 4.3 section 4.</p> <p>4.1 Verify RB pressure within limits of PT/1/A/0600/001 (Periodic Instrument Surveillance).</p> <p>4.2 Begin monitoring the following:</p> <ul style="list-style-type: none"> • RB pressure • RB temperature <p>4.4 Place desired switch to "HIGH":</p> <ul style="list-style-type: none"> • 1B RBCU <p>Plant response: OAC alarm "High Vibration 1B RBCU"</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE:</p> <p>Reactor Building Cooling System (OP/1/A/1104/015) Limit & Precaution: If RBCU vibration alarms are received after RBCU is in operation and CANNOT be promptly cleared, Immediately stop the affected RBCU.</p> <p>Once selected to "OFF" RBCU must remain "OFF" for 30 minutes before restarting except in emergencies.</p> </div>

October, 2010

Op-Test No.: _____

Scenario No.: 4

Event No.: 1

Page 2 of 2

Event Description: **Swap operating RBCUs: (N, BOP/SRO) (TS)**

Time	Position	Applicant's Actions or Behavior
	<p>BOP</p> <p>SRO</p>	<p>Crew response:</p> <ul style="list-style-type: none"> • BOP will attempt to reset vibration alarm (Panel 1AB3) • BOP should secure the 1B RBCU • Contact engineering <p>SRO should refer to TS 3.6.5, Reactor Building Spray and Cooling Trains.</p> <p>Condition B: Restore to operable within 7 days</p> <p>Note: Crew may attempt to restart 1C RBCU after 30 minutes.</p>
		<p>When the 1B RBCU has been secured and SRO has referred to TS or when directed by the lead examiner this event is completed.</p>

October, 2010

Op-Test No.: _____

Scenario No.: 4

Event No.: 2

Page 1 of 1

Event Description: Increase reactor power to 3% and place ICS in AUTO: (R, OATC, SRO)

Time	Position	Applicant's Actions or Behavior
		<p>Crew response:</p> <p>OP/1/A/1102/001 Section 4.7 (Controlling Procedure for Unit Startup)</p> <p>NOTE: POAH is normally achieved from 0.05 to 0.15% power on Wide Range Indications.</p> <p>When POAH is achieved: TBVs will begin to open, 1HP-120 will begin to close, TAVE will increase, & SUR will decrease with negative Moderator Temperature Coefficient.</p> <p>SRO/OATC 3.29 Begin reactor power increase to 0.5 - 1.0 % at ≤ 0.5 DPM SUR.</p> <p>3.30 WHEN above POAH, begin reactor power increase to 2.5 - 3.5%. (Manual Control Rod Withdrawal).</p> <p>BOP 3.31 WHILE power increases, begin increasing 1HP-120 (RC VOLUME CONTROL) setpoint to establish 215" to 225" PZR Level</p> <p>OATC 3.32 WHEN at 2.5 - 3.5 % Power, perform the following:</p> <p>3.32.1 Place REACTOR MASTER to "AUTO".</p> <p>3.32.2 Place DIAMOND to "AUTO".</p> <p>3.32.3 Ensure TURBINE MASTER Setpoint to 880 - 890 psig.</p>
		<p>Event is complete when ICS is placed in AUTO or when directed by the lead examiner.</p>

October, 2010

Op-Test No.: _____

Scenario No.: 4

Event No.: 3

Page 1 of 2

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

Time	Position	Applicant's Actions or Behavior
	<p>OATC</p> <p>SRO</p> <p>OATC</p>	<p>Booth Cue: Call the BOP to request the following: "This is the Secondary Chemist requesting the value of Steam Flow to the E Htrs" (This will ensure OATC will take actions for the PZR RTD failure)</p> <p>Plant response:</p> <p>Statalarms:</p> <ul style="list-style-type: none"> • 1SA-2/C-3 (RC Pressurizer Level Hi/Low) • OAC (RC PZR level 1&3 mismatch) • OAC (RC PZR level 2&3 mismatch) <p>Board indications:</p> <ul style="list-style-type: none"> • PZR level 1 and 2 indicates ≈ 133 inches • PZR level 3 indicates ≈ 220 inches and slowly increasing <p>Crew response:</p> <p>Refer to ARG 1SA-02 C-3:</p> <p>3.1 Check alternate PZR level indications..</p> <p>3.2 Check for proper Makeup/Letdown flows and adjust to restore proper level.</p> <ul style="list-style-type: none"> • RO may take 1HP-120 to manual to control PZR level. <p>3.4 Refer to Technical Specification 3.4.9, Pressurizer.</p> <p>3.5 Refer to Technical Specification 3.3.8, PAM Instrumentation.</p> <ul style="list-style-type: none"> • Condition A applies <p>3.6 Refer to OP/1/A/1105/014 Enclosure 4.9, Control Room Instrumentation Operation And Information, SASS Information.</p>
		<p>This event is complete when PZR level 3 has been selected and 1HP-120 returned to AUTO or when directed by the lead examiner.</p>

October, 2010

Op-Test No.: _____

Scenario No.: 4

Event No.: 3

Page 2 of 2

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

Time	Position	Applicant's Actions or Behavior
	BOP	<p>OP/1/A/1105/014</p> <p>3.2 SASS (Smart Automatic Signal Selector) Manual Operation</p> <p>3.2.1 IF "MISMATCH" light is on and "TRIP 'A'" or "TRIP 'B'" light is on, a SASS trip has occurred.</p> <p>A. Controlling signal will be selected from CR keyswitch (for parameters in ICS Cabinet #8).</p> <p>B. Select valid signal as controlling signal by positioning CR keyswitch or pushbutton for Pzr level to valid signal (for parameters in ICS Cabinet #8).</p> <p>3.2.2 IF "MISMATCH" light is on, a mismatch has occurred.</p> <p>A. Controlling signal will be signal selected from CR keyswitch (for parameters in ICS Cabinet #8).</p> <p>B. Select valid signal as controlling signal by positioning CR keyswitch or pushbutton for Pzr level to valid signal (Select Pzr level #3)</p> <p>3.2.3 Initiate a Work Request to repair faulty signal.</p> <p>Note: If the SRO has not addressed the TS for this event continue to next event and ask the TS as a follow up question.</p>
		<p>This event is complete when PZR level 3 has been selected and 1HP-120 returned to AUTO or when directed by the lead examiner.</p>

October, 2010

Op-Test No.: _____ Scenario No.: 4 Event No.: 4 Page 1 of 2
 Event Description: "1A" HPI Pump sheared shaft and the standby HPI pump fails to auto start:
 (C; BOP, SRO) TS

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	<p>Plant response:</p> <p>Statalarms:</p> <ul style="list-style-type: none"> • 1SA-2/B-2 (HP RCP Seal Injection Flow High/Low) • 1SA-2/C-2 (HP Injection Pump Disch. Header Pressure High/Low) <p>Board indications:</p> <ul style="list-style-type: none"> • RC Makeup Flow = ~ 0 gpm • RCP SI flow = ~ 0 gpm • 1A HPI Pump amps low = ~ 15 amps • PZR level will begin to decrease and LDST level will begin to increase. <p>Crew response:</p> <p>Refer to AP/14 (Loss of Normal HPI Makeup and/or RCP Seal Injection)</p> <p>3.1 IAAT RCP seal injection flow is lost, AND Component Cooling is lost, THEN perform the following:</p> <ol style="list-style-type: none"> A. Trip the Rx. B. Stop all RCPs. C. Initiate AP/25 (SSF EOP). <p>3.2 IAAT loss of suction to operating HPI pumps is indicated:</p> <ul style="list-style-type: none"> • Motor amps low or cycling • Discharge pressure low or cycling • Abnormal LDST level trend <p>RNO: GO TO Step 4.7</p> <p>4.7 Announce AP entry using PA System.</p> <p>4.8 Verify any HPI pump operating. RNO</p> <ol style="list-style-type: none"> 1. Close 1HP-5 (Letdown Isolation) 2. Place 1HP-120 in HAND and closed 3. Place 1HP-31 in HAND and closed 4. Attempt to start the Standby HPIP (1B HPIP starts) 5. IF standby HPI pump started, THEN GO TO Step 4.111.

October, 2010

Op-Test No.: _____

Scenario No.: 4

Event No.: 5

Page 1 of 3

Event Description: 1B1 RCP lower Seal Failure: (C, BOP/SRO)

Time	Position	Applicant's Actions or Behavior
	<p>BOP</p> <p>SRO</p>	<p>Plant response:</p> <ul style="list-style-type: none"> • 1SA-06/C-5 (RC PUMP 1B1 CAVITY PRESS HI/LOW) • 1SA-06/C-6 (RC PUMP 1B1 SEAL RETURN FLOW HI/LOW) <p>Crew response:</p> <p>Refer to the ARGs</p> <p>Refer to AP/16 (Abnormal RCP Operations)</p> <p>4.1 IAAT any RCP meets immediate trip criteria of Encl 5.1 (RCP Immediate Trip Criteria), THEN perform Steps 4.2 - 4.11. RNO: GO TO Step 4.12</p> <p>4.12 IAAT all of the following apply:</p> <ul style="list-style-type: none"> • Rx Power > 70% • Any RCP approaching immediate trip criteria of Encl 5.1 (RCP Immediate Trip Criteria) or it is desired to secure a RCP <p>THEN perform the following:</p> <ul style="list-style-type: none"> • Initiate Encl 5.2 (Rapid Power Reduction). • WHEN Rx Power is \leq 70%, THEN GO TO Step 4.2. <p>4.13 Announce AP entry using the PA system.</p> <p>4.14 Notify OSM to request evaluation by RCP Component Engineer.</p> <p>4.15 IAAT the failure is identified, THEN GO TO the applicable section: 4A Seal Failure</p> <p><u>Refer to Section 4A</u></p> <p>1. IAAT any RCP meets immediate trip criteria of Encl 5.1 (RCP Immediate Trip Criteria), THEN perform Steps 2 - 11. RNO: GO TO Step 12</p> <p>12. IAAT any of the following indicate loss of all RCP seals:</p> <ul style="list-style-type: none"> ➤ RB RIAs increasing or in alarm (RIA-4, 43 - 46) ➤ RCS Tave constant with LDST level decreasing more than normal ➤ Quench Tank level rate increasing ➤ RB Normal Sump rate increasing <p>THEN initiate AP/02 (Excessive RCS Leakage).</p>

October, 2010

Op-Test No.: _____ Scenario No.: 4

Event No.: 6

Page 1 of 1

Event Description: Continuous Rod Withdrawal: (I, OATC)

Time	Position	Applicant's Actions or Behavior
	<p>OATC</p> <p>SRO</p> <p>OATC</p>	<p>Plant response:</p> <ul style="list-style-type: none"> • Control Rods withdrawing without operator action • NI-5 thru NI-9 indicate increasing reactor power • SURs on Wide Range NIs increasing <p>Crew response:</p> <ul style="list-style-type: none"> • The candidates should utilize the "Plant Transient Response" process to stabilize the plant and recognize that control rods are withdrawing without a valid signal. • Verbalize to the SRO reactor power level and direction of movement. • Place the Diamond and both FDW Masters in MANUAL to stabilize the plant. <ul style="list-style-type: none"> ➤ The crew should insert control rods and monitor reactor power and wide range startup rate to stabilize the plant • The SRO should: <ul style="list-style-type: none"> ➤ Contact SPOC to investigate the continuous rod withdrawal. <p>Note: The OATC may elect to trip the Rx during this transient per SOMP 01-02.</p> <p>6.3.3 During abnormal operating conditions a manual reactor trip shall be initiated if any of the following conditions occur:</p> <ul style="list-style-type: none"> • Reactor power level approaches any operating limit • Reactor power level exceeds the pre-transient power level by greater than 5% AND the cause of the power change is NOT understood, OR is NOT controllable • Any time plant conditions are considered uncontrollable or unsafe <p>Note: If the Rx is tripped go to event 7 (next page)</p>
		<p>When the plant is stable or when directed by the lead examiner this event is completed.</p>

October, 2010

Op-Test No.: _____

Scenario No.: 4

Event No.: 7

Page 1 of 6

Event Description: SBLOCA: (M, ALL)

Time	Position	Applicant's Actions or Behavior
	<p>ALL</p> <p>OATC</p> <p>BOP SRO</p>	<p>Plant response:</p> <p>Control board indications:</p> <ul style="list-style-type: none"> • 1SA-2/D-3 (RC PRESS HI/LOW) • RCS Pressure and PZR level decreasing • ES 1-6 actuate • Reactor Trip • RCS subcooling margin will indicate 0°F <p>Crew response:</p> <ul style="list-style-type: none"> • Trip the Reactor due to MU being beyond "Normal Makeup Capability" (160 gpm). • The SRO will direct the OATC to perform IMAs and the BOP a symptom check. • OATC will perform IMAs <ol style="list-style-type: none"> 3.1 Depress REACTOR TRIP pushbutton. 3.2 Verify reactor power < 5% FP and decreasing. 3.3 Depress turbine TRIP pushbutton. 3.4 Verify all turbine stop valves closed. 3.5 Verify RCP seal injection available. • The BOP will perform a symptom check and will have no symptoms to report. <p>SRO will transfer to the Subsequent Actions Tab.</p> <p>NOTE: As RCS pressure decreases and Pzr level decreases, the RCS will Saturate.</p> <p>SA tab:</p> <ol style="list-style-type: none"> 4.1 Verify all control rods fully inserted. 4.2 Verify Main FDW in operation 4.3 Verify either of the following: <ul style="list-style-type: none"> • Main FDW overfeeding causing excessive temperature decrease. • Main FDW underfeeding causing SG level decrease below setpoint. <p>RNO GO TO Step 4.5</p>

October, 2010

Op-Test No.: _____

Scenario No.: 4

Event No.: 7

Page 1 of 7

Event Description: **SBLOCA: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	<p>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</p> <p>4.9 IAAT TBVs CANNOT control SG pressure at desired setpoint...</p> <p>4.10 Verify 1RIA-40 operable with CSAE OFF-GAS BLOWER operating.</p> <p>4.11 GO TO Step 4.14.</p> <p>4.14 Dispatch an operator with Encl 5.29 (MSRV Locations) to verify all MSRVs have reseated.</p> <p>4.15 Verify ES is required. RNO</p> <ul style="list-style-type: none"> • Initiate Encl 5.5 (Pzr and LDST Level Control). • GO TO Step 4.17. <p>4.17 Open PCB 20 and 21</p> <p>Note: ALL SA action steps will not be performed. The SRO will transfer to the LOSCM tab when SCM is lost. (See page 18)</p>

October, 2010

Op-Test No.: _____

Scenario No.: 4

Event No.: 7

Page 6 of 7

Event Description: **SBLOCA: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	<p>SRO/BOP OATC</p> <p>OATC/BOP</p>	<p>16. Initiate full depressurization of both SGs utilizing either of the following;</p> <ul style="list-style-type: none"> ➤ TBVs ➤ ADVs <p>17. Initiate feed to all available SGs to the LOSCM setpoint at maximum allowable rate (per Table 3, Emergency FDW Pump and Header Maximum Flow Limits) of Rule 7 (SG Feed Control) (CT-10, Establish EFDW flow and Feed SGs)</p> <p>18. Trip Both Main FDW Pumps</p> <p>19. Place block valve switches in close:</p> <ul style="list-style-type: none"> • 1FDW-33 • 1FDW-31 • 1FDW-42 • 1FDW-40 <p>20. Open 1AS-40 while closing 1MS-47</p> <p>21. Ensure Rule 3 (Loss of Main or Emergency FDW) is in progress or complete</p> <p>22. GO TO Step 34</p> <p>34. IAAT RCS pressure reaches 2450 psig... RNO Close 1RC-4 GO TO Step 37</p> <p>37. Close 1GWD-17, 1HP-1, 1HP-2, and 1RC-3</p> <p>38. Verify either of the following</p> <ul style="list-style-type: none"> • Core superheated • Rx vessel head level at 0" <p>RNO GO TO Step 40</p> <p>40. IAAT BWST level is $\leq 19'$, THEN initiate Encl 5.12 (ECCS Suction Swap to RBES)</p>

October, 2010

Op-Test No.: _____

Scenario No.: 4

Event No.: 7

Page 7 of 7

Event Description: **SBLOCA: (M, ALL)**

Time	Position	Applicant's Actions or Behavior
	SRO	<p>41. WHEN all SCMs are > 0°F, OR all the following exist:</p> <ul style="list-style-type: none"> • NO RCPs operating • HPI flow in both HPI headers • Adequate total HPI flow per Figure 1 (Total Required HPI Flow) <p>THEN maintain SG pressure < RCS pressure utilizing either of the following:</p> <ul style="list-style-type: none"> • TBVs • ADVs
	BOP/OATC	<p><u>Rule 3</u> (Loss of Main or Emergency Feedwater)</p> <ul style="list-style-type: none"> • Initiate Encl 5.9 (Extended EFDW Operation) <ul style="list-style-type: none"> 8. Perform the following to maintain UST level > 7.5': <ul style="list-style-type: none"> • Makeup with demin water • Place CST pumps in AUTO 11. Start TD EFDWP BEARING OIL COOLING PUMP. 12. Notify CR SRO to set priority based on the NOTE above and EOP activities.
		<p>When the SRO reaches the WHEN step above or when directed by the lead examiner this event is completed.</p>

October, 2010

Op-Test No.: _____ Scenario No.: 4

Event No.: 8

Page 1 of 1

Event Description: LBLOCA (M, All)

Timer #8

Time	Position	Applicant's Actions or Behavior
	OATC/BOP	<p>Plant Response:</p> <p>RCS pressure decreases rapidly</p> <p>Core and Loop Subcooling Margins indicate '0' or '-0' (flashing)</p> <p>ES Channels 1-8 if not previously actuated will now actuate</p> <p>Crew response:</p> <ul style="list-style-type: none"> • RO performing Encl. 5.1, ES Actuation, must recognize that the <u>IAAT Step 14</u> will need to be performed and LPI Pumps restarted. (CT-4, Initiate LPI) • SRO may direct an RO to perform a Symptoms Check: • RO performs Symptom Check • Crew should recognize LOSCM IAAT Step 6 now exists. <p><u>LOSCM IAAT Step 6:</u></p> <ul style="list-style-type: none"> • IAAT either of the following exists: <ul style="list-style-type: none"> ➤ LPI FLOW TRAIN A plus LPI FLOW TRAIN B \geq 3400 gpm ➤ Only one LPI header in operation with hdr flow \geq 2900 gpm <p>THEN GO TO LOCA CD tab.</p> <p><u>LOCA CD tab</u></p> <ol style="list-style-type: none"> 1. IAAT BWST level is \leq 19', THEN initiate Encl 5.12 (ECCS Suction Swap to RBES). 2. Verify ES actuated. 3. GO TO Step 7 7. Perform the following: <ul style="list-style-type: none"> ➤ 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 12. Dispatch an operator to remove the tags and close the Core Flood Tank Isolation valves 14. Dispatch operators to locally isolate the SGs 19. WHEN CETCs are \leq 400°F, THEN continue in this procedure.
		<p>When transfer to LOCA Cooldown tab or when directed by the lead examiner, this event is completed</p>

October, 2010

CRITICAL TASKS

1. CT-1, Trip ALL RCPs
2. CT-10, Establish EFDW flow and Feed SGs
3. CT- 27, Implementation of Control Room Habitability Guidance
4. CT-4, Initiate LPI

SAFETY: Take a Minute			
UNIT 0 (OSM)			
SSF Operable: Yes	KHU's Operable: U1 - OH, U2 - UG	LCTs Operable: 2	Fuel Handling: No
UNIT STATUS (CR SRO)			
Unit 1 Simulator		Other Units	
Mode: 1		Unit 2	Unit 3
Reactor Power: 0.01%		Mode: 1	Mode: 1
Gross MWE: 0		100% Power	100% Power
RCS Leakage: +.025 gpm (No WCAP action level)		EFDW Backup: Yes	EFDW Backup: Yes
RBNS Rate: .01 gpm			
Technical Specifications/SLC Items (CR SRO)			
Component/Train	OOS Date/Time	Restoration Required Date/Time	TS/SLC #
Shift Turnover Items (CR SRO)			
<i>Primary</i>			
<ul style="list-style-type: none"> SASS in MANUAL for I&E testing Swap operating RBCU's (Stop 1C RBCU and start 1B RBCU) Increase power to 3% and place ICS in AUTO. OP/1/A/1102/001 (Controlling Procedure For Unit Startup) Encl. 4.7 beginning at Step 3.29. After ICS is in AUTO, hold power increase for about 1 hour so Rx Engineering can collect data. When in MODE 2, evaluate or restrict evolutions involving MS, FDW, and EFDW to minimize changes to RCS temperature and reactor power. 			
<i>Secondary</i>			
<ul style="list-style-type: none"> 1SSH-1, 1SSH-3, 1SD-2, 1SD-5, 1SD-140, 1SD-303, 1SD-355, 1SD-356 and 1SD-358 are closed with power supply breakers open per the Startup Procedure for SSF Overcooling Event. 			
Reactivity Management (CR SRO)			
RCS Boron: 1688 ppmB	Gp 6 Rod Position: 49%		
Human Performance Emphasis (OSM)			
Procedure Use and Adherence			