Appendix D **Scenario Outline** **Form ES-D-1**

Facility: BFN Scenario Number: NRC - 4 Op-Test Number:1510

Examiners:_____ Operators: SRO: _____
_____ ATC: _____
_____ BOP: _____

Initial Conditions: 93% power following Main Turbine Valve Testing and Radwaste reported loud noise and the Radwaste in-leakage has increased.

Turnover: A down power is in progress to approximately 75 to 80% using the Reactivity Control Plan (RCP) for dose considerations in the 2A Reactor Feed Pump Room. Following power reduction perform Automatic Start Test of all RFPT Oil Pumps per 2-OI-3. RCIC Water Level Low-Low 58D has failed downscale and IMs are troubleshooting the problem. Tech Spec 3.3.5.2 Condition B.2 has been entered.

Event Number	Malfunction Number	Event Type*	EventDescription
1.	N/A	R-ATC R-SRO	Reduce power using Recirc.
2.	N/A	N-BOP N-SRO	Test Emergency Oil Pumps for RFPs
3.	PC02	C-BOP	Trip B Reactor Building Fan; Operator swaps fans.
4.	OVERRIDE HS-69-1A CU06	I-ATC I-SRO TS-SRO	RWCU Isolation on High NRHX Room Temp (failed Temp Control Valve 70-49), and 69-1fails to close. Enters AOI-64-2A for Group 3 RWCU isolation and manually isolates RWCU. Tech Spec 3.6.1.3 PCIVs and TRM 3.4.1.
5.	RC02	C-BOP C-SRO TS-SRO	Inadvertent RCIC Auto Initiation and injection; BOP Operator will trip RCIC Turbine Tech Spec 3.5.3 RCIC System
6.	FW30B	C-ATC C-SRO	Reactor Feed Pump B Governor Speed Failure Downscale.
7.	ED02 ED06B ED03 ED01	M-ALL	Loss of various offsite power sources and eventually all offsite power.
8.	DG01B DG03D	C-BOP C-SRO	B DG fails to start and D DG Fails to tie to bus, Actions are taken to restore power by closing D DG output breaker and starting B EDG, then verifies its respective output breaker closes.
9.	N/A	C-BOP C-SRO	RCIC tripped from event 6, but is available to use.
10.	HP03	C-BOP	HPCI controller fails in Auto; Operator transfers control to manual and operates as needed.

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

Events

1. The crew will begin to lower recirc pump speed in accordance with OI-68 to achieve a load reduction of approximately 100 MWe. When the Lead Examiner is satisfied with the reactivity change, the scenario may continue.

2. BOP operator performs the auto start test of the RFP Emergency Bearing Oil Pumps (EBOP) IAW applicable sections 2-OI-3 (Sections 8.13, 8.14, and 8.15). When the Lead Examiner is satisfied, the scenario may continue.

3. RX Bldg Ventilation Abnormal alarm will annunciate. BOP operator will respond IAW 2-ARP-9-3D, Window 3. He will go to panel 2-9-25 and recognize that the running Reactor Building fans have tripped and the discharge dampers are closed. He will start the standby fans in slow speed and verify that the discharge dampers open. He will report the trip of the fans and dispatch personnel to investigate.

4. The crew will respond to RWCU ISOL LOGIC CHANNEL A/B TEMP HIGH, 2-ARP-9-5B Windows 32/33 annunciators. The BOP operator will report the trip of RWCU pumps and Group 3 isolation of RWCU. He will also report the failure of 2-FCV-69-1 to close and manually close the valve. He will report the successful isolation of RWCU. An operator will be dispatched to the Auxiliary Instrument Room to check ATUs on Panel 9-83 and 9-85. The BOP operator will check Leak Detection temperatures on 2-9-21 and report no other alarms. It will be reported that 69-835 A/C indicate greater than 131°F and the US will enter EOI-3. Work control will be contacted to investigate. When the Lead Examiner is satisfied, the scenario may continue. The US will enter Tech Spec 3.6.1.3, Primary Containment Isolation Valves, Condition A which requires isolating the affected penetration flow path within 4 hours. He will also enter TRM 3.4.1, Coolant Chemistry which requires sampling every 4 hours.

5. RCIC will auto start and inject in to the RPV. The BOP operator will report the status of RCIC and the SRO will direct tripping the RCIC Turbine. The SRO will enter Tech Spec 3.5.3 and verify HPCI is OPERABLE per actions A.1.

6. Reactor Feed Pump B Governor will fail downscale and the C RFP will max out on speed and flow. Reactor water level will slowly lower and the SRO will direct entry into 2-AOI-3-1, Loss of Reactor Feedwater or Reactor Water Level High/Low. ATC operator will take manual control of governor and restore Reactor Water Level to normal band in accordance with 2-AOI-3-1. (Note: Unit Supervisor may direct a reactor scram on lowering reactor water level.)

7. The crew will respond to alarms on 9-23. The BOP operator will report PCB 5204, 500kV West Point line, has tripped open. The load on the West Point line is redistributed among the remaining in-service lines therefore the crew will continue to monitor critical parameters. The Load Dispatcher may be called. A loss of the Trinity 161kV line will then occur followed by a loss of 500kV Bus1 and a loss of all offsite power (LOOP). The ATC operator will announce a reactor scram and respond IAW AOI-100-1. The unit will initially be in a Station Blackout however actions by the BOP operator will energize the '2A' and '2B' 480V Shutdown Boards and the crew will respond IAW AOI-57-1A.

8. Following the loss of offsite power, the BOP operator will recognize that the B Diesel Generator has failed to start. He will manually start the diesel and recognize that it automatically tied to the 4kV Shutdown Board. He will also recognize that the D Diesel Generator has started but has failed to connect to the 4kV Shutdown Board. He will verify that there are no lockouts on the board and manually close the Diesel Generator output breaker. He will report the failures and that all 4kV Shutdown Boards are energized.

9. RCIC will be tripped from Event #6 but BOP operator can reset RCIC Trip Throttle Valve and use RCIC for injection if needed.

10. The BOP operator will recognize and report that HPCI is not injecting into the RPV. He will determine that the HPCI flow controller has failed in automatic and take manual control of HPCI flow. He will raise HPCI flow rate and report that HPCI is injecting to the RPV.

The Scenario ends when Reactor Water Level is in the normal control band of +2 inches to +51 inches with power restored to 480V Shutdown Boards A and B.

Critical Tasks 2

1. Restore power to one of the 480V Shutdown Boards to exit Station Blackout

1. Safety Significance:
   Maintain electrical power to one of the two 480V Shutdown Boards. Loss of power to the 480V Shutdown Boards is one of the top contributors to Core Damage Frequency.

2. Cues:
   - Procedural Compliance
   - Loss of power to 480V Shutdown Boards

3. Measured by:
   Criterion is that the crew energizes the 4kV Shutdown Boards which power the two 480V Shutdown Boards on the unit.

4. Feedback:
   One of the two 480V Shutdown Boards energized.

5. Critical Task #2 Failure Criteria:
   The Operating Crew fails to restore power to one of the two 480V Shutdown Boards within 30 minutes to prevent lose of ability to operate breakers remotely.

2. Crew aligns ANY preferred injection systems in Table L-1 to restore and maintain RPV Water level greater than -162 inches, once EOI-1 is entered.

1. Safety Significance:
   Maintain adequate core cooling and prevent degradation of fission product barrier.

2. Cues:
   - Procedural Compliance
   - RPV Water Level rises due to injection sources aligned and injecting

3. Measured by:
   Criterion is that the crew aligns ANY preferred injection systems in Table L-1 to restore and maintain RPV Water Level greater than -162 inches.

4. Feedback:
   RPV Water Level trend.

5. Critical Task #2 Failure Criteria:
   The Operating Crew fails to restore RPV Water Level above (-) 180 inches

SHIFT MANAGER TURNOVER

EQUIPMENT OOS/LCOS

- **Tech Spec 3.3.5.2 Condition B.2 for RCIC Water Level Low-Low 58D.**
- **2A RFPT is secured to investigate high bearing temperatures.**

ANTICIPATED OPERATIONS/MAINTENANCE FOR ONCOMING SHIFT

- **RCIC Water Level Low-Low 58D has failed downscale and IMs are troubleshooting the problem.**
- **Continue the down power to 75 to 80 % for 2A Reactor Feed Pump Room entry using 2-GOI-100-12 and the Urgent Load Reduction RCP.**
- **Automatic Start Test of all RFPT Oil Pumps per 2-OI-3 Sections 8.13, 8.14 and 8.15. (required on all RFPs by the troubleshooting plan to eliminate common cause concerns)**

STATUS

WORK WEEK - DIV I ☒, DIV II ☐ **OUTSIDE AIR TEMP 87ºF**

- **Main Turbine Valve Testing completed last shift and Rad Waste reported loud noise and has noticed an increase in Rad Waste in-leakage.**

COMMON

- **Shift Manager reports that there is a Thunder Storm Watch for the Tennessee Valley Service Area.**

UNIT 1

100%

UNIT 2

93%

UNIT 3

100%

Op Test No.: 15-10 Scenario No. 4 Event No.: 1 Page 1 of 2

Event Description: Load Reduction for 2A Reactor Feed Pump Room entry

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When requested by Examiner to begin event #1 call Control Room/ US and state as Shift Manager, "Proceed with power reduction for 2A Reactor Feed Pump Room Entry Room entry."**
	SRO	Updates the Crew with the Station Managements request and prepares to lower Reactor Power. **Assumes the Reactivity Manager position.**
	SRO	**2-GOI-100-12A** **5.1 Notifications and Approvals** [3] **NOTIFY** Chattanooga Load Coordinator of impending shut down or power reduction and **REQUEST** unloading instructions. (Unloading instructions are N/A if generator breaker is open.) [4] **NOTIFY** Radiation Protection of Power Reduction or Reactor Shutdown.
	SRO	**Calls Radiation Protection to inform them of the reactor shutdown power reduction.**
	DRIVER	**As the Rad Pro, acknowledge the load reduction.**

Op Test No.: 15-10 Scenario No. 4 Event No.: 1 Page 2 of 2

Event Description: Load Reduction for 2A Reactor Feed Pump Room entry

Time	Position	Applicant's Actions or Behavior
	ATC	**Reactivity Control Plan Form** Title of Evolution: **Maintenance in Feedpump Room RCP** **1. Lower reactor power to 90% power using core flow** **2. Insert first 2 groups of control rods per the RCP.** CR 22-31 pos 06-00 __ CR 22-39 pos 10-00 __ CR 30-39 pos 06-00 __ CR 38-39 pos 10-00 __ CR 38-31 pos 06-00 __ CR 38-23 pos 10-00 __ CR 30-23 pos 06-00 __ CR 22-23 pos 10-00 __ **3. lower reactor power to 75-80% using core flow** **4. Maintain 75-80% reactor power while maintenance is in progress** **2-OI-68** **6.2 Adjusting Recirc Flow** [2] **WHEN** desired to control Recirc Pumps 2A and/or 2B speed with the RECIRC MASTER CONTROL, **THEN** **ADJUST Recirc Pump Speed 2A & 2B using the following pushbuttons as required.** **LOWER** SLOW, 2-HS-96-33 **LOWER** MEDIUM, 2-HS-96-34 **LOWER** FAST, 2-HS-96-35 **Lowers reactor recirculation flow IAW the RCP Urgent Load Reduction and 2-OI-68 Sec. 6.2**
	BOP	**Provides peer check to ATC for reactivity changes.**
	SRO	**Provides oversight for the reactivity changes.**
	ATC	**Inserts Control Rods in the sequence provided in the RCP.**
Examiner Note: **Individual pump speeds should be mismatched by ~60 RPM during dual pump operation between 1200 and 1300 RPM to minimize harmonic vibration.** **End of Event #1, Request Event #2.**		

Op Test No.: 15-10 Scenario No. 4 Event No.: 2 Page 1 of 9

Event Description: Test Oil Pumps for ALL RFPs in accordance with 2-OI-3 Section 8.13 "Automatic Start Test of RFPT Oil Pumps"

Time	Position	Applicant's Actions or Behavior
	SRO	**Directs performance Automatic Start Test of RFPT 2A Oil Pumps**
	BOP	**8.13 Automatic Start Test of RFPT 2A Oil Pumps** **NOTES** 1) This test is performed weekly and with RFPT 2A in operation. The section tests auto start features of 2A1 and 2A2 Main Oil Pumps and 2A3 EBOP. During normal operation, 2A1 and 2A2 Main Oil Pumps are in service and 2A3 EBOP is in standby (AUTO after stop). With this pump alignment, Steps 8.13[5.1] and 8.13[5.2] are not performed. 2) The following steps are performed at Panel 2-9-6. [1] **OBTAIN** Unit Supervisor approval to perform this test.
	SRO	**Approves the test of the 2A Feed Pump Oil Pumps.**
	BOP	[2] **CHECK** position of the following switches: • RFPT 2A 2A1 MAIN OIL PMP, 2-HS-3-103A, in Normal after START or STOP. • RFPT 2A 2A2 MAIN OIL PMP, 2-HS-3-250A, in Normal after START or STOP. • RFPT 2A EBOP 2A3, 2-HS-3-102A, in Auto after START or STOP.

Op Test No.: 15-10 Scenario No. 4 Event No.: 2 Page 2 of 9

Event Description: Test Oil Pumps for ALL RFPs in accordance with 2-OI-3 Section 8.13 "Automatic Start Test of RFPT Oil Pumps"

Time	Position	Applicant's Actions or Behavior
	BOP	[3] **TEST** EBOP 2A3 as follows: [3.1] **DEPRESS** and **HOLD** 2A3 EBOP TEST pushbutton, 2-HS-3-105A. [3.1.1] **CHECK** the following: ▪ Red (running) light and amber (auto start) light at pushbutton illuminated. ▪ RFPT OIL PUMP AUTO START annunciation, 2-XA-55-6B, Window 29 in alarm.
	BOP	[3.2] **RELEASE** 2A3 EBOP TEST pushbutton, 2-HS-3-105A.
	BOP	[3.3] **PLACE** RFPT 2A EBOP 2A3 switch, 2-HS-3-102A, in **START** (return to AUTO). [3.3.1] **CHECK** the following: ▪ Amber (auto start) light extinguished at 2A3 EBOP TEST pushbutton, 2-HS-3-105A. ▪ RFPT OIL PUMP AUTO START annunciation, 2-XA-55-6B, Window 29, will reset.
	BOP	[3.4] **PLACE** RFPT 2A EBOP 2A3, 2-HS-3-102A, in STOP (return to AUTO). • **CHECK** Red light at 2A3 EBOP TEST pushbutton extinguished.

Op Test No.: 15-10 Scenario No. 4 Event No.: 2 Page 3 of 9

Event Description: Test Oil Pumps for ALL RFPs in accordance with 2-OI-3 Section 8.13 "Automatic Start Test of RFPT Oil Pumps"

Time	Position	Applicant's Actions or Behavior
	BOP	[4] **IF** both RFPT 2A 2A1 and 2A2 Main Oil Pumps are running, **THEN** (Otherwise N/A) **N/A** **GO TO** Step 8.13[6].
	BOP	[6] **NOTIFY** Unit Supervisor Automatic Start Test of RFPT 2A Oil Pumps complete. [7] **IF** performing Section 8.14 or 8.15, **THEN** **CONTINUE** at appropriate section. [8] **IF** all Automatic Start Test of RFPT Oil Pumps are complete **THEN** **RECORD** results in Narrative Log.

Op Test No.: 15-10 Scenario No. 4 Event No.: 2 Page 4 of 9

Event Description: Test Oil Pumps for ALL RFPs in accordance with 2-OI-3 Section 8.14 "Automatic Start Test of RFPT Oil Pumps"

Time	Position	Applicant's Actions or Behavior
	SRO	Directs performance Automatic Start Test of RFPT 2B Oil Pumps
	BOP	**8.14 Automatic Start Test of RFPT 2B Oil Pumps** **NOTES** 1) This test is performed weekly and with RFPT 2B in operation. The section tests the auto start features of 2B1 and 2B2 Main Oil Pumps and 2A3 EBOP. During normal operation, 2B1 and 2B2 Main Oil Pumps are in service and 2B3 EBOP is in standby (AUTO after stop). With this pump alignment, Steps 8.14[5.1] and 8.14[5.2] are not performed. 2) The following steps are performed at Panel 2-9-6. [1] **OBTAIN** Unit Supervisor approval to perform this test.
	SRO	Approves the test of the 2B Feed Pump Oil Pumps.
	BOP	[2] **CHECK** position of the following switches: • RFPT 2B 2B1 MAIN OIL PMP, 2-HS-3-129A, in Normal after START or STOP. • RFPT 2B 2B2 MAIN OIL PMP, 2-HS-3-254A, in Normal after START or STOP. • RFPT 2B EBOP 2B3, 2-HS-3-128A, in Auto after START or STOP.

Op Test No.: 15-10 Scenario No. 4 Event No.: 2 Page 5 of 9

Event Description: Test Oil Pumps for ALL RFPs in accordance with 2-OI-3 Section 8.14 "Automatic Start Test of RFPT Oil Pumps"

Time	Position	Applicant's Actions or Behavior
	BOP	[3] **TEST** EBOP 2B3 as follows: [3.1] **DEPRESS** and **HOLD** 2B3 EBOP TEST pushbutton, 2-HS-3-131A. [3.1.1] **CHECK** the following: ▪ Red (running) light and amber (auto start) light at pushbutton illuminated. ▪ RFPT OIL PUMP AUTO START annunciation, 2-XA-55-6B, Window 29 in alarm.
	BOP	[3.2] **RELEASE** 2B3 EBOP TEST pushbutton, 2-HS-3-105A.
	BOP	[3.3] **PLACE** RFPT 2B EBOP 2B3 switch, 2-HS-3-128A, in **START** (return to AUTO). [3.3.1] **CHECK** the following: ▪ Amber (auto start) light extinguished at 2A3 EBOP TEST pushbutton, 2-HS-3-131A. ▪ RFPT OIL PUMP AUTO START annunciation, 2-XA-55-6B, Window 29, will reset.
	BOP	[3.4] **PLACE** RFPT 2B EBOP 2B3, 2-HS-3-128A, in STOP (return to AUTO). • **CHECK** Red light at 2B3 EBOP TEST pushbutton extinguished.

Op Test No.: 15-10 Scenario No. 4 Event No.: 2 Page 6 of 9

Event Description: Test Oil Pumps for ALL RFPs in accordance with 2-OI-3 Section 8.14 "Automatic Start Test of RFPT Oil Pumps"

Time	Position	Applicant's Actions or Behavior
	BOP	[4] **IF** both RFPT 2B 2B1 and 2B2 Main Oil Pumps are running, **THEN** (Otherwise N/A) **N/A** **GO TO** Step 8.14[6].
	BOP	[6] **NOTIFY** Unit Supervisor Automatic Start Test of RFPT 2B Oil Pumps complete. [7] **IF** performing Section 8.13 or 8.15, **THEN** **CONTINUE** at appropriate section [8] **IF** all Automatic Start Test of RFPT Oil Pumps are complete **THEN** **RECORD** results in Narrative Log.

Op Test No.: 15-10 Scenario No. 4 Event No.: 2 Page 7 of 9

Event Description: Test Oil Pumps for ALL RFPs in accordance with 2-OI-3 Section 8.15 "Automatic Start Test of RFPT Oil Pumps"

Time	Position	Applicant's Actions or Behavior
	SRO	Directs performance Automatic Start Test of RFPT 2C Oil Pumps
	BOP	**8.15 Automatic Start Test of RFPT 2C Oil Pumps** **NOTES** 1) This test is performed weekly and with RFPT 2C in operation. The section tests the auto start features of 2C1 and 2C2 Main Oil Pumps and 2C3 EBOP. During normal operation, 2C1 and 2C2 Main Oil Pumps are in service and 2C3 EBOP is in standby (AUTO after stop). With this pump alignment, Steps 8.15[5.1] and 8.15[5.2] are not performed. 2) The following steps are performed at Panel 2-9-6. [1] **OBTAIN** Unit Supervisor approval to perform this test.
	SRO	Approves the test of the 2C Feed Pump Oil Pumps.
	BOP	[2] **CHECK** position of the following switches: • RFPT 2C 2C1 MAIN OIL PMP, 2-HS-3-1154A, in Normal after START or STOP. • RFPT 2C 2C2 MAIN OIL PMP, 2-HS-3-258A, in Normal after START or STOP. • RFPT 2C EBOP 2C3, 2-HS-3-153A, in Auto after START or STOP.

Op Test No.: 15-10 Scenario No. 4 Event No.: 2 Page 8 of 9

Event Description: Test Oil Pumps for ALL RFPs in accordance with 2-OI-3 Section 8.15 "Automatic Start Test of RFPT Oil Pumps"

Time	Position	Applicant's Actions or Behavior
	BOP	[3] **TEST** EBOP 2C3 as follows: [3.1] **DEPRESS** and **HOLD** 2C3 EBOP TEST pushbutton, 2-HS-3-156A. [3.1.1] **CHECK** the following: ▪ Red (running) light and amber (auto start) light at pushbutton illuminated. ▪ RFPT OIL PUMP AUTO START annunciation, 2-XA-55-6B, Window 29 in alarm.
	BOP	[3.2] **RELEASE** 2C3 EBOP TEST pushbutton, 2-HS-3-156A.
	BOP	[3.3] **PLACE** RFPT 2C EBOP 2C3 switch, 2-HS-3-153A, in **START** (return to AUTO). [3.3.1] **CHECK** the following: ▪ Amber (auto start) light extinguished at 2A3 EBOP TEST pushbutton, 2-HS-3-156A. ▪ RFPT OIL PUMP AUTO START annunciation, 2-XA-55-6B, Window 29, will reset.
	BOP	[3.4] **PLACE** RFPT 2C EBOP 2C3, 2-HS-3-153A, in STOP (return to AUTO). • **CHECK** Red light at 2C3 EBOP TEST pushbutton extinguished.

Op Test No.: 15-10 Scenario No. 4 Event No.: 2 Page 9 of 9

Event Description: Test Oil Pumps for ALL RFPs in accordance with 2-OI-3 Section 8.15 "Automatic Start Test of RFPT Oil Pumps"

Time	Position	Applicant's Actions or Behavior
	BOP	[4] **IF** both RFPT 2C 2C1 and 2C2 Main Oil Pumps are running, **THEN** (Otherwise N/A) **N/A** **GO TO** Step 8.13[6].
	BOP	[6] **NOTIFY** Unit Supervisor Automatic Start Test of RFPT 2C Oil Pumps complete. [7] **IF** performing Section 8.14 or 8.15, **THEN** **CONTINUE** at appropriate section. **N/A** [8] **IF** all Automatic Start Test of RFPT Oil Pumps are complete **THEN** **RECORD** results in Narrative Log.
	NRC	**End of Event 2, request Event #3.**

Op Test No.: 15-10 Scenario No. 4 Event No.: 3 Page 1 of 1

Event Description: Trip B Reactor Building Supply Fan; Operator swaps fans.

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When the NRC Chief Examiner is ready for Event 4, insert Event Trigger 4 to trip 'B' RB supply fan.**
	BOP	**2-ARP-9-3D, Window 3** RX BLDG VENTILATION ABNORMAL
	BOP	**2-ARP-9-3D, Window 3** **Operator Action:** A. **IF** PCIS group 6 isolation exists, **THEN** **REFER TO** 2-AOI-64-2d. **N/A** B. **NOTIFY** Unit Supervisors, Unit 1 and Unit 3. Notifies the other Units. C. **VERIFY** standby fans start. Notices that it did not start and starts it. D. **DISPATCH** personnel to check Bldg △P (PDIC 64-2, El 639', RxBldg.) E. **IF** △P is at or above - 0.17 in. H2O **THEN** **ENTER** 2-EOI-3 Flowchart, 2-XA-55-3D, window 32. F. **DISPATCH** personnel to CHECK 480V AC Rx Bldg Vent Bd 2A and 2B. G. **IF** unable to restore ventilation, **THEN** **REFER TO** 2-AOI-30B-1. **N/A**
Driver: If dispatched report DP locally is reading -.35 in H20 **If dispatched to check fans, report that belts are off of Rx Zone Exh Fan 2A. No issues with Rx Zone 2A supply Fan.**		
Examiner Note: Acceptable to start RB Supply Fan A or B in slow speed. **End of Event 3, request Event #4.**		

Op Test No.: 15-10 Scenario No. 4 Event No.: 4 Page 1 of 6

Event Description: RWCU Isolation on NRHX Outlet Temp (failed Temp Control Valve), and 69-1 fails to close.

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When the NRC Chief Examiner is ready for Event 5, Insert Event Trigger 5 to initiate an isolation of RWCU and failure of 69-1 to auto close.**
	ATC	**Reports that RWCU Pump has tripped and a Group 3 Isolation due to high area temp.** **Reports that RWCU 69-1 failed to automatically isolate. Manually isolates the valve and reports successful isolation of 69-1.**
	SRO	Directs entry into AOI-64-2A
	ATC	Enters AOI-64-2A **Group 3 Reactor Water Cleanup Isolation** **NOTES** 1) Reactor Water Cleanup System Isolation is initiated by any one of the following signals: • Reactor Vessel Water Level Low (PCIS Group 3 isolation). • SLC Injection Initiation. • RWCU Isolation Logic for Area Temperatures (PCIS Group 3 isolation). • RWCU Non-Regenerative HX Discharge Temperature High. A. Any one or more of the following annunciator in alarm: 1. RWCU ISOL LOGIC CHANNEL A(B) TEMP HIGH (2-XA-55-5B, Window 32 and/or 33) 2. RX VESSEL WTR LEVEL LOW HALF SCRAM (2-XA-55-4A, Window 2) 3. RWCU LEAK DETECTION TEMP HIGH (2-XA-55-3D, Window 17). 4. RWCU NON-REGENERATIVE HX DISCH TEMP HIGH (2-XA-55-4B, Window 17). 5. SLC INJECTION FLOW TO REACTOR (2-XA-55-5B, Window 14). 6. SCRAM, PRIMARY CTMT PRESS HIGH (2-XA-55-1, Window 24).

Op Test No.: 15-10 Scenario No. 4 Event No.: 4 Page 2 of 6

Event Description: RWCU Isolation on NRHX Outlet Temp (failed Temp Control Valve), and 69-1 fails to close.

Time	Position	Applicant's Actions or Behavior
	ATC	**3.0 AUTOMATIC ACTIONS** B. The following valves CLOSE: 1. RWCU INBD SUCTION ISOLATION VALVE, 2-FCV-69-1. Remains OPEN 2. RWCU OUTBD SUCTION ISOLATION VALVE, 2-FCV-69-2. 3. RWCU RETURN ISOLATION VALVE, 2-FCV-69-12. C. Reactor Water Cleanup Recirc Pumps 2A and 2B TRIP. **4.0 OPERATOR ACTIONS** **4.1 Immediate Actions** [1] **PERFORM** the following: • **VERIFY CLOSED** RWCU INBD SUCTION ISOLATION VALVE, 2-FCV-69-1. • **VERIFY CLOSED** RWCU OUTBD SUCTION ISOLATION VALVE, 2-FCV-69-2. • **VERIFY CLOSED** RWCU RETURN ISOLATION VALVE, 2-FCV-69-12. • **VERIFY TRIPPED** Reactor Water Cleanup Recirc Pumps 2A and 2B.
	DRIVER	**If AUO is dispatched, wait 3 minutes and report that TCV 70-49 has is indicating full closed locally.** **If AUO is dispatched to RB elev. 593 ft, report the setpoint to controller is set at 110 deg F and in automatic.**

Op Test No.: 15-10 Scenario No. 4 Event No.: 4 Page 3 of 6

Event Description: RWCU Isolation on NRHX Outlet Temp (failed Temp Control Valve), and 69-1 fails to close.

Time	Position	Applicant's Actions or Behavior
	ATC	**4.2 Subsequent Actions** [1] **IF** any EOI entry condition is met, **THEN ENTER** appropriate EOI(s). [2] **CHECK** the following to confirm high area temperature condition exists: • LEAK DETECTION SYSTEM TEMPERATURE, 2-TI-69-29 (Panel 2-9-21). • ATUs in Auxiliary Instrument Room. [3] **IF** isolation is caused by high area temperature, **THEN DETERMINE** if a line break exists by: • RWCU ARMs 2-RI-90-9A, 13A, and 14A. • Visual Observation. • Rx Zone Exhaust Rad Monitors 2-RE-90-142A, 142B,143A, and 143B. [4] **PERFORM** necessary Heat Balance adjustments. **REFER TO** 2-OI-69.
	BOP	Checks RWCU temperatures on LEAK DETECTION SYSTEM (Panel 2-9-21). Reports no indication of elevated temperatures. Dispatches AUO to Aux Inst Rm to check RWCU temperatures
	DRIVER	**As AUO, acknowledge checking RWCU temperatures in Aux. Inst. Room. Wait three minutes, call control room and report that TE-69-835A is reading 132°F and TE-69-835B is reading 134°F.** **If requested, the RE will work on adjusting heat balance per 2-OI-69, section 8.16.**

Op Test No.: 15-10 Scenario No. 4 Event No.: 4 Page 4 of 6

Event Description: RWCU Isolation on NRHX Outlet Temp (failed Temp Control Valve), and 69-1 fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	PCIVs 3.6.1.3 3.6 CONTAINMENT SYSTEMS 3.6.1.3 Primary Containment Isolation Valves (PCIVs) LCO 3.6.1.3 Each PCIV, except reactor building-to-suppression chamber vacuum breakers, shall be OPERABLE. APPLICABILITY: MODES 1, 2, and 3, When associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation." PCIVs 3.6.1.3 ACTIONS ----------NOTES---------- 1. Penetration flow paths except for 18 and 20 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 systems made inoperable by PCIVs. 4. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, "Primary Containment," when PCIV leakage results in exceeding overall containment leakage rate acceptance criteria in MODES 1, 2, and 3. ---------- CONDITION | REQUIRED ACTION | COMPLETION TIME

Op Test No.: 15-10 Scenario No. 4 Event No.: 4 Page 5 of 6

Event Description: RWCU Isolation on NRHX Outlet Temp (failed Temp Control Valve), and 69-1 fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	

A. ----------NOTE---------- Only applicable to penetration flow paths with two PCIVs. ---------- One or more penetration flow paths with one PCIV inoperable except due to MSIV leakage not within limits.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	4 hours except for main steam line AND 8 hours for main steam line

(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 primary containment

Op Test No.: 15-10 Scenario No. 4 Event No.: 4 Page 6 of 6

Event Description: RWCU Isolation on NRHX Outlet Temp (failed Temp Control Valve), and 69-1 fails to close.

Time	Position	Applicant's Actions or Behavior

Coolant Chemistry
TR 3.4.1

----------NOTE----------
When there is no fuel in the reactor vessel, sampling of reactor coolant chemistry at Technical Requirement frequency is not required.

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.1.1	----------NOTE---------- Not required when there is no fuel in the reactor vessel. ---------- Monitor reactor coolant conductivity.	Continuously OR 4 hours when the continuous conductivity monitor is inoperable and the reactor is not in MODE 4 or 5 OR 8 hours when the continuous conductivity monitor is inoperable and the reactor is in MODE 4 or 5

Op Test No.: 15-10 Scenario No. 4 Event No.: 5 Page 1 of 2

Event Description: Inadvertent RCIC Initiation

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When Examiner is ready, fire trigger #6**
	BOP	**BOP Operator recognizes RCIC has auto initiated and reports to SRO the status.** **BOP Operator will secure RCIC by tripping RCIC Turbine per OPDP-8, Conduct of Operations.** **Dispatch AUO to investigate locally and Aux Instrument Room.**
	SRO	**SRO will Direct RCIC Turbine to be tripped and address Tech Spec 3.5.3 RCIC System.**
	SRO	**Tech Spec 3.5.3 RCIC System** **LCO 3.5.3:** The RCIC System shall be OPERABLE. **APPLICABILITY:** MODE 1, MODES 2 and 3 with reactor steam dome pressure > 150 psig. **ACTIONS** NOTE LCO 3.0.4.b is not applicable to RCIC. **CONDITION** **A.** RCIC System inoperable. **A.1** Verify by administrative means High Pressure Coolant Injection System is OPERABLE. - Immediately **AND** **A.2** Restore RCIC System to OPERABLE status. – 14 days **SRO Briefs crew of Tech Spec and Verifies HPCI is OPERABLE.**

Op Test No.: 15-10 Scenario No. 4 Event No.: 5 Page 2 of 2

Event Description: Inadvertent RCIC Initiation

Time	Position	Applicant's Actions or Behavior
	SRO	**SRO will enter applicable APPX R LCO ref pg 752 of Fire Protection Report Vol 1 system 071 RCIC.**
	DRIVER	**As AUO, acknowledge checking in Aux. Inst. Room. Wait three minutes, call control room and report that an inadvertent initiation has occurred.** **As AOU Report no noticeable damage locally in the RCIC Room.**
Note to Examiner: End of Event #5, request Event #6.		

Op Test No.: 15-10 Scenario No. 4 Event No.: 6 Page 1 of 2

Event Description: Reactor Feed Pump B Governor Speed Failure Downscale.

Time	Position	Applicant's Actions or Behavior
	Driver	**When requested by Examiner, insert trigger #25 for Reactor Feed Pump B Governor Speed Failure Downscale (FW30B)**
	ATC	**2-AOI-3-1, Loss of Reactor Feedwater or Reactor Water Level High/Low** **4.1 Immediate Actions** -None **4.2 Subsequent Actions** **CAUTION** [NRC/C] Operations outside of allowable regions shown on the Recirculation System Operating Map could result in thermal-hydraulic power oscillations and subsequent fuel damage. Refer to 2-GOI-100 12A for required actions and monitoring to be performed during power reduction. [NCO 940245001] [1] **VERIFY** applicable automatic actions. [2] **IF** Reactor Water Level OR Feedwater flow is lowering due to loss of Condensate, Condensate Booster, or Feedwater Pump(s), **THEN**: **LOWER** Recirc flow as required to avoid scram on low level **AND** **CONTINUE** at Section 5.0. **ATC Operator observes Reactor Water Level Lowering, RFP B Speed lowering and RFP C Speed rising.** **Operator may attempt a core flow runback.**
	SRO	**SRO directs entering 2-AOI-3-1, Loss of Reactor Feedwater or Reactor Water Level High/Low**
Examiner note: The Unit Supervisor may order a reactor scram prior to taking manual control of RFP B Governor. If this occurs, once parameters are stable request Event #7 Loss of Offsite Power.		

Op Test No.: 15-10	Scenario No. 4	Event No.: 6	Page 2 of 2
Event Description: Reactor Feed Pump B Governor Speed Failure Downscale.			

Time	Position	Applicant's Actions or Behavior
	ATC	**2-AOI-3-1, Loss of Reactor Feedwater or Reactor Water Level High/Low** 5.0 LOW REACTOR WATER LEVEL OR LOSS OF FEEDWATER [1] **IF** Feedwater Control System has failed, **THEN PERFORM** the following: [1.1] **PLACE** individual RFPT Speed Control Raise/Lower switches in Manual Governor (depressed position with amber light illuminated). [1.2] **ADJUST** RFP Discharge flows with RFPT Speed Control Raise/Lower switches as necessary to maintain Reactor Water Level. **ATC operator will depress Manual Governor Control for RFP B and adjust as necessary to restore Reactor water level to normal band.**
Examiner note: End of Event #6, when ready request Event #7.		

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 1 of 21

Event Description: LOOP

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When NRC Chief Examiner is ready for the LOOP, insert Event Trigger 7, to cause a sequential loss of the Westpoint Line, Murray Line, Trinity 161 line, Bus 1 500kV, and all offsite power.**
	ATC	Announces Reactor Scram **Reactor Scram OATC Hard Card** **1.0 IMMEDIATE ACTIONS** [1] **DEPRESS** REACTOR SCRAM A and B, 2-HS-99-5A/S3A and 2-HS-99-5A/S3B, on Panel 2-9-5. [2] **IF** scram is due to a loss of RPS, **THEN PLACE** REACTOR MODE SWITCH, 2-HS-99-5A-S1, in START & HOT STBY **AND PAUSE** for approximately 5 seconds (Otherwise N/A) [3] Refuel Mode One Rod Permissive Light check: [3.1] **PLACE** REACTOR MODE SWITCH, 2-HS-99-5A-S1, in REFUEL. [3.2] **CHECK** illuminated REFUEL MODE ONE ROD PERMISSIVE light, 2-XI-85-46. [3.3] **IF** REFUEL MODE ONE ROD PERMISSIVE light, 2-XI-85-46, is **NOT** illuminated, **THEN CHECK** all control rod positions at Full-In Overtravel, or Full-In.(Otherwise N/A) [4] **PLACE** REACTOR MODE SWITCH, 2-HS-99-5A-S1, in SHUTDOWN. [5] **REPORT** the following status to the US: • Reactor Scram • Mode Switch is in Shutdown • "All rods in" or "rods out" • Reactor Water Level and trend (recovering or lowering) • Reactor pressure and trend • MSIV position (Open or Closed) • Power level

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 2 of 21

Event Description: LOOP

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>ATC</td><td>Performs immediate operator actions IAW hard card and makes scram report.</td></tr>
<tr><td></td><td>BOP</td><td>Reports loss of all off site power.</td></tr>
<tr><td></td><td>SRO</td><td>Directs BOP operator to enter 0-AOI-57-1A

Enters EOI-1 on RPV Water Lvl below +2”

<table>
<tr><td>Verifies RX scram</td><td>ACTION REQUIRED</td></tr>
</table>

<table>
<tr><td>Note 1
The reactor will remain subcritical without boron under all conditions when:

Any 19 control rods are at notch 02 with all other control rods fully inserted
OR
All control rods except one are inserted to or beyond position 00
OR
Determined by Reactor Engineering (0-TI-394)</td></tr>
</table>

<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>It has NOT been determined that the reactor will remain subcritical without boron under all conditions</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>RPV water level CANNOT be determined</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>PC water lvl and drywell press CANNOT be maintained in the safe area of Curve 7</td><td>NO ACTION REQUIRED</td></tr>
</table>

Reactor Power

AOI-100-1, Reactor Scram

Directs ATC to enter 2-AOI-100-1</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 3 of 21

Event Description: LOOP

Time	Position	Applicant's Actions or Behavior
	BOP	**0-AOI-57-1A** **4.0 OPERATOR ACTIONS** **4.1 Immediate Actions** **NOTE** Performing this instruction, in conjunction with an earthquake, may require resetting the individual Diesel Generator's 86G Lockout Relay and the Field Breaker(both locally at the Diesel Generator electrical cabinet). [1] **VERIFY** Diesel Generators have started and tied to respective 4kV Shutdown Boards
	NRC	**The Diesel Generator failures are Event 8 and are addressed on Page 44. The remaining AOI-57-1A actions are continued here.**
	BOP	[2] **VERIFY** two EECW Pumps (not using the same EECW strainer) are in service supplying Diesel Generators. [4] **PERFORM** the following to ensure at least one train of DieselGenerator Room Fans are energized: • **VERIFY** 480V DSL Aux Board A or B energized. Verifies two EECW pumps are in service Verifies Diesel Aux Boards are energized **4.2 Subsequent Actions** **NOTE** The following subsequent actions may be performed out of order, depending on plantconditions. **NOTES** 1) EECW supply valves to the Control Air Compressors and RBCCW are air operated. If initial air pressure is low, air compressors may trip on high temperature, until cooling water flow is established.

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 4 of 21

Event Description: LOOP

Time	Position	Applicant's Actions or Behavior
	BOP	2) At US discretion, the 0-FCV-67-53 valve can be placed in the open position with handswitch. The valve will automatically come open once EECW pressure is above setpoint. REFER TO OI-67 for valve operation. 3) The North header supply to Unit 1 RBCCW, the North header supply to Unit 2 RBCCWand the South header supply to Unit 3 RBCCW are normally isolated with a manual valve; therefore no flow will occur when either 1-FCV-67-50, 2-FCV-67-50 or 3-FCV-67-51 opens. [6] **WHEN** EECW header pressure is restored above the reset pressure setpoint (psig) for the valves listed below, **THEN** Common Unit 1 Unit 2 Unit 3 0-FCV-67-53 106 - - - FCV-67-50 - 90 91 92 FCV-67-51 - 107 109 113 **RESET** EECW supplies to Control Air Compressors and RBCCW, at Unit 1 Panel 1-LPNL-925-0032 and Unit 2,3 Panels 2(3)-25-32. **REFER TO** the EECW to the RCW Crossties for Control Air & RBCCW section of 0-OI-67. [7] **START** Control Air Compressors A, D and G as required and **MONITOR** system pressure. **REFER TO** 0-AOI-32-1. [9] **PLACE** RPS MG Sets A and B in service. **REFER TO**1(2,3)-OI-99. Calls for EECW to be reset, air compressors to be restarted, and RPS to be restored.
	DRIVER	**Acknowledge resetting EECW, restarting air compressors and restoring RPS. Insert Event Trigger 10, 11, 12 (tasks complete on a timed sequence). Call operator to report tasks completed.**

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 5 of 21

Event Description: LOOP

Time	Position	Applicant's Actions or Behavior
	BOP	**Reactor Scram BOP Unit Operator Hard** **1.0 SUBSEQUENT ACTIONS: PANELS 2-9-7 & 2-9-8** **NOTES** 1) To OPEN PCB 224 with the control room handswitch, ONE of the following is required: 2-XA-55-8A window 7, GEN REVERSE PWR FIRST RELAY OPERATION 2-EA-57-136, WITH GENERATOR PCB 224 CNTR W/REV BYPASS, 2-HS-242-224A, placed in TRIP. OR GENERATOR PCB 224 CNTR W/REV BYPASS, 2-HS-242-224A, placed in BYPASS. 2) The following steps are not required to be performed in order, but only as required to maintain stable conditions. [1] At ≤ 50 MWe, or as directed by the Unit Supervisor, **ENSURE TRIPPED** the Main Turbine as follows: [1.1] **DEPRESS** the TRIP pushbutton, 2-HS-47-67D on Panel 2-9-7. [1.2] **ENSURE OPEN** GENERATOR PCB 224. [1.3] **ENSURE TRIPPED** VOLTAGE REGULATOR [2] **ANNOUNCE** Reactor SCRAM over PA system. Trips the Main Turbine. Verifies PCB 224 OPEN and Voltage Regulator tripped. Reports Main Turbine tripped. **NOTE** The following steps are not required to be performed in order, but only as required to maintain stable conditions. [1] **MONITOR** and **CONTROL** RPV pressure to keep below 1073 psig and stable. [1.1] **IF** RPV pressure is lowering rapidly, **THEN CLOSE** the MSIVs. (Otherwise N/A)

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 6 of 21

Event Description: LOOP

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
RPV Water Lvl

• An RPV water lvl instrument may be used to determine or trend lvl only when it reads above the Minimum Indicated Lvl associated with the highest max DW or SC run temp·

• If DW temps or SC area temps (Table 6), as applicable, are outside the safe region of Curve 8, the associated instrument may be unreliable due to boiling in the run

<table>
<tr><td>ENSURE each as required
• PCIS isolations (Groups 1, 2 and 3)
• ECCS
• RCIC</td><td>ADDRESSED
ADDRESSED
ADDRESSED</td></tr>
</table>
Verified PCIS isolations.

<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>RPV water lvl can be restored and maintained above -162 in.
AND
The ADS timer has initiated</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>Loss of available injection systems is anticipated
OR
Raising RPV water lvl above +51 in will facilitate use of shutdown cooling, steam-driven injection systems, or Alternate Injection Subsystems (Table L-2)</td><td>NO ACTION REQUIRED</td></tr>
</table>
</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 7 of 21

Event Description: LOOP

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
<table>
<tr><td colspan="2">RESTORE and MAINTAIN RPV water lvl between +2 in. and +51 in. with ANY Preferred Injection Systems (Table L-1)</td></tr>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>RPV water lvl cannot be restored and maintained between +2 in. and +51 in.</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>RPV water lvl cannot be restored and maintained above -162 in.</td><td>NO ACTION REQUIRED</td></tr>
</table>

<table>
<tr><td colspan="3">Table L-1
Preferred Injection Systems</td></tr>
<tr><td>SOURCES</td><td>APPX</td><td>INJ PRESS</td></tr>
<tr><td>RCIC with CST suction if available</td><td>5C</td><td>1200 psig</td></tr>
<tr><td>HPCI with CST suction if available</td><td>5D</td><td>1200 psig</td></tr>
</table>

Directs BOP operator to restore and maintain RPV water level between +2 in. and +51 in. using RCIC, Appendix 5C and/or HPCI, Appendix 5D.
</td></tr>
<tr><td></td><td>NRC</td><td>Operator should recognize that RCIC was tripped earlier and this would be the start of event 9 and is addressed on Page 46</td></tr>
<tr><td></td><td>SRO</td><td>
RPV Press
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>A high drywell pressure ECCS signal exists (2.45 psig)</td><td>ADDRESSED</td></tr>
<tr><td>EMERGENCY RPV DEPRESSURIZATIONIS REQUIRED or has been required</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>Emergency RPV depressurization is anticipated</td><td>NO ACTION REQUIRED</td></tr>
</table>
</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 8 of 21

Event Description: LOOP

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
<table>
<tr><td>IF ANY MSRV is cycling
THEN MANUALLY OPEN MSRVs UNTIL RPV press drops to the press at which all main turbine bypass vlvs are fully open (APPX 11A)</td><td>ACTION REQUIRED</td></tr>
</table>
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>Suppr pl temp and lvl CANNOT be maintained in a safe area of Curve 3 at the existing RPV press</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>Suppr pl lvl CANNOT be maintained in the safe area of Curve 4</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>STEAM COOLING IS REQUIRED</td><td>NO ACTION REQUIRED</td></tr>
</table>
STABILIZE RPV press below 1073 psig using the main turbine bypass vlvs (APPX 8B)
• OK to use ANY Alternate RPV Pressure Control Systems (Table P-1)
• Crosstie CAD to DW Control Air (APPX 8G, 20H) if necessary

Directs BOP operator to control RPV pressure 800 – 1000 psig using Appendix 11A, SRVs.
</td></tr>
<tr><td></td><td>BOP</td><td>2-EOI Appendix-5C
1.0 INSTRUCTIONS

CAUTIONS
1) Operating RCIC turbine below 2100 rpm may result in unstable system operation andequipment damage.
2) High Suppression Chamber pressure may trip RCIC.
3) Operating RCIC Turbine with suction temperatures above 240°F may result inequipment damage.</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 9 of 21

Event Description: LOOP

Time	Position	Applicant's Actions or Behavior
	BOP	[8] **CHECK** proper RCIC operation by observing the following: A. Speed accelerates above 2100 rpm. B. Flow to RPV controlled automatically at 620 gpm. C. 2-FCV-71-34, RCIC PUMP MIN FLOW VALVE, closes asflow rises above 120 gpm. [9] **ADJUST** 2-FIC-71-36A, RCIC SYSTEM FLOW/CONTROL, as necessary to control injection. [10] **IF** BOTH of the following exist: • RCIC Initiation signal is NOT present, **AND** • RCIC flow is below 60 gpm, **THEN** **ENSURE OPEN** 2-FCV-71-34, RCIC PUMP MIN FLOW VALVE. Adjusts RCIC flow controller as necessary to control RPV water level Verifies RCIC minimum flow valve CLOSED when RCIC flow greater than 120 gpm. **2-EOI Appendix-11A** **1.0 INSTRUCTIONS** [1] **IF** Drywell Control Air is NOT available, **THEN** **EXECUTE** EOI Appendix 8G, CROSSTIE CAD TO DRYWELL CONTROL AIR, **CONCURRENTLY** with this procedure. [2] **IF** Suppression Pool level is at or below 5.5 ft, **THEN** **CLOSE** MSRVs and **CONTROL** RPV pressure using other options. [3] **OPEN** MSRVs using the following sequence to control RPV pressure as directed by SRO:

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 10 of 21

Event Description: LOOP

Time	Position	Applicant's Actions or Behavior
	BOP	<table><tr><td>1</td><td>2-PCV-1-179</td><td>MN STM LINE A RELIEF VALVE</td></tr><tr><td>2</td><td>2-PCV-1-180</td><td>MN STM LINE D RELIEF VALVE</td></tr><tr><td>3</td><td>2-PCV-1-4</td><td>MN STM LINE A RELIEF VALVE</td></tr><tr><td>4</td><td>2-PCV-1-31</td><td>MN STM LINE C RELIEF VALVE</td></tr><tr><td>5</td><td>2-PCV-1-23</td><td>MN STM LINE B RELIEF VALVE</td></tr><tr><td>6</td><td>2-PCV-1-42</td><td>MN STM LINE D RELIEF VALVE</td></tr><tr><td>7</td><td>2-PCV-1-30</td><td>MN STM LINE C RELIEF VALVE</td></tr><tr><td>8</td><td>2-PCV-1-19</td><td>MN STM LINE B RELIEF VALVE</td></tr><tr><td>9</td><td>2-PCV-1-5</td><td>MN STM LINE A RELIEF VALVE</td></tr><tr><td>10</td><td>2-PCV-1-41</td><td>MN STM LINE D RELIEF VALVE</td></tr><tr><td>11</td><td>2-PCV-1-22</td><td>MN STM LINE B RELIEF VALVE</td></tr><tr><td>12</td><td>2-PCV-1-18</td><td>MN STM LINE B RELIEF VALVE</td></tr><tr><td>13</td><td>2-PCV-1-34</td><td>MN STM LINE C RELIEF VALVE</td></tr></table> Controls RPV pressure as directed. Determines that HPCI is needed to restore and maintain RPV water level.
	NRC	**When HPCI is started, either manually or automatically, event 10 would start. This is addressed on Page 47**
	ATC	**2-AOI-100-1** **4.2 Subsequent Actions** [3] **DRIVE** in all IRMs and SRMs from Panel 2-9-5 as time and conditions permit. [3.1] **DOWNRANGE** IRMs as necessary to follow power as it lowers. [4] **ENSURE** SCRAM DISCH VOL VENT & DR VLVS CLOSED by green indicating lights at SDV Display on Panel 2-9-5. Performs subsequent actions of AOI-100-1 as time permits

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 11 of 21

Event Description: LOOP

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	**NOTE** Suppression Pool cooling should be placed in service as soon as practicable following MSRV, HPCI and / or RCIC operation regardless of indicated Suppression Pool temperatures to verify that thermal stratification does not exist. [5.3] **IF** required to maintain reactor water level, **THEN** **START** RCIC and/or HPCI as required. **REFER TO** 2-OI-71 and/or 2-OI-73. [5.4] **IF** HPCI and/or RCIC are in service and injecting to the vessel, **THEN** • **MONITOR** and **CONTROL** Reactor Water Level as necessary. • **TRIP** HPCI and/or RCIC as necessary to prevent exceeding High Reactor Water Level setpoint. [5.5] **IF** Reactor Water Level exceeds +51 inches, **THEN** **ENSURE TRIPPED** the following turbines: • HPCI • RCIC Operates HPCI/RCIC IAW EOI Appendices to control RPV water level as directed

Critical Task #2:

Crew aligns ANY preferred injection systems in Table L-1 to restore and maintain RPV Water level greater than -162 inches, once EOI-1 is entered.

1. **Safety Significance:**
   Maintain adequate core cooling and prevent degradation of fission product barrier.
2. **Cues:**
   - Procedural Compliance
   - RPV Water Level rises due to injection sources aligned and injecting
3. **Measured by:**
   Criterion is that the crew aligns ANY preferred injection systems in Table L-1 to restore and maintain RPV Water Level greater than -162 inches.
4. **Feedback:**
   RPV Water Level trend.
5. **Critical Task #2 Failure Criteria:**
   The Operating Crew fails to restore RPV Water Level above (-) 180 inches

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 12 of 21

Event Description: LOOP

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
RPV Press

STABILIZE RPV press below 1073 psig using the main turbine bypass vlvs (APPX 8B)
• OK to use ANY Alternate RPV Pressure Control Systems (Table P-1)

TABLE P-1
Alternate RPV Pressure Control Systems
Source | APPX
HPCI with CST suction if available | 11C

Directs BOP operator to place HPCI in pressure control using EOI Appendix 11C.
</td></tr>
<tr><td></td><td>SRO</td><td>
RPV Press

STABILIZE RPV press below 1073 psig using the main turbine bypass vlvs (APPX 8B)
• OK to use ANY Alternate RPV Pressure Control Systems (Table P-1)

TABLE P-1
Alternate RPV Pressure Control Systems
Source | APPX
HPCI with CST suction if available | 11C

Directs BOP operator to place HPCI in pressure control using EOI Appendix 11C.
</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 13 of 21

Event Description: LOOP

Time	Position	Applicant's Actions or Behavior
	SRO	**IF** DW Control Air is or becomes unavailable — **THEN** **NO ACTION REQUIRED** **IF** It is anticipated that RPV depressurization will result in a loss of injection required for adequate core cooling — **THEN** **NO ACTION REQUIRED** **DEPRESSURIZE** the RPV and maintain cooldown rate below 100ºF/hr Crosstie CAD to DW Control Air (APPX 8G, 20H) if necessary **IF** ANY MSRV is being used for RPV depressurization AND DW Control Air is or becomes unavailable — **THEN** **NO ACTION REQUIRED** Directs BOP operator to depressurize the RPV and maintain a cooldown rate below 100°F. **WHEN** shutdown cooling RPV press interlock clears AND further cooldown is required

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 14 of 21

Event Description: LOOP

Time	Position	Applicant's Actions or Behavior
	BOP	**2-EOI APPENDIX-11C** **CAUTION** • Operating HPCI Turbine below 2400 rpm may result in unstable systemoperation and equipment damage. • Operating HPCI Turbine with suction temperatures above 140°F mayresult in equipment damage. 1. IF ..... Suppression Pool level drops below 12.75 ft, THEN .....**TRIP** HPCI and **CONTROL** RPV pressure using otheroptions. 2. IF ..... Emergency RPV Depressurization is required, **OR** Steam Cooling is required, THEN .....**EXECUTE** EOI Appendix 16C and 16D as necessary tobypass HPCI Low RPV pressure and Test Mode IsolationInterlocks. 4. IF ..... HPCI Turbine is operating, THEN .....**ALIGN** HPCI in test mode as follows: a. **OPEN** 2-FCV-73-35, HPCI PUMP CST TEST VLV. b. **OPEN** 2-FCV-73-36, HPCI/RCIC CST TEST VLV. c. **CLOSE** 2-FCV-73-44, HPCI PUMP INJECTION VALVE. d. **CONTINUE** in this procedure at Step 6. 6. **VERIFY** proper HPCI minimum flow valve operation as follows: a. IF ..... HPCI flow is above 1200 gpm, THEN .....**VERIFY CLOSED** 2-FCV-73-30, HPCI PUMP MINFLOW VALVE. b IF ..... HPCI flow is below 600 gpm, THEN .....**VERIFY OPEN** 2-FCV-73-30, HPCI PUMP MIN FLOW VALVE. 7. **THROTTLE** 2-FCV-73-35, HPCI PUMP CST TEST VLV, to control HPCI pump discharge pressure at or below 1100 psig. 8. **ADJUST** 2-FIC-73-33, HPCI SYSTEM FLOW/CONTROL, controller to control RPV pressure. Aligns HPCI in the pressure control mode IAW Appendix 11C. Commences a RPV cooldown as directed.

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 15 of 21

Event Description: LOOP

Time	Position	Applicant's Actions or Behavior
	BOP	9. IF ..... HPCI injection to the RPV becomes necessary, THEN ..... ALIGN HPCI to the RPV as follows: a. OPEN 2-FCV-73-44, HPCI PUMP INJECTION VALVE. b. THROTTLE 2-FCV-73-35, HPCI PUMP CST TEST VLV, to control injection. c. GO TO EOI Appendix-5D. If needed for RPV level control, realigns HPCI IAW Appendix and injects into the RPV. Reports Suppression Pool Temperature at 95°F and rising
	SRO	Enters EOI-2 on Suppression Pool Temperature above 95°F. **Suppr Pl Temp** Caution 2: Operating pumps with suction from the suppression pool above the NPSH Limit (Curve 1, 2, 9 or 10) or with suppression pool water level below 10 ft (Vortex limit) may cause equipment damage **MONITOR** and **CONTROL** suppr pl temp below 95°F using available suppr pl cooling (APPX 17A) — **ACTION REQUIRED** Directs BOP operator to initiate Suppression Pool Cooling IAW Appendix 17A

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 16 of 21

Event Description:

Time	Position	Applicant's Actions or Behavior
	BOP	**APPENDIX-17A** **NOTE** Placing a BYPASS SEL switch in BYPASS in step 1 below prevents automatic opening of the affected RHR loop's outboard injection valve. This makes LPCI mode of that RHR loop inoperable. 1. IF Adequate core cooling is assured, **OR** Directed to cool the Suppression Pool irrespective of adequate core cooling, THEN.....**BYPASS** LPCI injection valve open interlock AS NECESSARY: • PLACE 2-HS-74-155A, LPCI SYS I OUTBD INJ VLV BYPASS SEL in BYPASS. • PLACE 2-HS-74-155B, LPCI SYS II OUTBD INJ VLV BYPASS SEL in BYPASS. 2. **PLACE** RHR SYSTEM I(II) in Suppression Pool Cooling as follows: a. **VERIFY** at least one RHRSW pump supplying each EECW header. b. **VERIFY** RHRSW pump supplying desired RHR Heat Exchanger(s). c. **THROTTLE** the following in-service RHRSW outlet valves to obtain between 1350 and 4500 gpm RHRSW flow: • 2-FCV-23-34, RHR HX 2A RHRSW OUTLET VLV • 2-FCV-23-46, RHR HX 2B RHRSW OUTLET VLV • 2-FCV-23-40, RHR HX 2C RHRSW OUTLET VLV • 2-FCV-23-52, RHR HX 2D RHRSW OUTLET VLV

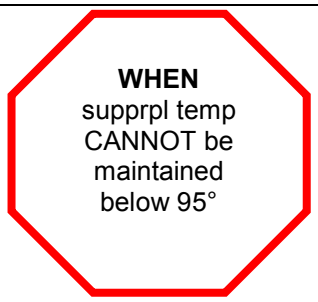
Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 17 of 21

Event Description: LOOP

Time	Position	Applicant's Actions or Behavior
	BOP	d. IF ..... Directed by SRO, THEN.....**PLACE** 2-XS-74-122(130), RHR SYS I(II) LPCI 2/3 CORE HEIGHT OVRD in MANUAL OVERRIDE. e. IF .....LPCI INITIATION Signal exists, THEN.....**MOMENTARILY PLACE** 2-XS-74-121(129), RHR SYS I(II) CTMT SPRAY/CLG VLV SELECT in SELECT. f. IF ..... 2-FCV-74-53(67), RHR SYS I(II) LPCI INBD INJECT VALVE, is OPEN, THEN..... **VERIFY CLOSED** 2-FCV-74-52(66), RHR SYS I(II) LPCI OUTBD INJECT VALVE. g. **OPEN** 2-FCV-74-57(71), RHR SYS I(II) SUPPR CHBR/POOL ISOL VLV. h. **VERIFY** desired RHR pump(s) for Suppression Pool Cooling are operating. **CAUTION** RHR system flows below 7000 gpm or above 10000 gpm for one-pump operation may result in excessive vibration and equipment damage. i. **THROTTLE OPEN** 2-FCV-74-59(73), RHR SYS I(II) SUPPR POOLCLG/TEST VLV, to maintain EITHER of the following as indicated on2-FI-74-50(64), RHR SYS I(II) FLOW: • Between 7000 and 10000 gpm for one-pump operation. **OR** • At or below 13000 gpm for two-pump operation.

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 18 of 21

Event Description:

Time	Position	Applicant's Actions or Behavior
	BOP	j. **VERIFY CLOSED** 2-FCV-74-7(30), RHR SYSTEM I(II) MIN FLOW VALVE. k. **MONITOR** RHR Pump NPSH using Attachment 1. l. **NOTIFY** Chemistry that RHRSW is aligned to in-service RHR Heat Exchangers. m. IF ..... Additional Suppression Pool Cooling flow is necessary, THEN.....**PLACE** additional RHR and RHRSW pumps in serviceusing Steps 2.b through 2.l. Places RHR in Suppression Pool Cooling IAW EOI-Appendix 17A.
	SRO	 **OPERATE** all available suppr pl cooling using only RHR pumps NOT required to assure adequate core cooling by continuous inj (APPX 17A) Directs BOP operator to place all available suppression pool cooling in service.
	BOP	Places all available suppression pool cooling in service as directed.

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 19 of 21

Event Description:

Time	Position	Applicant's Actions or Behavior
	SRO	**BEFORE** Suppr pl temp rises to 110°F EOI-1 — **NO ACTION REQUIRED** **EOI-1 previously entered** **WHEN** supprpl temp and RPV press CANNOT be maintained within a safe area of Curve 3 **DW Temp** **Caution 1** • Ambient temp may affect RPV water level indication and trend **MONITOR** and **CONTROL** DW temp below 160°F using available DW cooling — **NO ACTION REQUIRED**

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 20 of 21

Event Description: LOOP

Time	Position	Applicant's Actions or Behavior
	SRO	**WHEN** DW temp CONNOT be maintained below 160 °F **PC Press** **MONITOR** and **CONTROL** PC press below 2.45 psig using the Vent system (AOI-64-1) — **NO ACTION REQUIRED** **WHEN** PC press CONNOT be maintained below 2.45 psig **PC H_2** IF: H2 and O2 monitoring system is inoperable — THEN: **NO ACTION REQUIRED** IF: Offsite radioactivity release rate reaches ODCM limits **OR** H2 is NO longer detected in PC(2.4% on control room indicators) — THEN: **NO ACTION REQUIRED**

Op Test No.: 15-10 Scenario No. 4 Event No.: 7 Page 21 of 21

Event Description: LOOP

Time	Position	Applicant's Actions or Behavior
	SRO	**ENSURE** H2/O2 analyzer in service (APPX 19) — **NO ACTION REQUIRED** **WHEN** H_2 is detected in PC (2.4% on control room indicators) **Suppr Pl Lvl** **MONITOR** and **CONTROL** suppr pl lvl -6 in. to -1 in. (APPX 18) **IF** Suppr pl lvl CANNOT be maintained below -1 in. — **THEN** **NO ACTION REQUIRED** **IF** Suppr pl lvl CANNOT be maintained above -6 in. — **THEN** **NO ACTION REQUIRED**

Op Test No.: 15-10 Scenario No. 4 Event No.: 8 Page 1 of 2

Event Description: 'B' DG Failure to Start and 'D' DG Failure to Tie to the Bus.

Time	Position	Applicant's Actions or Behavior
	BOP	**0-AOI-57-1A** **4.0 OPERATOR ACTIONS** **4.1 Immediate Actions** **NOTE** Performing this instruction, in conjunction with an earthquake, may require resetting theindividual Diesel Generator's 86G Lockout Relay and the Field Breaker(both locally at theDiesel Generator electrical cabinet). [1] **VERIFY** Diesel Generators have started and tied to respective 4kV Shutdown Boards, THEN DISPATCH personnel to Diesel Generators. Determines that 'B' Diesel Generator failed to start. Starts 'B' Diesel Generator by taking 0-HS-82-B/1A to START. Verifies 'B' Diesel Generator starts and ties to 4kV Shutdown Board 'B'. Determines that 'D' Diesel Generator started but failed to tie to 4kV Shutdown Board 'D'. Checks that no lockout conditions are present and CLOSES DG Output Breaker 1816 to tie 'D' Diesel Generator to 4kV Shutdown Board 'D' Reports failures and that all 4kV Shutdown Boards are currently energized. Dispatches AUO to monitor the diesels for proper operation. Call Work Control to initiate an investigation for the diesel failures

Op Test No.: 15-10 Scenario No. 4 Event No.: 8 Page 2 of 2

Event Description: 'B' DG Failure to Start and 'D' DG Failure to Tie to the Bus.

Time	Position	Applicant's Actions or Behavior
		Critical Task #1: **Restore power to one of the 480V Shutdown Boards to exit Station Blackout** 1. **Safety Significance:** Maintain electrical power to one of the two 480V Shutdown Boards. Loss of power to the 480V Shutdown Boards is one of the top contributors to Core Damage Frequency. 2. **Cues:** • Procedural Compliance • Loss of power to 480V Shutdown Boards 3. **Measured by:** Criterion is that the crew energizes the 4kV Shutdown Boards which power the two 480V Shutdown Boards on the unit. 4. **Feedback:** One of the two 480V Shutdown Boards energized 5. **Critical Task #1 Failure Criteria:** The Operating Crew fails to restore power to one of the two 480V Shutdown Boards within 30 minutes to prevent lose of ability to operate breakers remotely.
	DRIVER	**As AUO, acknowledge monitoring the diesel generators.** **As Work Control, acknowledge work orders to investigate the failures on the diesel generators.**
	NRC	**End of Event 7 and 8, when Suppression Cooling is in service per EOI-2.**

Op Test No.: 15-10 Scenario No. 4 Event No.: 9 Page 1 of 1

Event Description: RCIC available after LOOP

Time	Position	Applicant's Actions or Behavior
	BOP	Reports to US that RCIC was tripped earlier and is available if the RCIC Turbine Trip Throttle Valve is reset.
	SRO	Directs resetting RCIC Turbine Trip Throttle Valve and use RCIC to restore Reactor Water Level.
Examiner Note: BOP Operator resets RCIC Turbine Trip Throttle Valve by closing FCV-71-9 and then reopening FCV-71-9 **End of Event 9**		

Op Test No.: 15-10 Scenario No. 4 Event No.: 10 Page 1 of 2

Event Description: HPCI Flow Controller Fails in Automatic

Time	Position	Applicant's Actions or Behavior
	BOP	**2-EOI Appendix-5D** **1.0 INSTRUCTIONS** [4] VERIFY at least one SGTS train in operation. **CAUTIONS** 1) Operating HPCI Turbine below 2400 rpm may result in unstable system operation and equipment damage. 2) Operating HPCI Turbine with suction temperatures above 140°F may result in equipment damage. [5] VERIFY 2-FIC-73-33, HPCI SYSTEM FLOW/CONTROL, controller is in one of the following configurations, as desired: • in AUTO and set for 5300 gpm for rapid injection **NOTE** HPCI Auxiliary Oil Pump will NOT start UNTIL 2-FCV-73-16, HPCI TURBINE STEAMSUPPLY VLV, starts to open. [7] **PLACE** HPCI AUXILIARY OIL PUMP handswitch in START. [8] **PLACE** HPCI STEAM PACKING EXHAUSTER handswitch in START. [9] **OPEN** the following valves: • 2-FCV-73-30, HPCI PUMP MIN FLOW VALVE • 2-FCV-73-44, HPCI PUMP INJECTION VALVE. [10] **OPEN** 2-FCV-73-16, HPCI TURBINE STEAM SUPPLY VLV, to start HPCI Turbine [11] **CHECK** proper HPCI operation by observing the following: A. HPCI Turbine speed accelerates. B. 2-CKV-73-45, HPCI SYSTEM CHECK VLV, opens by observing 2-ZI-73-45A, DISC POSITION, red light illuminated. C. HPCI flow to RPV stabilizes and is controlled automatically at the setpoint. (N/A if controller in manual). D. 2-FCV-73-30, HPCI PUMP MIN FLOW VALVE, closes as flow exceeds approximately 1200 gpm.

Op Test No.: 15-10 Scenario No. 4 Event No.: 10 Page 2 of 2

Event Description:

Time	Position	Applicant's Actions or Behavior
		CAUTION HPCI PUMP MIN FLOW VALVE, 2-FCV-073-0030, automatically opens when system flowis at or below 900 gpm (lowering) only if a system initiation signal is present. Manuallyopening the min flow valve may be required for pump min flow protection. Recognizes that HPCI does not accelerate to full speed. Check HPCI lineup and recognizes that the HPCI flow controller is not operating properly in AUTO. Reports the failure of the HPCI flow controller. Takes manual control of the HPCI flow controller and adjusts HPCI flow as necessary to control RPV water level as directed. Calls Work Control to initiate a work order to investigate the failure of the HPCI flow controller.
	DRIVER	**As Work Control, acknowledge initiating a work order to investigate the problem with the HPCI flow controller.**
	NRC	**End of Event 10**

Scenario Setup

IC	28
Exam IC	289

Schedule Files(s):	Schedule #4 rev 0.sch

Malfunctions	Description	Event #	Delay	Severity	Ramp	Initial value	Final value
DG01B	DG B Fail to auto start	ACTIVE	NA	NA	NA	NA	NA
DG03D	DG D Fail to auto tie	ACTIVE	NA	NA	NA	NA	NA
RC02	Inadvertent RCIC Auto Initiation	5	NA	NA	NA	NA	NA
CU06A	RWCU 69-1 isol fail	4	NA	NA	NA	NA	NA
PC02	RB Vent Fan failure	3	NA	NA	NA	NA	NA
ED01	LOSS OF ALL OFFSITE POWER	7	185	NA	NA	NA	NA
ED02	500-KV PCB 5204 TRIP AND LOCKOUT	7	NA	NA	NA	NA	NA
ED06B	LOSS OF 161-KV TRANSFORMER CSST B	7	120	NA	NA	NA	NA
ED03	500 KV BUS 1 FAULT	7	180	NA	NA	NA	NA
HP03	HPCI AUTOMATIC FLOW CONTROLLER FAILURE	10	120	NA	NA	NA	NA
SW05	RWCU ISOL ON HI TEMP NRHX	4	NA	NA	NA	NA	NA
FW30B	WOODWARD GOVERNOR SPEED CONTROL HS FAILURE	6	NA	NA	NA	NA	0

Remotes	Description	Event #	Delay	Severity	Ramp	Initial value	Final value
RP01	RPS A NORM SUPPLY	7	300	NA	NA	NA	RESET
RP02	RPS B NORM SUPPLY	7	330	NA	NA	NA	RESET
SW22	EECW LOWW PRESS RELAYS	7	180	NA	NA	NA	RESET

IA05A	CONTROL AIR COMP A LOCAL CONTROL	7	360	NA	NA	NA	RESET
IA05D	CONTROL AIR COMP D LOCAL CONTROL	7	360	NA	NA	NA	RESET
IA09	CONTROL AIR COMP G LOCAL CONTROL	7	360	NA	NA	NA	RESET
ED31B5208	SWYD BKR 5208 MAN CONTROL	7	NA	NA	NA	NA	TRIP
ED31B5254	SWYD BKR 5254 MAN CONTROL	7	60	NA	NA	NA	TRIP
ED31B5258	SWYD BKR 5258 MAN CONTROL	7	60	NA	NA	NA	TRIP

Overrides	Description	Event #	Delay	Severity	Ramp	Initial value	Final value
HS-69-1A	RWCU ISOL VLV	4	None	NA	NA	OPEN	OPEN
ZLOHS469_1	HS-46-9 RFPT 2B SPEED CONT RAISE/LOWER	6	NA	NA	NA	NA	OFF

SHIFT MANAGER TURNOVER

EQUIPMENT OOS/LCOS

- **Tech Spec 3.3.5.2 Condition B.2 for RCIC Water Level Low-Low 58D.**
- **2A RFPT is secured to investigate high bearing temperatures.**

ANTICIPATED OPERATIONS/MAINTENANCE FOR ONCOMING SHIFT

- **RCIC Water Level Low-Low 58D has failed downscale and IMs are troubleshooting the problem.**
- **Continue the down power to 75 to 80 % for 2A Reactor Feed Pump Room entry using 2-GOI-100-12 and the RCP.**
- **Automatic Start Test of all RFPT Oil Pumps per 2-OI-3 Sections 8.13, 8.14 and 8.15. (required on all RFPs by the troubleshooting plan to eliminate common cause concerns)**

STATUS

WORK WEEK - DIV I ☒, DIV II ☐ OUTSIDE AIR TEMP 87ºF

- **Main Turbine Valve Testing completed last shift and Rad Waste reported loud noise and has noticed an increase in Rad Waste in-leakage.**

COMMON

- **Shift Manager reports that there is a Thunder Storm Watch for the Tennessee Valley Service Area.**

UNIT 1

100%

UNIT 2

93%

UNIT 3

100%

Appendix D	Scenario Outline	Form ES-D1

Facility:Browns Ferry NPP Scenario No.:NRC–3 Op-Test No.:1510

Examiners: _____ Operators: SRO:_____
_____ ATC:_____
_____ BOP:_____

Initial Conditions: Low Power Rx SU 1%, ~950 psig with B& C Condensate Pump, C Condensate Booster Pump and C RFP in MANUAL

Turnover: Raise Rx Power to achieve 10-50% open on 1st bypass valve position and then place C RFP in Service.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R-ATC R-SRO	Raise power with Control Rods to achieve approximately 10-50% on 1stbypass valves.
2	N/A	N-BOP N-SRO	Place C RFP in Service per GOI Step 5.4[63] and control Reactor Water Level with CRD, RWCU Blowdown and RFP C in manual.
3	RD06 R5035	C-ATC C-SRO TS-SRO	CR 50-35 Stuck Control Rod OPERABILITY LCO 3.1.3
4	MS01	C-BOP	Seal Steam Regulator Failure
5	NM05H	I-ATC I-SRO	IRM H Fails Downscale; Bypass IRM per OI-92A
6	N/A	TS-SRO	SLC A Pump oil level low. Standby Liquid Control (SLC) System 3.1.7
7	ZAIFC0229A1	C-BOP C-SRO	3-FCV-2-29 Condensate Short Cycle drifts closed. Manual action required per OPDP-1 sect 3.3.5.
8	TH35B MS06C MS06D RP15A PC14 TH23 RF ED24B	M-ALL Precursor	Steam Leak in Reactor Building and failure of one main steam line MSIVs to close. Rx SCRAM, Emergency Depresson 2 Max Safe Area Rads (EOI-3)Fuel Failure Loss of power to 3B 250V DC RMOV Board
9	HP07	C-BOP	HPCI 120V Power Failure

10	N/A	C-BOP C-SRO	Fail two ADS valves to open on blowdown, result of power loss to 3B 250V DC RMOV BD.
11	FW02C	C-ATC C-SRO	C Condensate Booster Pump Trips Loop I RHR Logic power Failure and Core Spray Div I Logic Power Failure, result of power loss to 3B 250V DC RMOV BD.

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

Events

1. Reactor Power starts at approximately 1% and 950 psig. The first event starts with a reactivity brief from the SRO to the ROs concerning pulling control rods and watching the IRMs carefully. The goal is for the ATC to pull rods using the pull sequence to achieve enough power and steam production to maintain main 1st turbine bypass valves between approximately 10-50% open.

2. The C RFP will be placed in service in accordance with GOI-100-1A Unit Startup and Power Operation, Step 5.4 [63]. The BOP will perform the actions required to maintain reactor water level in band with CRD, RWCU Blowdown and Manual Governor Control of RFP C.

3. This event is manually triggered when the times the RO selects a control rod 50-35 and then positions it to position 04. The crew will raise drive water pressure and the control rod will not move. The SRO will declare that control rod INOP in accordance with T.S.3.1.3 Control Rod Operability. When the Tech Spec is addressed, the scenario may continue with the next event.

4. The Seal Steam Regulator PIC-1-147 will fail closed which requires the BOP operator to use the manual bypass to restore Seal Steam. This will require continuous monitoring. The local report will indicate that the Seal Steam Controller will not operate and has no idea why it failed.

5. When directed by the NRC Chief Examiner, the next event may be triggered. IRM H will fail downscale. Once reported to US, the US will direct bypassing IRM H per 3-OI-92A, Intermediate Range Monitors to continue with Reactor Startup.

6. When directed by the NRC Chief Examiner, the next event may be triggered. This event will cause 3-FCV-2-29 to slowly drift closed. The BOP Operator will take manual control of 3FCV-2-29 per OPDP-1 Conduct of Operations section 3.3.5 and restore Condensate Parameters to normal.

7. When directed by NRC Chief Examiner, the RB AUO will report that SLC Pump A oil level sight glass is empty with no oil level indication. The US will enter T. S. 3.7.1 Standby Liquid Control (SLC) System Condition A.

8. When the NRC Chief Examiner is satisfied with the actions of Event 6, the next event can be triggered. The major event for this scenario is a steam leak that develops in the Reactor Building side of the main steam tunnel. This will cause radiation and temperatures to start rising in areas of the Reactor Building. The Crew will anticipate the Main Steam Line isolation and manually close all eight MSIVs, however one line fails to isolate. The Reactor will be scrammed and the crew will monitor both Radiation and temperatures in the reactor building to determine entry into EOI-3 (Secondary Containment Control) and when two areas identified in Table SC-1 or SC-2 on EOI-3 exceed their Max Safe Rad or Temp limits, the crew will Emergency Depressurize the reactor to reduce the driving force behind the steam leak. To assist in plausibility to the failures of events 8-10, the 250V DC RMOV Board will lose power when the mode switch is taken to shutdown position.

9. To complicate level recovery, the HPCI 120V power will fail requiring the BOP to use other available injection source, manually because the loss of 3B 250V DC RMOV removes the Flow Controller.

10. To complicate the ED, the loss of 3B 250V DC RMOV will de-energize two of the MSRVs, requiring the RO to compensate and open two other SRVs.

11. The available running Condensate Booster Pump will trip resulting in the use of the low pressure ECCS systems for Reactor Water Level Control. This is further complicated by the loss of the 3B 250V DC RMOV. Both DIV I LPCI and CS systems will not function and require the operator to use DIV II LPCI and CS to recover Reactor Water Level.

The Scenario ends when the crew has performed an Emergency Depressurization based on two areas above Max Safe and Reactor Water Level is restored using LP ECCS.

Critical Tasks: 2

1. **With the reactor at power and with a primary system discharging into the secondary containment, manually scram the reactor before any area exceeds the maximum safe operating value.**
   1. **Safety Significance**
      Scram reduces to decay heat the energy that the RPV may be discharging into thesecondary containment.

   2. **Cues**
      Procedural Compliance
      Secondary Containment Area Temperature, Level and/or radiation indication

   3. **Measured by:**
      Observation - With a primary system discharging into secondary containment a reactor scram is initiated before a maximum safe condition is reached

   4. **Feedback**
      Control rod positions
      Reactor Power reduction

   5. **Critical Task Failure Criteria:**
      The operating crew fails to insert a manual reactor scram prior to 1st Area Radiation Levels reaching the Max Safe Value.

2. **With a primary system discharging into the Secondary Containment when two or more areas are greater than their maximum safe operating values for the same parameter, RO initiates Emergency Depressurization as directed by US.**
   1. **Safety Significance**
      Places the primary system in the lowest possible energy state, rejects heat to theSuppression Pool in preference to outside the Primary Containment, and reduces driving head and flow of system discharging into the Secondary Containment.

   2. **Cues**
      Procedural Compliance
      Secondary Containment Area temperature, level, or radiation indication

3. **Measured by:**
Observation - US transitions to EOI-C2 and directs opening at least 6 MSRVs when two or more areas are greater than their maximum safe operating values for the same parameter.

4. **Feedback**
Reactor Pressure Trend
MSRV status indications

5. **Critical Task Failure Criteria:**
The operating crew fails to recognize Emergency Depressurization is required when 2 Area Radiation Levels exceed the Max Safe value within 5 minutes.

OR

The operating crew fails to initiate an Emergency Depressurization within 10 minutes after 2 Area Radiation Levels exceeding Max Safe value.

SHIFT MANAGER TURNOVER

EQUIPMENT OOS/LCOS

- **Condensate Booster Pump A is disassembled for overhaul.**
- **Condensate Booster Pump B was tagged last shift for troubleshooting activities due to high vibration reading on pump start.**

ANTICIPATED OPERATIONS/MAINTENANCE FOR ONCOMING SHIFT

- **Pull control rods IAW 3-GOI-100-1A 5.4 [71] to achieve 10-50% open on the first Bypass valve position starting with CR 34-43.**
- **Place RFP C in service to control Reactor Water Level IAW 3-OI-3 section 5.5 Placing the First RFP in service step 5.5 [12].**

STATUS

WORK WEEK - DIV I ☒, DIV II ☐

OUTSIDE AIR TEMP 50ºF

- **RWCU Blowdown in service**
- **CRD Pump 2A in service**
- **IRMs on ranges 6-7**
- **CPs: B & C in service**
- **CBPs: C in service.**

COMMON

UNIT 1

100%

UNIT 2

100%

UNIT 3

Rx at 1 % Power

Op Test No.: 15-10 Scenario No. 3 Event No.: 1 Page 1 of 5

Event Description:Pull Control Rod for 10-50% Bypass Valve Position

Time	Position	Applicant's Actions or Behavior
	Driver	**Begin recording data for scenario**
	SRO	**Crew assumes the shift.**
	SRO	Directs ATC to raise reactor Power to achieve 30% Bypass Valve position on the first Bypass Valve per 3-GOI-100-1A [71] in preparation to place first RFP on RX WATER LVL CONTROL, 3-LIC-46-5, in AUTO and begin warm up of a second RFP. SRO -Performs Reactivity Brief with the crew. SRO -Assumes Reactivity SRO Over-site function.
	ATC	Begins pulling Control Rods at Group 22 CR 34-43 of the movement sheet and 3-OI-85, Control Rod Drive System. **NOTE** Positive or Negative reactivity should normally be made by only one method at a time. [SOER 07-1]. 3-GOI-100-1A [55] **CONTINUE**withdrawing Control Rods at the Unit Supervisor discretion.
Note to NRC Examiner: Student may notch withdrawal or continuous withdrawal Control Rods per 3-OI-85, Control Rod Drive System		

Op Test No.: 15-10 Scenario No. 3 Event No.: 1 Page 2 of5

Event Description: Pull Control Rod for 10-50% Bypass Valve Position

Time	Position	Applicant's Actions or Behavior
	ATC	**3-OI-85,Control Rod Drive System** **6.6 Control Rod Withdrawal** **CAUTIONS** 1) Positioning control rods should be done with the utmost diligence and care. Notch Withdrawing control rods provides the most deliberate controlled method of withdrawing control rods. 2) [NER/C] Never pull control rods except in a deliberate, carefully controlled manner, while closely monitoring the Reactor's response. [INPO SOER-96-001] **NOTES** 1) If the control rod is uncoupled, the four rod display digital read-out and the full core display digital readout and background light will extinguish for the uncoupled rod and the annunciator CONTROL ROD OVERTRAVEL (3-XA-55-5A, Window 14) will seal in. 2) Coupling integrity is satisfied if CRD Notch Override Switch is used and rod is withdrawn to Position 48. 3) The following steps are performed from Panel 3-9-5 unless noted otherwise. Group 22 Pull CR 34-43 to position 04 IAW pull sheet ___ Pull CR 42-35 to position 04 IAW pull sheet ___ Pull CR 42-27 to position 04 IAW pull sheet ___ Pull CR 34-19 to position 04 IAW pull sheet ___ Pull CR 26-19 to position 04 IAW pull sheet ___ Pull CR 18-27 to position 04 IAW pull sheet ___ Pull CR 10-35 to position 06 IAW pull sheet ___ Pull CR 26-51 to position 06 IAW pull sheet ___

Note to NRC Examiner: Event 2 RFP Startup will accompany Event #1 Up Power.

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Event Description: Pull Control Rod for 10-50% Bypass Valve Position

Time	Position	Applicant's Actions or Behavior
	ATC	**3-OI-85,Control Rod Drive System** **6.6.1 Initial Conditions Prior to Withdrawing Control Rods** [1] **REVIEW** Precautions and Limitations in Section 3.7 and Section 3.8. [2] **VERIFY** the following prior to control rod movement: • CRD POWER, 3-HS-85-46 in ON. • Rod Worth Minimizer is operable and LATCHED into thecorrect ROD GROUP when Rod Worth Minimizer isenforcing (not required with no fuel in RPV). **NOTES** 1) Section 6.6.2 is applicable for all control rod withdrawals and addressed as required during or following any control rod withdrawal. 2) If rod insertion to position 00 is required and core thermal power is less than or equal to 10%, entry into LCO 3.1.6 may be required. **6.6.2 Actions Required During and Following Control Rod Withdrawal** [1] **IF** the control rod fails to withdraw, **THEN** Refer to Section 8.15 for additional methods to repositioncontrol rod. [2] **IF** the control rod double notches, or withdraws past its correct/desired position, **THEN** Refer to Section 6.7 for inserting control rod to itscorrect/desired position. [NRC IR 84-02] [3] **IF** at any time while driving a selected rod during the performance of this section, the Control Rod moves more thanone notch from its intended position, **THEN** Refer to 3-AOI-85-7, Mispositioned Control Rod.

Op Test No.: 15-10 Scenario No. 3 Event No.: 1 Page 4 of 5

Event Description: Pull Control Rod for 10-50% Bypass Valve Position

Time	Position	Applicant's Actions or Behavior
	ATC	**3-OI-85,Control Rod Drive System** **6.6.2 Actions Required During and Following Control Rod Withdrawal (continued)** [4] **OBSERVE** the following during control rod repositioning: • Control rod reed switch position indicators (four rod display) agree with the indication on the Full Core Display. • Nuclear Instrumentation responds as control rods move through the core (This ensures control rod is following drive during Control Rod movement.) [5] **ATTEMPT** to minimize automatic RBM Rod Block as follows: **N/A**
	ATC	**6.6.2 Actions Required During and Following Control Rod Withdrawal(continued)** [6] **NA** **6.6.3 Control Rod Notch Withdrawal** [1] **SELECT** the desired control rod by depressing the appropriate CRD ROD SELECT pushbutton, 3-XS-85-40. [2] **OBSERVE** the following for the selected control rod: • CRD ROD SELECT pushbutton is brightly ILLUMINATED • White light on the Full Core Display ILLUMINATED • Rod Out Permit light ILLUMINATE

Op Test No.: 15-10 Scenario No. 3 Event No.: 1 Page 5 of 5

Event Description: Pull Control Rod for 10-50% Bypass Valve Position

Time	Position	Applicant's Actions or Behavior
	ATC	**3-OI-85,Control Rod Drive System** **6.6.3 Control Rod Notch Withdrawal (continued)** [3] **VERIFY** Rod Worth Minimizer is operable and **LATCHED** into the correct ROD GROUP when the Rod Worth Minimizer is enforcing. [4] **PLACE** CRD CONTROL SWITCH, 3-HS-85-48, in ROD OUT NOTCH, and **RELEASE**. [5] **OBSERVE** the control rod settles into the desired position and the ROD SETTLE light extinguishes. [6] **IF** control rod is notch withdrawn to rod notch Position 48, **N/A**
	DRIVER	**When Control Rod 50-35 is pulled to position 04 insert trigger #2 for Stuck Control Rod to start Event #3.**

Note to Examiner: End of Event #1, Event 2 RFP Startup will accompany Event #1 Up Power. When Event #1 and #2 complete request Event #3.

Op Test No.: 15-10 Scenario No. 3 Event No.: 2 Page 1 of 1

Event Description: Placing C RFP in service per 3-OI-3, Reactor Feedwater System

Time	Position	Applicant's Actions or Behavior
	ATC	**3-GOI-100-1A Unit Startup** • Pull CR 34-51 to position 06 IAW pull sheet ___ • Pull CR 50-35 to position 06 IAW pull sheet ___ • Pull CR 50-27 to position 06 IAW pull sheet ___ • Pull CR 34-11 to position 06 IAW pull sheet ___ • Pull CR 26-11 to position 06 IAW pull sheet ___ • Pull CR 10-27 to position 06 IAW pull sheet ___ **50-35 will not move past 04 and begin event #3 on pg 7.**
	BOP	**NOTE** Positive or Negative reactivity should normally be made by only one method at a time. [SOER 07-1]. **3-GOI-100-1A Unit Startup** [71] **WHEN** Reactor pressure reaches approximately 950 psig and the first bypass valve 10% to 50% open, **THEN** [71.1] **VERIFY** the first RFP is in service maintaining Reactor water level. **2-OI-3 Reactor FeedwaterSystemSection 5.5** [12] **ESTABLISH** flow to the vessel and maintain level as follows: • **SLOWLY** Raise speed of RFPT using RFPT 3C SPEED CONT RAISE/LOWER switch, 3-HS-46-10A. [13] **WHEN** sufficient flow is established to maintain RFP MIN FLOW VALVE in the CLOSED position (≈ 2 x 106 lbm/hr), **THEN** • **PLACE** RFP 3C MIN FLOW VALVE, 3-HS-3-6, in AUTO. [14] **ADJUST** the following as necessary to control RFPT speed and maintain Reactor water level: • **SLOWLY** Raise speed of RFPT using RFPT 3C SPEED CONT RAISE/LOWER switch, 3-HS-46-10A. **BOP control Reactor Water Level with CRD, RWCU Blowdown and RFPT 3C Speed Controller.**

Note to Examiner: End of Event #2, When Event #1 and #2 complete request Event #3.

Op Test No.: 15-10 Scenario No. 3 Event No.: 3 Page 1 of 6

Event Description: Control Rod 50-35 Stuck

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When Control Rod 50-35 is pulled to position 04 insert trigger #2 for Stuck Control Rod.**
	ATC	**3-OI-85, Control Rod Drive System** **8.15 Control Rod Difficult to Withdraw** [1] VERIFY the control rod will not notch out. Refer to Section 6.6. Determines Control Rod 50-35 will not notch out [2] REVIEW all Precautions and Limitations in Section 3.0. Reviews P&L **CAUTION** **[NER/C] Never pull control rods except in a deliberate, carefully controlled manner, while closely monitoring the Reactor's response. [INPO SOER-96-001]** [3] [NRC/C] **IF** RWM is enforcing, **THEN** VERIFY RWM is operable and LATCHED in to the correct ROD GROUP. [NRC-IR 84-02]

Op Test No.: 15-10 Scenario No. 3 Event No.: 3 Page 2 of 6

Event Description: Control Rod 50-35 Stuck

Time	Position	Applicant's Actions or Behavior
	ATC	**8.15 Control Rod Difficult to Withdraw** **NOTES** 1) Steps 8.15[4] through 8.15[6] should be used when the control rod is at Position 00 while Step 8.15[7] should be used when the control rod is at or between Positions 02 and 46. 2) Double clutching of a control rod at Position 00 will place the rod at the "overtravel in" stop, independent of the RMCS timer, allowing maximum available time to establish over-piston pressure required to maintain the collet open and prevent the collet fingers from engaging the 00 notch. 3) Step 8.15[4] may be repeated as necessary until it is determined that this method will not free the control rod. [4] ,[5] **Step [4] [5] [6] are N/A due to CR 50-35 is at position 06** [7] IF the control rod is at or between Positions 02 and 46, THEN PERFORM the following to withdraw the control rod using elevated drive water pressure: [7.1] RAISE CRD DRIVE WTR HDR DP, 3-PDI-85-17A, to 300 psid, using CRD DRIVE WATER PRESS CONTROL VLV, 3-HS-85-23A. [7.2] ATTEMPT to withdraw the control rod using CRD CONTROL SWITCH, 3-HS-85-48. [7.3] IF the control rod successfully notches out, THEN LOWER CRD DRIVE WTR HDR DP, 3-PDI-85-17A, to between 250 psid and 270 psid, using CRD DRIVE WATER PRESS CONTROL VLV, 3-HS-85-23A, and PROCEED to Section 6.6.

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Event Description: Control Rod 50-35 Stuck

Time	Position	Applicant's Actions or Behavior
	ATC	**CAUTION** To prevent a drive from double notching in a high rod worth region and to reduce exposure of drive seals and directional control valves to excessive pressures, the CRD DRIVE WTR HDR DP should be returned to between 250 psid and 270 psid as soon as possible. [7.4] IF the control rod failed to notch out, THEN RAISE CRD DRIVE WTR HDR DP, 3-PDI-85-17A, to 350 psid, using CRD DRIVE WATER PRESS CONTROL VLV, 3-HS-85-23A. [7.5] ATTEMPT to withdraw the control rod using CRD CONTROL SWITCH, 3-HS-85-48. [7.6] LOWER CRD DRIVE WTR HDR DP, 3-PDI-85-17A, to between 250 psid and 270 psid, using CRD DRIVE WATER PRESS CONTROL VLV, 3-HS-85-23A. [7.7] IF the control rod has failed to notch out using elevated CRD DRIVE WTR HDR DP, THEN CONTACT Reactor Engineer and NOTIFY Unit Supervisor for further instructions. **Raises Drive Water Pressure and CR does not move.**
	SRO	**Directs using continuous insert.**

Op Test No.: 15-10 Scenario No. 3 Event No.: 3 Page 4 of 6

Event Description: Control Rod 50-35 Stuck

Time	Position	Applicant's Actions or Behavior
	ATC	**6.7.3 Continuous Insertion of Control Rod** **[1] VERIFY Section 6.7.1 has been performed.** **[2] SELECT the desired control rod by depressing the appropriate CRD ROD SELECT pushbutton, 3-XS-85-40.** **[3] OBSERVE the following for the selected control rod:** **CRD ROD SELECT pushbutton is brightly ILLUMINATED** **White light on the Full Core Display ILLUMINATED** **[4] PLACE and HOLD CRD CONTROL SWITCH, 3-HS-85-48, in ROD IN.** **[5] WHEN control rod notch reaches the even rod notch position prior to the desired final control rod notch position, THEN RELEASE CRD CONTROL SWITCH, 3-HS-85-48.** **[6] OBSERVE the control rod settles into desired position and the ROD SETTLE light extinguishes.** **Attempts to use continuous insert and it does not work.**
	SRO	**Directs proceeding to section 8.16, Control Rod Difficult to insert.**
	DRIVER	**Following notification to Rx Engineering call US and state as Shift Manager; "Attempt to insert control rod to position 00"**

Op Test No.: 15-10 Scenario No. 3 Event No.: 3 Page 5 of 6

Event Description: Control Rod 50-35 Stuck

Time	Position	Applicant's Actions or Behavior
	ATC	**8.16 Control Rod Difficult to Insert** [1] VERIFY the control rod will not notch in, in accordance with Section 6.7 or Section 8.19. [2] REVIEW all Precautions and Limitations in Section 3.0. [3] [NRC/C] IF RWM is enforcing, THEN VERIFY RWM operable and LATCHED in to the correct ROD GROUP. [NRC IR 84-02] [4] CHECK CRD SYSTEM FLOW is between 40 gpm and 65 gpm, indicated by 3-FIC-85-11. [5] CHECK CRD DRIVE WTR HDR DP, 3-PDI-85-17A is between 250 psid and 270 psid. [6] IF CRD SYSTEM FLOW or CRD DRIVE WTR HDR DP had to be adjusted, THEN PROCEED to Section 6.7. **Note the following may or may not be attempted.** [7] IF control rod motion is observed, but the CRD fails to notch-in with normal operating drive water pressure, THEN: [7.1] NOTIFY Reactor Engineer to determine what parameters should be recorded for further evaluation. [7.2] RAISE CRD DRIVE WTR HDR DP, 3-PDI-85-17A, not to exceed 300 psid, using CRD DRIVE WATER PRESS CONTROL VLV, 3-HS-85-23A. [7.3] INSERT control rod as directed in Section 6.7. [7.4] LOWER CRD DRIVE WTR HDR DP, 3-PDI-85-17A, to between 250 psid and 270 psid using CRD DRIVE WATER PRESS CONTROL VLV, 3-HS-85-23A. **Raises Drive Water Pressure and CR does not move.**

Op Test No.: 15-10 Scenario No. 3 Event No.: 3 Page 6 of 6

Event Description: Control Rod 50-35 Stuck

Time	Position	Applicant's Actions or Behavior
	ATC	**Steps [8], [9], [10], [11] are N/A** [12] IF the control rod still fails to notch in, THEN: [12.1] NOTIFY the Unit Supervisor and Reactor Engineer to Refer to section Stuck Control Rod-Test to distinguish a Hydraulic Problem from Mechanical Binding, 0-TI-20, and RETURN to Section 8.16. [12.2] REQUEST the Unit Supervisor and Reactor Engineer to evaluate the control rod operability. Refer to Tech Spec 3.1.3
	SRO TS	**3.1.3 Control Rod OPERABILITY** **LCO 3.1.3** Each control rod shall be OPERABLE. **APPLICABILITY:** MODES 1 and 2. **ACTIONS** ----------**NOTE**---------- Separate Condition entry is allowed for each control rod. --- **CONDITION A** ----------**NOTE**---------- Rod worth minimizer (RWM) may be bypassed as allowed by LCO 3.3.2.1, "Control Rod Block Instrumentation," if required, to allow continued operation. --- **A.1** Verify stuck control rod separation criteria are met.- **immediately** AND **A.2** Disarm the associated control rod drive (CRD). **-2 hours** AND **A.3** Perform SR 3.1.3.3 for each withdrawn OPERABLE control rod. **–N/A** AND **A.4** Perform SR 3.1.1.1. **-72 hours** **Note: SRO may conservatively enter LCO 3.1.3 or wait for results of 0-TI-20 evaluation. CR 50-35 will remain at position 04 after Rx Scram.**
Note to NRC Examiner: End of Event #3. Request Event #4.		

Op Test No.: 15-10 Scenario No. 3 Event No.: 4 Page 1 of 1

Event Description: Seal Steam Regulator Failure

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When requested by NRC Chief Examiner Fire Trigger #3 for Seal Steam Regulator Failure.**
	BOP	**3-ARP-9-6B window 21 STEAM TO STEAM SEAL REG PRESS LOW** **Automatic Actions:** None **Operator Actions:** A. CHECK steam seal header pressure, 3-PI-1-148, Panel 2-9-7. B. VERIFY proper valve alignment on Panel 3-9-7. C. IF pressure is low, THEN OPEN steam seal bypass valve 3-FCV-1-145. D. DISPATCH personnel to check 3-PIC-1-147 (El 617' TurbBldg). E. CHECK condenser vacuum on 3-P/TR-2-2 (Panel 3-9-6) and turbine vibration on 3-XR-47-15 (Panel 3-9-7) normal. **BOP Operator will observe Steam Seal Header Pressure lowering and OPENS Steam Seal Bypass Valve 3-FCV-1-145 and returns pressure to normal.**
	DRIVER	**When dispatched state as AUO "3-PIC-147 Steam Seal Controller doesn't appear to be working properly"**
Note to Examiner: **End of Event #4, when ready proceed to Event #5.**		

Op Test No.: 15-10 Scenario No. 3 Event No.: 5 Page 1 of 2

Event Description: IRM H fails Downscale

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When requested by NRC, insert trigger # 5 for IRM H Failing Downscale.**
	ATC	**3-ARP-9-5A window 19 IRM DOWNSCALE** **AUTOMATIC ACTION:** Rod withdrawal block if IRM range switch is not in position 1 (one) or REACTOR MODE SWITCH in RUN. **OPERATOR ACTION:** A. **VALIDATE** alarm by multiple indications. B. **SELECT** next lower range on IRM range switch. C. **IF** alarm does not reset with use of Range switch, **THEN BYPASS** initiating channel. **REFER TO** 3-OI-92A. D. **NOTIFY** Reactor Engineer. E. **REFER TO** Tech Spec Tables 3.3.1.1-1, TRM Tables 3.3.4-1 and 3.3.5-1. **ATC recognizes that IRM H fails downscale and reports to SRO. Calls RE to notify them of IRM H condition.**
	SRO	Directs ATC to bypass IRM H per 3-OI-92A and calls IMs to investigate IRM H failure.
	ATC	**3-OI-92A, Intermediate Range Monitor** **CAUTION** [QA/QC] NPG-SPP 10.4 requires approval of the Plant Manager or his designee prior to any planned operation with IRMs bypassed unless bypassing is specifically allowed within approved procedures.

Op Test No.: 15-10 Scenario No. 3 Event No.: 5 Page 2 of 2

Event Description: IRM H fails Downscale

Time	Position	Applicant's Actions or Behavior
	DRIVER	**As RE, respond to IRM H information.**
	ATC	**2-OI-92A, Intermediate Range Monitor** **NOTES** 1) It is not necessary for a bypassed IRM channel to have its detector inserted into the core. 2) Only one IRM in each trip system can be bypassed at a time. 3) All operations are performed on Panel 3-9-5 unless specifically stated otherwise. [1] **REVIEW** all precautions and limitations in Section 3.0. [2] **PLACE** the appropriate IRM Bypass selector switch to the **BYPASS** position: • IRM BYPASS, 3-HS-92-7A/S4A • IRM BYPASS, 3-HS-92-7A/S4B [3] **CHECK** that the Bypassed light is illuminated. **Places IRM BYPASS Switch to IRM H and verifies bypass light is illuminated.**

Note to Examiner: Tech spec not required, only a tracking LCO. End of Event #5, request event #6.

Op Test No.: 15-10 Scenario No. 3 Event No.: 6 Page 1 of 2

Event Description: SLC PUMP A OIL LEVEL LOW.

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When requested by NRC Examiner call Unit Supervisor and report following as RB AUO; "SLC PUMP A Oil Level sight glass is indicating empty with oil observed on the floor."**
	SRO	**Updates the crew of the status of SLC PUMP A.** **Calls work control to dispatch operator to rack out SLC Pump Breaker and calls for a work order to repair SLC Pump A.** **REFERs TO Tech Spec 3.1.7.**
	SRO	**Tech Spec 3.1 REACTIVITY CONTROL SYSTEMS** **3.1.7 Standby Liquid Control (SLC) System** **LCO 3.1.7** Two SLC subsystems shall be OPERABLE. **APPLICABILITY:** MODES 1, 2, and 3. **ACTIONS** **CONDITION** **A.** One SLC subsystem inoperable. **A.1** Restore SLC subsystem to OPERABLE status. 7 days
Note to Examiner: **End of Event #6, when ready request Event #7.**		

Op Test No.: 15-10 Scenario No. 3 Event No.: 7 Page 1 of 1

Event Description: FCV-2-29, Condensate Short Cycle Drifting Closed

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When requested by NRC Chief Examiner fire trigger #7 (5 min ramp) for FCV-2-29, Condensate Short Cycle Drifting Closed**
	ATC	**3-ARP-9-6B, CONDENSATE DEMIN ABNORMAL** **AUTOMATIC ACTIONS: NONE** **OPERATOR ACTIONS:** A. **CHECK** system flow conductivity, and system DP, on Panel 3-9-6 for abnormalities. **ATC Recognizes that FCV-2-29, Condensate Short Cycle Drifting closed and takes manual control per OPDP-1, Conduct of Operations and restores parameters to normal.** **OPDP-1, Conduct of Operations** **3.3.5 Manual Control of Automatic Systems** A. If an automatic control or an automatic action is confirmed to have malfunctioned, take prompt actions to place that control in manual or to accomplish the desired function. Establishment of manual level control following automatic FCV failure to control level or manual start of an EDG that failed to auto start.
	DRIVER	**If dispatched report that 3-FCV-2-29 is indicating closed locally and no air leaks noted.**
Note to Examiner: End of Event #7, request Event #8		

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 1 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	DRIVER	**Fire Trigger #8, Steam Leak in Reactor Building when requested by NRC Examiner.**
Note to NRC Examiner: Numerous alarms are received when Steam Leak Occurs, 3-3A-W22, RX BLDG AREA RADIATION HIGH, 3-3A-W4, RX BLDG, TURB BLDG, RF ZONE EXH RADIATION HIGH, 3-3D-W24, MAIN STEAM LINE LEAK DETECTION TEMP HIGH,3-3A-W7, MAIN STEAM LINE RADIATION HIGH, 3-9-3A-W27 MAIN STEAM LINE RADIATION HIGH HIGH		
	BOP	**3-9-3A-W22 RX BLDG AREA RADIOATION HIGH** **Automatic Action:** None A. **DETERMINE** area with high radiation level on Panel 3-9-11. (Alarm on Panel 3-9-11 will automatically reset if radiation level lowers below setpoint.) B. **IF** the alarm is from the HPCI Room while Flow testing is being performed, **THEN REQUEST** personnel at the HPCI Quad to validate conditions. C. **NOTIFY** RAD PRO. D. **IF** the TSC is NOT manned and a "VALID" radiological condition exists., **THEN USE** public address system to evacuate area where high radiological conditions exist E. **Step E is N/A** F. **MONITOR** other parameters providing input to this annunciator frequently as these parameters will be masked from alarming while this alarm is sealed in.
Note to NRC Examiner: BOP Operator will evacuate the affected areas and begin looking for other indication of source.		

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 2 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	BOP	**3-9-3A-W22 RX BLDG AREA RADIATION HIGH(continued)** G. **IF** a CREV initiation is received, **THEN** 1. **VERIFY** CREV A(B) Flow is ≥ 2700 CFM, and ≤ 3300 CFM as indicated on 0-FI-031-7214(7213) within 5 hours of the CREV initiation. [BFPER 03-017922] 2. **IF** CREV A(B) Flow is NOT ≥ 2700 CFM, and ≤ 3300 CFM as indicated on 0-FI-031-7214(7213) **THEN PERFORM** the following: (Otherwise N/A) [BFPER 03-017922] a. **STOP** the operating CREV per 0-OI-31. b. **START** the standby CREV per 0-OI-31. H. **IF** alarm is due to malfunction, **THEN REFER** TO 0-OI-55. I. **ENTER** 3-EOI-3 Flowchart. J. **REFER TO** 3-AOI-79-1 or 3-A01-79-2 if applicable.
Note to NRC Examiner: SRO Enters EOI-3, Secondary Containment Control, continued on page 26.		
	DRIVER	**If dispatched: State that the Main Steam Tunnel Fan is ON.** **If dispatched to investigate, report that there is steam in the vicinity of the Steam Vault Door. RP will not allow me to proceed any further.**

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 3 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	BOP	**3-9-3A-W4 RX BLDG, TURB BLDG, RF ZONE EXH RADIATION HIGH** **Automatic Action:** None A. **REQUEST** Unit 1 Operator assist in determining source of alarm. B. **IF** high activity is confirmed, **THEN NOTIFY** RAD PRO. C. **REQUEST** Chemistry perform radiochemical analysis to determine source. D. **IF** Dry Cask storage activities are in progress, **THEN NOTIFY** CASK Supervisor. E. **IF** the TSC is **NOT** manned, **THEN EVACUATE** personnel from affected areas. F. **Step is N/A** G. **REFER TO** 3-AOI-79-1 or 3-AOI-79-2 if applicable. H. **MONITOR** release rate for ODCM compliance. **IF** ODCM limits are exceeded, **THEN REFER TO** EPIP-1. I. **IF** Air Particulate Monitor Controller is operable, **THEN REFER TO** 3-OI-90, to reset alarms.

Note to NRC Examiner: BOP Operator will evacuate the affected areas. SRO calls Chemistry for analysis and directs Monitoring release rate for ODCM compliance.

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Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	BOP	**3-3D-W24, MAIN STEAM LINE LEAK DETECTION TEMP HIGH** **Automatic Actions:** Impending MSIV Isolation at 189°F area temp. **OperatorAction:** **NOTES** 1) 3-LI-64-159A, SUPPR POOL WATER LEVEL may give erroneous indications due to High Temperatures experienced by the Instrument during a Main Steam high energy line break in Secondary Containment. 2) The following Steps may be performed in any order or concurrently as necessary. A. **CHECK** the following temperature indications: • MN STEAM TUNNEL TEMP temperature indicator, 3-TIS-1-60Aon Panel 3-9-3. • Temperature Switches 3-TS-1-60B, -60C, or -60D window(s) on Panel 3-9-21. • RWCU Piping in the Main Steam Tunnel temperature indicators,3-TIS-69-834A(B)(C)(D), Auxiliary Instrument Room Panels 9-83(84)(85)(86) OR ICS 'HPTURB' mimic. B. **CHECK** the following flow indications: • MAIN STEAM LINE FLOW A(B)(C)(D), 3-FI-46-1(2)(3)(4) on Panel 3-9-5. • RFW FLOW LINE A(B), 3-FI-3-78A(78B) on Panel 3-9-5. • RFP 3A(3B)3C) flow indicators, 3-FI-3-20(13)(6) on Panel 3-9-6. C. **IF** RCIC is **NOT** in service AND 3-FI-71-1A(B), RCIC STEAM FLOW indicates flow, **THEN ISOLATE** RCIC and VERIFY Temperatures lowering.

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 5 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	BOP	**3-3D-W24, MAIN STEAM LINE LEAK DETECTION TEMP HIGH (continued)** D. **CHECK** for elevated RAD Levels on the following Instruments: • 3-RM-90-20, CRD-HCU West. • 3-RM-90-29, Suppression Pool. E. **IF** HPCI is injecting with elevated Suppression Pool Temperature,**THEN CONSIDER** securing HPCI to determine if it is the source of the leak. F. **IF** Rx Bldg main steam tunnel temperature is above 170°F on3-TIS-1-60A on Panel 3-9-3, **THEN PERFORM** the following: 1. **ENTER** 3-EOI-3 Flowchart. 2. **VERIFY** Rx Zone fans, 3-HS-64-11A at Panel 3-9-25, in fast speed. 3. **VERIFY** Steam Vault Exhaust Booster Fan in service. **REFER TO** 3-OI-30B. G. **IF** turbine building main steam tunnel temperature is above 160°F on 3-TS-1-60B, -60C, or -60D on Panel 3-9-21, **THEN DISPATCH** personnel to 480V AC Turb Bldg Vent Bd 3A (TB, El 617') to verify TB fans and the Mechanical Spaces Exhaust Fan running. **Note to NRC Examiner:Informs SRO that Alarm is EOI-3 Entry Condition and SRO Enters EOI-3.**
	DRIVER	**When Dispatched; Report that the TB fans and Mechanical Space Exhaust Fan are running.** **If requested report that the Main Steam Tunnel Booster Fan is ON.**

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 6 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	BOP	**3-3A-W7, MAIN STEAM LINE RADIATION HIGH** **Automatic Actions:** none **Operator Actions:** A. For High MSL rad alarms due to recent Noble Metals applications, industry experience indicates that the only corrective action is continued reactor operation. The normal build up of iron oxide crud on the fuel surface and system cleanup by the Reactor Water Cleanup system will reduce the amount of N16 and N13 released from the core, which will decrease main steam line radiation over time. B. **CHECK** following radiation recorders: 1. MAIN STEAM LINE RADIATION, 3-RR-90-135 on Panel 3-9-2. 2. OFFGAS PRETREATMENT RADIATION, 3-RR-90-157 on Panel 3-9-2. 3. OFFGAS RADIATION, 3-RR-90-160 on Panel 3-9-2. 4. OFFGAS POST-TREATMENT RADIATION, 3-RR-90-265 on Panel 3-9-2 5. STACK GAS/CONT RM RADIATION FROM STACK GAS, 0-RR-90-147 onPanel 1-9-2 C. **NOTIFY** Radiation Protection. D. [NRC/C] **REQUEST** Chemistry perform radiochemical analysis of primary coolant. [NCO 940247001] E. **IF** off-gas pretreatment radiation, 3-RR-90-157, has risen significantly (30% above previous hour average), **THEN REQUEST** Chemistry perform analysis of pretreatment off-gas.

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 7 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	BOP	**3-3A-W7, MAIN STEAM LINE RADIATION HIGH(continued)** F. **SHUTDOWN** Hydrogen Water Chemistry. **REFER TO** 3-OI-4. G. **REFER** TO 0-SI-4.8.B.1.A.1 for ODCM compliance and to determine if power level reduction is required. H. [NRC/C] **REDUCE** reactor power to maintain off-gas radiation within ODCM limits as directed by Unit Supervisor. [NCO 940247001] I. **IF** ODCM limits are exceeded, **THEN REFER TO** EPIP-1. **Note to NRC Examiner: BOP Reports Rx Bldg main steam tunnel temperature 3-TIS-1-60A on Panel 3-9-3 and MAIN STEAM LINE RADIATION, 3-RR-90-135 on Panel 3-9-2 are rising and MS Tunnel Booster Fan is OFF.**
	BOP	**3-9-3A-W27 MAIN STEAM LINE RADIATION HIGH HIGH** **Automatic Action:** A. Mechanical vacuum pumps trip. B. Vacuum pump suction valves 3-FCV-66-36 and 3-FCV-66-40 close. **Operator Action:** A. **VERIFY** alarm on 3-RM-90-136 thru 137 on Panel 3-9-10. B. **CONFIRM** main steam line radiation level on recorder 3-RR-90 135, Panel 3-9-2.

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 8 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	BOP	**3-9-3A-W27 MAIN STEAM LINE RADIATION HIGH HIGH (continued)** C. **IF** alarm is **VALID** and scram has **NOT** occurred, **THEN PERFORM** the following: **IF** core flow is above 60%, **THEN** 1. **LOWER** core flow to between 50-60%. 2. **MANUALLY SCRAM** the Reactor. 3. **REFER TO** 3-AOI-100-1. D. **IF** SLC injection per RC/Q of EOI-1 is **NOT** required, **THEN VERIFY** the MSIVs closed. E. **NOTIFY** RAD PRO. F. **VERIFY** actions OF 3-ARP-9-3A window 7 have been completed. G. **IF** Technical Specifications limits are exceeded, **THEN REFER TO** EPIP-1.
	SRO	• **Directs ATC to manually scram the reactor and enter 3-AOI 100-1.** • **Directs BOP operator to evacuate (Reactor and Turbine Buildings) and to close (MSIVs and MSL Drain Valves).** • **Enters EOI-1, RPV Control and EOI-3 Secondary Containment Control**
	ATC	**Inserts a manual reactor scram. ATC performs immediate and subsequent actions of 3-AOI-100-1, Reactor Scram. Provides scram report to US.**
	BOP	**Evacuates Reactor Building and Turbine Building and attempts to close MSIVs and drains but B MSL OUTBD &INBD MSIV Fails to isolate. BOP reports this information to US.**
	SRO	**Directs offsite release rates monitored in accordance with SI-4.8.B.1.a.1 for EOI-4 information**

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 9 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**Enters EOI-3 on Any Secondary Cntmt Area Temp above Max Normal value of Table – SC-1 (Steam tunnel (RB) XA-55-3D-24, alarmed)** **Override SC-1** **IF** / **THEN** Rx Zone ventilation exh radiation lvl is above 72 mR/hr — **NO ACTION REQUIRED** Refuel Zone ventilation exh radiation lvl is above 72 mR/hr — **NO ACTION REQUIRED** Rx Zone ventilation is isolated AND Rx Zone ventilation exh radiation lvl is below 72 mR/hr — **NO ACTION REQUIRED** Refuel Zone ventilation is isolated AND Refuel Zone ventilation exh radiation lvl is below 72 mR/hr — **NO ACTION REQUIRED** **EOI-3 SC Temperature** **SC-2** **Caution 1** Ambient temp may affect RPV water level indication and trend **SC/T-1** **IF** / **THEN** **IF** Rx Zone or Refuel Zone ventilation exh radiation lvl is below 72 mR/hr — **NO ACTION REQUIRED**

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 10 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td colspan="3">Note to NRC Examiner: Override is applicable when Reactor and Refueling Zone Radiation Levels reach 72 mr/hr.</td></tr>
<tr><td></td><td>SRO</td><td>Override SC-1

<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>Rx Zone ventilation exh radiation lvl is above 72 mR/hr</td><td>ACTION REQUIRED</td></tr>
<tr><td>Refuel Zone ventilation exh radiation lvl is above 72 mR/hr</td><td>ACTION REQUIRED</td></tr>
<tr><td>Rx Zone ventilation is isolated AND Rx Zone ventilation exh radiation lvl is below 72 mR/hr</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>Refuel Zone ventilation is isolated AND Refuel Zone ventilation exh radiation lvl is below 72 mR/hr</td><td>NO ACTION REQUIRED</td></tr>
</table>

SRO: Directs BOP Operator to Verify Group 6 Isolation and ensure SBGT has Auto Initiated</td></tr>
<tr><td></td><td>BOP</td><td>BOP Operator verifies Reactor Zone and Refueling Zone Fans are secure and dampers closed.

BOP Verifies SBGT A, B & C are in service.</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 11 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**EOI-3 SC Temperature (continued)** **SC/T-2** **WHEN** ANY area temperature exceeds its Max Normal temperature (Table SC-1)

Table SC-1
Secondary Cntmt Area Temp

Area	Panel 9-3 Alarm Window (unless noted)	Panel 9-21 Temp Element (unless noted)	Max Normal Value °F	Max Safe Value °F	Potential Isolation Sources
RHR sys I pumps	XA-55-3E-4	74-95A	Alarmed	155	FCV-74-47, 48
RHR sys II pumps	XA-55-3E-4	74-95B	Alarmed	215	FCV-74-47, 48
HPCI room	XA-55-3F-10	73-55A	Alarmed	270	FCV-73-2, 3, 44, 81
CS sys I pumps RCIC room	XA-55-3D-10	71-41A	Alarmed	190	FCV-71-2, 3, 39
Top of torus	XA-55-3D-10 XA-55-3F-10 XA-55-3E-4	71-41B, C, D 73-55B, C, D 74-95G, H	Alarmed Alarmed Alarmed	250 240 240	FCV-71, 2, 3 FCV-73-2, 3, 81 FCV-74-47, 48
Steam tunnel (RB)	XA-55-3D-24	1-60A (Panel 9-3)	Alarmed	315	MSIVs FCV-71-2, 3, FCV-69-1, 2, 12
DW access	XA-55-3E-4	74-95E	Alarmed	175	FCV-74-47, 48
RB el 565 W (RWCU pipe trench)	XA-55-5B-32 (Panel 9-5) XA-55-5B-33 (Panel 9-5)	69-835A, B, C, D (Aux Inst room)	Alarmed	175	FCV-69-1, 2, 12
RWCU hx room	XA-55-3D-17	69-29F, G, H	Alarmed	220	FCV-69-1, 2, 12
RWCU pump A	XA-55-3D-17	69-29D	Alarmed	215	FCV-69-1, 2, 12
RWCU pump B	XA-55-3D-17	69-29E	Alarmed	215	FCV-69-1, 2, 12
RB el 593	XA-55-3E-4	74-95C, D	Alarmed	200	FCV-74-47, 48
RB el 621	XA-55-3E-4	74-95F	Alarmed	155	FCV-43-13, 14

Note to NRC Examiner: **Continue to step SC-3 on page 30 if entered due to Area Temperature**

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 12 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**EOI-3 SC Radiation** **SC/R-1** **WHEN** ANY area radiation level exceeds its Max Normal radiation level (Table SC-2

Table SC-2
Secondary Cntmt Area Radiation

Area	Applicable Radiation Indicators	Max Normal Value mR/hr	Max Safe Value mR/hr	Potential Isolation Sources
RHR sys I pumps	90-25A	Alarmed	1000	FCV-74-47, 48
RHR sys II pumps	90-28A	Alarmed	1000	FCV-74-47, 48
HPCI room	90-24A	Alarmed	1000	FCV-73-2, 3, 44, 81
CS sys I pumps RCIC room	90-26A	Alarmed	1000	FCV-71-2, 3, 39
CS sys II pumps	90-27A	Alarmed	1000	None
Top of torus General area	90-29A	Alarmed	1000	FCV-73-2, 3, 81 FCV-74-47, 48 FCV-71-2, 3
RB el 565 W	90-20A	Alarmed	1000	FCV-69-1, 2, 12 SDV vents & drains
RB el 565 E	90-21A	Alarmed	1000	SDV vents & drains
RB el 565 NE	90-23A	Alarmed	1000	None
TIP room	90-22A	Alarmed	100,000	TIP ball valve
RB el 593	90-13A, 14A	Alarmed	1000	FCV-74-47, 48
RB el 621	90-9A	Alarmed	1000	FCV-43-13, 14
Recirc MG sets	90-4A	Alarmed	1000	None
Refuel floor	90-1A, 2A 3A	Alarmed	1000	None

Note to NRC Examiner: Continue to step SC-3 on page 30 once first Area Radiation Max normal is exceeded.

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 13 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**EOI-3 SC Temperature, Radiation or Water Level** **SC-3** **Note 3** Tables SC-1 and SC-2 contain information that may be used to determine if a primary system is discharging into Secondary Cntmt (emergency depressurization will reduce discharge) **ISOLATE** all systems that are discharging into the area **EXCEPT** systems required: For damage control **OR** To be operated by EOIs — **ACTION REQUIRED** **Critical Task #1:** **With the reactor at power and with a primary system discharging into the secondary containment, manually scram the reactor before any area exceeds the maximum safe operating value.** • **SRO Directs ATC to manually scram the reactor and enter 3-AOI 100-1.** • **Directs BOP operator to evacuate (Reactor and Turbine Buildings) and to close (MSIVs and MSL Drain Valves).** • **Enters EOI-1, RPV Control** • **Go to Page 34 for EOI-1 Actions** **Critical Task #1 Failure Criteria:** **The operating crew fails to insert a manual reactor scram prior to 1st Area Radiation Levels reaching the Max Safe Value.**

Critical Task #1 Start Time:_____ Critical Task #1 Stop Time: _____

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 14 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	ATC	**Inserts a manual reactor scram. ATC performs immediate and subsequent actions of3-AOI-100-1, Reactor Scram. Provides scram report to US.**
	BOP	**Evacuates Reactor Building and Turbine Building and attempts to close MSIVs and drains but B MSL OUTBD &INBD MSIV Fails to isolate. BOP reports this information to US.**
	SRO	**Directs offsite release rates monitored in accordance with SI-4.8.B.1.a.1 for EOI-4 information**
	SRO	**EOI-3 SC Water Level** **STOP SIGN SC/L-1** **WHEN** ANY floor drain sump or area water level exceeds its Max Normal level (Table SC-3)

Table SC-3
Secondary Cntmt Water Level

Water Level	Max Normal Value in.	Max Safe Value in.
Floor drain sumps	66	None
Areas	2	20

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 15 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**EOI-3 SFP Level** **EOI-3 SFP Temperature** **SF/T-1** **MAINTAIN** SFP temperature below 125°F using available SFP cooling — **NO ACTION REQUIRED** **SF/T-2** **WHEN** SFP temperature CANNOT be maintained below 150°F **EOI-3 SFP Level** **SF/L-1** **RESTORE** and **MAINTAIN** SFP level above 662 ft 8 in. – **ADDRESSED** — **NO ACTION REQUIRED** **SF/L-2** **WHEN** SFP level CANNOT be restored and maintained above 662 ft 8

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 16 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
		EOI-3(continued) **RPV Depressurization** **SC-7** **WHEN** a primary system is discharging into secondary **SC-8** **BEFORE** ANY SC parameter reaches its MAX Safe value (Tables SC-1, SC-2, SC-3) Enter EOI-1**–ACTION REQUIRED** — **ACTION REQUIRED**
	SRO	**SRO Directs ATC to manually scram the reactor and enter 3-AOI-100-1.** **SRO Directs BOP operator to evacuate (Reactor and Turbine Buildings) and to close (MSIVs and MSL Drain Valves).** **Enters EOI-1, RPV Control**
Note to NRC Examiner: Proceed to page 35 for EOI-1, RPV Control actions.		

Critical Task #2 Start Time:_____ Critical Task #2 Stop Time: _____

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 17 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	ATC	**EOI-3 (continued)** **Depresses the Manual Scram Pushbuttons and verifies all rods are fully inserted.**
	BOP	**Picks up the pager and announce to Evacuate the Reactor and Turbine Buildings.** **Closes MSIVs and reports that B MSL Failed to Isolate.**
	SRO	**SC-9** **WHEN** ANY SC parameter exceeds its Max Safe value in 2 or more areas for the same parameter(Tables SC-1, SC-2, SC-3) containment
	SRO	**SC-10** **EMERGENCY DEPRESSURIZATION IS REQUIRED** **SRO ENTERS 3-C-2 EMERGENCY RPV DEPRESSURIZATION**
Note to NRC Examiner: ED will be required on 2 Max Safe Area RADS or Area Temps. Proceed to Page 47 for 3-C-2 EMERGENCY DEPRESSURIZATION STEPS.		

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 18 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**Enters EOI-1 from EOI-3** **RC-1** Verifies RX scram — **ACTION REQUIRED** **Receives SCRAM Report from ATC Operator.** **RC-2** **Note 1** The reactor will remain subcritical without boron under all conditions when: Any 19 control rods are at notch **02** with all other control rods fully inserted **OR** All control rods except one are inserted to or beyond position **00** **OR** Determined by Reactor Engineering (0-TI-394) **IF** / **THEN** It has NOT been determined that the reactor will remain subcritical without boron under all conditions — **NO ACTION REQUIRED** RPV water level CANNOT be determined — **NO ACTION REQUIRED** PC water lvl and drywell press CANNOT be maintained in the safe area of Curve 7 — **NO ACTION REQUIRED** **RC-3** **Caution 1** Ambient temp may affect RPV water level indication and trend

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 19 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
EOI-1(continued)
RC/L-1
<table>
<tr><td colspan="2">ENSURE each as required</td></tr>
<tr><td>PCIS Isolations (Group 1, 2 and 3)</td><td>ACTION REQUIRED</td></tr>
<tr><td>ECCS</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>RCIC</td><td>ACTION REQUIRED</td></tr>
</table>
Override RC/L-2
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>RPV water lvl can be restored and maintained above -162 in.
AND
The ADS timer has initiated</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>Loss of available injection systems is anticipated
OR
Raising RPV water lvl above +51 in. will facilitate use of shutdown cooling, steam-driven injection systems, or Alternate Injection Subsystems (Table L-2)</td><td>NO ACTION REQUIRED</td></tr>
</table>
RC/L-3
<table>
<tr><td colspan="2">RESTORE and MAINTAIN RPV water lvl between +2 in. and +51 in. with ANY Preferred Injection Systems (Table L-1)-
ACTION REQUIRED</td></tr>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>RPV water lvl cannot be restored and maintained between +2 in. and +51 in.</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>RPV water lvl cannot be restored and maintained above -162 in.</td><td>NO ACTION REQUIRED</td></tr>
</table>
</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 20 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
EOI-1(continued)
Directs ATC to restore and maintain reactor level between +2 in and +51 in using Table L-1 Systems

<table>
<tr><td colspan="3">Table L-1 Preferred Injection Systems</td></tr>
<tr><td>SOURCES</td><td>APPX</td><td>INJ PRESS</td></tr>
<tr><td>CNDS and FW</td><td>5A</td><td>1210 psig</td></tr>
<tr><td>CRD</td><td>5B</td><td>1640psig</td></tr>
<tr><td>RCIC with CST suction if available</td><td>5C</td><td>1200 psig</td></tr>
<tr><td>HPCI with CST suction if available</td><td>5D</td><td>1200 psig</td></tr>
<tr><td>CNDS</td><td>6A</td><td>410 psig</td></tr>
<tr><td>CS</td><td>6D,6E</td><td>330 psig</td></tr>
<tr><td>LPCI</td><td>6B, 6C</td><td>320 psig</td></tr>
</table>
</td></tr>
<tr><td></td><td>ATC</td><td>
APPENDIX 5A
1. IF It is desired to use a reactor feed pump that is in operation,
THEN CONTINUE at step 12 to control the operating pump.
12. SLOWLY ADJUST RFPT speed UNTIL feedwater flow to the RPV is indicated, using ANY of the following methods on Panel 3-9-5:
• Individual 3-HS-46-8A(9A)(10A), RFPT 3A(3B)(3C) SPEEDCONT RAISE/LOWER switch in MANUAL GOVERNOR,
OR
• Individual 3-SIC-46-8(9)(10), RFPT 3A(3B)(3C) SPEEDCONTROL in MANUAL,
OR
• 3-LIC-46-5, REACTOR WATER LEVEL CONTROL, in MANUALwith individual 3-SIC-46-8(9)(10), RFPT 3A(3B)(3C) SPEED CONTROL in AUTO.

13. ADJUST RFPT speed as necessary to control injection using the methods of step 12.

14. WHEN RPV level is approximately equal to desired level AND automatic level control is desired, THEN PLACE 3-LIC-46-5, REACTOR WATER LEVEL CONTROL, in AUTO with individual 3 SIC-46-8(9)(10), RFPT 3A(3B)(3C) SPEED CONTROL in AUTO.
</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 21 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
EOI-1 RPV Pressure

Override RC/P-1
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>A high drywell pressure ECCS signal exists (2.45 psig)</td><td>ADDRESSED</td></tr>
<tr><td>Emergency RPV depressurization is REQUIRED or has been required</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>Emergency RPV depressurization is anticipated</td><td>ACTION REQUIRED</td></tr>
</table>
SRO Directs BOP operator to RAPIDLY DEPRESSURIZE the RPV with main turbine bypass valves:

OK to exceed 100ºF/hr cooldown rate
Lower pressure as low as practicable while maintaining RPV injection required for adequate core cooling

</td></tr>
<tr><td></td><td>BOP</td><td>Attempts to use Main Turbine Bypass Valves via Manual Jack. Reports that Bypass Valve are FULL OPEN.</td></tr>
<tr><td></td><td>SRO</td><td>
RC/P-2
<table>
<tr><td colspan="2">IF ANY MSRV is cycling</td></tr>
<tr><td>THEN MANUALLY OPEN MSRVs UNTIL RPV press drops to the press at which all main turbine bypass vlvs are fully open (APPX 11A)</td><td>NO ACTION REQUIRED</td></tr>
</table>
</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 22 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
EOI-1(continued)
Override RC/P-3
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>Suppr pl temp and lvl CANNOT be maintained in a safe area of Curve 3 at the existing RPV press</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>Suppr pl lvl CANNOT be maintained in the safe area of Curve 4</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>STEAM COOLING IS REQUIRED</td><td>NO ACTION REQUIRED</td></tr>
</table>
RC/P-4
<table>
<tr><td colspan="2">STABILIZE RPV press below 1073 psig using the main turbine bypass vlvs (APPX 8B) ACTION REQUIRED
• OK to use ANY Alternate RPV Pressure Control Systems (Table P-1)
• Crosstie CAD to DW Control Air (APPX 8G) if necessary</td></tr>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>DW Control Air is or becomes unavailable</td><td>NO ACTION REQUIRED</td></tr>
</table>
Directs BOP operator to control Reactor Pressure between 800 – 1000 psig using Main Turbine Bypass Valves.
<table>
<tr><td colspan="2">Table P-1
Alternate RPV Pressure Control Systems</td></tr>
<tr><td>SOURCE</td><td>APPX</td></tr>
<tr><td>MSRVs only if suppr pl lvl is above 5.5 ft

IF "MAIN STEAM RELIEF VLV AIR ACCUM PRESS LOW" annunciator (XA-55-3D-18) is in alarm

THEN MINIMIZE MSRV cycling by using sustained opening for depressurization</td><td>11A</td></tr>
</table>
</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 23 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
EOI-1(continued)

RC/P-5

<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>It is anticipated that RPV depressurization will result in a loss of injection required for adequate core cooling</td><td>NO ACTION REQUIRED</td></tr>
</table>

RC/P-6

DEPRESSURIZE the RPV and maintain cooldown rate below 100ºF/hr - ACTION REQUIRED
• Crosstie CAD to DW Control Air (APPX 8G) if necessary

<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>ANY MSRV is being used for RPV depressurization AND DW Control Air is or becomes unavailable</td><td>NO ACTION REQUIRED</td></tr>
</table>
</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 24 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**EOI-1 (continued)** **Directs BOP Operator to DEPRESSURIZE the RPV and maintain cooldown rate below 100ºF/hr**
	BOP	**Begins Opening Main Turbine Bypass Valves to depressurize the Reactor Plant.**
	SRO	**RC/P-7** **WHEN** shutdown cooling RPV press interlock clears AND further cooldown is required

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 25 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
Note to NRC Examiner: The following is a list of actions to be taken after Condensate and Feedwater are lost and when the SRO determines that Normal Reactor Level Band of +2 - +51 inches cannot be restored and maintained.		
	SRO	**EOI-1 (continued)** **RC/L-3**

RESTORE and **MAINTAIN** RPV water lvl between +2 in. and +51 in. with ANY Preferred Injection Systems (Table L-1)	
IF	**THEN**
RPV water lvl cannot be restored and maintained between +2 in. and +51 in.	**ACTION REQUIRED**
RPV water lvl cannot be restored and maintained above -162 in.	**NO ACTION REQUIRED**

SRO Directs ATC Operator to RESTORE and MAINTAIN RPV water lvl above -162 in.

- **OK to use ANY Alternate Injection Subsystems (Table L-2)**

Table L-1 Preferred Injection Systems		
SOURCES	APPX	INJ PRESS
CNDS and FW	5A	1210 psig
CRD	5B	1640psig
RCIC with CST suction if available	5C	1200 psig
HPCI with CST suction if available	5D	1200 psig
CNDS	6A	410 psig
CS	6D,6E	330 psig
LPCI	6B, 6C	320 psig

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 26 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**EOI-1 RC/L-3(continued)**

Table L-2Alternate Injection Systems

SOURCES	APPX	INJ PRESS
SLC (Test Tank)	7B	1450 psig
SLC (Boron Tank)	7B	1450psig
CNDS Transfer Pumps to RHR and CS	7A	110 psig
RHR Crosstie to other Units	7C	320 psig
STBY Coolant	7D	160 psig
RHR Drain Pumps	7E, 7F	50 psig
PSC Head Tank Pumps	7G	30 psig
RCIC (Aux Boiler Steam) with CST	7H	1200 psig
RCIC Manual Start	EDMG-24 App B	1200 psig
HPIC (Aux Boiler Steam) with CST	7J	780 psig
Fire Protection System	7K	150 psig
Portable Pumps	EDMG-24 App E	150 psig

Note to NRC Examiner: US will enter the ALTERNATE LEVEL Leg of EOI-1 at this time if scenario goes to this point.

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 27 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td colspan="3">Note to Examiner: Pages 44-46 may not be applicable due to expecting crew to Emergency Depressurize RPV on 2 Max Safe Area Radiation Levels.</td></tr>
<tr><td></td><td>SRO</td><td>EOI-1 Alternate Level Control

Override RC/L-4
<table><tr><th>IF</th><th>THEN</th></tr><tr><td>RPV water lvl can be restored and maintained above -162 in.</td><td>NO ACTION REQUIRED</td></tr></table>
RC/L-5
INHIBIT ADS

SRO Directs BOP Operator to INHIBIT ADS</td></tr>
<tr><td></td><td>BOP</td><td>BOP Operator placed Div 1 and Div 2 ADS Inhibit Switches to INHIBIT and verifies responses.</td></tr>
<tr><td></td><td>SRO</td><td>RC/L-6
RESTORE and MAINTAIN RPV water lvl above -162 with ANY Preferred Injection Systems (Table L-1)
• OK to use ANY Alternate Injection Subsystems (Table L-2)
<table><tr><th>IF</th><th>THEN</th></tr><tr><td>IF 2 or more inj sub sys CANNOT be lined up:
• CNDS
• LPCI system I (pumps A or C)
• LPCI system II (pumps B or D)
• CS system I (pumps A or C)
• CS system II (pumps B or D)</td><td>ACTION REQUIRED</td></tr></table></td></tr>
</table>

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 28 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	ATC	**EOI-1 Alternate Level Control (continued)** **Lines up Table L-2 systems**
	SRO	**SRO Directs ATC operators to preparing as many of the Alternate Injection Subsystems (Table L-2) as possible for injection**
	ATC	**Begin aligning alternate sources.**
	SRO	**STOP SIGN RC/L-7** **WHEN** RPV water lvl drops to- 162 in. **RC/L-8** **IF**: NO **CNDS**, **LPCI** or **CS** inj subsystem is lined up for inj with at least one pump running **THEN**: **ACTION REQUIRED** **SRO Directs MAXIMIZE injection with Table L-2 subsystems** **RC/L-9** Is ANY RPV inj source lined up with at least one pump running

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 29 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**EOI-1 Alternate Level Control (continued)** **SRO Verifies at least 1 pump running and ready for injection** **STOP SIGN RC/L-10** **WHEN** RPV water lvl CANNOT be restored and maintained above -180
	SRO	**RC/L-11** **EMERGENCY DEPRESSURIZATION IS REQUIRED** **SRO ENTERS 3-C-2 EMERGENCY RPV DEPRESSURIZATION**
Note to NRC Examiner: Proceed to page 47 for 3-C-2 EMERGENCY DEPRESSURIZATION		

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 30 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
3-C-2 EMERGENCY DEPRESSURIZATION

Override C2-1
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>RPV water level CANNOT be determined</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>It is anticipated that RPV depressurization will result in loss of injection required for adequate core cooling</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>Containment water lvl CANNOT be maintained below 44 ft</td><td>NO ACTION REQUIRED</td></tr>
</table>
C2-2
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>IF DW press is above 2.45 psig</td><td>NO ACTION REQUIRED</td></tr>
</table>
C2-3
<table>
<tr><td colspan="2">EMERGENCY DEPRESSURIZE the RPV –ACTION REQUIRED</td></tr>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>Suppr pl lvl is above 5.5 ft</td><td>THEN OPEN 6 MSRVs (ADS vlvs preferred) OK to exceed 100°F/hr cooldown rate</td></tr>
<tr><td>DW Control Air is or becomes unavailable</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>Less than 4 MSRVs can be opened
AND
RPV press is 70 psi or more above suppr chmbr press</td><td>NO ACTION REQUIRED</td></tr>
</table>
Note to NRC Examiner:SRO Directs BOP Operator to OPEN 6 ADS MSRVs
</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 31 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	Crew	**3-C-2 EMERGENCY DEPRESSURIZATION (continued)** **BOP Operator takes ADS MSRVs handswitches to OPEN and 2 fail to OPEN. BOP the selects 2 additional MSRVs and reports to SRO that 6 MSRVs are OPEN and that 2 ADS MSRVs failed to operate by Handswitches.** **Critical Task #2:** **With a primary system discharging into the Secondary Containment when two or more areas are greater than their maximum safe operating values for the same parameter, RO initiates Emergency Depressurization as directed by US** **Critical Task #2 Failure Criteria:** **The operating crew fails to recognize Emergency Depressurization is required when 2 Area Radiation Levels exceed the Max Safe value within 5 minutes.** **OR** **The operating crew fails to initiate an Emergency Depressurization within 10 minutes after 2 Area Radiation Levels exceeding Max Safe value.**
	SRO	**C2-4** **WHEN** shutdown cooling RPV press interlock clears AND furthercooldown is required

Note to NRC Examiner: Once ED has been completed and Reactor Water Level has been recovered to +2 inches to +51 inches, this will end the scenario.

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 32 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**EOI-2 PRIMARY CONTAIMENT CONTROL** **SRO Enters on High Suppression Pool Temperature above 95°F** **Suppr Pl Temp** **Caution 2** Operating pumps with suction from the suppression pool above the NPSH Limit (Curve 1, 2, 9 or 10) or with suppression pool water level below 10 ft (Vortex limit) may cause equipment damage **SP/T-1** **MONITOR** and **CONTROL** suppr pl temp below 95°F using available suppr pl cooling (APPX 17A) — **ACTION REQUIRED** **SRO Directs BOP Operator to Initiate a Loop of Suppression Pool Cooling per APPX 17A**
	BOP	**3-EOI APPENDIX-17A** **NOTE:** Placing a BYPASS SEL switch in BYPASS in step 1 below prevents automatic opening of the affected RHR loop's outboard injection valve. This makes LPCI mode of that RHR loop inoperable.

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 33 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	BOP	**EOI-2 SP/T-1 (continued)** 1. **IF** adequate core cooling is assured, **OR** Directed to cool the Suppression Pool irrespective ofadequate core cooling, **THEN**.....**BYPASS** LPCI injection valve open interlock AS NECESSARY: • **PLACE** 3-HS-74-155A, LPCI SYS I OUTBD INJ VLV BYPASS SEL in BYPASS. • **PLACE** 3-HS-74-155B, LPCI SYS II OUTBD INJ VLV BYPASS SEL in BYPASS. 2. **PLACE** RHR SYSTEM I(II) in Suppression Pool Cooling as follows: a. **VERIFY** at least one RHRSW pump supplying each EECW header. b. **VERIFY** RHRSW pump supplying desired RHR HeatExchanger(s). c. **THROTTLE** the following in-service RHRSW outlet valves to obtain between 1350 and 4500 gpm RHRSW flow: • 3-FCV-23-34, RHR HX 3A RHRSW OUTLET VLV • 3-FCV-23-46, RHR HX 3B RHRSW OUTLET VLV • 3-FCV-23-40, RHR HX 3C RHRSW OUTLET VLV • 3-FCV-23-52, RHR HX 3D RHRSW OUTLET VLV d. **IF** ..... Directed by SRO, **THEN**.....**PLACE** 3-XS-74-122(130), RHR SYS I(II) LPCI 2/3 CORE HEIGHT OVRD in MANUAL OVERRIDE.

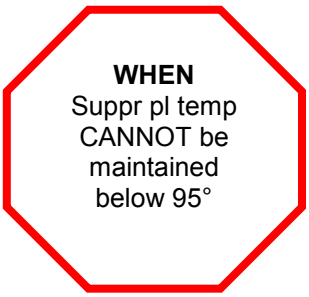
Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 34 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	BOP	**EOI-2 SP/T-1 (continued)** e. IF .....LPCI INITIATION Signal exists, THEN.....**MOMENTARILY PLACE** 3-XS-74-121(129), RHR SYS I(II) CTMT SPRAY/CLG VLV SELECT in SELECT. f. IF ..... 3-FCV-74-53(67), RHR SYS I(II) LPCI INBD INJECT VALVE, is OPEN, THEN..... **VERIFY CLOSED** 3-FCV-74-52(66), RHR SYS I(II) LPCI OUTBD INJECT VALVE. g. **OPEN** 3-FCV-74-57(71), RHR SYS I(II) SUPPR CHBR/POOL ISOL VLV. h. **VERIFY** desired RHR pump(s) for Suppression Pool Cooling are operating. **CAUTION** RHR System flows below 7000 gpm or above 10000 gpm for one-pump operation may result in excessive vibration and equipment damage. i. **THROTTLE OPEN** 3-FCV-74-59(73), RHR SYS I(II) SUPPR POOL CLG/TEST VLV, to maintain EITHER of the following as indicated on 3-FI-74-50(64), RHR SYS I(II) FLOW: • Between 7000 and 10000 gpm for one-pump operation. OR • At or below 13000 gpm for two-pump operation. j. **VERIFY CLOSED** 3-FCV-74-7(30), RHR SYSTEM I(II) MIN FLOW VALVE. k. **MONITOR** RHR Pump NPSH using Attachment 1. l. **NOTIFY** Chemistry that RHRSW is aligned to in-service RHR Heat Exchangers. IF .. Additional Suppression Pool Cooling flow is necessary, THEN....**PLACE** additional RHR and RHRSW pumps in service using Steps 2.b through 2.l.

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 35 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**EOI-2 (continued)** **SP/T-2**  **SRO Determines to Operate All Available Suppression pool Cooling Loops and directs BOP Operator to place another Loop of RHR in Suppression Pool Cooling**
	BOP	**Starts addition RHR Loop per APPX 17A**
Note to NRC Examiner: Step are repeated for APPX 17A for additional RHR Pumps.		

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 36 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**EOI-2 SP/T-3 (continued)** **SP/T-4** **BEFORE** supprpl temp rises to 110°F **SRO Enters EOI-1; Action already completed.** **SP/T-5** **Note 2** TSC staff may recommend an alternate curve for station blackout per 0-AOI-57-1A **WHEN** Suppr pl temp and RPV press CANNOT be maintained within a safe area of Curve 3 **2**Curve **SP/T-6** **EMERGENCY DEPRESSURIZATION IS REQUIRED**

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 37 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**EOI-2 DW TEMP** **Caution 1** • Ambient temp may affect RPV water level indication and trend **DW/T-1** **MONITOR** and **CONTROL** DW temp below 160°F using available DW cooling — **NO ACTION REQUIRED** **DW/T-2** **WHEN** DW temp CONNOT be maintained below 160 °F **EOI-2 PC Press** **PC/P-1** **MONITOR** and **CONTROL** PC press below 2.45 psig using the Vent system (AOI-64-1) — **NO ACTION REQUIRED** **PC/P-2** **WHEN** PC press CONNOT be maintained below 2.45 psig

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 38 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**EOI-2 PC H_2** **PC/H-1** **IF** / **THEN** H2 and O2 monitoring system is inoperable — **NO ACTION REQUIRED** Offsite radioactivity release rate reaches ODCM limits **OR** H2 is NO longer detected in PC(2.4% on control room indicators) — **NO ACTION REQUIRED** **PC/H-2** **ENSURE** H2/O2 analyzer in service (APPX 19) — **NO ACTION REQUIRED** **PC/H-3** **WHEN** H_2 is detected in PC (2.4% on control room indicators)

Op Test No.: 15-10 Scenario No. 3 Event No.: 8 Page 39 of 39

Event Description: Steam Leak in Reactor Building, Inboard MSIV fails to close.

Time	Position	Applicant's Actions or Behavior
	SRO	**EOI-2 Suppr Pl Lvl** **SP/L-1** **MONITOR** and **CONTROL** suppr pl lvl -6 in. to -1 in. (APPX 18) **IF** / **THEN** Suppr pl lvl CANNOT be maintained below -1 in. → **NO ACTION REQUIRED** Suppr pl lvl CANNOT be maintained above -6 in. → **NO ACTION REQUIRED**

Note to NRC Examiner: Once ED has been completed and Reactor Water Level has been recovered to +2 inches to +51 inches this will end the scenario.

Op Test No.: 15-10 Scenario No. 3 Event No.: 9 Page 1 of 1

Event Description: HPCI 120V Power Failure

Time	Position	Applicant's Actions or Behavior
	BOP	**3-ARP-9-3F HPCI 120 VAC POWER FAILURE** **Automatic Action:** A. HPCI controller loses power. HPCI becomes inoperable. B. If HPCI is in service, the HPCI Turbine Stop Valve, 3-FCV-73 18, closes. HPCI controller loses power. HPCI becomes inoperable. C. 3-PI-064-67B will lose power and become inop. **BOP Operator recognizes loss of power and reports to US that HPCI is not OPERABLE.**
Note to Examiner: End of Event #9		

Op Test No.: 15-10 Scenario No. 3 Event No.: 10 Page 1 of 1

Event Description: Two ADS Valves failing to open

Time	Position	Applicant's Actions or Behavior
	BOP	**On Emergency Depressurization, BOP Operator Recognizes that 2 ADS MSRVs fail to Open due to Loss of Power to 2B 250 VDC Bus B and OPENS 2 additional MSRVs.**
Note to Examiner: End of Event #10		

Op Test No.: 15-10 Scenario No. 3 Event No.: 11 Page 1 of 1

Event Description: Condensate Booster Pump C Trip

Time	Position	Applicant's Actions or Behavior
	ATC	**3-ARP-9-6C window 15 RFPT C ABNORMAL** **AUTOMATIC ACTIONS:** None **OPERATOR ACTIONS:** A. **CHECK** other RFP alarms on Panel 3-9-6 to determine problem area. B. **REFER TO** appropriate alarm response procedure. C. **IF** NO other annunciator on Panel 3-9-6 is in alarm, **THEN PERFORM** an alarm summary on alarm types. **ATC Operator recognizes that Condensate Booster Pump C and RFPT C have tripped. ATC determines that Condensate and Feedwater are not available and transitions to Panel 9-3 for Reactor Water Level Control using RCIC, RHR Loop II and Core Spray loop II.**
Note to Examiner: End of Event #11		

Op Test No.: 15-10 Scenario No. 3 Event No.: 12 Page 1 of 1

Event Description: Loss of 3B 250V DC RMOV BD.

Time	Position	Applicant's Actions or Behavior
	BOP	**MAIN STEAM SYSTEM** • ADS Logic Bus A & B ○ Power to B logic will auto transfer to alternate (ADS remains functional with 4 ADS valves) • ADS Relief Valve 3-PCV-1-18 Power Loss • ADS Relief Valve 3-PCV-1-19 Power Loss • ADS Relief Valve 3-PCV-1-22 Power Loss (loss of alternate power supply) • NON ADS Relief Valve 3-PCV-1-31, 42, 179 loss of power supply • Main Steam Line Drain Valve 3-FCV-1-56 power loss • INBOARD MSIV indication and DC Solenoid power loss **RCIC SYSTEM** • Div 1 Logic Power Failure –RCIC INOP • 3-FCV-71-3 RCIC Steam Supply Outboard Isolation Valve power loss • 3-FCV-71-34 RCIC Min Flow Valve power loss **HPCI SYSTEM** • Div I logic power loss –HPCI remain functional. (Scenario has malfunction for HPCI 120V Power Loss which will make HPCI INOP and unavailable for use.) • 3-FCV-73-36 HPCI/RCI CST TEST RTN Valve power loss **RWCU SYTEM** • 3-FCV-69-2 RWCU INBD ISOL Valve power loss **RHR SYSTEM** • Div I logic power failure –RHR will not inject due to 450 psig interlock **CS SYSTEM** • Div I logic power failure –RHR will not inject due to 450 psig interlock **ECCS Div I ATU Inverter power loss** **Backup Scram Valves Channel B power loss**
Examiner Note: End of Event #12		

Scenario Setup

IC	8
Exam IC	253

Schedule Files(s): Scenario #3.sch, Scenario #3.evt

Trigger	Appx	Trigger	Appx
18	18	24	7G
19	7A CS	25	7H
20	7A RHR	26	8E
21	7B	27	16H
22	7E	28	16J
23	7F	29	18 RHR A

Malfunctions	Description	Event #	Delay	Severity	Ramp	Initial value	Final value
RD06R5035	STICK ANY CONTROL ROD CR 50-35	3	N/A	N/A	N/A	N/A	N/A
TH35B	B Main Steam Line Break in Steam Tunnel (Rx Building)	8	60	.5	N/A	N/A	.5
TH23	Fuel Failure	8	N/A	100	N/A	N/A	100
MS06C	Main Steam Line Isolation Valve Failure to Close: FCV-1-26 MSL B INBD	8	N/A	N/A	N/A	N/A	N/A
MS06D	Main Steam Line Isolation Valve Failure to Close: FCV-1-27 MSL B OUTBD	8	N/A	N/A	N/A	N/A	N/A
RP15A	MSIV and DRAIN ISOL Failure	8	N/A	N/A	N/A	N/A	N/A
FW02C	C Condensate Booster Pump Trip	11	180	N/A	N/A	N/A	TRIP
FW02A	A Condensate Booster Pump Trip	ACTIVE	N/A	N/A	N/A	N/A	TRIP
HP07	HPCI Logic Power Failure	9	N/A	N/A	N/A	N/A	N/A
NM05H	IRM H Amp Failure	5	N/A	N/A	N/A	N/A	0
MS01	Steam Seal Regulator Failure	4	N/A	N/A	N/A	N/A	0

Remotes	Description	Event #	Delay	Severity	Ramp	Initial value	Final value
PC14	MS Tunnel Booster Fan Trip	8	N/A	N/A	N/A	N/A	STOP
ED24B	Transfer power supply to 250V RMOV BD 3A, 3B, AND 3C	8	N/A	N/A	N/A	N/A	OPEN

Overrides	Description	Event #	Delay	Severity	Ramp	Initial value	Final value
RM10H	RM-90-20A	8	N/A	N/A	1100	N/A	1000
RM10S	RM-90-29A	8	N/A	N/A	840	N/A	1000
PMP-02-056A	52 BREAKER COND BST PMP A	1	N/A	N/A	N/A	N/A	FAIL PWR
PMP-02-062A	52 BREAKER COND BST PMP B	1	N/A	N/A	N/A	N/A	FAIL PWR
ZAIFC0229A1	FCV-2-29 COND SHORT CYCLE	7	N/A	N/A	300	N/A	0

Control Board Setup:

- **Reset IC 253**
- **Begin recording data**
- **Place simulator in RUN**
- **Ensure RWM screen is selected and alarms are clear**
- **Adjust Rx Water Level to ensure stable trend**

SHIFT MANAGER TURNOVER

EQUIPMENT OOS/LCOS

- **Condensate Booster Pump A is disassembled for overhaul.**
- **Condensate Booster Pump B was tagged last shift for troubleshooting activities due to high vibration reading on pump start.**

ANTICIPATED OPERATIONS/MAINTENANCE FOR ONCOMING SHIFT

- **Pull control rods IAW 3-GOI-100-1A 5.4 [71] to achieve 10-50% open on the first Bypass valve position starting with CR 34-43.**
- **Place RFP C in service to control Reactor Water Level IAW 3-OI-3 section 5.5 Placing the First RFP in service step 5.5 [12].**

STATUS

WORK WEEK - DIV I ☒, DIV II ☐

OUTSIDE AIR TEMP 50ºF

- **RWCU Blowdown in service**
- **CRD Pump 2A in service**
- **IRMs on ranges 6-7**
- **CPs: B & C in service**
- **CBPs: C in service.**

COMMON

UNIT 1

100%

UNIT 2

100%

UNIT 3

Rx at 1 % Power

Facility: BFN Scenario Number: NRC - 2 Op-Test Number:15-10

Examiners:_____ Operators: SRO: _____
_____ ATC: _____
_____ BOP: _____

Initial Conditions:98% Reactor Power

Turnover: Start HPCI for Quarterly Surveillance; RHR Loop I is in Suppression Pool Cooling per 3-OI-74, SGT A is in service per 0-OI-65.

Event Number	Malfunction Number	Event Type*	EventDescription
1.	N/A	N-BOP N-ATC N-SRO	Continue HPCI Quarterly Surveillance SR 3.5.1.7 sec 6.4. SR 3.6.2.1.1 Suppression Chamber Water Temp Check
2.	OVERRIDE XA-55-3F_13 ZAOPI7328A	I-BOP I-SRO TS-SRO	HPCI Pump Suction Press Low Alarm (Failure of PS-73-29-1) and failure of HPCI to trip. Respond per ARP 3-ARP-9-3F window 13 Tech Spec 3.5.1 (ECCS and RCIC)
3.	RP01B REMOTE RP04 B	C-ATC C-SRO TS-SRO	Loss of RPS Bus B, ½ SCRAM, Restore Power to RPS B per AOI-99-1 Tech Spec on equipment that is inoperable due to the power loss
4.	FW05C FW19C	C-BOP C-SRO	C2 FW Heater Tube Leak and Extraction Steam Fails to isolate. Manual isolation per 3-AOI-6-1A
5.	N/A	R-ATC R-SRO	Reduce Rx Power for FW Heater Removal Remove FW Heater from service per OI-6 or AOI-6-1A
6.	TU02C/D TC03A-J	C-ATC C-SRO	Main Turbine Vibration rise, Rx Scram to take Unit offline/ Bypass valves fail to open
7.	RD09A/B RD17A/B	M-ALL	High Power ATWS –Hydraulic Lock
8.	FW14A/B/C	C-ATC	Feedwater Pump A/B/C Trip
9.	AD01G	C-BOP	SRV Leaks/sticks open

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

Events

1. The BOP operator will continue in the HPCI Quarterly Surveillance, SR 3.5.1.7. Upon Lead Examiner direction, the scenario may continue.

2. While HPCI is operating, the HPCI Pump Suction Press Low alarm will annunciate. The BOP operator will check suction pressure and respond IAW ARP-9-3F Window 13. The operator reports that HPCI should have tripped and closes the HPCI Turbine Steam Supply Valve, 3-FCV-73-16. The US will declare HPCI inoperable and enter Tech Spec 3.5.1 Condition C. He will verify, administratively, that RCIC is operable immediately and restore HPCI to operable with 14 days. When the Lead Examiner is satisfied with the Tech Spec, the scenario may continue.

3. A loss of RPS Channel B will occur. The crew will respond IAW 3-AOI-99-1, Loss of Power to One RPS Bus. Personnel will be dispatched to determine the cause of the loss of RPS. It will be reported that the failure was due to the B2 circuit protector assembly. The US will direct that RPS B be transferred to the alternate power supply and for the ATC to reset the ½ Scram. When RPS has been restored, the US will direct restoring equipment IAW 3-AOI-99-1 and 3-OI-99, Reactor Protection System.The US will refer to Tech Specs for the equipment that is removed from service and is now inoperable. When the Lead Examiner is satisfied with the restoration and Tech Spec, the scenario may continue.

4. When the lead examiner is satisfied with the last event this event can be manually triggered which causes a feedwater tube leak to develop in the C2 High Pressure Heater. The crew will notice and report heater level rising and electric power, MWe, lowering. Bypass Vlv to Condenser Not Closed will annunciate. The crew will recognize and report increased condensate flow and proper drain/dump valve operation for the C2 heater. As heater level continues to rise, the Level High annunciator will be received and the crew will respond IAW the ARP. The crew will verify that FCV-6-96 drain valve is open and recognize that Extraction Steam Isolation Valves will fail to close and manual action will be required. The US will direct entry into 3-AOI-6-1A.

5. After 3-AOI-6-1A is entered, the US will direct lowering reactor > 5% below initial power level and call the RE to evaluate thermal limits. 3-OI-6 will be referred to for turbine/heater load restrictions. The US will direct a mid power runback to lower reactor power to approximately 79%. He will also direct that the C2 Heater be isolated IAW Attachment 1 of 3-AOI-6-1A. When the Lead Examiner is satisfied with the reactivity manipulation, the scenario may continue.

6. The Crew will recognize and report increasing main turbine bearing vibration. The crew will refer to ARP-9-7B, Window 32 for Main Turbine High Vibration and report that an immediate turbine trip is required if a journal bearing exceeds 12 mils. The US will direct a manual reactor scram and main turbine trip when bearing vibration exceeds 12 mils. The ATC operator will manually scram the reactor to take the main turbine offline. Following the scram, the ATC operator will report the failure of the main turbine bypass valves to respond to rising reactor pressure

7. The ATC operator will manually scram the reactor and make the scram report. He will continue to take actions IAW the OATC Hard Card and initiate ARI, verify that recirc pumps are tripped, and initiate SLC. The BOP operator will control reactor pressure 800 – 1000 psig using the SRVs. The US will direct that RPV injection be terminated and prevented and reactor level lowered to at least (-) 50 inches. After reactor water has been lowered to (-) 50 inches, the US will direct maintaining (-) 50 to (-)100 inches. If torus temperature rises to 110°F, the US will direct continuing to lower reactor water level until power is less than 5% or TAF is reached. Appendix 1F and 2 will be called for and control rods will be inserted using Appendix 1D. After SDVs have drained, a scram will be initiated and all rods will insert. Reactor water level will be restored to normal.

8. After the ATC operator terminates and prevents injection to the RPV and reactor water level is lowering, the operating feedwater pump will trip. The operator will respond by restoring another feedwater pump to service.

9. As reactor power lowers due to lowering reactor water level and initiation of SLC, the BOP operator will identify that a SRV has stuck open. The operator will respond IAW 3-AOI-1-1 and attempt to close the valve. When the operator takes the MSRV Auto Actuation Logic to INHIBIT, the valve will close.

The Scenario ends when the crew has re-initiated a reactor scram, all control rods have inserted and reactor water level has been restored to normal.

Critical Tasks 2

1. Inhibit ADS prior to automatic initiation to prevent uncontrolled RPV depressurization and injection during an ATWS.

1. Safety Significance:
   Precludes core damage due to an uncontrolled reactivity addition.

2. Cues:
   Procedural compliance.

3. Measured by:
   Criterion is ADS logic inhibited prior to an automatic initiation unless all required injection systems are Terminated and Prevented.

4. Feedback:
   - RPV pressure trend
   - RPV level trend
   - "ADS LOGIC BUS A/B INHIBITED" annunciator status

5. Critical Task Failure Criteria:
   The Operating Crew fails to inhibit ADS prior to inadvertent initiation of ADS.

2. When Reactor Power is greater than 5% or unknown and RPV Level is greater than (-) 50 inches, STOP and PREVENT all injection into the RPV except RCIC, CRD and SLC.

1. Safety Significance:
   With thermal power being produced in the RPV and all actions to lower power have not brought reactor power out of the heating range, power oscillation and subsequent fuel damage may be generated from these conditions persisting. Stopping and preventing injection to lower RPV level will reduce this challenge to the reactor.

2. Cues:
   Reactor is scrammed and all ATWS actions are taken by the operator and power is greater than or equal to 5% power or unknown.

3. Measured by:
   Reactor power on APRM NUMAC or recorder displays.

4. Feedback:
   - RPV Level lowering
   - Reactor Power lowering

5. Critical Task Failure Criteria:

The Operating Crew exceeds curve 3, Heat Capacity Temperature Limit Curve, requiring Emergency Depressurization with Control Rods Out.

3. With a reactor scram required and the reactor not shutdown, inject boron into the RPV.

1. Safety Significance:
   Shutting down reactor can preclude failure of containment or equipment necessary for the safe shutdown of the plant.

2. Cues:
   Procedural compliance.
   Suppression Pool temperature.

3. Measured by:
   Observation - If operating IAW EOI-1A, US determines that SLC is required (indicated by verbal direction or EOI placekeeping action) before exceeding 110 degrees in the Suppression Pool.

   AND

   RO places SLC A / B Pump control switch in ON, when directed by US.

4. Feedback:
   Reactor Power trend.
   Control Rod indications.
   SLC tank level.

5. Critical Task Failure Criteria:
   Failure to initiate SLC prior to Suppression Pool Temperature exceeding 110 °F

SHIFT MANAGER TURNOVER

EQUIPMENT OOS/LCOS

None

ANTICIPATED OPERATIONS/MAINTENANCE FOR ONCOMING SHIFT

- **Continue HPCI Quarterly Surveillance SR 3.5.1.7 Sec 6.4.**
- **SR 3.6.2.1.1 Suppression Chamber Water Temp Check**

STATUS

WORK WEEK - DIV I ☐, DIV II ☒ **OUTSIDE AIR TEMP 30ºF**

COMMON

Thunderstorms are in Northern Alabama

UNIT 1

100%

UNIT 2

100%

UNIT 3

- **Reactor Power is 98% to support HPCI run.**
- **RHR Loop I & II are in Suppression Pool Cooling per 3-OI-74.**
- **SGT A is in service per 0-OI-65 to support HPCI run.**

Op TestNo.: 15-10 Scenario No. 2 Event No.: 1 Page 1 of 8

Event Description: HPCI Quarterly Surveillance SR 3.5.1.7

Time	Position	Applicant's Actions or Behavior
	DRIVER	Ensure Critical Parameters are recorded
	CREW	Assumes shift
	BOP	**3-SR-3.5.1.7** **6.4 HPCI Main Pump and Booster Pump Testing** [9] **ALIGN** HPCI System for a manual start by performing the following steps: [9.1] **ENSURE** HPCI SYSTEM FLOW/CONTROL 3-FIC-73-33 is in AUTO position. (Depressing the AUTO operation mode transfer switch changes mode of the controller) [9.2] **ENSURE** HPCI SYSTEM FLOW/CONTROL 3-FIC-73-33 is set to control at 530 (5,300 gpm).(Adjusting the Setpoint up/down keys changes the setpoints.) Ensures HPCI flow controller is for 5300 gpm and in AUTO. [9.3] **PLACE** HPCI STEAM PACKING EXHAUSTER by placing 3-HS-73-10A to START. [9.4] **ENSURE OPEN** 3-FCV-73-36, using HPCI/RCIC CST TEST VLV 3-HS-73-36A. [9.5] **OPEN** 3-FCV-73-35, using HPCI PUMP CST TESTVLV, 3-HS-73-35A. STARTS HPCI Steam Packing Exhauster, verifies HPCI/RCIC CST Test valve (73-36A) is open and OPENS HPCI Pump CST Test valve (73-35A)/

Op TestNo.: 15-10 Scenario No. 2 Event No.: 1 Page 2 of 8

Event Description: HPCI Quarterly Surveillance SR 3.5.1.7

Time	Position	Applicant's Actions or Behavior
	BOP	[10] **IF** 3-SR-3.5.1.1(HPCI), Maintenance of Filled HPCI Discharge Piping was being performed, **THEN** **ENSURE** 3-SR-3.5.1.1(HPCI), Maintenance of Filled HPCI Discharge Piping has been completed. (Otherwise N/A) [11] **RECORD** pretest suction pressure and thrust bearing temperature below: Marks step 10 as NA and verifies suction pressure and thrust bearing temperature are within acceptable range. [12] [NER] **ENSURE** communication is established with Operations personnel in HPCI Room. [IE 93-67] [13] [NER] **REQUEST** that Operations personnel in HPCI Room ensure that all unnecessary personnel have exited HPCI Room. [IE 93-67] [14] [NER] **ANNOUNCE** HPCI Turbine startup over Plant Public Address System. [IE 93-67] Establishes communications with Operations personnel in HPCI room. Directs that personnel in HPCI room evacuate the room and announces HPCI startup over PA system. [15] **PLACE** HPCI AUXILIARY OIL PUMP 3-HS-73-47A to START. [16] **OPEN** 3-FCV-73-30, using HPCI PUMP MIN FLOW VALVE, 3-HS-73-30A. **Places HS for HPCI Aux Oil Pump (73-47A) to START and OPENS HPCI Min Flow Valve (73-30)**
DRIVER: Report as RBO AUO that local suction pressure is 32 psig for step 6.4 [11]		

Op TestNo.: 15-10 Scenario No. 2 Event No.: 1 Page 3 of 8

Event Description: HPCI Quarterly Surveillance SR 3.5.1.7

Time	Position	Applicant's Actions or Behavior
	BOP	[17] **ENSURE** personnel are ready to monitor 3-FCV-73-18 forsmooth operation **AND** **NOTIFY** the personnel monitoring that the next step will open 3-FCV-073-0018. Verifies personnel ready to monitor 73-18 and notifies them that the next step will open 73-18. **NOTES** 1) During the startup of the HPCI Turbine a second Operator should be utilized to monitor for abnormal conditions and alarms. 2) The HPCI Turbine parameters should be monitored during HPCI startup. This will ensure proper response of the control systems. If HPCI pumps suction pressure causes an auto swap of the HPCI Suction Valves from CST to the Torus, then the HPCI Turbine should be tripped. 3) Review Step 6.4[19] to ensure actions occur when 3-FCV-73-16 opens. 4) Personnel monitoring the 3-FCV-73-18 valve for smooth operation must pay close attention to valve travel from the time 3-FCV-73-16 is opened until 3-FCV-73-18 is full open and stable. 5) Smooth operation for 3-FCV-73-18 is a continuous operation from full close to full open without erratic movement. Sound can be used to assist in determining operation of valve. (i.e., the valve slamming open suddenly and then closed and then ramps open is NOT smooth operation)

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Event Description: HPCI Quarterly Surveillance SR 3.5.1.7

Time	Position	Applicant's Actions or Behavior
	BOP	**CAUTIONS** 1) If HPCI TURBINE STEAM SUPPLY VLV 3-FCV-73-16 fails to fully open, then the governor controls ystem ramp generator will time out and HPCI turbine speed, discharge pressure, or flow will be lower than expected. DO NOT RE-ATTEMPT to open HPCI TURBINE STEAM SUPPLY VLV 3-FCV-73-16 unless HPCI TURBINE STOP VALVE 3-FCV-73-18 is closed using HPCI TURBINE TRIP 3-HS-73-18A. Failure to observe this caution will result in a turbine overspeed trip if 3-FCV-73-16 is opened with the ramp generator timed out. 2) During the startup of the HPCI Turbine, the flow indication will remain high during the transient until the Governor Control System stabilizes the HPCI Flow to the desired setpoint. • The response time of the Governor Control System is slow. Therefore flow should NOT be adjusted until the system has stabilized. During this time the operator should monitor the speed indication for proper operation of the Governor Control. • The Ramp Generator will cause the Turbine Speed to rise at a steady rate until the Signal Converter circuit takes control and lowers the speed to stabilize the flow at the desired setpoint. 3) Starting the HPCI turbine with HWC in service and without the flow being at a reduced rate may result in higher than Normal Radiation Levels. **WARNING** [NER] Failure of both HPCI Steam Exhaust piping rupture discs during Turbine startup and operation will result in a process steam release into HPCI Room. This release raises the risk of personnel injury until steam line isolation occurs. Therefore, personnel in HPCI Room should minimize stay time in close proximity to rupture disc cage assembly. [IE 93-67]

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Event Description: HPCI Quarterly Surveillance SR 3.5.1.7

Time	Position	Applicant's Actions or Behavior
	BOP	**Start of Critical Step(s)** [18] **OPEN** 3-FCV-73-16, using HPCI TURBINE STEAM SUPPLY VLV, 3-HS-73-16A. **End of Critical Step(s)** [19] **OBSERVE** the following actions occur: • HPCI AUXILIARY OIL PUMP starts. • [NRC/C] HPCI TURBINE STOP VALVE 3-FCV-73-18 opens by observing 3-ZI-73-18 position indicating lights.[Appendix R] • HPCI TURBINE CONTROL VALVE 3-FCV-73-19 partially or fully opens by observing 3-ZI-73-19 position indicating lights. • [NRC/C] HPCI PUMP MIN FLOW VALVE 3-FCV-73-30 closes when HPCI SYSTEM FLOW/CONTROL3-FIC-73-33 indicates approximately ≥ 125 (≥ 1250 gpm) flow. [Appendix R] • HPCI Turbine speed rises to greater than 2400 rpm asindicated on HPCI TURBINE SPEED 3-SI-73-51. • HPCI STM LINE CNDS INBD/OUTBD DR VLVS 3-FCV-73-6A and 3-FCV-73-6B close by observing 3-ZI-73-6A and 3-ZI-73-6B position indicating lights. • HPCI AUXILIARY OIL PUMP stops as Turbine speed rises.

Op Test No.: 15-10 Scenario No. 2 Event No.: 1 Page 6 of 8

Event Description: HPCI Quarterly Surveillance SR 3.5.1.7

Time	Position	Applicant's Actions or Behavior
	BOP	OPENS HPCI Turbine Steam Supply Valve (73-16) and observes the proper indications. Verifies HPCI Aux Oil Pump stops as turbine speed rises. [20] **CHECK** smooth operation of 3-FCV-73-18 **AND** **MARK** the results below. [21] **IF** the answer above is "NO", **THEN** **PERFORM** the following: (Otherwise N/A) • **NOTIFY** System Engineer of condition. • **INITIATE** an SR/WO. • **PROCEED** with test. [22] **CHECK RESET** the following annunciators: • HPCI PUMP DISCH FLOW LOW 3-FA-73-33 (3-XA-55-3F, window 5) • HPCI TURBINE TRIPPED 3-ZA-73-18 (3-XA-55-3F, window 11) • HPCI TURBINE GLAND SEAL DRAIN PRESSURE HIGH3-PA-73-46 (3-XA-55-3F, window 14) • HPCI TURBINE BEARING OIL PRESSURE LOW3-PA-73-47 (3-XA-55-3F, window 19) [23] **CHECK** System flow, discharge pressure and Turbine speedis stable prior to performing the next step. **Verifies smooth operation of 73-28, resets associated annunciators and checks for stable operation of HPCI.**
DRIVER: Report as RB AUO that no abnormal indication of HPCI observed locally.		

Op Test No.: 15-10 Scenario No. 2 Event No.: 1 Page 7 of 8

Event Description: HPCI Quarterly Surveillance SR 3.5.1.7

Time	Position	Applicant's Actions or Behavior
		NOTES 1) Pause periodically as HPCI discharge pressure approaches the desired test pressure to allow HPCI system flow, discharge pressure, and Turbine speed to stabilize.[BFPER 00-003572-000] 2) Due to discharge pressure indicator failures, speed should be monitored NOT to exceed 4345 rpm to minimize exceeding design discharge pressure.
	BOP	[24] **WHILE** maintaining HPCI Turbine Speed less than 4345 rpm, **ADJUST** HPCI Pump Discharge Pressure as follows: [24.1] [NRC/C] **SLOWLY THROTTLE** 3-FCV-73-35 using HPCI PUMP CST TEST VLV, 3-HS-73-35A, as necessary until the following are achieved: • HPCI PUMP DISCH PRESS as indicated on 3-PI-73-31A is ≥ psig _____ (Step 6.4[2.2]) • Discharge flow steadies at or above 500 (5,000 gpm) as indicated by HPCI SYSTEM FLOW/CONTROL, 3-FIC-73-33. [Appendix R] Adjusts HPCI Discharge Pressure using 73-35 until pressure is greater than or equal to 1035 psig (+5, -85) or discharge flow steadies at or above 5000 gpm.

Op Test No.: 15-10 Scenario No. 2 Event No.: 1 Page 8 of 8

Event Description: HPCI Quarterly Surveillance SR 3.5.1.7

Time	Position	Applicant's Actions or Behavior
	BOP	[24.2] [NRC/C] **CHECK** HPCI Room for evidence of steam, oil and gland seal condenser leaks. [RPT-82-13] [24.3] **REQUEST** Radiation Protection to monitor Radiation and Contamination levels to ensure either has NOT risen significantly. [24.4] **CHECK** System flow, discharge pressure, and Turbine speed are stable prior to performing the next step. Calls personnel in HPCI room to check for leaks and stable operation of HPCI. Calls RP to monitor radiation and contamination levels in HPCI area.
	DRIVER	**As AUO in HPCI area, report no leaks and stable operation of HPCI.** **As RP, report no significant rise in radiation or contamination.**
	NRC	**End of Event #1,request Event #2**

Op Test No.: 15-10 Scenario No. 2 Event No.: 2 Page 1 of 2

Event Description: HPCI Low Suction Pressure/Failure to trip

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When NRC Chief Examiner is ready for Event #2, insert Event Trigger 2 to insert malfunction XA-55-3F_13 to ON and override HPCI Suction Press to -15.**
	BOP	Reports HPCI Pump Suction Pressure Low annunciator and HPCI still operating. Refers to 3-9-3F, W13 **3-ARP-9-3F** **Automatic Action:** A. Turbine Trip 1. HPCI TURBINE STOP VALVE, 3-FCV-73-18, closes 2. HPCI PUMP MIN FLOW VALVE 3-FCV-73-30, closes **Operator Action:** A. **Verify** automatic action has occurred. Reports failure of HPCI to trip and initiates a manual turbine trip. Reports manual trip of HPCI successful.
	ATC	Reports Critical Parameters (Reactor Power, Reactor Pressure, and Reactor Water Level) are stable.
	SRO	Acknowledges report of HPCI Turbine Trip failure and directs HPCI turbine trip. Directs BOP to initiate an investigation on the HPCI suction pressure low annunciator. Refers to Technical Specifications 3.5.1

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

Event Description: HPCI Low Suction Pressure/Failure to trip

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS) AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.1 ECCS – Operating

<table>
<tr><th>CONDITION</th><th>REQUIRED ACTION</th><th>COMPLETION TIME</th></tr>
<tr><td>C.HPCI System inoperable</td><td>C.1 Verify by administrative means RCIC System is OPERABLE
<u>AND</u>
C.2 Restore HPCI System to OPERABLE status</td><td>Immediately

14 days</td></tr>
</table>

Determines that TS 3.5.1 Condition C is applicable. Verifies that RCIC System is OPERABLE. Declares HPCI System in INOPERABLE and must be restored to OPERABLE status in 14 days.

APPENDIX R:
A. Restore the equipment function in 7 days or provide equivalent shutdown capability by one of the following methods:

Briefs crew on current plant conditions and T.S. LCO for HPCI</td></tr>
<tr><td></td><td>BOP</td><td>Calls maintenance to initiate investigation on the HPCI Low Suction Pressure annunciator and HPCI failure to trip.</td></tr>
<tr><td></td><td>DRIVER</td><td>Acknowledge initiating an investigation into HPCI Low Suction Pressure condition and failure of HPCI to trip.</td></tr>
<tr><td colspan="3">Examiner Note: End of Event #2, request Event #3</td></tr>
<tr><td colspan="3">DRIVER CUE: After event #2, call US and state as the Shift Manager, "Secure Suppression Pool Cooling at this time."</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 2 Event No.: 3 Page 1 of 13

Event Description: Loss of RPS 'B', Half Scram

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When the NRC Chief Examiner is ready for Event # 3, insert Event Trigger 3 to insert malfunction RP01B, RPS CHANNEL MG SET FAILURE CHANNEL B**
	ATC	**Reports a reactor half scram and loss of RPS 'B' Reports Critical Parameters, (Reactor Power, Reactor Pressure, and Reactor Water Level) are stable.**
	BOP	**Calls the outside US to investigate the loss of RPS 'B' and restore power to RPS 'B'.**
	DRIVER	**As the outside US, acknowledge investigating the loss of RPS 'B' and the direction to restore power to RPS 'B'**
	DRIVER	**Wait 3 minutes, then as the outside US, call control room and report that the cause of the RPS loss is a trip of the RPS B MG Set.**
	SRO	**Acknowledges report from outside US and directs that RPS 'B' be transferred to the alternate source.** **3.4 REACTOR COOLANT SYSTEM (RCS)** **3.4.5 RCS Leakage Detection Instrumentation** **LCO 3.4.5** The following RCS leakage detection instrumentation shall be OPERABLE: a. Drywell floor drain sump monitoring system; and b. One channel of either primary containment atmospheric particulate or atmospheric gaseous monitoring system.

CONDITION	REQUIRED ACTION	COMPLETION TIME
D.All required leakage detection systems inoperable	D.1 Enter LCO 3.0.3	Immediately

Op Test No.: 15-10 Scenario No. 2 Event No.: 3 Page 2 of 13

Event Description: Loss of RPS 'B', Half Scram

Time	Position	Applicant's Actions or Behavior
	SRO	**TR 3.3 INSTRUMENTATION** **TR 3.3.11 Hydrogen Monitoring Instrumentation** **LCO**3.3.11 The primary containment hydrogen analyzer shall be OPERABLE **APPLICABILITY:** MODE 1 during the time period a. From 24 hours after THERMAL POWER is > 15% RTP following startup, to b. 24 hours prior to reducing THERMAL POWER to < 15% RTP prior to the next scheduled reactor shutdown. **ACTIONS** **CONDITIONS** **A.** Primary containment hydrogen analyzer inoperable. **A.1** Restore primary containment hydrogen analyzer to OPERABLE status. **-7 DAYS**
	SRO	**TR 3.6 CONTAINMENT SYSTEMS** **TR** 3.6.2 Hydrogen Oxygen Concentration Monitor **LCO**3.6.2 The Primary Containment oxygen concentration monitor shall be OPERABLE. **APPLICABILITY:** MODE 1 during the time period a. From 24 hours after THERMAL POWER is > 15% RTP following startup, to b. 24 hours prior to reducing THERMAL POWER to < 15% RTP prior to the next scheduled reactor shutdown. **ACTIONS** **CONDITIONS** A. Primary containment oxygen concentration monitor inoperable. A.1 Begin alternate sampling and analyze results. **Immediately AND once per 7 DAYS thereafter**

Op Test No.: 15-10 Scenario No. 2 Event No.: 3 Page 3 of 13

Event Description: Loss of RPS 'B', Half Scram

Time	Position	Applicant's Actions or Behavior
		TR 3.4 REACTOR COOLANT SYSTEM TR 3.4.1 Coolant Chemistry LCO 3.4.1 Reactor coolant chemistry shall be maintained within the limits of Table 3.4.1-1. APPLICABILITY: According to Table 3.4.1-1 **Calls Chemistry to meet TSR 3.4.1.1 for alternate sampling.**
	DRIVER	**As the outside US, acknowledge transferring RPS 'B' to the alternate source of power.** **Insert Event Trigger 10 to insert remote function RP04 to B, RPS A/B ALTERNATE.** **Call control room and report that RPS 'B' has been transferred to alternate power.** **As Chemistry, acknowledge the need for alternate sampling to be performed.**
	SRO	**Directs ATC operator to reset RPS and PCIS IAW OI-99 and/or AOI-99**
	SRO/BOP	**AOI-99-1, Loss of Power to one RPS Bus** **4.0 OPERATOR ACTIONS** **4.1 Immediate Action** [1] **STOP** all testing with potential RPS half-scrams or PCIS logic isolation signals.

Op Test No.: 15-10 Scenario No. 2 Event No.: 3 Page 4 of 13

Event Description: Loss of RPS 'B', Half Scram

Time	Position	Applicant's Actions or Behavior
	BOP	**AOI-99-1, Loss of Power to one RPS Bus** **4.2 Subsequent Actions** **NOTES** 1) If power cannot be restored promptly to a de-energized RPS Bus, plant operation may continue until repairs are made provided all plant operational limits are met 2) With Reactor Building Ventilation isolated, Main Steam Line Tunnel Area temperature can reach PCIS Group 1 isolation trip setpoint in less than 10 minutes unless the Main Steam Tunnel Booster Fan is in service. 3) Loss of RPS will isolate 3-RM-90-256, Drywell Air Monitor, and TS LCO 3.4.5 Condition B should be entered. [1] **VERIFY** automatic actions occur.
	SRO	[2] **VERIFY** Steam Tunnel Booster FAN operating by observation of MAIN STEAM LINE TUNNEL TEMPERATURE, 3-TIS-1-60A. [4] **IF** desired to place RPS Bus B on Alternate Supply, **THEN PERFORM** Step 4.2[9]. (Otherwise N/A) **Dispatches personnel to transfer then transfer RPS 'B' to alternate.**
	DRIVER	**As the outside US, acknowledge transferring RPS 'B' to the alternate source of power.** **Insert Event Trigger 10 to insert remote function RP04 to B, RPS A/B ALTERNATE.** **Call control room and report that RPS 'B' has been transferred to alternate power.**

Op Test No.: 15-10 Scenario No. 2 Event No.: 3 Page 5 of 13

Event Description: Loss of RPS 'B', Half Scram

Time	Position	Applicant's Actions or Behavior
	ATC	**AOI-99-1, Loss of Power to one RPS Bus** **4.2 Subsequent Actions** [12] **RESET** the RPS trip logic half scram at Panel 3-9-5 as follows: **NOTE** The eight CONTROL ROD TEST SCRAM SOLENOID GROUP A and B LIGHTS SHOULD ILLUMINATE [12.1] **MOMENTARILY PLACE** SCRAM RESET, 3-HS-99-5A-S5, as follows: [12.2] RESET FIRST position. (Group 2/3) [12.3] RESET SECOND position. (Group 1/4) [12.4] NORMAL position. [13] **CHECK** the following conditions: [13.1] All eight SCRAM SOLENOID GROUP A/B LOGIC RESET lights ILLUMINATED. [13.2] The following four lights ILLUMINATED: [13.2.1] SYSTEM A BACKUP SCRAM VALVE, 3-IL-99-5A/AB. [13.2.2] SYSTEM B BACKUP SCRAM VALVE, 3-IL-99-5A/CD. [13.3] Scram Discharge Volume vent and drain valves indicate OPEN. **ATC Operator Resets RPS Scram by placing HS-99-5A-S5 to group 2/3 then 1/4 and verifies indications as stated above.**

Op Test No.: 15-10 Scenario No. 2 Event No.: 3 Page 6 of 13

Event Description: Loss of RPS 'B', Half Scram

Time	Position	Applicant's Actions or Behavior
	BOP	**AOI-99-1, Loss of Power to one RPS Bus** **4.2 Subsequent Actions** [14] RESET PCIS trip logic at Panel 3-9-4 as follows: [14.1] **MOMENTARILY PLACE** PCIS DIV I RESET, 3-HS-64-16A-S32, to left and right RESET positions. [14.2] **CHECK** the following red lights ILLUMINATED: [14.2.1] MSIV GROUP A1, 3-IL-64-A1 [14.2.2] MSIV GROUP B1, 3-IL-64-B1 [14.3] **MOMENTARILY PLACE** PCIS DIV II RESET, 3-HS-64-16A-S33, to left and right RESET positions. [14.4] **CHECK** the following red lights ILLUMINATED: [14.4.1] MSIV GROUP A2, 3-IL-64-A2 [14.4.2] MSIV GROUP B2, 3-IL-64-B2 **BOP Operator resets PCIS by placing HS-64-16A-S32 PCIS Div I RESET to left and right and observes indications as stated above.** [16] **RESET** the secondary containment isolation logic at Panel 3-9-25, as follows: [16.1] **PLACE** the REACTOR ZONE FANS AND DAMPERS switch, 3-HS-64-11A, to OFF. [16.2] **PLACE** REFUEL ZONE FANS AND DAMPERS Switch, 3-HS-64-3A, to OFF. [16.3] **VERIFY** only one SBGT trains operating. [17] **START** the Refuel Zone supply and exhaust fans, at Panel 3-9-25, as follows: [17.1] **PLACE** REFUEL ZONE FANS AND DAMPERS Switch, 3-HS-64-3A, in SLOW A (SLOW B) position.

Op Test No.: 15-10 Scenario No. 2 Event No.: 3 Page 7 of 13

Event Description: Loss of RPS 'B', Half Scram

Time	Position	Applicant's Actions or Behavior
	BOP	**AOI-99-1, Loss of Power to one RPS Bus** **4.2 Subsequent Actions** [18] **START** the Reactor Building supply and exhaust fans, at Panel 3-9-25, as follows: [18.1] **PLACE** the REACTOR ZONE FANS AND DAMPERS switch, 3-HS-64-11A, to the SLOW A(B) position. [19] **SECURE** remaining SBGT train per 0-OI-65 section 7.1. [20] **IF** fans transfer to fast speed is required after five minutes, **THEN**: **PLACE** the REACTOR ZONE FANS AND DAMPERS switch, 3-HS-64-11A, to the FAST A(B) position. [21] **IF** fans transfer to fast speed is required after five minutes, **THEN**: **PLACE** the REFUEL ZONE FANS AND DAMPERS switch, 3-HS-64-3A, to the FAST A(FAST B) position. [22] **REFER** to 3-OI-99 to restore remaining affected systems to operation following RPS Bus Power loss and **RETURN** to Step 4.2[23] **BOP Operator starts REFUEL and REACTOR ZONE FANS as described above.**
	DRIVER	**As Unit 1, acknowledge securing SBGT trains and CREV. Insert Event Trigger 11 to STOP SGTS trains.** **For CREV take FP05A and FP05B to STOP then NORM.** **Call control room and report SBGT trains and CREV secured.** **When called upon to reset ATU RP09 insert trigger 25 to perform actions to reset Local ATU RP09 Alarms.**

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Event Description: Loss of RPS 'B', Half Scram

Time	Position	Applicant's Actions or Behavior
	ATC	**3-OI-99** **8.5 Restoration to Normal Following RPS Bus Power Loss or Transfer** **NOTES** 1) This section provides instructions for resetting the various system isolations and reopening affected valves to allow those systems to be restored to normal operation in accordance with their respective operating instructions. 2) The following steps are performed at Panel 3-9-5 unless otherwise noted. 3) When RPS Bus power is lost to some scram discharge volume level switches, their RTD heater is de-energized. Following the restoration of power, a time delay, dependent on how long the level switch was de-energized, prevents resetting the halfscram signal. This may take up to 37 seconds after RPS power is restored. Precaution 3.0 O can be referred to for more information on these level switches [1] **OBTAIN** Unit Supervisor/SRO's permission to restore to normal. [2] **MOMENTARILY PLACE** SCRAM RESET, 3-HS-99-5A-S5, as follows: [2.1] RESET FIRST position. (Group 2/3) [2.2] RESET SECOND position. (Group 1/4) [2.3] NORMAL position. [3] **CHECK** the following conditions: A. All eight SCRAM SOLENOID GROUP A/B LOGIC RESET lights ILLUMINATED. B. The following four lights ILLUMINATED: • SYSTEM A BACKUP SCRAM VALVE, 3-IL-99-5A/AB. • SYSTEM B BACKUP SCRAM VALVE, 3-IL-99-5A/CD. C. Scram Discharge Volume vent and drain valves indicate OPEN. D. Points SOE033 and SOE035 on ICS computer or on the First Out Printer reads "NOTTRIP" for RPS "A". E. Points SOE034 and SOE036 on ICS computer or on the First Out Printer reads "NOTTRIP" for RPS "B".

Op Test No.: 15-10 Scenario No. 2 Event No.: 3 Page 9 of 13

Event Description: Loss of RPS 'B', Half Scram

Time	Position	Applicant's Actions or Behavior
	ATC	[4] At Panel 3-9-4, **RESET** PCIS trip logic as follows: [4.1] **MOMENTARILY PLACE** PCIS DIV I RESET,3-HS-64-16A-S32, to left and right RESET positions. [4.2] **CHECK** the following red lights ILLUMINATED: • MSIV GROUP A1. • MSIV GROUP B1. [4.3] **MOMENTARILY PLACE** PCIS DIV II RESET,3-HS-64-16A-S33, to left and right RESET positions. [4.4] **CHECK** the following red lights ILLUMINATED: • MSIV GROUP A2. • MSIV GROUP B2. Resets RPS and PCIS IAW OI-99 Reports RPS and PCIS have been reset
`	SRO	**Directs BOP operator to restore remaining systems IAW OI-99.**
	BOP	**NOTE** Steps 8.5[5] through 8.5[22] can be performed in any order. [5] **VERIFY** the green lights are ILLUMINATED on all 5 of the QLVPS located at Panel 9-14. [6] **RESTORE** Reactor and Refuel Zone Ventilation to normal operation. REFER TO 3-AOI-64-2D, Group 6 Ventilation System Isolation. [7] **RESTORE** Standby Gas Treatment System to standby readiness. REFER TO 0-OI-65, Section 7.0. **3-AOI-64-2D** **4.2 Subsequent Actions (continued)** [10] **WHEN** initiating signal has been corrected AND necessary repairs have been made, **THEN** [10.1] **VERIFY** PCIS RESET: • **RESET** PCIS DIV I RESET, 3-HS-64-16A-S32. • **RESET** PCIS DIV II RESET, 3-HS-64-16A-S33.

Op Test No.: 15-10 Scenario No. 2 Event No.: 3 Page 10 of 13

Event Description: Loss of RPS 'B', Half Scram

Time	Position	Applicant's Actions or Behavior
	BOP	**3-AOI-64-2D** **4.2 Subsequent Actions (continued)** [10] **WHEN** initiating signal has been corrected AND necessaryrepairs have been made, **THEN** [10.1] **VERIFY** PCIS RESET: • **RESET** PCIS DIV I RESET, 3-HS-64-16A-S32. • **RESET** PCIS DIV II RESET, 3-HS-64-16A-S33. [10.2] **RESET** Reactor/Refuel isolation logic as required: • **PLACE** REFUELING ZONE FANS AND DMPRS,3-HS-64-3A in OFF. • **PLACE** REACTOR ZONE FANS AND DMPRS, 3-HS-64-11A in OFF. [10.3] **START** Reactor/Refuel zone ventilation as required: • **PLACE** REACTOR ZONE FANS AND DAMPERS switch, 3-HS-64-11A, in SLOW A (SLOW B). • **PLACE** REFUEL ZONE FANS AND DAMPERSSwitch, 3-HS-64-3A, in SLOW A (SLOW B). [10.4] **VERIFY** for the fans started the dampers open and fans start as indicated by illuminated red lights above the following switches: • The two green lights A(B) above REFUEL ZONEFANS AND DAMPERS Switch, 3-HS-64-3A,extinguish and the two red lights A(B) illuminate. • The two green lights A(B) above REACTOR ZONEFANS AND DAMPERS Switch 3-HS-64-11A,extinguish and the two red lights A(B) illuminate. • REACTOR ZONE SPLY OUTBD ISOL DMPR, 3-HS-64-13. • REACTOR ZONE SPLY INBD ISOL DMPR, 3-HS-64-14. • REACTOR ZONE EXH INBD ISOL DMPR, 3-HS-64-42. • REACTOR ZONE EXH OUTBD ISOL DMPR, 3-HS-64-43. • REACTOR ZONE FANS AND DAMPERS, 3-HS-64-11A. • REFUEL ZONE SPLY OUTBD ISOL DMPR, 3-HS-64-5. • REFUEL ZONE SPLY INBD ISOL DMPR,3-HS-64-6. • REFUEL ZONE EXH OUTBD ISOL DMPR,3-HS-64-9. • REFUEL ZONE EXH INBD ISOL DMPR,3-HS-64-10.

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Event Description: Loss of RPS 'B', Half Scram

Time	Position	Applicant's Actions or Behavior
	BOP	[11] **NOTIFY** RADCON of the isolation restoration AND **REQUEST** surveys. Verifies PCIS reset and restarts reactor/refuel zone ventilation IAW AOI-64-2d. Runs fans in SLOW for 5 minutes before shifting to FAST speed. Verifies green lights illuminated on all 5 QLVPS. Calls Unit 1 operator to secure SBGT trains.
	DRIVER	**As Unit 1, acknowledge securing SBGT trains and CREV. Insert Event Trigger 11 to STOP SGTS trains.** **For CREV take FP05A and FP05B to STOP then NORM.** **Call control room and report SBGT trains and CREV secured.** **When called upon to reset ATU RP09 insert trigger 21 to perform actions to reset Local ATU RP09 Alarms.**
	BOP	**8.5 Restoration to Normal Following RPS Bus Power Loss or Transfer (continued)** [8] At Panel 3-9-3, **PLACE** PSC head tank pumps in service as follows: • **PLACE** PSC PUMP SUCTION INBD ISOL VALVE,3-HS-75-57A, in AUTO After OPEN. • **PLACE** PSC PUMP SUCTION OUTBD ISOL VALVE,3-HS-75-58A, in AUTO After OPEN. • **PLACE** PSC HEAD TANK PUMPS 3A & 3B,3-HS-75-75A &3-HS-75-76A in AUTO. Places PSC head tank pumps back in service.

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Event Description: Loss of RPS 'B', Half Scram

Time	Position	Applicant's Actions or Behavior
	BOP	[9] **IF** RHR System was in Shutdown Cooling, **THENRESTORE** RHR System. REFER TO 3-AOI-74-1. (**N/A** ifSection 8.11 performed). **NOTE** 3-FCV-64-139 and 3-FCV-64-140 opens and closes automatically when the Drywell DPCompressor starts and stops. [10] At Panel 3-9-3, **RESTORE** Drywell DP Compressor toautomatic operation as follows: [10.1] **DEPRESS** DRYWELL DP COMP SUCTION VLV RESET pushbutton, 3-HS-64-139A. [10.2] **DEPRESS** DRYWELL DP COMP DISCH VLV RESET pushbutton, 3-HS-64-140A. [10.3] **VERIFY OPEN** DRYWELL INBD ISOLATION VLV using 3-HS-64-31. [10.4] **VERIFY OPEN** SUPPR CHBR INBD ISOLATION VLV using 3-HS-64-34. [11] At Panel 3-9-4, **RESTORE** Drywell Floor and Equipment Drain Systems to normal operation as follows: [11.1] **NOTIFY** Radwaste Operator that Drywell Equipment and Floor Drain Sump isolation valves are being reopened. [11.2] **PLACE** DW EQPT DRAIN INBD ISOL VALVE, 3-HS-77-15A, in AUTO After OPEN. [11.3] **PLACE** DW EQPT DRAIN OUTBD ISOL VALVE, 3-HS-77-15B, in AUTO After OPEN. [11.4] **PLACE** DW FLOOR DRAIN INBD ISOL VALVE, 3-HS-77-2A, in AUTO After OPEN. [11.5] **PLACE** DW FLOOR DRAIN OUTBD ISOL VALVE, 3-HS-77-2B, in AUTO After OPEN. Restores Drywell DP Compressor to automatic operation. Restores Drywell Floor and Equipment Drain systems to normal operation. [12] **IF** DW Radiation Monitor CAM, 3-RM-90-256 was secured due to a preplanned transfer, **THEN** (otherwise **N/A**)

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Event Description: Loss of RPS 'B', Half Scram

Time	Position	Applicant's Actions or Behavior
	BOP	**NOTE** Step 8.3[13] bullets may be performed in any order. [13] **IF** DW Radiation Monitor CAM, 3-RM-90-256, isolated due to loss of RPS, **THEN** (otherwise **N/A**) **MOMENTARILY DEPRESS** the following RESET push buttons on Panel 3-9-2 and verify the associated valves open. • UPPER INBD SUPPLY ISOL VALVE RESET,3-HS-90-254A-A (opens FCV-90-254A). • LOWER INBD SUPPLY ISOL VALVE RESET,3-HS-90-254B-A (opens FCV-90-254B). • OUTBD RETURN ISOL VALVE RESET,3-HS-90-257A-A (opens FCV-90-257A). • OUTBD SUPPLY ISOL VALVE RESET,3-HS-90-255A (opens FCV-90-255). • INBD RETURN ISOL VALVE RESET,3-HS-90-257B-A (opens FCV-90-257B). [14] At Panel 3-9-54,**PLACE** H2/O2 Analyzer in service per 3-OI-76. [15] At Panel 3-9-55, **VERIFY** PATH A VENT FLOW CONT,3-FIC-84-20, in AUT0 with setpoint at 100 scfm. Returns DW Radiation Monitor CAM to service. Places H2/O2 Analyzer in service. Verifies 3-FIC-84-20 in AUTO w/setpoint at 100 scfm. [16] **RESTORE** Reactor Water Cleanup System to normal operation. REFER TO 3-OI-69, Section 5.0. (**N/A** ifSection 8.10 performed)
	NRC	**End of Event #3, Request Event #4**

Op Test No.: 15-10 Scenario No. 2 Event No.: 4 Page 1 of 4

Event Description: C2 Feedwater Heater Tube Leak/Lower reactor power

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When the NRC Chief Examiner is ready for Event 4, insert Event Trigger 4 to insert malfunction FW05C to 100 in 600, C2 Feedwater Heater Tube Leak ramped to 100% over 10 minutes.**
	BOP	**Announces BYPASS VLV TO CONDENSER NOT CLOSED annunciator.** Refers to 3-9-6A, W18 ARP **3-ARP-9-6A** **Operator Action:** A. **CHECK** heater high or low level or moisture separator high or low level alarm window illuminated on Panel 3-9-6 or 3-9-7 to identify which bypass valve is opening. B. **CHECK** ICS to determine which bypass valve is open. C. **DISPATCH** personnel to check which valve's light is extinguished on junction box 3-JBOX-006-3422, Col T-7 J-LINE, elevation 565'. **Dispatches AUO to JB to determine which light is extinguished.**
	ATC	**Checks Feedwater Heater mimics on ICS screen (FWHL)** **Reports that the drain valve on C2 heater (LCV-6-40A) is opening.**
	DRIVER	**As AUO sent to JB, call control room and report that the light is extinguished for LCV-6-40A**
	ATC	**Announces HEATER C2 LEVEL HIGH annunciator.**
	BOP	Refers to 3-9-6A, W10 ARP **3-ARP-9-6A** **Operator Action:** A. **CHECK** the following indications: • Condensate flow recorder 3-XR-002-0026 (Point 4), Panel 2 9-6.Rising flow is a possible indication of a tube leak. • Heater C2 shell pressure, 3-PI-5-26, and drain cooler C5 flow,3-FI-6-52, Panel 3-9-6. High or rising shell pressure or drain cooler flow is possible indication of a tube leak. **Checks Condensate flow recorder and reports rising condensate flow.**

Op Test No.: 15-10 Scenario No. 2 Event No.: 4 Page 2 of 4

Event Description: C2 Feedwater Heater Tube Leak/Lower reactor power

Time	Position	Applicant's Actions or Behavior
	BOP	**NOTE** If a Hi level occurs when a heater is not in service (extraction stm isolated) it is not required toisolate the condensate or feedwater side unless a gross tube failure is indicated. A gross tube leak would be indicated by rising flow on Condensate Flow Recorder 3-XR-002-0026 (Point 4), Panel 9-6or elevated Heater shell pressure approaching the extraction steam header pressure. A. **CHECK** drain valve 3-FCV-6-96 open. C. **VERIFY** level on ICS screen Feedwater Heater Level (FWHL). • **IF** the C2 heater indicates HIGH (Yellow), **THEN VERIFY**proper operation of the Drain and Dump Valves. • **DISPATCH** personnel to local Panel 3-LPNL-925-562C on El. 586, to VERIFY and MANUALLY control the level. **Check drain valve 6-96 and confirms that it is OPEN.** **Verifies on ICS screen that C2 heater indicates HIGH (Yellow). Reports that drain is OPEN and drain valve is OPENING for C2 heater.** **Calls outside US to attempt to manually control heater level at Panel 925-562C**
	DRIVER	**Acknowledge going to local panel to attempt controlling level for C2 heater.**
EXAMINER NOTE: If the crew diagnoses the tube leak quickly, they may reduce reactor power to 79% IAW OI-6 and isolate the heater. Methods to reduce power may include Mid Power Runback, Core Flow Runback or incremental lowering of Recirc Pump Speed.		
	BOP	**Reports C2 heater indicates HIGH-HIGH (Red)**

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Event Description: C2 Feedwater Heater Tube Leak/Lower reactor power

Time	Position	Applicant's Actions or Behavior
	SRO	Directs entry into 3-AOI-6-1A, High Pressure Feedwater Heater String/Extraction Steam isolation **3-AOI-6-1A** **4.1 Immediate Actions** [1] **REDUCE** Core Thermal Power to ≥ 5% below initial power level to maintain thermal margin. **Directs ATC to initiate an Upper Power Runback**
	ATC	**3-OI-68** **8.12 Initiating Manual Runbacks** **NOTES** 1) Manual runback controls are utilized when it becomes necessary to reduce reactor power and core flow during abnormal plant conditions. 2) This section is performed at Panel 3-9-5. 3) Depressing a manual runback pushbutton initiates a runback of both recirc pumps until the setpoint is reached. Depressing the pushbutton a second time stops the manual runback. The pushbutton can be depressed a third and fourth time to reinitiate and stop the manual runback. This pattern can be repeated until the applicable setpoint is reached. 4) Illustration 2 can be referred to for additional information on manual runback controls. 5) [II/C] When initiating manual runbacks, the appropriate manual pushbutton must be depressed until the backlight is blinking, then the pushbutton can be released.[PER98-013557-000] 6) If ≥25 rpm mismatch in the lower direction exists between Speed Demand and Calculated Speed, the Manual Runback pushbuttons are disabled. [1] **IF** time permits, **THEN** **REVIEW** Precautions and Limitations. **(REFER** TO Section 3.0).

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 4 Page 4 of 4

Event Description: C2 Feedwater Heater Tube Leak/Lower reactor power

Time	Position	Applicant's Actions or Behavior
	ATC	[2] **IF** desired to reduce Reactor Power to approximately 90%,**THEN** (Otherwise N/A): [2.1] **DEPRESS** RECIRC PUMPS UPPER POWER RUNBACK Pushbutton, 3-HS-68-42. [2.2] **CHECK** the following: • Pushbutton backlight blinks until setpoint isreached. • Reactor power lowers to approximately 90%. **Depresses Recirc Pumps Upper Power Runback pushbutton** **Checks that pushbutton backlight blinks and reactor power lowers to approximately 90%** **Reports that reactor power is approximately 90%**
	NRC	**End of Event 4 and beginning of Event 5.**

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Event Description: Lower Reactor Power/Feedwater Heater Removal From Service

Time	Position	Applicant's Actions or Behavior
	SRO	**3-AOI-6-1A** **4.2 Subsequent Actions** [1] **REFER TO** 3-OI-6 for turbine/heater load restrictions. [2] **REQUEST** Reactor Engineer EVALUATE and ADJUST thermal limits, as required. **CAUTION** Failure to reduce core power if fuel is operating at or near the preconditioned envelope in any region of the core may result in fuel damage [3] **ADJUST** reactor power and flow as directed by Reactor Engineer/Unit Supervisor to stay within required thermal andfeedwater temperature limits. **REFER TO** 3-GOI-100-12or 3-GOI-100-12A for the power reduction. [4] **ISOLATE** heater drain flow from the feedwater heater string by closing the appropriate FEEDWATER HEATER A2(B2)(C2)DRAIN TO HTR A3(B3)(C3), 3-FCV-6-94(95)(96). [5] **IF** a tube leak is indicated, **THEN** **PERFORM** manual actions of Attachment 1 for affected heaters. [6] **VERIFY** automatic actions occur. **REFER TO** Attachment 1. **Attachment 1** **Feedwater Heater String Isolation Alignment Requirements** C1 or C2: The following valves must be MANUALLY CLOSED 3-FCV-3-24, HP HTR C2 FW Inlet ISOL VALVE 3-FCV-3-77, HP HTR C1 FW Outlet ISOL VALVE The following valves AUTO Isolate 3-FCV-5-13, HP Heater C1 EXTR ISOL VLV 3-FCV-5-25, HP Heater C2 EXTR ISOL VLV 3-FCV-6-85, Moisture SEP LC RES C1 ISOL VLV 3-FCV-6-174, Moisture SEP LC RES C2 ISOL VLV

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 5 Page 2 of 3

Event Description: Lower Reactor Power/Feedwater Heater Removal From Service

Time	Position	Applicant's Actions or Behavior
	SRO	**3-OI-6** **Illustration 1** **Maximum Turbine-Generator Load Allowed when any Feedwater Heater is Not in Service** **HEATERS OUT (Tube and Shell Side)** One HP string 920 MWe (79%) **Directs BOP operator to CLOSE 3-FCV-6-96** **Calls Reactor Engineer to evaluate and adjust thermal limits** **Directs ATC operator to initiate a recirc mid power runback to lower reactor power to approximately 79%** **Directs ATC operator to monitor the Power To Flow map and to monitor for power oscillations.**
	ATC	**3-OI-68** **8.12 Initiating Manual Runbacks (continued)** [3] **IF** desired to reduce Reactor Power to approximately 78.5%,**THEN** (Otherwise N/A): [3.1] **DEPRESS** RECIRC PUMPS MID POWER RUNBACK pushbutton, 3-HS-68-43. [3.2] **CHECK** the following: • Pushbutton backlight blinks until setpoint is reached. • Reactor power lowers to approximately 78.5%.

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 5 Page 3 of 3

Event Description: Lower Reactor Power/Feedwater Heater Removal From Service

Time	Position	Applicant's Actions or Behavior
	ATC	**Depresses Recirc Pumps Mid Power Runback pushbutton** **Checks that pushbutton backlight blinks and reactor power lowers to approximately 78.5%** **Reports that reactor power is approximately 78%**
	SRO	**Directs that reactor power be maintained less than 920 MWe** **Directs BOP operator to CLOSE 3-FCV-3-24, HP HTR C2 FW Inlet ISOL VALVE and 3-FCV-3-77, HP HTR C1 FW Outlet ISOL VALVE.** **Directs BOP operator to verify 3-FCV-5-13, HP Heater C1 EXTR ISOL VLV, 3-FCV-5-25, HP Heater C2 EXTR ISOL VLV, 3-FCV-6-85, Moisture SEP LC RES C1 ISOL VLV, and 3-FCV-6-174, Moisture SEP LC RES C2 ISOL VLV automatically isolate.**
	BOP	**Closes heater isolation valves as directed** **Verifies automatic isolation of extraction steam and moisture separators.** **Reports isolation of heater string.**
	NRC	**Extraction Steam and MS isolation will NOT automatically close on High Level in FW Heater.**
	SRO	**3-AOI-6-1A** [7] **MONITOR** TURB THRUST BEARING TEMPERATURE,3-TR-47-23, for rising metal temperature and possible active/passive plate reversal. [8] **DETERMINE** cause which required heater isolation and **PERFORM** necessary corrective action. **Direct BOP operator to monitor main turbine thrust bearing temperature.** **Calls management to inform them of the power reduction and cause.** **Calls Work Control to initiate repair package for the C2 heater.**
	DRIVER	**As RE, acknowledge checking Thermal Limits** **As management, acknowledge the heater leak and lowering of reactor power.** **As Work Control, acknowledge preparing work package for the repair of C2 heater.**
	NRC	**Enc of Event #5, request Event #6**

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 6 Page 1 of 4

Event Description: Main Turbine Vibration, Reactor Scram, Failure of Main Turbine Bypass Valves

Time	Position	Applicant's Actions or Behavior
	DRIVER	**When NRC Chief Examiner is ready for Event #6, insert Event Trigger 6 to cause Main Turbine Vibration to rise on two bearings.**
		Announces Main Turbine Vibration High alarm. **Checks Turbine Vibration Recorder and/or Turbine Vibration screen on EHC workstation. Reports rising Main Turbine vibration** Refers to 3-9-7B, W32 ARP **3-ARP-9-7B** **Operator Action:** A. **VERIFY** alarm by checking the following: • On EHC WORKSTATION, Turbine Vibration screen. • On ICS, MAIN TURBINE BEARINGS (TURBBRG) screen. • TURBINE GENERATOR VIBRATION recorder, 3-XR-47-15 (Panel 3-9-7). • Computer points 47-15A thru 47-15M. **CAUTION** If Main Turbine trips Unit Supervisor will decide if Condenser Vacuum should be broken to lower Main Turbine speed at a higher rate. B. **IF** alarm is valid, **THEN** 1. **DETERMINE** cause by checking PROBABLE CAUSE section above. 2. **REDUCE** load and **OBSERVE** vibration. 3. **IF** any of the vibration limits requiring a trip are met in Table 1, **THEN** **DEPRESS** Turbine TRIP pushbutton, 3-HS-47-67D:

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 6 Page 2 of 4

Event Description: Main Turbine Vibration, Reactor Scram, Failure of Main Turbine Bypass Valves

<table>
<tr><td></td><td>BOP</td><td>
TABLE 1
NORMAL VIBRATION LIMITS
<table>
<tr><td>SPEED</td><td>TRIP AFTER VIBRATION EXCEEDS _MILS FOR _MIN</td><td>TRIP IMMEDIATELY IF VIBRATION EXCEEDS</td><td>NORM VIB CONT OPS</td></tr>
<tr><td>1400 – RUNNING SPEED</td><td>10 15</td><td>12 MILS</td><td>≤5 MILS</td></tr>
</table>
Checks Bearing Oil Temperature as a probable cause.
Reports Bearing Oil Temperature as normal
Reports Main Turbine Vibration continuing to rise.
</td></tr>
<tr><td></td><td>SRO</td><td>Briefs crew on the current plant status
Directs ATC operator to insert a manual reactor scram when Main Turbine Vibration exceed 12 MILS
Directs BOP operator to trip the Main Turbine following the reactor scram.</td></tr>
<tr><td></td><td>BOP</td><td>Reports Main Turbine Vibration >12 MILS</td></tr>
<tr><td></td><td>ATC</td><td>Initiates a manual reactor scram

Reactor Scram OATC Hard Card

1.0 IMMEDIATE ACTIONS

[1] DEPRESS REACTOR SCRAM A and B, 3-HS-99-5A/S3A and 3-HS-99-5A/S3B, on Panel 3-9-5.
[2] IF scram is due to a loss of RPS, THEN PLACE REACTOR MODE SWITCH, 3-HS-99-5A-S1, in START & HOT STBYAND PAUSE for approximately 5 seconds (Otherwise N/A)</td></tr>
<tr><td></td><td>DRIVER</td><td>Verify Main Turbine vibration deleted following MT Trip. (Delete malfunction TU02C/TU02D).</td></tr>
</table>

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 6 Page 3 of 4

Event Description: Main Turbine Vibration, Reactor Scram, Failure of Main Turbine Bypass Valves

Time	Position	Applicant's Actions or Behavior
	ATC	[3] Refuel Mode One Rod Permissive Light check: [3.1] PLACE REACTOR MODE SWITCH, 3-HS-99-5A-S1, in REFUEL. [3.2] CHECK illuminated REFUEL MODE ONE ROD PERMISSIVE light, 3-XI-85-46. [3.3] IF REFUEL MODE ONE ROD PERMISSIVE light, 3-XI-85-46, is NOT illuminated, THEN CHECK all control rod positions at Full-In Overtravel, or Full-In. (Otherwise N/A) [4] PLACE REACTOR MODE SWITCH, 3-HS-99-5A-S1, in SHUTDOWN. [5] REPORT the following status to the US: • Reactor Scram • Mode Switch is in Shutdown • "All rods in" or "rods out" • Reactor Water Level and trend (recovering or lowering) • Reactor pressure and trend • MSIV position (Open or Closed) • Power level Completes 'hard card' actions and makes scram report.
	BOP	**Reactor Scram BOP Unit Operator Hard** **1.0 SUBSEQUENT ACTIONS: PANELS 3-9-7 &3-9-8** **NOTES** 1) To OPEN PCB 224 with the control room handswitch, ONE of the following is required:3-XA-55-8A window 7,GEN REVERSE PWR FIRST RELAY OPERATION 3-EA-57-136,WITH GENERATOR PCB 224 CNTR W/REV BYPASS, 3-HS-242-224A,placed in TRIP. OR GENERATOR PCB 224 CNTR W/REV BYPASS, 3-HS-242-224A, placed in BYPASS. 2) The following steps are not required to be performed in order, but only as required to maintain stable conditions.

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 6 Page 4 of 4

Event Description: Main Turbine Vibration, Reactor Scram, Failure of Main Turbine Bypass Valves

Time	Position	Applicant's Actions or Behavior
	BOP	[1] At ≤ 50 MWe, or as directed by the Unit Supervisor, **ENSURE TRIPPED** the Main Turbine as follows: [1.1] **DEPRESS** the TRIP pushbutton, 3-HS-47-67D on Panel 3-9-7. [1.2] **ENSURE OPEN** GENERATOR PCB 224. [1.3] **ENSURE TRIPPED** VOLTAGE REGULATOR [2] **ANNOUNCE** Reactor SCRAM over PA system. Trips the Main Turbine. Verifies PCB 224 OPEN and Voltage Regulator tripped. Reports Main Turbine tripped. **NOTE** The following steps are not required to be performed in order, but only as required tomaintain stable conditions. [1] **MONITOR** and **CONTROL** RPV pressure to keep below 1073 psig andstable. [1.1] **IF** RPV pressure is lowering rapidly, **THEN** **CLOSE** the MSIVs. (Otherwise N/A) [1.2] **IF** MSRVs are cycling and bypass valves are available, **THEN** **MANUALLY OPEN** MSRVs on Panel 3-9-3 to maintain RPV Pressure below 1073 psig while maximizing use of the bypass valves.(Otherwise N/A) [1.3] **IF** MSRVs are cycling and bypass valves are **NOT** available, **THEN** **MANUALLY OPEN** MSRVs on Panel 3-9-3 until RPV pressure is controlled between 800 and 1000 psig. (Otherwise N/A) **Reports Main Turbine Bypass valves are not controlling reactor pressure.** **Attempts to open bypass valves with the jack.** **Reports Main Turbine Bypass valves have failed closed.** **Operates MSRVs to control reactor pressure between 800 and 1000 psig.**
	NRC	**End of Event #6 and start of Event #7**

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 1 of 29

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior
	ATC	**2.0 SUBSEQUENT ACTIONS:** [1] **IF** all control rods **CAN NOT** be verified fully inserted, **THEN PERFORM** the following (otherwise N/A) [1.1] **INITIATE** ARI by Arming and Depressing BOTH of the following: • ARI Manual Initiate, 3-HS-68-119A • ARI Manual Initiate, 3-HS-68-119B [1.2] **ENSURE** the Reactor Recirc Pumps (if running) at minimum speed at Panel 3-9-4 [1.3]**DETERMINE IF** Reactor Power is **ABOVE** or **BELOW** 5% [1.4] IF Reactor Power is **BELOW** 5%, **THEN PERFORM** the following (otherwise N/A) • **REPORT** 'ATWS Actions Complete' and power level [1.5] **IF** Reactor Power is **ABOVE** 5%, **THEN PERFORM** the following (otherwise N/A) [1.5.1] **TRIP** both Recirc Pumps [1.5.2] **INITIATE** SLC [1.5.3] **REPORT** 'ATWS Action Complete' and SLC is or is not injecting and power level. **Reports Rods Out** **Initiates both channels of ARI** **Ensures both reactor recirc pumps are at minimum speed** **Trips both recirc pumps** **Initiates SLC** **Reports 'ATWS Actions Complete', SLC is injecting, and current power level.**
Note to Examiner: Proceed to page 57 for EOI-2 Actions		
	SRO	**Announces entry into EOI-1A, ATWS RPV CONTROL** The reactor will remain subcritical without boron under all conditions — **ADDRESSED** **ADDRESSE** RPV water level CANNOT be determined — **ADDRESSED** **ADDRESSE** PC water lvl and drywell press CANNOT be maintained in the safe area of Curve 7 — **ADDRESSED** **ADDRESSE**

Op TestNo.: 15-10 Scenario No. 2 Event No.: 7 Page 2 of 30

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior

Critical Task #3:

3. With a reactor scram required and the reactor not shutdown, inject boron into the RPV.

1. Safety Significance:
   Shutting down reactor can preclude failure of containment or equipment necessary for the safe shutdown of the plant.

2. Cues:
   Procedural compliance.
   Suppression Pool temperature.

3. Measured by:
   Observation - If operating IAW EOI-1A, US determines that SLC is required (indicated by verbal direction or EOI placekeeping action) before exceeding 110 degrees in the Suppression Pool.

   AND

   RO places SLC A / B Pump control switch in ON, when directed by US.

4. Feedback:
   Reactor Power trend.
   Control Rod indications.
   SLC tank level.

5. Critical Task Failure Criteria:
   Failure to initiate SLC prior to Suppression Pool Temperature exceeding 110 °F

Suppression Pool Temp: _____ Time: _____

Op TestNo.: 15-10 Scenario No. 2 Event No.: 7 Page 3 of 30

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior
	BOP	**Identifies and reports one MSRV stuck open** [2] **IF** any PCIS isolation signal is received, **THEN** **ENSURE** PCIS isolations using any of the following: (Otherwise N/A) • Containment Isolation Status System on Panel 3-9-4 • PCIS Mimic and individual control switch indications • ICS • 3-OI-64 **Reports PCIS isolations 2,3,6, and 8.**
	NRC	**MSRV stuck open is Event 9 and addressed starting on Page 66**
	SRO	**RPV Water Lvl** ENSURE each as required: • PCIS isolations (Groups 1, 2 and 3) **ADDRESSED** • ECCS **ADDRESSED** • RCIC **ADDRESSED** **INHIBIT** ADS **IF** ANY main steam line is open **THEN START** defeating the following isolations: • MSIV low lowlow RPV water lvl (APPX 8A) • RB ventilation low RPV water lvl (APPX 8E) **Directs BOP operator to Inhibit ADS** **Directs BOP operator to call for EOI Appendix 8A and 8E to be performed.**
	BOP	**Inhibits ADS and verifies inhibited by observing 3-9-3C, W18/31 annunciators in alarm** **Calls Work Control to have EOI Appendix 8A and 8E performed** **Reports ADS inhibited.**

Op TestNo.: 15-10 Scenario No. 2 Event No.: 7 Page 4 of 30

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior
Critical Task #1: **Inhibit ADS prior to automatic initiation to prevent uncontrolled RPV depressurization and injection during an ATWS.** 1. Safety Significance: Precludes core damage due to an uncontrolled reactivity addition. 2. Cues: Procedural compliance. 3. Measured by: Criterion is ADS logic inhibited prior to an automatic initiation unless all required injection systems are Terminated and Prevented. 4. Feedback: • RPV pressure trend • RPV level trend • "ADS LOGIC BUS A/B INHIBITED" annunciator status 5. Critical Task Failure Criteria: The Operating Crew fails to inhibit ADS prior to inadvertent initiation of ADS.		
	DRIVER	**As Work Control, acknowledge direction to perform EOI Appendix 8A and 8E.** **Insert Event Trigger 7 to insert App8A.sch and Event Trigger 8 to insert App8Esch** **As Work Control, call control room and report EOI Appendix 8A and 8E completed.**
	DRIVER	**MONITOR which RFP is used for RX WATER LEVEL CONTROL and TRIP A or B if C is NOT selected by use of manual triggers 21 or 22 for (mf FW014A/B) and then delete the malfunction FW14C for RFP C.**

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 5 of 30

Event Description: High Power ATWS – Hydraulic Lock

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>Reactor power is above 5% or unknown
AND
RPV water lvl is above -50 in.</td><td>ACTION REQUIRED</td></tr>
<tr><td>ALL level/power conditions exist (Table Q-1)</td><td>NO ACTION REQUIRED</td></tr>
</table>
STOP and PREVENTALL inj into RPV EXCEPT from RCIC, CRD and SLC (Table L-4, APPX 4)

WHEN RPV water lvl drops below -50 in.

Directs ATC operator to Stop and Prevent all injection to the RPV, except CRD and SLC, using EOI Appendix 4 and lower RPV level to below -50 inches.

Directs ATC and BOP operators to Stop and Prevent all injection to the RPV, except RCIC, using EOI Appendix 4.
</td></tr>
<tr><td></td><td>BOP</td><td>
3-EOI APPENDIX-4

[1] STOP and PREVENT injection from HPCI by performing the following:
[1.1] IF HPCI Turbine is NOT at zero speed, THEN PRESS and HOLD 3-HS-73-18A, HPCI TURBINE TRIP push-button.
[1.2] WHEN HPCI Turbine is at zero speed, THEN PLACE 3-HS-73-47A, HPCI AUXILIARY OIL PUMP control switch in PULL TO LOCK and RELEASE 3-HS-73-18A, HPCI TURBINE TRIP push-button.

Places HPCI Aux Oil Pump control switch in PTL.
</td></tr>
</table>

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 6 of 30

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior

Critical Task #2:

When Reactor Power is greater than 5% or unknown and RPV Level is greater than (-) 50 inches, STOP and PREVENT all injection into the RPV except RCIC, CRD and SLC.

1. Safety Significance:
   With thermal power being produced in the RPV and all actions to lower power have not brought reactor power out of the heating range, power oscillation and subsequent fuel damage may be generated from these conditions persisting. Stopping and preventing injection to lower RPV level will reduce this challenge to the reactor.

2. Cues:
   Reactor is scrammed and all ATWS actions are taken by the operator and power is greater than or equal to 5% power or unknown.

3. Measured by:
   Reactor power on APRM NUMAC or recorder displays.

4. Feedback:
   - RPV Level lowering
   - Reactor Power lowering

5. Critical Task Failure Criteria:
   The Operating Crew exceeds curve 3, Heat Capacity Temperature Limit Curve, requiring Emergency Depressurization with Control Rods Out.

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 7 of 30

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior
	BOP	NOTE Following receipt of a CORE SPRAY automatic initiation signal, it is NOT necessary to wait until a pump starts before performing step 1.0[3]. [3] **STOP** and **PREVENT** injection from CORE SPRAY following an initiation signal by **PLACING** ALL Core Spray pump control switches in STOP. [4] **STOP** and **PREVENT** injection from LPCI SYSTEM I by performing the following: **NOTE** Injection may be prevented by performing EITHER step 1.0[4.1] or step 1.0[4.2]. [4.1] Following automatic pump start, **PLACE** RHR SYSTEM I pump control switches in STOP. **OR** [4.2] BEFORE RPV pressure drops below 450 psig, [4.2.1]**PLACE** 3-HS-74-155A, LPCI SYS I OUTBD INJ VLV BYPASS SEL in **BYPASS.** **AND** [4.2.2]**ENSURE CLOSED** 3-FCV-74-52, RHR SYS I LPCI OUTBD INJECT VALVE . [5]**PREVENT** injection from LPCI SYSTEM II by performing the following: **NOTE** Injection may be prevented by performing EITHER step 1.0[5.1]or step 1.0[5.2]. [5.1] Following automatic pump start, **PLACE** RHR SYSTEM II pump control switches in STOP. **OR**

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 8 of 30

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior
	BOP	[5.2]BEFORE RPV pressure drops below 450 psig, [5.2.1] **PLACE**3-HS-74-155B, LPCI SYS II OUTBD INJ VLV BYPASS SEL in **BYPASS.** **AND** [5.2.2] **VERIFY CLOSED** 3-FCV-74-66, RHR SYS II LPCI OUTBD INJECT VALVE. **Places LPCI Sys I and II outboard injection valve bypass switches in BYPASS** **Reports stopped and prevented on Panel 9-3**
	ATC	**3-EOI APPENDIX-4** [6] **STOP** and **PREVENT** injection from CONDENSATE and FEEDWATER by performing the following: [6.1] **IF** performing for power control and oscillations, **THEN PERFORM** the following: • Reduce discharge pressure of all Feedwater Pumps to less than Reactor Pressure. • **ENSURE** Feedwater injection to Reactor vessel is stopped. • **CLOSE** the following valves BEFORE RPV pressure drops below 500 psig: • 3-FCV-3-19, RFP 3A DISCHARGE VALVE • 3-FCV-3-12, RFP 3B DISCHARGE VALVE • 3-FCV-3-5, RFP 3C DISCHARGE • 3-LCV-3-53, RFW START-UP LEVEL CONTROL

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 9 of 30

Event Description: High Power ATWS – Hydraulic Lock

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>ATC</td><td>Reports stopped and prevented on Panel 9-6 and RPV water level lowering.
Reports RPV water level < -50 inches.</td></tr>
<tr><td></td><td>BOP</td><td>Reports Suppression Pool temperature > 110°F</td></tr>
<tr><td></td><td>SRO</td><td>
<table>
<tr><td>ALL level/power conditions exist (Table Q-1)</td><td>ACTION REQUIRED</td></tr>
</table>
<table>
<tr><th colspan="2">Table Q-1
Level/Power Conditions</th></tr>
<tr><td>Suppression Pool Temperature is above 110ºF</td><td>CHECKED</td></tr>
<tr><td>Reactor Power above 5% OR unknown</td><td>CHECKED</td></tr>
<tr><td>RPV Level above -162 in.</td><td>CHECKED</td></tr>
<tr><td>MSRV open/cycling OR DW pressure above 2.4 psig</td><td>CHECKED</td></tr>
</table>
Do ALL Level/Power condtions exist Table (Q-1)

YES

CONTINUE to lower RPV water lvl, irrespective of ANY reactor power or RPV water lvl oscillations
</td></tr>
<tr><td></td><td>NRC</td><td>EOI-2 is addressed starting on page 57</td></tr>
</table>

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 10 of 30

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior
	SRO	WHEN ANY Level/Power condition clears (Table Q-1) Directs ATC to continue to lower RPV water level until Reactor Power is < 5%, or RPV water level lowers to -162 in., or all MSRVs or shut. **Reactor Power**

IF	THEN
The reactor is subcritical AND NO boron has been injected	**NO ACTION REQUIRED**

ENSURE reactor mode switch in SHUTDOWN	**CHECKED**

INITIATE ARI	**CHECKED**

IF tripping Recirc pumps will cause loss of Main Turbine, RFP, HPCI, or RCIC THEN **ENSURE** Recirc runback (pump speed 480 rpm or less)	**CHECKED**

IF reactor power is above 5% or Unknown **THEN TRIP** Recirc pumps	**CHECKED**

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 11 of 30

Event Description: High Power ATWS – Hydraulic Lock

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>ATC</td><td>Recognizes and reports trip of RFP 'C'</td></tr>
<tr><td></td><td>NRC</td><td>Trip of RFP 'C' is Event 8 and is addressed on Page 65</td></tr>
<tr><td></td><td>SRO</td><td>
Control Rod Insertion

<table>
<tr><td>RESET ARI
DEFEAT ARI logic trips if necessary (APPX 2)</td><td>CHECKED</td></tr>
</table>

<table>
<tr><td>INSERT control rods using ANY Alternate Control Rod Insertion Methods (Table Q-2)</td><td>CHECKED</td></tr>
</table>

Table Q-2
Alternate Control Rod Insertion Methods
<table>
<tr><th>CONDITIONS</th><th>METHODS</th><th>APPX</th></tr>
<tr><td>Scram valves opened but SDV is full</td><td>1. RESET scram DEFEAT RPS logic if necessary
2. DRAIN SDV
3. RECHARGE accumulators
4. INITIATE scram</td><td>1F</td></tr>
<tr><td>Manual control rod insertion methods</td><td>DRIVE control rods
BYPASS RWM and
RAISE CRD drive water differential pressure if necessary</td><td>1D</td></tr>
</table>

Directs BOP operator call for EOI Appendix 1F and 2 to be performed
</td></tr>
<tr><td></td><td>NRC</td><td>EOI-1A Pressure Leg is addressed on Page 50</td></tr>
</table>

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 12 of 30

Event Description: High Power ATWS – Hydraulic Lock

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>BOP</td><td>Calls Work Control and directs that EOI Appendix 1F and 2 be performed.</td></tr>
<tr><td></td><td>DRIVER</td><td>As Work Control, acknowledge performing EOI Appendix 1F and 2
Insert Event Trigger 9 & 29 to insert App1F.sch, App2.sch.

As Work Control, call control room and report EOI Appendix 1F and 2 completed.
After report remove ATWS Malfunctions, RD09A and RD09B.</td></tr>
<tr><td></td><td>ATC</td><td>Reports that Reactor Power is < 5%</td></tr>
<tr><td></td><td>SRO</td><td>
<table>
<tr><th colspan="2">Table Q-1
Level/Power Conditions</th></tr>
<tr><td>Suppression Pool Temperature is above 110ºF</td><td>CHECKED</td></tr>
<tr><td>Reactor Power above 5% OR unknown</td><td>NOT CHECKED</td></tr>
<tr><td>RPV Level above -162 in.</td><td>CHECKED</td></tr>
<tr><td>MSRV open/cycling OR DW pressure above 2.4 psig</td><td>CHECKED</td></tr>
</table>

WHEN
ANY
Level/Power
condition clears
(Table Q-1)

STOP lowering RPV water lvl
AND
RECORD level _____ in.
</td></tr>
</table>

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 13 of 30

Event Description: High Power ATWS – Hydraulic Lock

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
Directs ATC Operator to stop lowering RPV water level
Records RPV water level where Reactor Power < 5%
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>EMERGENCY RPV DEPRESSURIZATION IS REQUIRED</td><td>NO ACTION REQUIRED</td></tr>
</table>
USE ANY Preferred ATWS Injection System (Table L-3) to maintain RPV water lvl between -180 in. and:

Lowered level (if lvl was deliberately lowered in flowpath A)

OR

+51 in. (if lvl was NOT deliberately lowered)

Ok to use CS (Appx 6D,6E) or Alternate Injection Subsystems (Table L-2) if previously required by flowpathEor C4A
<table>
<tr><th colspan="3">Table L-3
Preferred ATWS Injection Systems</th></tr>
<tr><td>SOURCES</td><td>APPX</td><td>INJ PRESS</td></tr>
<tr><td>CNDS and FW</td><td>5A</td><td>1210 psig</td></tr>
</table>
Directs ATC operator to maintain RPV water level between the level where reactor power lowered < 5% and -180 inches using EOI Appendix 5A (CNDS and FW)

Directs ATC operator to perform EOI Appendix 1F and drive control rods using EOI Appendix 1D.
</td></tr>
</table>

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 14 of 30

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior
	ATC	**3-EOI APPENDIX-5A** 1. IF ..... It is desired to use a reactor feed pump that is in operation, THEN .....**CONTINUE** at step 12 to control the operating pump**.** 12. **SLOWLY ADJUST** RFPT speed UNTIL feedwater flow to the RPV is indicated, using ANY of the following methods on Panel 3-9-5: • Individual 3-HS-46-8A(9A)(10A), RFPT 3A(3B)(3C) SPEED CONT RAISE/LOWER switch in MANUAL GOVERNOR, **OR** • Individual 3-SIC-46-8(9)(10), RFPT 3A(3B)(3C) SPEED CONTROL in MANUAL, **OR** • 3-LIC-46-5, REACTOR WATER LEVEL CONTROL, in MANUALwith individual 3-SIC-46-8(9)(10), RFPT 3A(3B)(3C) SPEED CONTROL in AUTO. 13. **ADJUST** RFPT speed as necessary to control injection using the methods of step 12. **Controls RPV water level as directed using EOI Appendix 5A** **3-EOI Appendix-1F** **1.0 INSTRUCTIONS** [1] VERIFY Reactor Scram and ARI reset. [2] WHEN RPS Logic has been defeated, THEN RESET Reactor Scram.

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 15 of 30

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior
	ATC	[3] VERIFY OPEN Scram Discharge Volume vent and drain valves. [4] **DRAIN** SDV UNTIL the following annunciators clear: • WEST CRD DISCH VOL WTR LVL HIGH HALF SCRAM (Panel 3-9-4, 3-XA-55-4A, Window 1). • EAST CRD DISCH VOL WTR LVL HIGH HALF SCRAM (Panel 3-9-4, 3-XA-55-4A, Window 29). **Resets ARI and Reactor Scram** **Opens SDV vent and drain valves** **3-EOI Appendix-1D** **1.0 INSTRUCTIONS** **NOTE** This EOI Appendix may be executed concurrently with EOI Appendix 1A or 1B at SRO's discretion when time and manpower permit. [1] **VERIFY** at least one CRD pump in service **NOTES** 1) Closing 3-85-586, CHARGING WATER ISOL valve may reduce the effectiveness of EOI Appendix 1A or 1B. 2) A ladder may be required to perform the following step. REFER TO Tools andEquipment, Attachment 1. 3) IF necessary, an alternate ladder is available at the HCU Modules, EAST and Westbanks. It is stored by the CRD Charging Cart. [2] **IF** Reactor Scram or ARI CANNOT be reset, **THEN DISPATCH** personnel to close 3-SHV-85-586, CHARGING WATER SHUTOFF (RB NE, El 565 ft).

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Event Description: High Power ATWS – Hydraulic Lock

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>ATC</td><td>[3] VERIFY REACTOR MODE SWITCH in SHUTDOWN.
[4] BYPASS Rod Worth Minimizer.
[5] REFER TO Attachment 2 and INSERT control rods in the area of highest power as follows:
[5.1] SELECT control rod.
[5.2] PLACE CRD NOTCH OVERRIDE switch in EMERG ROD IN position UNTIL control rod is NOT moving inward.
[5.3] REPEAT Steps 1.0[5.1] and 1.0[5.2] for each control rod to be inserted.

Verifies Reactor Mode Switch is in SHUTDOWN
Bypasses the RWM
Refers to Attachment 2 and inserts control rods using EMERG ROD IN. Starts with control rods in the area of highest power.
Reports that control rods are being inserted.</td></tr>
<tr><td></td><td>SRO</td><td>
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>RPV water lvl CANNOT be restored and maintained above -180 in. AND Core steam flow remains below MCSF (Table L-5)</td><td>NO ACTION REQUIRED</td></tr>
</table>
WHEN SLC has injected into the RPV to a tank lvl of 67%

RPV Press
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>A high drywell pressure ECCS signal exists (2.45 psig)</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>EMERGENCY RPV DEPRESSURIZATION IS REQUIRED or has been required</td><td>NO ACTION REQUIRED</td></tr>
</table>
</td></tr>
</table>

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 17 of 30

Event Description: High Power ATWS – Hydraulic Lock

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
<table>
<tr><td>IF……ANY MSRV is cycling
THEN MANUALLY OPEN MSRVs UNTIL RPV press drops to the press at which all main turbine bypass vlvs are fully open (APPX 11A)</td><td>ADDRESSED</td></tr>
</table>
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>Suppr pl temp and lvl CANNOT be maintained in a safe area of Curve 3 at the existing RPV press</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>Suppr pl lvl CANNOT be maintained in the safe area of Curve 4</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>BORON INJECTION IS REQUIRED
AND
The main condenser is available
AND
There has been no indication of a steam line break</td><td>NO ACTION REQUIRED</td></tr>
</table>
<table>
<tr><td>STABILIZE RPV press below 1073 psig using the main turbine bypass vlvs (APPX 8B)
Use Alternate RPV Pressure Control Systems (Table P-1), if necessary
Crosstie CAD or MSRV carts to DW Control Air (APPX 8G, 20H) if necessary</td></tr>
</table>
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>DW Control Air is or becomes unavailable</td><td>NO ACTION REQUIRED</td></tr>
</table>
</td></tr>
</table>

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 18 of 30

Event Description: High Power ATWS – Hydraulic Lock

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
<table>
<tr><td colspan="2">Table P-1
Alternate RPV Pressure Control Systems</td></tr>
<tr><td>Source</td><td>APPX</td></tr>
<tr><td>Main turb bypass vlvs</td><td>8B</td></tr>
<tr><td>MSRVs only if suppr lvl is above 5.5 ft
IF “MAIN STEAM RELIEF VLV AIR ACCUM PRESS LOW” annunciator (XA-55-3D-18) is in alarm
THEN MINIMIZE MSRV cycling by using sustained opening for depressurization</td><td>11A</td></tr>
</table>
Directs BOP operator to control RPV Pressure 800 – 1000 psig using EOI Appendix 11A, SRVs

Directs BOP operator to call maintenance to investigate the failure of the main turbine bypass valves.
</td></tr>
<tr><td></td><td>BOP</td><td>Controls RPV pressure as directed.

Calls Work Control and requests maintenance investigate the failure of the Main Turbine Bypass valves.</td></tr>
<tr><td></td><td>DRIVER</td><td>As Work Control, acknowledge maintenance investigation of the Main Turbine Bypass failure.</td></tr>
<tr><td></td><td>ATC</td><td>Reports that the following annunciators have reset:
WEST CRD DISCH VOL WTR LVL HIGH HALF SCRAM (Panel 3-9-4, 3-XA-55-4A, Window 1).
AND
EAST CRD DISCH VOL WTR LVL HIGH HALF SCRAM (Panel 3-9-4, 3-XA-55-4A, Window 29).

3-EOI Appendix-1F
NOTES
1) If EOI Appendix 2 has been executed, ARI initiation or reset will NOT be possible or necessary in Step 1.0[6].
2) If reactor pressure is greater than 600 psig, SRO may direct performance of step1.0[6] prior to accumulators being fully recharged.</td></tr>
</table>

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 19 of 30

Event Description: High Power ATWS – Hydraulic Lock

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>ATC</td><td>[6] WHEN CRD Accumulators are recharged, THEN
INITIATE manual Reactor Scram and ARI.

Initiates a manual Reactor Scram and ARI
Observes the full core display and reports ALL control rods fully inserted</td></tr>
<tr><td></td><td>SRO</td><td>
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>The reactor will remain subcritical without boron under all conditions</td><td>STOP boron inj unless required by other procedures
AND
ENTER EOI-1 RPV Control</td></tr>
</table>

Directs ATC operator to STOP boron injection
Exits EOI-1A and enters EOI-1, RPV Control.

<table>
<tr><td>ENSURE RX scram</td><td>CHECKED</td></tr>
</table>

<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>It has NOT been determined that the reactor will remain subcritical without boron under all conditions</td><td>ADDRESSED</td></tr>
<tr><td>RPV water level CANNOT be determined</td><td>ADDRESSED</td></tr>
<tr><td>PC water lvl and drywell press CANNOT be maintained in the safe area of Curve 7</td><td>ADDRESSED</td></tr>
</table>

Reactor Power

Directs ATC operator to enter AOI-100-1

RPV Water Lvl

• An RPV water lvl instrument may be used to determine or trend lvl only when it reads above the Minimum Indicated Lvl associated with the highest max DW or SC run temp·</td></tr>
</table>

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 20 of 30

Event Description: High Power ATWS – Hydraulic Lock

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
If DW temps or SC area temps (Table 6), as applicable, are outside the safe region of Curve 8, the associated instrument may be unreliable due to boiling in the run
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>RPV water lvl can be restored and maintained above -162 in.
AND
The ADS timer has initiated</td><td>ADDRESSED</td></tr>
<tr><td>Loss of available injection systems is anticipated
OR
Raising RPV water lvl above +51 in will facilitate use of shutdown cooling, steam-driven injection systems, or Alternate Injection Subsystems (Table L-2)</td><td>ADDRESSED</td></tr>
</table>
<table>
<tr><td colspan="2">RESTORE and MAINTAIN RPV water lvl between +2 in. and +51 in. with ANY Preferred Injection Systems (Table L-1)</td></tr>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>RPV water lvl cannot be restored and maintained between +2 in. and +51 in.</td><td>ADDRESSED</td></tr>
<tr><td>RPV water lvl cannot be restored and maintained above -162 in.</td><td>ADDRESSED</td></tr>
</table>
<table>
<tr><td colspan="3">Table L-1
Preferred Injection Systems</td></tr>
<tr><td>SOURCES</td><td>APPX</td><td>INJ PRESS</td></tr>
<tr><td>CNDS and FW</td><td>5A</td><td>1210 psig</td></tr>
</table>
Directs ATC operator to restore and maintain RPV water level to +2 to +51 in. using condensate and feedwater, EOI Appendix 5A
</td></tr>
</table>

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 21 of 30

Event Description: High Power ATWS – Hydraulic Lock

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>ATC</td><td>Restores RPV water level as directed</td></tr>
<tr><td></td><td>SRO</td><td>
RPV Press
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>A high drywell pressure ECCS signal exists (2.45 psig)</td><td>ADDRESSED</td></tr>
<tr><td>EMERGENCY RPV DEPRESSURIZATION IS REQUIRED or has been required</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>Emergency RPV depressurization is anticipated</td><td>NO ACTION REQUIRED</td></tr>
</table>
<table>
<tr><td>IF ANY MSRV is cycling
THEN MANUALLY OPEN MSRVs UNTIL RPV press drops to the press at which all main turbine bypass vlvs are fully open (APPX 11A)</td><td>NO ACTION REQUIRED</td></tr>
</table>
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>Suppr pl temp and lvl CANNOT be maintained in a safe area of Curve 3 at the existing RPV press</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>Suppr pl lvl CANNOT be maintained in the safe area of Curve 4</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>STEAM COOLING IS REQUIRED</td><td>NO ACTION REQUIRED</td></tr>
</table>
STABILIZE RPV press below 1073 psig using the main turbine bypass vlvs (APPX 8B)

OK to use ANY Alternate RPV Pressure Control Systems (Table P-1)
Crosstie CAD to DW Control Air (APPX 8G, 20H) if necessary

</td></tr>
</table>

Op TestNo.: 15-10 Scenario No. 2 EventNo.: 7 Page 22 of 30

Event Description: High Power ATWS – Hydraulic Lock

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>DW Control Air is or becomes unavailable</td><td>NO ACTION REQUIRED</td></tr>
</table>
<table>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>It is anticipated that RPV depressurization will result in a loss of injection required for adequate core cooling</td><td>NO ACTION REQUIRED</td></tr>
</table>
<table>
<tr><td colspan="2">DEPRESSURIZE the RPV and maintain cooldown rate below 100ºF/hr
Crosstie CAD to DW Control Air (APPX 8G, 20H) if necessary</td></tr>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>ANY MSRV is being used for RPV depressurization AND DW Control Air is or becomes unavailable</td><td>NO ACTION REQUIRED</td></tr>
</table>
Direct BOP Operator to depressurize the RPV and maintain a cooldown rate below 100°F

WHEN
shutdown
cooling RPV
press interlock
clears AND
further cooldown
is required</td></tr>
<tr><td></td><td>BOP</td><td>Commences RPV cooldown</td></tr>
<tr><td></td><td>NRC</td><td>End of Event 7 and scenario</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 2 Event No.: 7 Page 23 of 30

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior
Note to Examiner: Entry to EOI-2 May or May NOT be applicable.		
	SRO	**Announces entry into EOI-2 on Suppression Pool Temperature** **EOI-2 PRIMARY CONTAIMENT CONTROL** **Suppr Pl Temp** **Caution 2** Operating pumps with suction from the suppression pool above the NPSH Limit (Curve 1, 2, 9 or 10) or with suppression pool water level below 10 ft (Vortex limit) may cause equipment damage **MONITOR** and **CONTROL** suppr pl temp below 95°F using available suppr pl cooling (APPX 17A) — **ACTION REQUIRED** **Directs BOP operator to initiate Suppression Pool Cooling IAW EOI Appendix 17A**
	BOP	**3-EOI APPENDIX-17A** NOTE: Placing a BYPASS SEL switch in BYPASS in step 1 below prevents automatic opening of the affected RHR loop's outboard injection valve. This makes LPCI mode of that RHR loop inoperable. 1. IF Adequate core cooling is assured, OR Directed to cool the Suppression Pool irrespective of adequate core cooling,

Op Test No.: 15-10 Scenario No. 2 Event No.: 7 Page 24 of 30

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior
	BOP	THEN **BYPASS** LPCI injection valve open interlock AS NECESSARY: • **PLACE**3-HS-74-155A, LPCI SYS I OUTBD INJ VLV BYPASS SEL in BYPASS. • **PLACE**3-HS-74-155B, LPCI SYS II OUTBD INJ VLV BYPASS SEL in BYPASS. 2. **PLACE** RHR SYSTEM I(II) in Suppression Pool Cooling as follows: a. **VERIFY** at least one RHRSW pump supplying each EECW header. b. **VERIFY** RHRSW pump supplying desired RHR Heat Exchanger(s). c. **THROTTLE** the following in-service RHRSW outlet valves to obtain between 1350 and 4500 gpm RHRSW flow: • 3-FCV-23-34, RHR HX 3A RHRSW OUTLET VLV • 3-FCV-23-46, RHR HX 3B RHRSW OUTLET VLV • 3-FCV-23-40, RHR HX 3C RHRSW OUTLET VLV • 3-FCV-23-52, RHR HX 3D RHRSW OUTLET VLV d. IF .....Directed by SRO, THEN.....**PLACE**3-XS-74-122(130), RHR SYS I(II) LPCI 2/3 CORE HEIGHT OVRD in MANUAL OVERRIDE. e. IF .....LPCI INITIATION Signal exists, THEN.....**MOMENTARILY PLACE**3-XS-74-121(129), RHR SYS I(II) CTMT SPRAY/CLG VLV SELECT in SELECT.

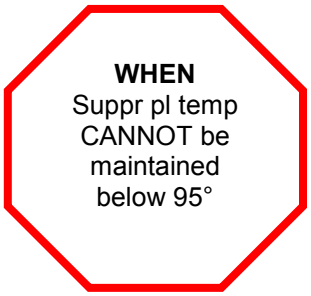
Op Test No.: 15-10 Scenario No. 2 Event No.: 7 Page 25 of 30

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior
	BOP	f. IF ..... 3-FCV-74-53(67), RHR SYS I(II) LPCI INBD INJECT VALVE, is OPEN, THEN... **VERIFY CLOSED** 3-FCV-74-52(66), RHR SYS I(II) LPCI OUTBD INJECT VALVE. g. **OPEN**3-FCV-74-57(71), RHR SYS I(II) SUPPR CHBR/POOL ISOL VLV. h. **VERIFY**desired RHR pump(s) for Suppression Pool Cooling are operating. **CAUTION** RHR System flows below 7000 gpm or above 10000 gpm for one-pump operation may result in excessive vibration and equipment damage. i. THROTTLE OPEN3-FCV-74-59(73), RHR SYS I(II) SUPPR POOLCLG/TEST VLV, to maintain EITHER of the following as indicated on 3-FI-74-50(64), RHR SYS I(II) FLOW: • Between 7000 and 10000 gpm for one-pump operation. **OR** • At or below 13000 gpm for two-pump operation. j. **VERIFY CLOSED**3-FCV-74-7(30), RHR SYSTEM I(II) MIN FLOW VALVE. k. **MONITOR** RHR Pump NPSH using Attachment 1. l. **NOTIFY** Chemistry that RHRSW is aligned to in-service RHR heat Exchangers. m. **IF** Additional Suppression Pool Cooling flow is necessary, THEN **PLACE** additional RHR and RHRSW pumps in service using Steps 2.b through

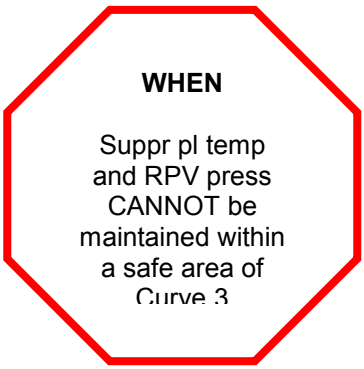
Op Test No.: 15-10 Scenario No. 2 Event No.: 7 Page 26 of 30

Event Description: High Power ATWS – Hydraulic Lock

Time	Position	Applicant's Actions or Behavior
	SRO	**SP/T-2**  **OPERATE** all available suppr pl cooling using only RHR pumps NOT required to assure adequate core cooling by continuous inj (APPX 17A) — **ACTION REQUIRED** Directs BOP operator to operate all available Suppression Pool Cooling. EOI-1 — **ACTION REQUIRED**
	NRC	**EOI-1A already entered**
	BOP	**Starts all available RHR pumps in Suppression Pool Cooling IAW EOI Appendix 17A**

Op Test No.: 15-10 Scenario No. 2 Event No.: 7 Page 27 of 30

Event Description: High Power ATWS – Hydraulic Lock.

Time	Position	Applicant's Actions or Behavior
	SRO	**Note 2** TSC staff may recommend an alternate curve for station blackout per 0-AOI-57-1A  **DW Temp** Caution 1 Ambient temp may affect RPV water level indication and trend **MONITOR** and **CONTROL** DW temp below 160°F using available DW cooling — **NO ACTION REQUIRED**

Op Test No.: 15-10 Scenario No. 2 Event No.: 7 Page 28 of 30

Event Description: High Power ATWS – Hydraulic Lock.

Time	Position	Applicant's Actions or Behavior
	SRO	**WHEN** DW temp CONNOT be maintained below 160 °F **PC Press** **MONITOR**and **CONTROL**PC press below 2.45 psig using the Vent system (AOI-64-1) — **NO ACTION REQUIRED** **WHEN** PC press CONNOT be maintained below 2.45 psig

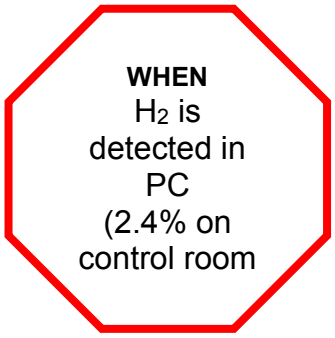
Op Test No.: 15-10 Scenario No. 2 Event No.: 7 Page 29 of 30

Event Description: High Power ATWS – Hydraulic Lock.

Time	Position	Applicant's Actions or Behavior
	SRO	**PC H_2**

IF	THEN
H2 and O2 monitoring system is inoperable	**NO ACTION REQUIRED**
Offsite radioactivity release rate reaches ODCM limits OR H2 is NO longer detected in PC(2.4% on control room indicators)	**NO ACTION REQUIRED**

ENSUREH2/O2 analyzer in service (APPX 19)	**NO ACTION REQUIRED**



Op Test No.: 15-10 Scenario No. 2 Event No.: 7 Page 30 of 30

Event Description: High Power ATWS – Hydraulic Lock.

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>SRO</td><td>
Suppr Pl Lvl
<table>
<tr><td colspan="2">MONITOR and CONTROL suppr pl lvl -6 in. to -1 in. (APPX 18)</td></tr>
<tr><th>IF</th><th>THEN</th></tr>
<tr><td>Suppr pl lvl CANNOT be maintained below -1 in.</td><td>NO ACTION REQUIRED</td></tr>
<tr><td>Suppr pl lvl CANNOT be maintained above -6 in.</td><td>NO ACTION REQUIRED</td></tr>
</table>
</td></tr>
</table>

Op Test No.: 15-10 Scenario No. 2 Event No.: 8 Page 1 of 1

Event Description: Feedwater Pump A/B/C Trip

Time	Position	Applicant's Actions or Behavior
	SRO	Directs ATC to respond IAW AOI-3-1
	BOP	**AOI-3-1** **4.2 Subsequent Actions** **CAUTION** [NRC/C] Operations outside of allowable regions shown on the Recirculation System Operating Map could result in thermal-hydraulic power oscillations and subsequent fuel damage. Refer to 3-GOI-100-12A for required actions and monitoring to be performed during power reduction. [NCO 940245001] [2] **IF** Reactor Water Level **OR** Feedwater flow is lowering due to loss of Condensate, Condensate Booster, or Feedwater Pump(s), **THEN:** **LOWER** Recirc flow as required to avoid scram on low level **AND** **CONTINUE** at Section 5.0. **5.0 LOW REACTOR WATER LEVEL OR LOSS OF FEEDWATER** [8] **IF** RFPT has tripped and needed to maintain level, **THEN PERFORM** the following: [8.7] For Slow Recovery of RFPT in MANUAL GOVERNOR, **RAISE** RFPT speed using RFPT Speed Control Raise/Lower switch until desired flow is obtained. **Restores either A, B or C RFP to service IAW AOI-3-1 and maintains RPV water level as directed.**

Op Test No.: 15-10 Scenario No. 2 Event No.: 9 Page 1 of 2

Event Description: SRV Leaks/sticks open

Time	Position	Applicant's Actions or Behavior
	SRO	**Directs BOP to respond IAW AOI-1-1**
	BOP	**AOI-1-1** **NOTE** Once a MSRV is operated, a time delay of 15 to 30 seconds can be expected before aresponse can be detected on 3-TR-1-1, MSRV DISCHARGE TAILPIPE TEMPERATURE.ICS can be used to monitor the discharge tailpipe temperature, but the appropriateindications on 3-TR-1-1 must be confirmed. **4.1 Immediate Action** [1] **IDENTIFY** stuck open relief valve by **OBSERVING** the following: • SRV TAILPIPE FLOW MONITOR, 3-FMT-1-4, on Panel 3-9-3, OR • MSRV DISCHARGE TAILPIPE TEMPERATURE recorder, 3-TR-1-1 on Panel 3-9-47. [2] **IF** relief valve transient occurred while operating above 90% power, **THEN** **REDUCE** reactor power to ≤90% RTP with recirc flow. (Otherwise N/A) [3] **WHILE OBSERVING** the indications for the affected Relief valve on the Acoustic Monitor; **CYCLE** the affected relief valve control switch as required upto three times: • CLOSE to OPEN to CLOSE positions [4] **IF** all SRVs are CLOSED, **THEN** **CONTINUE** at Step 4.2.4. (Otherwise N/A) **NOTES** 1) Once initial transient of SRV opening has stabilized (pressure regulator compensation)the Heat Balance will indicate bad data. 2) The SRV TAILPIPE FLOW MONITOR may seal-in an OPEN position indication.

Op Test No.: 15-10 Scenario No. 2 Event No.: 9 Page 2 of 2

Event Description: SRV Leaks/sticks open

Time	Position	Applicant's Actions or Behavior
	BOP	**4.3 Subsequent Action** **4.2.2 Attempt to close valve from Panel 9-3:** [1] **PLACE** the SRV TAILPIPE FLOW MONITOR POWER SWITCH in the OFF position. [2] **PLACE** the SRV TAILPIPE FLOW MONITOR POWER SWITCH in the ON position. [3] **IF** all SRVs are CLOSED, **THEN** **CONTINUE** at Step 4.2.4. (Otherwise N/A) [4] **PLACE** MSRV AUTO ACTUATION LOGIC INHIBIT, 3-XS-1-202 in INHIBIT: [5] **IF** relief valve closes, **THEN** **OPEN** breaker or **PULL** fuses as necessary using Attachment 1 (Unit 2 SRV Solenoid Power Breaker/Fuse Table). **Performs action IAW AOI-1-1** **Recognizes that SRV closes when MSRV AUTO ACTUATION LOGIC INHIBIT switch is taken to INHIBIT.** **Reports that MSRV is closed.** **Directs personnel to perform step 5 to disable the MSRV.**
	DRIVER	**When dispatched to pull fuses wait 2 minutes and then fire trigger #13 and call back that fuses have been removed.**
	NRC	**End of Event 9**

SIMULATOR SETUP

IC	28
Exam IC	252

Schedule Files	**Scenario #2.sch (scenario schedule file)** Appendix 1F/2 – Event Trigger 9 Appendix 8A – Event Trigger 7 Appendix 8E – Event Trigger 8 Xfer RPS to alt. – Event Trigger 10 Stop SBGT – Event Trigger 11

Malfunctions	Description	Event #	Delay	Severity	Ramp	Initial value	Final value
RD09A/B	ATWS (Hyd Lock)	Initial	N/A	75	N/A	NA	NA
RD17A/B	SDV Xmit Fail Low	Initial	N/A	NA	N/A	NA	NA
RP01B	RPS MG Set Fail B	3	N/A	NA	N/A	NA	NA
FW05C	C2 FW Tube Leak	4	N/A	100	600	0	100
TU02C/D	Turbine Vibration	6	D:30	100	300	0	100
TC03A-J	TURBINE BYPASS VALVE FAILURE	7	N/A	NA	NA	NA	0
ADO1G	RELIEF VALVE FAILURES_PCV 1-4	9	10	NA	NA	0	100
FW14A	RFPT 3A TRIP LOW BEARING OIL PRESS	8	N/A	NA	NA	NA	NA
FW14B	RFPT 3B TRIP LOW BEARING OIL PRESS	8	N/A	NA	NA	NA	NA
FW14C	RFPT 3C TRIP LOW BEARING OIL PRESS	8	N/A	NA	NA	NA	NA

Remotes	Description	Event #	Delay	Severity	Ramp	Initial value	Final value
RP04	RPS A/B Alternate	3	N/A	NA	NA	NA	B
PC01A/B/C	SBGT Fan A/B/C	3	N/A	NA	NA	NA	STOP
FW19C	FW HTR ISOL CIRCUIT BYP SW	4	N/A	NA	NA	NA	BYP

Overrides	Description	Event #	Delay	Severity	Ramp	Initial value	Final value
XA-55-3F_13	HPCI Low Suct Press	2	120	NA	NA	OFF	ON

ZAOPI7328A	HPCI Pmp Suct Press	2	60	NA	60	NA	-15
ZAOPI7331A	HPCI MN Pmp Disch Press	2	60	NA	60	NA	500
ZAIFIC7333A1	HPCI System Flow	2	60	NA	60	NA	60
ZLOHS014	HS-1-4 MSRV	9	N/A	NA	NA	NA	OFF

SHIFT MANAGER TURNOVER

EQUIPMENT OOS/LCOS

None

ANTICIPATED OPERATIONS/MAINTENANCE FOR ONCOMING SHIFT

- **Continue HPCI Quarterly Surveillance SR 3.5.1.7 Sec 6.4.**
- **SR 3.6.2.1.1 Suppression Chamber Water Temp Check**

STATUS

WORK WEEK - DIV I ☐, DIV II ☒ **OUTSIDE AIR TEMP 30ºF**

COMMON

Thunderstorms are in Northern Alabama

UNIT 1

100%

UNIT 2

100%

UNIT 3

- **Reactor Power is 98% to support HPCI run.**
- **RHR Loop I is in Suppression Pool Cooling per 3-OI-74.**
- **SGT A is in service per 0-OI-65 to support HPCI run.**