

Note for Adams Package:

For scenario 2 only there is a final scenario file in the final approved Op test file and an as-given scenario 2 file which is in Adams as its own file. The other scenario ran was scenario 3 and scenario 1 was the spare for this exam.

Two crews (crew 1 and crew 3) failed to diagnose the dryer event properly and therefore created new critical tasks and different paths than expected by the licensee or NRC examiners during validation week and so the ES-D1 and ES-D2 forms are marked up accordingly (electronically) with two paths. Crew 2 took path one and crews 1 and 3 took path 2 with the new write-in critical tasks.

Facility: Cooper Nuclear Station Scenario No.: 2Op-Test No.: 1Examiners: Clayton / Kennard
Drake
GarchowOperators: Matt Nee (CRS)
Stuart Heck (ATC)
Aaron Parker (BOP)Initial Conditions: 100% power, EOL, no equipment out of service.Turnover: Lower power to 95% for HPCI Test. Following HPCI Test return to 100% power.
6.HPCI.103 completed to Step 4.13.

| Event No. | Malf. No. | Event Type* | Event Description |
|-----------|--------------------------|-------------------------|--|
| 1 | SW04 | C (BOP) TS (SRO) | RHR SW Pump trips when started. (2.2.70) The SRO addresses Tech Spec 3.7.1 Condition A for one pump INOP |
| 2 | N/A | N (BOP) | Place RHR Loop B in Suppression Pool Cooling (2.2.69.3) The SRO addresses Tech Spec 3.5.1 Condition A for one RHR LPCI loop INOP. |
| 3 | N/A | R (ATC) | Lower Power with Reactor Recirculation (2.1.10) |
| 4 | HP12 | N (BOP) TS (SRO) | Perform HPCI Full Flow Test (6.HPCI.103) Enters Tech Spec 3.5.1C and declares HPCI INOP and 3.5.1D for HPCI and Loop B LPCI inoperable. |
| 5 | RD04a | I (ATC) | In Service CRD FCV fails closed. |
| 6 | RR26c RR26d | I (BOP) TS (SRO) | LIS-72C and LIS-72D fail downscale. RCIC initiates. (Abnormal Procedure 2.4CSCS) LCOs 3.3.5.1 3.5.3, 3.5.1G and 3.5.1H.. |
| 7 | IA05 | C © (BOP) | Instrument Air dryer plugs. (Abnormal Procedure 5.2AIR) Opens Air Dryer bypass valve SA-MO-81. |
| 8 | RR50A RR10A, RR11A | C (ATC) | Reactor Recirculation Pump high Vibration (ARP) Recirculation Pump Seal Failure (ARP) (Abnormal Procedures 2.4RR and 2.4PC) |

| | | | |
|--|-------|--------------|--|
| 9 | RR31A | M © (All) | LOCA – RR Suction Line Break (EOP 1A, 3A) |
| | RD01 | C © (ATC) | Scram Discharge Volume Drain Vlv. Fails to close |
| 10 | O/R | C © (BOP) | RHR Loop A Drywell Spray Valves de-energize. |
| 11 | N/A | All © | When RPV level cannot be maintained above TAF with low pressure systems available, emergency depressurize and re-flood the core within 15 minutes. |
| * (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (T)echnical Specifications, (©) CT | | | |

Initial Conditions: 100% power, EOL, HPCI INOP for testing.

Turnover:

Lower power to 95% for HPCI Test. Following HPCI Test return to 100% power. 6.HPCI.103 completed to step 4.13

Description:

RHR Suppression Pool cooling is placed into service in preparation for the HPCI run. RHR Service Water Booster system is started and then RHR is placed into service.

The B RHRSW Pump trips when B loop of RHRSW is placed in service per Procedure 2.2.70, RHR Service Water Booster Pump System, to support Suppression Pool Cooling. The other pump in the loop is started per procedure. The CRS addresses Tech Spec LCO 3.7.1 and declares the tripped pump inoperable.

The BOP Operator places B Loop of RHR in Suppression Pool Cooling operation to support the HPCI Full Flow Test per 2.2.69.3, RHR Suppression Pool Cooling and Containment Spray. The CRS enters TS LCO 3.5.1, Condition A for RHR LPCI system inoperable.

The ATC reduces reactor power using reactor recirculation flow to 95% reactor power in preparation for the HPCI Full Flow Test per 2.1.10 Station Power Changes.

The BOP Operator performs the HPCI Full Flow Test per 6.HPCI.103. At step 4.16 the test fails and the SRO addresses Tech Spec 3.5.1C and declares HPCI INOP. LCO 3.5.1D is also entered due to HPCI and RHR Subsystem B inoperable.

The in-service CRD FCV fails closed requiring the ATC to enter Abnormal Procedure 2.4CRD which requires shifting FCVs per procedure 2.2.8.

The BOP responds to alarms 9-3-1/B-1, 9-3-2/A-5, 9-3-2/B-5, and 9-4-1/A-1. RCIC starts and must be secured per Abnormal Procedure 2.4CSCS. Per alarm 9-3-1/B-1. ADS is inhibited. The SRO enters TS LCOs, 3.3.5.1 Function 4a and 5a, 3.5.3, Condition A for RCIC being inoperable, 3.5.1 G two or more ADS valves being inoperable, and 3.5.1 H 3.0.3 due to HPCI and more than one ADS valves inoperable.

The BOP responds to alarm A-4/A-5, CONTROL AIR LOW PRESSURE, due to instrument air dryers plugging. The BOP enters Abnormal Procedure 5.2AIR and opens a motor operated valve that bypasses the plugged air dryer. Once the other air dryer train is placed in service the bypass valve can be closed.

Note for auditing purposes: This is where the scenario did not go as planned. If the crew correctly diagnoses the dryer event and restores instrument air (as expected and validated), then the scenario continues on Path 1 below. If the crew does not diagnose the dryer event correctly and fails to restore instrument air, then the scenario continues on Path 2 below. Two of the three crews that this scenario was administered to did not recognize or attempt to open the bypass valve for the dryer.

Path 1:

The ATC responds to high vibration on the "A" Reactor Recirculation Pump per alarm 9-4-3/C-3 and begins to reduce recirculation pump speed to reduce vibrations. The vibration continues and the Recirculation Pump seals fail resulting in a LOCA inside the Drywell. The pump is secured and isolated and the primary containment is vented with Standby Gas Treatment. After a time delay the RR suction pipe breaks. The SRO enters EOP 1A and directs the ATC to SCRAM the reactor then enters EOP 3A to address containment pressure issues.

During the SCRAM recovery, one of the SDV drain valves fails to close resulting in a primary system leaking into secondary containment. The ATC recognizes this and closes the valve using the control switch on Panel 9-5 and reports the action to the SRO.

The SRO directs the BOP operator to utilize Drywell Sprays and control drywell pressure between 2 psig and 10 psig per EOP 3A. If the operator fails to control drywell pressure the valves will NOT close resulting in a negative pressure in primary containment.

When RPV water level lowers below TAF, the reactor is emergency depressurized and re-flooded with low pressure ECCS systems within 15 minutes of the core uncovering.

The scenario ends when the primary containment pressure is being controlled in band (+2 to +10 psig) and RPV level is restored above TAF as directed by the SRO.

Critical Task List for Path 1

| | |
|------------------------|--|
| Critical Task 1 | Event 7- (BOP) Bypass the plugged instrument air dryers by opening SA-MO-81, prior to reactor scram requirement due to low instrument air pressure (< 77psig). |
| Critical Task 2 | Event 9 – (BOP) Initiate Drywell Spray prior to Drywell pressure exceeding the Pressure Suppression Pressure (PSP) graph. Note to Examiners: Either Loop of RHR may be used for Torus Spray and Drywell Spray. Only A Loop of RHR may be used for Torus cooling. |
| Critical Task 3 | Event 10 – (BOP) Secure RHR Loop A drywell sprays or lower Loop B sprays prior to Drywell Pressure reaching negative pressure. NOTE to Examiners: During performance of Drywell Sprays using procedure 2.2.69.3 during execution of EOP 3A if the operator fails to recognize DW Spray valves have lost power the valves will fail to close resulting in negative DW pressure and challenging PC Integrity. |

Path 2 (added due to crew failure to diagnose dryer event):

Misdiagnosis of the dryer event causes a loss of instrument air, which then requires a reactor scram and closing the MSIVs per the emergency procedure "5.2AIR." Once the two crews did this they lose the Main feed pumps. Because of this loss and the earlier loss of the HPCI pump, there are no high pressure injection pumps to maintain level for the RPV. Because of this, when the small break LOCA is inserted into the scenario, the RPV level loss causes the crews to transition to EOP-1A for RPV level control. Because CRD pumps are lost due to the IA issue and RCIC and SLC can't keep up with the small break LOCA, the crew will be required to enter EOP-1A for RPV level control. The crews will not be able to maintain level with the pumps they have for high pressure injection and therefore will have to Emergency Depressurize using six SRVs, which becomes the second write-in critical task (due to the dryer issue not being correctly diagnosed and corrected). Once the ED is completed, LPCI pumps are started and RPV level is restored and maintained above TAF, the scenario is secured. Because the energy from the RPV is moved from it to the suppression pool, the challenge to the drywell temperature and pressures is removed from the scenario, which means that the critical tasks for drywell sprays are no longer critical.

Critical Task List for Path 2

| | |
|-----------------|--|
| Critical Task 1 | Event 7- (BOP) Bypass the plugged instrument air dryers by opening SA-MO-81, prior to reactor scram requirement due to low instrument air pressure (< 77psig). |
|-----------------|--|

| | |
|-----------------|--|
| Critical Task 2 | Event 11- (ALL) When RPV level cannot be maintained above TAF and low pressure ECCS systems are available, emergency depressurize and raise water level above TAF within 15 minutes. |
|-----------------|--|

Procedures used

2.2.70, RHR Service Water Booster Pump System (Normal)
 Annunciator 9-4-3/A-2 or 9-3-3/D-1 for RHR Service Water Pump trip (ARP)
 2.2.69.3, RHR Suppression Pool Cooling and Containment Spray (Normal)
 2.1.10, Station Power Changes (Normal)
 6.HPCI.103, HPCI IST AND 92 DAY TEST MODE SURVEILLANCE OPERATION (Normal)
 Annunciator 9-5-2/E-6, CRD Flow Control Valve fails closed. (ARP)
 2.4CRD, place standby CRD Flow Control Valve into service. (AOP)
 Annunciator 9-3-2/A-5, reactor low-low level due to LIS failure (ARP)
 Annunciator 9-3-2/B-5, reactor low-low level due to LIS failure (ARP)
 Annunciator 9-4-1/A-1, RCIC initiation due to LIS failure (ARP)
 2.4CSCS, Inadvertent ECCS Initiation due to LLS failure (AOP)
 Annunciator A-4/A-5 for instrument air dryer plugging (ARP)
 5.2AIR for instrument air dryer plugging (AOP)

| Appendix D | Required Operator Actions | Form ES-D-1 |
|------------|---------------------------|-------------|
|------------|---------------------------|-------------|

Annunciator 9-4-3/C-3 for RR pump high vibration (ARP)
 Annunciator 9-4-3/A-3 for RR pump seal failure (ARP)
 2.4RR for RR pump seal failure (AOP)
 2.4PC for RR pump seal failure (AOP)
 2.2.68.1, Reactor Recirculation System Operations for single loop operation (Normal)
 2.1.5, Scram (EOP)
 EOP-1A
 EOP-2A
 EOP-3A
 2.2.69.3, RHR Suppression Pool Cooling and Containment Spray to spray the torus and drywell
 (Hard Card)

| | | | |
|---|-----------------------|---|---------------------|
| Op-Test No.: 1 | | Scenario No.: 2 | Event No.: 1 |
| Event Description: RHRSWBP trips | | | |
| Time | Position | Applicant's Action or Behavior | |
| NOTE to Examiners: SWB Pump B or D will trip shortly after starting. | | | |
| | Booth Operator | Allow the SWBP to run for a couple of seconds before tripping the first one started. Insert <u>Trigger 10 for SWBP B</u> or <u>Trigger 11 for SWBP D</u>. | |
| | BOP | Place RHRSW system B in service per 2.2.70 5.2.1 Place and hold SWBP B or D switch to START until pump starts. 5.2.2 At Panel 9-3, check SWBP B or D AMPS are normal. 5.2.3 At Panel 9-3, check SW-MO-89B, HX-B SW DISCH VLV, opens. Respond to alarm 9-3-3/C-1 (Pump B) or 9-3-3/D-1 (Pump D). 2.3 Start SWBP B(D), as required, per Procedure 2.2.70. Respond to alarm 9-3-3/A-1 (Pump B) or 9-3-3/B-1 (Pump D). 2.3 Start SWBP B(D), as required, per Procedure 2.2.70. | |
| | Booth Operator | ROLE PLAY: If contacted as the E Shop to investigate the SWBP trip, wait 5 minutes and report a bad overload/ground relay in the start circuit is the cause. | |
| | Booth Operator | After the E Shop report, call the CRS as AOM Shift and direct the B Loop of RHRSW be placed into service. | |
| | CRS | Direct BOP to place the other RHRSW pump in service per 2.2.70. | |
| | CRS | Refers to Tech Spec 3.7.1 Condition A, One RHRSWB Pump inoperable. Action A.1 Restore RHR suppression pool cooling subsystem to OPERABLE status. Time 30 Days to restore | |
| | BOP | 5.2.1 Place and hold SWBP B or D switch to START until pump starts. 5.2.2 At Panel 9-3, check SWBP B or D AMPS are normal. 5.2.3 At Panel 9-3, check SW-MO-89B, HX-B SW DISCH VLV, opens. | |

| | | | |
|---|--|---|---------------------|
| Op-Test No.: 1 | | Scenario No.: 2 | Event No.: 1 |
| Event Description: RHRSWBP trips | | | |
| Time | Position | Applicant's Action or Behavior | |
| | | 5.1.4.1 Flow on SW-FI-132B, SW FLOW, between 2500 and 4000 gpm. 5.1.4.2 SWBP B or D AMPS \leq 136 amps. 5.1.5 Ensure differential pressure on SW-DPI-359B, RHR HX B SW SIDE DIVIDER PLATE DIFFERENTIAL PRESSURE (R-903-B RHR HX Room), \leq 17.0 psid. 5.1.5.1 Record SW-DPI-359B Δ P (R-903-B RHR HX Room) in Narrative Logs | |
| | Booth Operator | When requested as NLO to report differential pressure at step 5.2.5 of SW 2.2.70, respond it indicates 5 psid. (\leq17 psid is procedurally acceptable) | |
| | | END OF EVENT | |
| | Notes | | |
| | Proceed to the next event when CRS directs SPC placed into service.. | | |

| | | | | | | | | |
|---|-----------------------|---|------------------------|--|--|---------------------|--|--|
| Op-Test No.: 1 | | | Scenario No.: 2 | | | Event No.: 2 | | |
| Event Description: Place RHR Loop B in Suppression Pool Cooling (Procedure 2.2.69.3) | | | | | | | | |
| Time | Position | Applicant's Action or Behavior | | | | | | |
| | CRS | Directs BOP to place RHR Loop B in Suppression Pool Cooling per 2.2.69.3. Refers to TS LCO 3.5.1, Condition A: One low pressure ECCS injection/spray subsystem inoperable. Action A.1 Restore low pressure ECCS injection/spray subsystem(s) to operable status. Time: 7 days | | | | | | |
| | Booth Operator | ROLE PLAY: When contacted, report suction line drain flush for hot spots is not required. | | | | | | |
| | BOP | Contact ALARA to determine if suction line drain flush for hot spots is needed. Ensure RHR Subsystem B in Standby Status per Procedure 2.2.69. Notify Radiation Protection of RHR startup. IF RHR Subsystem B is being placed in suppression pool cooling to support non-emergency evolutions, THEN perform Section 3 concurrent with this section. 3.1.2 Initiate 6.LOG.601 Torus Average Temperature and Drywell Bulk Average Temperature Log Attachment for testing which adds heat to the suppression pool. | | | | | | |
| NOTE to Examiners: Annunciator 9-3-1/G-1, ADS AUX COOLING INTERLOCK, is an expected alarm when starting an RHR pump. | | | | | | | | |
| | BOP | Initiate Suppression Pool Cooling: 8.23 Open RHR-MO-39B, SUPPR POOL COOLING/TORUS SPRAY VLV 8.25 Start RHR Pump B <u>or</u> D. 8.26 Throttle open RHR-MO-34B, SUPPR POOL COOLING INBD THROTTLE VLV, to obtain rated cooling flow or as directed by | | | | | | |

| | | | |
|---|--|---|---------------------|
| Op-Test No.: 1 | | Scenario No.: 2 | Event No.: 2 |
| Event Description: Place RHR Loop B in Suppression Pool Cooling (Procedure 2.2.69.3) | | | |
| Time | Position | Applicant's Action or Behavior | |
| | | Control Room Supervisor 8.27 Ensure RHR-MO-16B (min flow valve) closed. 8.28 Perform one of the following: 8.28.1 Close CM-38, LOOP B INJECTION LINE PRESSURE MAINTENANCE SHUTOFF (R-958-SW). 8.28.2 Maintain RHR Subsystem B pressure greater than Condensate Transfer System pressure to prevent filling Torus. 8.29 Throttle closed RHR-MO66B, HX BYPASS VLV, to obtain desired cooling rate. | |
| | | END OF EVENT | |
| | Notes | | |
| | Proceed to the next event when the CRS directs lowering reactor power. | | |

| | | | | | | | | |
|---|--|--|--|--|--|---------------------|--|--|
| Op-Test No.: 1 | | | Scenario No.: 2 | | | Event No.: 3 | | |
| Event Description: Reduce Power with Reactor Recirculation | | | | | | | | |
| Time | Position | | Applicant's Action or Behavior | | | | | |
| | CRS | | Conducts Reactivity Briefing. Notifies Shift Manager and Load Dispatcher of power reduction for HPCI testing. Directs ATC to lower reactor power to 95% per 2.1.10. | | | | | |
| NOTE to Examiners: RR pump flows can be read on recorder RR-FR-163 on VBd 9-4. | | | | | | | | |
| | ATC | | Enter Procedure 2.1.10 Station power changes, Section 7 RR FLOW. 7.4 Lower power by lowering RR pump flow. Maintain rate of power change consistent with system capabilities as determined by Load Dispatcher and TG limits. Monitors reactor power, level, and power-to-flow map. Reports power lowered to 95% to SRO. | | | | | |
| | | | END OF EVENT | | | | | |
| | Notes | | | | | | | |
| | Proceed to the next event when CRS direct surveillance to begin. | | | | | | | |

| | | | | | | | | |
|--|-----------------------|---|------------------------|--|--|---------------------|--|--|
| Op-Test No.: 1 | | | Scenario No.: 2 | | | Event No.: 4 | | |
| Event Description: Perform HPCI Full Flow Test (Procedure 6.HPCI.103) | | | | | | | | |
| Time | Position | Applicant's Action or Behavior | | | | | | |
| NOTE to Examiners: The HPCI Aux Oil Pump discharge line rupture is passive until the pump is started. | | | | | | | | |
| | CRS | Directs performance of 6.HPCI.103 | | | | | | |
| | Both Operator | ROLE PLAY: When requested to establish communications, respond that you are setup and ready to begin 6.HPCI.103 at step 4.16. Wait 2 minutes and report oil pressures were recorded. | | | | | | |
| | BOP | Reviews procedure 6.HPCI.103 in preparation for continuing surveillance. Establish Communications with local Operator in HPCI room. Begins at step 4.13 4.13 Informs CRS that HPCI System is inoperable for testing. 4.14 Step already completed 4.15 Step already completed 4.16 (Time) Start AUXILIARY OIL PUMP and time STOP VALVE opening stroke time | | | | | | |
| | Booth Operator | ROLE PLAY-After HPCI AOP is started and Trigger 13 becomes active, call the control room and report a large lube oil leak on the AOP discharge piping. | | | | | | |
| | CRS | Halt the HPCI surveillance. | | | | | | |
| | CRS | Refers to Tech Spec 3.5.1 Condition C and declares HPCI INOP. Action C.1 Verify by administrative means RCIC System is OPERABLE within one hour AND C.2 Restore HPCI System to OPERABLE status within 14 days. | | | | | | |

| | | | | | | | | |
|--|--|--|------------------------|--|--|---------------------|--|--|
| Op-Test No.: 1 | | | Scenario No.: 2 | | | Event No.: 4 | | |
| Event Description: Perform HPCI Full Flow Test (Procedure 6.HPCI.103) | | | | | | | | |
| Time | Position | Applicant's Action or Behavior | | | | | | |
| | | Also enters Condition D HPCI system inoperable and Condition A entered. Action: D.1 Restore HPCI system to OPERABLE status OR D.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE STATUS. Time: 72 hours for both D.1 and D.2. | | | | | | |
| | BOP | Place HPCI AOP control switch to Pull-To-Lock. | | | | | | |
| | | END OF EVENT | | | | | | |
| | Notes | | | | | | | |
| | Proceed to the next event at direction of the lead examiner. | | | | | | | |

| | | | |
|--|-----------------------|--|---------------------|
| Op-Test No.: 1 | | Scenario No.: 2 | Event No.: 5 |
| Event Description: In-Service CRD FCV fails closed. | | | |
| Time | Position | Applicant's Action or Behavior | |
| | Booth Operator | When directed by the Lead Examiner, Insert Trigger 6, (CRD FCV fails closed). | |
| | ATC | <p>Respond to alarm 9-5-2/E-6, CRD CHARGING HEADER HIGH PRRESSURE.</p> <p>1.1 Check drive water flow control valves for proper operation.</p> <p>1.2 Adjust CRD-MO-20 to maintain following:</p> <p>1.2.1 Drive water DP of ~ 265 psid.</p> <p>1.2.2 Cooling water DP of ~ 20 psid.</p> <p>1.3 Adjust charging water pressure manually with CRD-170, PUMP DISCHARGE MANUAL PRESSURE CONTROL VALVE, per Procedure 2.2.8.</p> <p>1.4 IF annunciator due to CRD flow degradation, THEN enter Procedure 2.4CRD.</p> <p>Report alarm references 2.4CRD.</p> | |
| | CRS | <p>Enter Abnormal Procedure 2.4CRD, CRD TROUBLE.</p> <p>Assign actions to ATC.</p> | |

Op-Test No.: 1

Scenario No.: 2

Event No.: 5

Event Description: In-Service CRD FCV fails closed.

| Time | Position | Applicant's Action or Behavior |
|------|----------|--|
| | ATC | <p>Enter 2.4CRD Attachment 5 for cooling water trouble.</p> |
| | ATC | <p>Follow 2.4CRD Attachment 5 path to step CWT-7 and shift FCVs per Procedure 2.2.8.</p> <p>20.1 Ensure CRD-FC-301 in BAL with settape adjusted, as required, for obtaining ~ 50 gpm cooling water flow.</p> <p>20.4 .1 Step performed locally by building operator (controller in manual)</p> <p>20.4.2 Building operator opens FCV B inlet valve.</p> <p>20.4.3 Building operator opens FCV B outlet valve.</p> <p>20.4.4 Building operator ensures FCV A in manual.</p> |

| | | | | | | | | |
|--|--|---|------------------------|--|--|---------------------|--|--|
| Op-Test No.: 1 | | | Scenario No.: 2 | | | Event No.: 5 | | |
| Event Description: In-Service CRD FCV fails closed. | | | | | | | | |
| Time | Position | Applicant's Action or Behavior | | | | | | |
| | | 20.4.5 Step is N/A because the valve is closed. 20.4.5 Building operator opens FCV B. 20.4.9 & 10 Building operator isolates FCV A. | | | | | | |
| | Booth Operator | When directed to CRD FCV use remote function RD12 to OPEN to unisolate FCV B. Use remote function RD11 to CLOSE to isolate FCV A. | | | | | | |
| | | END OF EVENT | | | | | | |
| | Notes | | | | | | | |
| | Proceed to the next event at direction of the lead examiner. | | | | | | | |

| | | | | | | | | |
|--|-----------------------|--|------------------------|--|--|---------------------|--|--|
| Op-Test No.: 1 | | | Scenario No.: 2 | | | Event No.: 6 | | |
| Event Description: LIS-72C and LIS-72D fails downscale. | | | | | | | | |
| Time | Position | Applicant's Action or Behavior | | | | | | |
| | Booth Operator | When directed by the Lead Examiner, Insert Trigger 7 (RD26C and D. NBI-LIS-72C and D) | | | | | | |
| | BOP | <p>Respond to alarms:</p> <p>9-3-1/B-1, ADS AUX RELAYS ENERGIZED</p> <p>2.1 IF initiation signal is <u>not</u> valid, THEN perform following:</p> <p>2.1.1 Place ADS A INHIBIT switch to INHIB.</p> <p>2.1.2 Place ADS B INHIBIT switch to INHIB.</p> <p>2.1.3 Enter Procedure 2.4CSCS.</p> <p>9-3-2/A-5, RX LOW WATER LEVEL -42</p> <p>2.1 If alarm is not valid, then enter Procedure 2.4CSCS to secure HPCI and RCIC as dictated by plant conditions.</p> <p>9-3-2/B-5, RX LOW WATER LEVEL -113</p> <p>2.1 If alarm not valid, then perform following:</p> <p>2.1.1 Enter Procedure 2.4PC.</p> <p>2.1.2 Enter Procedure 2.4CSCS.</p> <p>2.1.3 Step is N/A.</p> <p>9-4-1/A-1, RCIC LOGIC ACTUATED</p> <p>2.1 If initiation not valid, perform following:</p> <p>2.1.1 Press and hold TURBINE TRIP button until throttle valve closed.</p> <p>2.1.2 Leave RCIC-MO-131 open, so turbine trip will not reset.</p> <p>2.1.3 Enter Procedure 2.4CSCS.</p> | | | | | | |
| | CRS | <p>Enter Abnormal Procedure 2.4CSCS. Assign actions to BOP.</p> <p>Direct ADS A and B switches taken to INHIBIT.</p> | | | | | | |
| | BOP | <p>Place ADS A INHIBIT switch to INHIB.</p> <p>Place ADS B INHIBIT switch to INHIB.</p> | | | | | | |

| | | | | | | | | |
|--|--|---|------------------------|--|--|---------------------|--|--|
| Op-Test No.: 1 | | | Scenario No.: 2 | | | Event No.: 6 | | |
| Event Description: LIS-72C and LIS-72D fails downscale. | | | | | | | | |
| Time | Position | Applicant's Action or Behavior | | | | | | |
| | | Update crew ADS has been placed in Inhibit. | | | | | | |
| | Booth Operator | ROLE PLAY: If directed to go to local instrument racks, report NBI-LIS-72C and 72D are both down scale. NBI-LIS-72A and B are reading normal. | | | | | | |
| | CRS | <p>Review TS LCO 3.5.3 Condition A for RCIC and determine Condition B applies due to HPCI being inoperable.</p> <p>Be in MODE 3 in 12 hours and reduce reactor steam dome pressure ≤ 150 psig within 36 hours.</p> <p>Review TS LCO 3.3.5.1-1 for Function 3a (HPCI low level initiation) Note half of HPCI initiation logic is tripped.</p> <p>TS Table 3.3.5.1-1 Functions 1a for CS initiation logic on low RPV level, and 2a for RHR initiation logic on low RPV level.</p> <p>TS Table 3.3.5.1-1 Functions 4a and 5a and LCO 3.3.5.1 F.1 and G.1 and declare ADS valves inoperable within 1 hour.</p> <p>TS LCO 3.3.5.2-1 for Function 1(RCIC low level actuation)-Note logic is tripped.</p> <p>LCO 3.5.1 G for two or more ADS valve inoperable, and H for HPCI and one or more ADS valves inoperable and enter LCO 3.0.3 immediately.</p> | | | | | | |
| | | END OF EVENT | | | | | | |
| | Notes | | | | | | | |
| | Proceed to the next event at direction of the lead examiner. | | | | | | | |

| | | | |
|---|----------------|--|--------------|
| Op-Test No.: 1 | | Scenario No.: 2 | Event No.: 7 |
| Event Description: Instrument Air dryer plugs | | | |
| Time | Position | Applicant's Action or Behavior | |
| | Booth Operator | When directed by the Lead Examiner, Insert Trigger 2 (IA05, Instrument Air dryer plugging) | |
| | BOP | Respond to alarm A-4/A-5, CONTROL AIR LOW PRESSURE. 1.1 Verify SACs operating properly. 1.2 Check for excessive air leaks or usage. 1.3 Enter Procedure 5.2AIR Report Instrument air pressure from IA-PI-606 (Panel A) Report Service air pressure from SA-PI-611. Report Service air pressure high and instrument air pressure low. | |
| | CRS | Enter Abnormal Procedure 5.2AIR. Assign actions to BOP. | |
| | Booth Operator | ROLE PLAY: If directed to report air filter dP, wait 3 minutes and report the filter dP is rising. | |
| | Critical Task | Bypass the plugged instrument air dryers by opening SA-MO-81, prior to reactor scram requirement due to low instrument air pressure (< 77psig). | |
| | BOP | 4.3 If air drying/filtering components at fault then perform following: 4.3.1 Open SA-MO-81, SA TO IA CROSSTIE (Panel A) 4.3.2 Place standby dryer and filters in service per Procedure 2.2.59. 4.3.3 If necessary, manually bypass any obstructed component(s). 4.3.4 When dryer and filter flow returned to service, close SA-MO-81. 4.4 Step is N/A. 4.5 Make following announcement twice: "All personnel using breathing equipment supplied by plant air move to | |

| Op-Test No.: 1 | | | Scenario No.: 2 | | | Event No.: 7 | | |
|--|-----------------|---|------------------------|--|--|---------------------|--|--|
| Event Description: Instrument Air dryer plugs | | | | | | | | |
| Time | Position | Applicant's Action or Behavior | | | | | | |
| | | <p>an area with a clean atmosphere."</p> <p>4.6 Step is N/A.</p> <p>4.7 Stop any work involving large air system loads.</p> <p>4.8 At INSTRUMENT AIR PRESSURE \leq 85 psig:</p> <p>4.8.1 Ensure Steps 4.3 through 4.7 actions are completed.</p> <p>4.8.2 Place BF-C-1A, EMERG BSTR FAN, as follows:</p> <p>4.8.2.1 Place switch for BF-C-1A, EMERG BSTR FAN, to RUN, then allow it to spring-return to AUTO (VBD-R).</p> <p>4.8.2.2 After BF-C-1A, has started, then verify following</p> <p>a. EF-C-1B, TOILET EXH FAN, stops.</p> <p>b. HV-270AV, CONTROL ROOM HVAC INLET VALVE, closes.</p> <p>c. HV-271AV, CONTROL ROOM HVAC EMERGENCY BYPASS SYSTEM INLET VALVE, opens.</p> <p>d. HV-272AV, CONTROL ROOM PANTRY EXHAUST FAN ISOLATION VALVE, closes.</p> <p>4.8.3 Step is N/A.</p> <p>4.8.4 Stop all radwaste processing.</p> <p>4.8.5 Step is N/A.</p> <p>4.8.6 Bypass FPC F/Ds per Procedure 2.2.32.</p> <p>4.8.7 In Diesel Generator Rooms:</p> <p>4.8.7.1 Close IA-687</p> <p>4.8.7.2 Slowly open DGSA-37</p> <p>4.8.7.3 Close IA-683</p> <p>4.8.7.4 Slowly open DGSA-38.</p> <p>4.8.8 Step is N/A.</p> <p>4.8.9 Review Attachment 1 for significant loads and effects due to plant air loss.</p> <p>4.9 At INSTRUMENT AIR PRESSURE \leq 77 psig:</p> | | | | | | |

| | | | | | | | | |
|--|--|---|------------------------|--|--|---------------------|--|--|
| Op-Test No.: 1 | | | Scenario No.: 2 | | | Event No.: 7 | | |
| Event Description: Instrument Air dryer plugs | | | | | | | | |
| Time | Position | Applicant's Action or Behavior | | | | | | |
| | | 4.9.1 Concurrently enter Procedure 2.1.5. 4.9.2 Transfer level control to HPCI/RCIC per Procedure 2.2.33.1 or 2.2.67.1. 4.9.3 Close all MSIVs. 4.9.4 Close MO-MO-74, INBD ISOL VLV. 4.9.5 CLOSE ms-mo-77, OUTBD ISOL VLV. 4.9.6 Concurrently perform Attachment 2. | | | | | | |
| | CRS | If dryer/filter bypass not opened, direct reactor scrammed, MSIVs closed and RPV level control transferred to RCIC. | | | | | | |
| NOTE to Chief Examiner: If crew scrams the reactor at this point, direct booth operator to continue with Event 8 and insert Trigger 4. | | | | | | | | |
| NOTE to Examiners: If the reactor is scrammed at this point go to Event 9 for post scram actions. This is Path 2 as discussed at the beginning of the scenario guide in the D1 summary section in red text. | | | | | | | | |
| | BOP | Contact building operator and direct other air dryer/filter placed in service. | | | | | | |
| | Booth Operator | If directed to place other air dryer/filter in service, wait 5 minutes delete malfunction IA05, and report the other dryer/filter is in service. | | | | | | |
| | | END OF EVENT | | | | | | |
| | Notes | | | | | | | |
| | Proceed to the next event at direction of the lead examiner. | | | | | | | |

| | | | |
|--|----------------|---|--------------|
| Op-Test No.: 1 | | Scenario No.: 2 | Event No.: 8 |
| Event Description: Reactor Recirculation Pump High Vibration (ARP 9-4-3/C-3) Recirculation Pump Seal Failure (ARP 9-4-3/A-3) | | | |
| Time | Position | Applicant's Action or Behavior | |
| | Booth Operator | When directed by lead examiner, insert Trigger 4 (RR10a, RR11a, RR50a RR31a, RR Pump A #1 and #2 seal failure, RR Motor A high vibration, and RR Loop A suction rupture) | |
| | ATC | Respond to alarm 9-4-3/C-3, RECIRC A PUMP MOTOR HI VIBRATION 1.1 Monitor RR A pump/motor vibration using PMIS Points. 1.2 NA 1.3 Notify System Engineer of valid alarms. | |
| | Booth Operator | ROLE PLAY: If sent to the 976' elevation to observe RR Pump A motor vibrations, wait 4 minutes and report the MOTOR LOWER vibration is indicating 10 mils (Alert) and the UPPER MOTOR velocity is 6 mils (Alert). | |
| NOTE to Examiners: ATC may trip RR pump A before SRO directs it if a drywell pressure increase is noted with the seal trouble annunciator. | | | |
| | ATC | Respond to alarm 9-4-3/A-3, RECIRC PUMP A SEAL TROUBLE | |
| | ATC | Operator responds to annunciator, announces alarm RR Pump A seal failures, and refers to alarm procedure. | |
| | CRS | Directs ATC to trip RR pump A and entry into 2.4RR. | |
| | BOP | Report drywell pressure rise. | |
| | CRS | Enter Abnormal Procedure 2.4 PC and direct BOP to vent the drywell to maintain drywell pressure within band. | |
| | BOP | Vent the drywell per the Hard Card: 1.5 Ensure PC-AD-R-1B is open and PC-AD-R-1A is closed. 1.6 Start preferred SGT fan. | |

| Op-Test No.: 1 | | Scenario No.: 2 | Event No.: 8 |
|--|----------|--|---------------------|
| Event Description: Reactor Recirculation Pump High Vibration (ARP 9-4-3/C-3) Recirculation Pump Seal Failure (ARP 9-4-3/A-3) | | | |
| Time | Position | Applicant's Action or Behavior | |
| | | <p>1.7 Open SGT-DPCV-546A(B) valve.</p> <p>NOTE – Steps 1.4 and 1.5 may be performed in any order or concurrently, depending on plant conditions.</p> <p>1.8 Vent Torus by performing following:</p> <p>1.8.1 Ensure PC-MO-1308 is closed.</p> <p>1.8.2 Open PC-AO-245AV.</p> <p>1.8.3 Open PC-MO-305MV.</p> <p>1.8.4 WHEN Torus pressure ~ 0.25 psig, THEN close PC-MO-305MV.</p> <p>1.8.5 Close PC-AO-245AV.</p> <p>1.8.6 Place switch for PC-AO-245AV to AUTO.</p> <p>1.9 Vent Drywell by performing following:</p> <p>1.9.1 Open PC-AO-246AV.</p> <p>1.9.2 While ensuring Torus pressure does <u>not</u> exceed Drywell pressure by > 0.1 psig, open PC-MO-306.</p> <p>1.9.3 WHEN Drywell pressure ~ 0.25 psig, THEN close PC-MO-306.</p> <p>1.9.4 Close PC-AO-246AV.</p> <p>1.9.5 Place switch for PC-AO-246AV to AUTO.</p> <p>1.10 Place switch for running SGT fan to AUTO.</p> <p>1.11 Place switch for SGT-DPCV-546A(B) to AUTO.</p> | |
| | ATC | Trips RR pump A and enters 2.4RR. | |

| | | | |
|---|-----------------|---|---------------------|
| Op-Test No.: 1 | | Scenario No.: 2 | Event No.: 8 |
| Event Description: Reactor Recirculation Pump High Vibration (ARP 9-4-3/C-3) Recirculation Pump Seal Failure (ARP 9-4-3/A-3) | | | |
| Time | Position | Applicant's Action or Behavior | |
| | | <p>4.3 Checks power-to-flow map for operating in the exclusion zone</p> <p>4.4 Secure OWC Injection System, place OWC INJECTION SYS ENABLE SWITCH to SHUTDOWN (PANEL A).</p> <p>4.5 Perform applicable Attachment 2, RECIRCULATION PUMP SEAL FAILURE</p> <p>Attachment 2</p> <p>1. If both seals have failed and affected RR pump requires prompt isolation, perform following:</p> <p>1.1 Ensure DRIVE MOTOR BKR 1CN, 1CS (1DN, 1DS) is tripped.</p> <p>1.2 Close RR-MO-43A(B), PUMP SUCTION VLV.</p> <p>1.3 Close RR-MO-53A(B), PUMP DISCHARGE VLV.</p> <p>1.4 Close CRD-50 (CRD-51), REACTOR RECIRCULATION PUMP A (B) SEAL FLOW REGULATOR 46A (B) INLET (R-903-SE).</p> <p>1.5 Following steps may be performed concurrently:</p> <p>1.5.1 Enter Single Loop Operation section of Procedure 2.2.68.1.</p> <p>1.5.2 Ensure RRMG Set A(B) GEN FIELD BKR open.</p> <p>1.5.3 Ensure operating RRMG is transferred to Startup Transformer per Procedure 2.2.18.</p> <p>If both seals have degraded and time allows, shut down and isolate affected pump per Procedure 2.2.68.1.</p> | |
| NOTE to Examiners: Venting the drywell with Standby Gas Treatment can keep up with RR seal leakage until the RR suction piping failure leakage exceeds venting capabilities. | | | |
| | | END OF EVENT | |
| | Notes | | |

| | | | | | | | | |
|--|-----------------------------------|---------------------------------------|------------------------|--|--|---------------------|--|--|
| Op-Test No.: 1 | | | Scenario No.: 2 | | | Event No.: 8 | | |
| Event Description: Reactor Recirculation Pump High Vibration (ARP 9-4-3/C-3) Recirculation Pump Seal Failure (ARP 9-4-3/A-3) | | | | | | | | |
| Time | Position | Applicant's Action or Behavior | | | | | | |
| | | | | | | | | |
| | The next event is already active. | | | | | | | |

| | | | |
|--|-----------------|--|---------------------|
| Op-Test No.: 1 | | Scenario No.: 2 | Event No.: 9 |
| Event Description: LOCA – RR Suction Line Break (EOP 1A, 3A) | | | |
| Time | Position | Applicant's Action or Behavior | |
| NOTE to Examiners: malfunction RR31A, 5%, RR Suction line leak is already ramping in (Active). | | | |
| | BOP | Report reversal in drywell pressure. | |
| | ATC | Accept scram action of 1.5 psig drywell pressure from Abnormal Procedure 2.4PC. | |
| | CRS | Direct ATC to SCRAM at 1.5 psig drywell pressure. | |
| | CRS | Enters EOP 1A and 3A on high drywell pressure and directs actions. | |
| | ATC | SCRAM or verify SCRAM per 2.1.5 1. MITIGATING TASK SCRAM ACTIONS 1.1 Press both RX SCRAM buttons. 1.2 Place REACTOR MODE switch to REFUEL. 1.3 IF reactor power > 3%, THEN perform following: 1.3.1 Place REACTOR MODE switch to SHUTDOWN. 1.3.2 Initiate ARI. | |
| NOTE to Examiners: The SDIV drain valve (AO-33) on the south volume fails to isolate when required post scram. This was originally annotated as a critical task but was determined by the exam team to NOT be critical for this scenario because it is masked by the SB LOCA events (Recirc pump seal LOCA and SB Pipe LOCA). | | | |
| | ATC | Perform Attachment 2 Reactor Power Control of 2.1.5 as follows: 1 REACTOR POWER CONTROL 1.1 Ensure REACTOR MODE switch is in SHUTDOWN. | |

| Op-Test No.: 1 | | Scenario No.: 2 | Event No.: 9 |
|--|----------|--|--------------|
| Event Description: LOCA – RR Suction Line Break (EOP 1A, 3A) | | | |
| Time | Position | Applicant's Action or Behavior | |
| | | <p>1.2 Verify <u>all</u> SDV vent and drain valves are closed.</p> <p>Report failure of drain isolation valve AO-33 to close. (Panel 9-5)</p> <p>Places SDV Isolation switch on Panel 9-5 to ISOL.</p> <p>Reports SDV drain valve closed.</p> <p>NOTE – RR pump(s) will be tripped if on Normal Transformer or if ARI/RPT has automatically initiated.</p> <p>1.3 Ensure operating RR pumps have run back to 22% speed.</p> <p>NOTE – Steps 1.4 and 1.5 may be performed concurrently.</p> <p>1.4 Verify all control rods are fully inserted.</p> <p>1.4.1 If necessary, insert control rods as directed by CRS.</p> <p>1.5 Observe nuclear instrumentation and perform following:</p> <p>1.5.1 Insert SRM detectors.</p> <p>1.5.2 Insert IRM detectors.</p> <p>1.5.3 Change APRM recorders to IRMs.</p> <p>1.5.4 Range IRMs on scale.</p> <p>Check reactor power is lowering.</p> | |
| | BOP | <p>EOP 1A RPV Control (RC/P-5)</p> <p>Stabilize RPV pressure below 1050 psig using main turbine BPVs and RPV Pressure Control Systems (TABLE 1) as necessary (RC/L-5)</p> <p>If ADS timer has initiated THEN inhibit ADS</p> | |

| | | | |
|--|---------------|--|--------------|
| Op-Test No.: 1 | | Scenario No.: 2 | Event No.: 9 |
| Event Description: LOCA – RR Suction Line Break (EOP 1A, 3A) | | | |
| Time | Position | Applicant's Action or Behavior | |
| Note to Examiners: Either Loop of RHR may be used for Torus Spray and Drywell Spray. | | | |
| | Critical Task | Initiate Drywell Spray prior to Drywell pressure exceeding the Pressure Suppression Pressure (PSP) graph (Only if still on Path 1 for the scenario guide). | |
| | CRS | Enters EOP 3A and directs Containment Sprays initiated. | |
| | BOP | <p>(PC/P-1)</p> <p>Monitor and control PC pressure below 1.84 psig using containment pressure control systems, EOP 5.8.17</p> <p>(PC/P-2)</p> <p>BEFORE torus pressure reaches 10 psig, Spray Torus</p> <p>(PC/P-3)</p> <p>When Torus pressure exceeds 10 PSIG Spray the Drywell</p> <p>2. Containment Sprays (RHR Hard Card)</p> <p>2.1 IF required, with CRS permission, THEN place CONTMT COOLING 2/3 CORE VALVE CONTROL PERMISSIVE switch to MANUAL OVERRD.</p> <p>2.2 IF required, THEN place CONTMT COOLING VLV CONTROL PERMISSIVE switch to MANUAL.</p> <p>2.3 Ensure RHR-MO-39A(B) open.</p> <p>2.4 IF reactor pressure \leq 300 psig <u>and</u> injection <u>not</u> desired, THEN _close RHR-MO-27A(B), OUTBD INJECTION VLV.</p> <p>2.5 Ensure RHR PUMP(s) running.</p> <p><u>NOTE</u> – RHR pump operation at minimum flow should be limited to < 15 minutes <u>or</u> pump damage may result.</p> <p>2.6 Throttle RHR-MO-38A(B) to maintain desired containment pressure.</p> <p>2.7 Throttle RHR-MO-66A(B) to obtain desired cooling rate.</p> <p>2.8 IF Drywell Spray required, THEN perform following:</p> <p>2.8.1 Open RHR-MO-31A(B).</p> | |

| Op-Test No.: 1 | | Scenario No.: 2 | Event No.: 9 |
|---|----------|--|---------------------|
| Event Description: LOCA – RR Suction Line Break (EOP 1A, 3A) | | | |
| Time | Position | Applicant's Action or Behavior | |
| | | <p>2.8.2 Throttle RHR-MO-26A(B) to maintain desired containment pressure.</p> <p>2.9 IF PCIS Group 6 lights lit on Panel 9-5, THEN ensure one of following open:</p> <p>2.9.1 REC-MO-711; <u>or</u></p> <p>2.9.2 REC-MO-714.</p> <p>2.10 Place RHR SW System in service:</p> <p>2.10.1 Start SWBP(s).</p> <p>2.10.2 Adjust SW-MO-89A(B) to maintain flow between 2500 and 4000 gpm.</p> <p>2.11 Throttle RHR-MO-66A(B) to maintain desired cooling rate.</p> <p>Maintain Drywell pressure between +2 & +10 psig.</p> | |
| | ATC | <p>EOP 1A RPV Control (RC/L-1)</p> <p>Ensure each of following initiated:</p> <ul style="list-style-type: none"> • PCIS Group 1-7 isolations, SOP 2.1.22 • ECCS initiations • DGs <p>(RC/L-3)</p> <p>Restore and maintain RPV water level between +3 in. and +54 in. with one or more Injection Systems (TABLE 3)</p> <p>(RC/L-4)</p> <p>When RPV water level cannot be restored and maintained between +3 in. and +54 in.</p> <p>(RC/L-6)</p> <p>Restore and maintain RPV water level above -150 in. using Injection Systems (TABLE 3) and, if necessary, Alternate Injection Subsystems (TABLE 4)</p> | |

| | | | | | | | | |
|---|----------------------------|---|------------------------|--|--|---------------------|--|--|
| Op-Test No.: 1 | | | Scenario No.: 2 | | | Event No.: 9 | | |
| Event Description: LOCA – RR Suction Line Break (EOP 1A, 3A) | | | | | | | | |
| Time | Position | Applicant's Action or Behavior | | | | | | |
| | BOP | Report RCIC trip when containment pressure rises to the RCIC high exhaust trip setting. | | | | | | |
| | | END OF EVENT | | | | | | |
| | Notes | | | | | | | |
| | Proceed to the next event. | | | | | | | |

| | | | |
|---|-----------------------|--|----------------------|
| Op-Test No.: 1 | | Scenario No.: 2 | Event No.: 10 |
| Event Description: RHR Drywell Spray Valves fail to auto close on low DW pressure. | | | |
| Time | Position | Applicant's Action or Behavior | |
| NOTE to Examiners: During performance of Drywell Sprays using procedure 2.2.69.3 during execution of EOP 3A if the operator fails to recognize DW Spray valves have lost power the valves will fail to close resulting in negative DW pressure and challenging PC Integrity. | | | |
| | Critical Task | Secure RHR Loop A drywell sprays or lower Loop B sprays prior to Drywell Pressure reaching negative pressure (Only if still on Path 1 for the scenario guide). | |
| | Booth Operator | As drywell pressure is lowered to ~5 psig, insert Trigger 5 to de-energize MO26A and MO-31A open. | |
| | BOP | Recognizes that RHR-MO-26A, DRYWELL SPRAY OUTBD THROTTLE VLV and RHR-MO-31A, DRYWELL SPRAY INBD VLV will not close while spraying the Drywell. If RHR Loop B also being used to spray the drywell, isolate drywell sprays in that loop to maintain drywell pressure above 2 psig. OR Secure all RHR Loop A pumps. Report status to the CRS | |
| | CRS | Acknowledges and directs the drywell pressure maintained positive. | |
| | | END OF EVENT | |
| | Notes | | |
| | | Proceed to the next event. | |

| | | | | | | | | |
|---|----------------------|---|------------------------|--|--|----------------------|--|--|
| Op-Test No.: 1 | | | Scenario No.: 2 | | | Event No.: 11 | | |
| Event Description: Emergency Depressurize and core re-flood. | | | | | | | | |
| Time | Position | Applicant's Action or Behavior | | | | | | |
| NOTE to Examiners: As the LOCA propagates, the RFP startup valves are unable to keep up with the leak causing RPV level to lower to below TAF. | | | | | | | | |
| | Critical Task | When RPV level cannot be maintained above TAF, and low pressure ECCS systems are available, emergency depressurize and raise water level above TAF within 15 minutes (Only if on Path 2 for the scenario guide). | | | | | | |
| | CRS | When RPV water level cannot be maintained above TAF, exit EOP 1A level leg and enter EOP 2A and direct Emergency Depressurization. | | | | | | |
| | BOP | Opens 6 SRVs as directed by the CRS. | | | | | | |
| | ATC | Uses RHR and Core Spray to inject into the RPV to restore and maintain RPV level in band prescribed by the CRS. | | | | | | |
| | | END OF EVENT | | | | | | |
| | Notes | | | | | | | |
| | | When RPV level is recovered and controlled, stop the scenario as directed by the lead examiner. | | | | | | |

Simulator Setup

Initialize the simulator in **Protected IC 232**.

Triggers and Malfunctions

- E4 – RR10A, RR #1 seal failure, 100% severity with a 5:00 ramp time.
RR11A, RR #2 seal failure, 100% severity with a 15:00 ramp time.
RR31A, RR Suction Line Break, 3.5% severity with a 10:00 ramp time. 6 minute TD.
RR50A RR Pump A High Vibration, 50% severity.
- E5 – RH23a and RH19a Loop A DW Spray Valves fail open.
- E6 – RD04a 0% with 15 second ramp.
- E7 – RR26 C and D.
- E9– DMF RD01a (Allows SDIV drain valve to close)
- E13– None
- Trgset 9 "zdirpssws10[1]==1" (SDIV control switch to ISOL)
- Trgset 13 "zdihpcisws20[4]==1" (HPCI Aux Oil Pump control switch to START)
- RD01a, 100% (Open) South SDV Drain Valve Fails to Close (Active)

HP 12, HPCI oil discharge line rupture (15 second time delay) (Active)
IA05 100% with a 5 minute ramp.

Remotes

- E5- rh19a, RHR-MO-26a control power failure
rh23a, RHR-MO-31a control power failure
- E10- SW04b RHRSW Pump B trip.
- E11- SW04d RHRSW Pump D trip.

Overrides

None

Panel Set-up

- Ensure HPCI Test displayed on SSSP.
- Ensure Tendamatic plaque labeled B-A-C
- Ensure PMIS IDTs are blank.
- Place the Shutdown EOL Rod Sequence Book on Panel 9-5.
- Ensure Recirculation Controllers are selected to "P"

Procedures Needed

6.HPCI.103 – Completed up to step 4.13, then steps 4.14 and 4.15 are complete.

Tags Hung

None

Parameter Monitoring:

Monitor RPV Power, Pressure and Level, Drywell Pressure

Turnover Sheet:

Plant Status: 100% power, EOL

Risk: Green

Activities in Progress:

Prejob brief for SPC and HPCI surveillance was briefed yesterday.

Procedure 2.2.69.3 is complete through Step 8.17.

RHR Heat Exchanger B was vented at the end of the previous shift in preparation for performing HPCI surveillance test.

6.HPCI.103 – procedure completed up to Step 4.13; Steps 4.14 and 4.15 are N/A.

LCOs in effect: None

Equipment out of service: None

Activities for the Shift:

- Place B Loop of RHR in Suppression Pool Cooling.
- Lower power to 95% for HPCI Test
- Perform 6.HPCI.103 Test
- Return to 100% power following HPCI test