

Dresden Generating Station

ILT-N-1

RAISE REACTOR POWER BY WITHDRAWING CONTROL RODS

CONTROL ROD RPIS FAILURE

CRD FLOW CONTROLLER FAILURE

TARGET ROCK BELLOWS FAILURE

LOSS OF CIRCULATING WATER SYSTEM

LOSS OF MAIN CONDENSER VACUUM

**UNISOLABLE ISOLATION CONDENSER STEAM LEAK TO RX BLDG /
EMERGENCY DEPRESSURIZATION FOR HIGH RAD**

Rev. 00

11/06

Developed By:

Exam Author

Date

Approved By:

Facility Representative

Date

Facility: DresdenScenario No: ILT-N-1Op-Test No: 2007-301

Examiners: _____ Operators: _____

Initial Conditions: Reactor power ~15%, C RFP and IRM 11 OOS.Turnover: Continue with startup per DGP 1-1

Event No.	Malf. No.	Event Type*		Event Description
1	N/A	R	NSO SRO	Raise Reactor power by withdrawing control rods
2	RDFAILF5	I	NSO SRO	RPIS failure for rod F5 ^T
3	RDFCFLO	I	NSO SRO	CRD Flow Controller Fails Low
4	ADS3ABF	C	ANSO SRO	Target Rock Bellows Failure ^T
5	HP6 HP7	C	ANSO SRO	Trip of 2A circ water pump and 2B fails to start
6	HP5	M	TEAM	Loss of Main Condenser Vacuum due to increased air leakage / RPS failure (ARI works)
7	ICSTMRB	M	TEAM	Iso cond steam inlet line leak into the Reactor Building and it will not isolate

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

Scenario Objective

Evaluate the operators in using the Emergency Depressurization DEOP contingency procedure.

Scenario Summary

Initial Conditions:

- Mode 1 at approximately 15% reactor power.
- Load ascension in progress per DGP 01-01.
- IRM channel 11 out of service.
- 2C Reactor Feed Pump OOS, expected to return to service this shift.
- Unit 3 is in Mode 1.

Scenario Sequence

- The NSO, as directed by the SRO, continues the power ascension for unit startup by control rod withdrawal.
- During the control rod withdrawal, a control rod RPIS failure occurs. The Team will insert the control rod, reference Tech Specs and direct taking it OOS.
- The indicated flow to the CRD Flow Controller fails high. This causes the controller demand to the CRD FCV to fail low. If the team does not recognize the failure quickly and restore CRD cooling flow, the ROD DRVE HI TEMP alarm comes up. The Team takes manual control of the CRD Flow Controller to restore system parameters to normal.
- A Target Rock Bellows Failure occurs as indicated by annunciator and SER. The team references Tech Specs.
- A trip of 2A circ water pump occurs. The Team attempts to start 2B circ water pump, but it fails to start, The Team manually scrams the reactor and secures the circ water system. During the scram, a failure of RPS to de-energize occurs. (ARI works) Due to the transient, air leakage causes a loss of Main Condenser Vacuum.
- After the Team has stabilized the plant, an unisolable Isolation Condenser Steam Line Leak into the Reactor Building occurs. Due to a FEF, Rx Bldg rad levels will increase to the point that the Team will perform an Emergency Depressurization.

Event One – Raise Reactor power by withdrawing control rods

- The crew increases reactor power by withdrawing control rods per DOP 0400-01, and DGP 01-01.

Malfunctions required:

0

Success Path:

- Control rods pulled per applicable procedures.

Event Two –Control Rod RPIS Failure

- Control Rod F-05 loses RPIS indication.

Malfunctions required:

- 1 (Loss of RPIS for Control Rod F-05)

Success Path:

- Inserts Control Rod F-05 and references Tech Specs.

Event Three – CRD Flow Controller Failure

- Indicated flow to the CRD Flow Controller fails high. This causes the controller demand to the CRD FCV to fail low.

Malfunctions required:

- 1 (Indicated flow to the CRD Flow Controller fails high)

Success Path:

- The crew takes manual control of the CRD Flow Controller.

Event Four – Target Rock Bellows Failure

- The Target Rock Bellows Failure alarm is received causing the Target Rock to be inoperable in the safety Valve mode.

Malfunctions required:

- 1 (Target Rock Bellows Failure)

Success Path:

- The Unit Supervisor references appropriate Tech Specs and makes correct LCO call.

Event Five And Six – Loss Of Circulating Water System / Loss Of Main Condenser Vacuum

- A Trip of 2A circ water pump and a failure of 2B to start causes a loss of the Circulating Water System, This leads to a loss of Main Condenser Vacuum, due to increased air in-leakage. A failure of RPS to de-energize (ARI works) also occurs.

Malfunctions required:

- 2 (Loss Of Circulating Water System / Loss Of Main Condenser Vacuum)
(RPS Failure)

Success Path:

- The Team scrams the reactor and stabilizes the plant.

Event Seven – Unisolable Isolation Condenser Steam Leak To Rx Bldg / Emergency Depressurization For High Rad

- An unisolable Isolation Condenser Steam Line Leak into the Reactor Building occurs. Due to a FEF, Rx Bldg rad levels will increase to the point that the Team will perform an Emergency Depressurization.

Malfunctions required:

- 2 (Unisolable Isolation Condenser Steam Line Leak)
(FEF)

Success Path:

- The Team performs an Emergency Depressurization.

PRE-SCENARIO ACTIVITIES

- 1 If applicable, conduct pre-scenario activities in accordance with TQ-AA-106-0107, SIMULATOR EXAMINATION BRIEFING.
 - a. Provide the crew with a copy of DGP 01-01 Unit Startup marked up and completed through steps necessary for ~15% power.
 - b. Inform the crew that (select an individual) is the QNE present in the Control Room.
 - c. Direct the crew to perform their briefs prior to entering the simulator.

- 2 Simulator Setup (the following steps can be done in any logical order)

NOTE: If a pre-snapped IC 153 is not available, then see the end of this section to make an IC 153.

- a. Copy the saved Snapshot of IC 153 to the simulator server as follows:
 - 1) Stop MST.
 - 2) Copy file **d_ic.153** (saved on the exam jump drive) to simulator server directory **s:\loads\training\lopslic**.
 - 3) Restart MST.

NOTE: After completion of the examination or exam development, snap over IC 153 with IC 12 for exam security.

- b. Initialize simulator in IC 153 (~15% Rx power, startup in progress, Primary Containment inerted) and perform the following before continuing below:
 - 1) Verify RWM displays that control rod step 42 withdrawal is complete. (Sequence XH.0.1 used)
 - 2) Verify Recirc pump speed at 28%.
- c. Secure the following equipment and tag out of service:
 - 1) IRM channel 11.
 - 2) 2C RFP Pump.
 - 3) 2C RFP Aux Oil Pump.
- d. Run the initial setup CAEP file: **ILT-N-1.CAE**.
- e. Cut in/out Cond Demin Beds as needed, to maintain DP within operational limit.
- f. Ensure running Condensate pump amps within operational limits.
- g. Verify 902-5 panel digital displays are clear.
 - a. Place screen #44 Startup / Shutdown Trend 1 in Overhead Display 2.
 - b. Place screen #2 Turbine in Overhead Display 4.
- h. Advance the chart recorders.
- i. Clear the 902-5 panel Digital Displays

- 3 Verify the following simulator conditions:
 - a. Reactor Power ~15%.
 - b. Drywell and Torus pressures are normal.
- 4 Complete the Simulator Setup Checklist.

Legend for team actions:

■ - Required Actions □ - Optional Actions √ - Critical Task

Creating IC 153

- 1 Initialize simulator in IC 8 (~19% Rx power, ~4 ½ Bypass valves open, dated 3/25/05) and perform the following:
 - a. Insert control rods thru step 43. (Sequence XH.0.1 used)
 - b. Verify Recirc pump speed at 30%.
 - c. Setup Primary Containment as follows:
 - 1) Vent the drywell to ~0.75 psig.
 - 2) Run CAEP file: **inert.cae** (In IC 8 the Primary Containment is not inerted, this will inert it)
 - 3) Verify the Primary Containment pressure control is setup for normal control.

Note: IC 8 was snapped with the RBCCW TCV setpoint @ 70 deg. With the RBCCW TCV setpoint now @ 90 deg, Drywell temperature is going to tend to drift up for a while. The Initial Setup CAEP file will adjust the RBCCW water mass so the alarm for Head Tank level clears if it comes up.

 - 4) If necessary, vent to establish Drywell pressure between 1.15 – 1.2 psig.
 - d. Verify MO 2-3606 2B2 Startup Vent OPEN.
 - e. Verify 2B Circulating Water pump is OFF.
 - f. Verify 2 Service Water pumps running (2B and 3B).
 - g. Verify 2E Drywell Cooler is running.
 - h. Place screen Power to Flow Map (Nominal Feedwater Heating) on Overhead Display 1
 - i. If the core flow (X axis) on the Power to Flow Map is not displaying properly, then restore the following points to scan as follows:
 - 1) On the Process Computer "Main Menu" screen top bar select "Security" and then "Logon"
 - 2) Enter r*x in both the "User Name" and "Password" fields. Click "OK".
 - 3) On the Process Computer "Main Menu" screen select "Database Management".
 - 4) On the "Database Management" screen select "Single Point Display - Analog".
 - 5) Repeat the following for each point listed below:
 - a) On the "Single Point Display - Analog" screen click in the box next to "Point Name".
 - b) On the "Data Point Selection" popup window, select the desired point from the list below, and then click "OK".
 - c) The Point should be displaying on the "Single Point Display - Analog" screen.
 - d) Click the "Return to Scan" button and click "OK" on the popup window. The button should change to "Delete from Scan"

Points: C200_RAW, C202_RAW, C204_RAW, C205_RAW, C206_RAW, C207_RAW, F279_RAW, F280_RAW, W226_RAW, W227_RAW, W228_RAW, W229_RAW.

 - 6) Once all the points have been returned to scan navigate back to the "Main Menu".
 - 7) Verify that the Power to Flow Map is displaying correctly.
- 2 Once plant conditions have stabilized:
 - a. Freeze the Simulator.
 - b. Snapshot to IC 153.
 - c. **Copy file s:\loads\training\lops\ic\ d_ic.153** to the Exam Jump Drive.

Event One – Raise Reactor power by withdrawing control rods		
Trigger	Position	Crew Actions or Behavior
		FLOOR INSTRUCTOR NOTE: The simulator models Circulating Water Pump amps higher than procedurally allowed. If the team points this out, inform them that Circulating Water Pump amps indicate 275. (SWR 9727)
1		<p>FLOOR INSTRUCTOR / SIMULATOR OPERATOR / ROLE PLAY:</p> <p>If the team announces that they will adjust gains, inform them an extra NSO will perform the adjustment. Then:</p> <ul style="list-style-type: none"> ❖ Tell the team you are time compressing. ❖ Direct the simulator operator to activate trigger 1 and verify gains within limits. ❖ Inform the team the gains are adjusted. <p>(Note: trigger 1 can be toggled OFF, then back ON as many times as necessary to adjust gains)</p>
	US	<p>Directs pulling control rods:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Reviews REMA. <input type="checkbox"/> Designates second verifier. <input type="checkbox"/> Directs NSO to pulls rods.
	NSO	<p>Performs the following actions per DOP 0400-01, Reactor Manual Control System Operation, and DGP 03-04, Control Rod Movements, as directed</p> <p><u>Verifies the following prior to moving any control rod:</u></p> <ul style="list-style-type: none"> ■ Control rod selected on the select matrix is correct rod. ■ Second Verification requirements satisfied. ■ Rod Out Permit light is illuminated. <p><u>Withdraws rods as follows:</u></p> <ul style="list-style-type: none"> ■ Moves RONOR Switch to NOTCH OVERRIDE (use of RONOR is optional) and the Rod Movement Control switch to ROD OUT. ■ Verifies ON light and proper Control Rod Timer operation. ■ Releases switches before target position is reached. <p><u>Verifies rod settles to target position and proper response of nuclear instrumentation.</u></p>

Event One – Raise Reactor power by withdrawing control rods

Trigger	Position	Crew Actions or Behavior
	ANSO	<p>Performs second verification checks.</p> <p><u>For first rod in a step:</u></p> <ul style="list-style-type: none">■ Verifies correct control rod pattern■ Verifies correct step and array.■ Verifies RWM rod blocks enabled <p><u>For all rods moved:</u></p> <ul style="list-style-type: none">■ Verifies correct control rod selected.■ Verifies planned control rod motion is correct. <p><u>Verifies control rod at target position.</u></p>

Event 1 Completion Criteria:

- **Sufficient rod moves.**
- **OR, at the direction of the NRC Lead Examiner.**

Event Two – Control Rod RPIS Failure		
Trigger	Position	Crew Actions or Behavior
2		<p><u>SIMULATOR OPERATOR:</u></p> <p>At the direction of the Lead Examiner, activate trigger 2, RPIS failure for control rod F-05.</p>
	NSO	<p>Reports and responds to DANs 902-5 A-3 ROD DRIFT, and B-3 ROD WORTH MIN BLOCK.</p> <ul style="list-style-type: none"> ■ Views Full Core Display and identifies CRD with Rod Drift light. ■ Selects Control Rod F-05 and reports no indication on Four Rod Display for Control Rod F-05.
	NSO	<p>Recognizes loss of control rod F-05 position indication on Full Core Display, Four Rod Display, RWM, and/or Process Computer.</p>
	US	<p>References appropriate plant licensing documents and determines:</p> <ul style="list-style-type: none"> ■ TS 3.1.3, condition C, required actions: <ul style="list-style-type: none"> ❖ C.1 Fully insert inoperable control rod within 3 hours; AND, ❖ C.2. Disarm the associated CRD within 4 hours. □ Directs electrically or hydraulically isolating control rod F-05 HCU. □ Directs referencing DOA 0300-06 RPIS Failure.
		<p><u>ROLE PLAY</u></p> <p>As QNE acknowledge reports. If concurrence is requested for any action, report “I concur with (insert requested action here)”</p>
	NSO	<p>Performs subsequent actions of DOA 0300-06, RPIS Failure:</p> <ul style="list-style-type: none"> ■ Stops any power change or control rod motion in progress. □ May insert Rod F-05 to 00 prior to entering DOA 0300-06. □ Enters substitute position of 48 for F-05. □ Inserts control rod F-05 one notch. □ Determines no control rod position indication at alternate position. ■ Drives rod F-05 to fully inserted position. □ Calls WEC to electrically or hydraulically isolate the control rod F-05 HCU. □ May enter a substitute position and take OOS on the RWM per DOP 0400-02, Rod Worth Minimizer.
	ANSO	<ul style="list-style-type: none"> □ Monitors panel, provides assistance as directed.
	TEAM	<ul style="list-style-type: none"> □ May enter DOA 0300-12, Mispositioned Control Rod. □ Notifies the Shift Manager, QNE, Work Week Manager, Fin team, IMD, OR EMD.

Event Two – Control Rod RPIS Failure

Trigger	Position	Crew Actions or Behavior
		<u>SIMULATOR OPERATOR / ROLE PLAY:</u> When NLO directed to disarm control rod F-05, report: "I'll disarm F-05 after I receive a pre-job brief" (it is not intended for this to be completed).
	NSO	<input type="checkbox"/> Records failed RPIS indication per DOS 0300-06, CRD Abnormality Record.

Event 2 Completion Criteria:

- **DOA 0300-06 actions have been taken.**
- **Technical Specifications have been referenced.**
- **OR, at the direction of the NRC Lead Examiner.**

Event Three – CRD Flow Controller Failure

Trigger	Position	Applicant's Actions or Behavior
3		<p><u>SIMULATOR OPERATOR:</u></p> <p>At the discretion of the NRC Chief Examiner, Activate trigger 3, which causes the indicated flow to the CRD Flow Controller to fail high. This causes the controller demand to the CRD FCV to fail low.</p> <p>NOTE: If the team does not recognize the failure quickly and restore CRD cooling flow, the ROD DRIVE HI TEMP alarm comes up after ~ 4 - 5 min.</p>
	NSO	<ul style="list-style-type: none"> ■ From panel monitoring or alarm 902-5 F-3, ROD DRIVE HI TEMP, notices and announces loss of CRD system flow. ■ Performs DOA 0300-01, Control Rod Drive System Failure actions as directed: ■ Diagnoses failure of the CRD Flow Controller and takes manual control of it. ■ Restores CRD system flows and pressures to normal.
	US	<ul style="list-style-type: none"> ■ Enters and directs performance of DOA 0300-01, Control Rod Drive System Failure. <input type="checkbox"/> Notifies Shift Manager and IMD of CRD Flow Controller failure.
		<p><u>ROLE PLAY:</u></p> <p>NLO to check CRD FCV operation: (wait 2 min) Report “ the CRD FCV appears to be full closed”.</p> <p>NLO to check CRD system flow locally; (wait 1 min) Report “CRD system flow indicates 100 gpm (pegged high)”.</p> <p>NLO to check cooling water flow locally: (wait 1 min) Report “CRD cooling water flow indicates (same as control room meter)”.</p> <p>Respond as groups notified.</p>
	ANSO	Monitors panels and assists as directed.

Event 3 Completion Criteria:

- Team has taken manual control of the CRD Flow Controller.
- OR, at the discretion of the NRC Chief Examiner.

Event Four – Target Rock Bellows Failure

Trigger	Position	Crew Actions or Behavior
5		<p><u>SIMULATOR OPERATOR:</u> At the direction of the Lead Examiner, activate trigger 5, which causes a Target Rock Bellows failure.</p>
	ANSO	<p>Performs the following actions per DAN 902-4 D-23, 2A Target Rock Relief Valve Inop:</p> <ul style="list-style-type: none"> ■ Attempts to reset the alarm. ■ Notifies the Unit Supervisor: <ul style="list-style-type: none"> ❖ IF the alarm does NOT reset, THEN the Target Rock Valve is INOPERABLE in the Safety Mode. ❖ Comply with Tech Spec Section 3.4.3, Safety and Relief Valves. □ Verifies Target Rock has NOT lifted: <ul style="list-style-type: none"> ❖ Checks RX power, RPV level and pressure unchanged. ❖ Checks Target Rock tail pipe temperature unchanged. ❖ Checks Acoustic Monitor status unchanged.
	NSO	<ul style="list-style-type: none"> □ Monitors panels, provides assistance as directed.
	US	<p>References appropriate plant licensing documents and determines:</p> <ul style="list-style-type: none"> ■ TS 3.4.3 condition B, required action: <ul style="list-style-type: none"> ❖ B.1, be in Mode 3 within 12 hrs; AND ❖ B.2, be in Mode 4 within 36 hrs. □ Notifies the Shift Manager. □ Notify Work Week Manager, Fin team, IMD, OR EMD.
<p><u>Event 4 Completion Criteria:</u></p> <ul style="list-style-type: none"> • Applicable TS has been referenced. • OR, at the direction of the NRC Lead Examiner. 		

Events Five and Six – Trip of 2A circ water pump and 2B fails to start, which leads to a loss of Main Condenser Vacuum, due to increased air in-leakage / Failure of RPS to de-energize (ARI works)

Trigger	Position	Crew Actions or Behavior
6 7		<p><u>SIMULATOR OPERATOR:</u></p> <p>At the direction of the Lead Examiner activate trigger 6, which causes 2A Circulating Water Pump to trip, prevents the 2B Circulating Water Pump from starting, and creates an air leak into the Main Condenser. A Fuel Element Failure is also inserted.</p> <p>Verify trigger 7 automatically activates when alarm 902-5 A-1 is received. This causes the Electrical ATWS malfunction to be deleted so FWLC setpoint setdown occurs.</p> <p>After 5 min, an Isolation Condenser steam line break in the Reactor Building is initiated. This starts the next Event.</p>
		<p><u>NOTE:</u></p> <p>Evaluator needs to ensure ANSO does NOT perform the actions for Circ Water pump trip OR scram the Reactor.</p>
	NSO	<p>Performs the following per DAN 902-7 A-15, Circ Wtr PP Trip, DOA 4400-01, Circulating Water System Failure, and DOA 6500-10, 4KV Circuit Breaker Trip, as directed:</p> <ul style="list-style-type: none"> ■ Attempts to start 2B Circulating Water Pump. ■ Reports 2B Circulating Water Pump will not start. ■ Stops 2C Circulating Water Pump. □ May send NLO to check 2A and 2C Circ Pump breakers.
	US	<ul style="list-style-type: none"> □ May direct performance of DOA 4400-01, Circulating Water System Failure, and DOA 6500-10, 4KV Circuit Breaker Trip. ■ Directs a reactor scram, based on loss of Circ Water System. □ Notifies the Shift Manager, Work Week Manager, Fin team, IMD, OR EMD.
		<p><u>NOTE:</u></p> <p>The following event is based on a failure of the RPS electrical scram (inserted in setup). ARI will be successful in inserting all control rods. Since the ARI action is part of the SCRAM procedure, 'all rods in' may be reported before the US enters DEOP 400-05 flowchart.</p>
	NSO	<p>Performs the following actions per DGP 02-03, Reactor Scram, and DEOP 100, RPV Control, as directed:</p> <ul style="list-style-type: none"> ■ Places Mode Switch to Shutdown and depresses the Scram pushbuttons. ■ √ Checks rods inserted (initially rods will not go in, until ARI is actuated), and announces: <ul style="list-style-type: none"> • Rods did not go in, Electric ATWS, ARI initiated, all rods in. □ Maintains RPV level as directed by SRO. □ Inserts_SRMs and IRMs.

Events Five and Six – Trip of 2A circ water pump and 2B fails to start, which leads to a loss of Main Condenser Vacuum, due to increased air in-leakage / Failure of RPS to de-energize (ARI works)

Trigger	Position	Crew Actions or Behavior
	US	Enters DEOP 100, RPV Control, and may enter DEOP 400-05, Failure to Scram, depending on timing of reports from NSO regarding status of rods. If DEOP 400-05 is entered, it will be exited as soon as report of 'all rods in' is received. <ul style="list-style-type: none"> ■ Directs actions of DEOP 100. ■ Directs actions of DGP 02-03. ■ Verification of all isolations, ECCS and EDGs starts. ■ Holding RPV/L +8 to +48 inches. ■ Maintaining RPV/P <1060 psig using the Iso Cond to control RPV/P (may use Hardcard)
	ANSO	<ul style="list-style-type: none"> ■ Controls RPV/P using the Iso Cond, as directed.
		<p><u>ROLE PLAY:</u> If NLO to 2A and 2B Circ pump breakers (wait 3 min), then report: "2A and 2B Circulating Water pump breakers have an overcurrent target up".</p>
	NSO / ANSO	<ul style="list-style-type: none"> □ May diagnose slowly decreasing vacuum by observing condenser vacuum recorder or increase in SJAE / Off Gas flow.
	NSO / ANSO	<ul style="list-style-type: none"> □ May report SJAE flow is high AND Main Condenser Vacuum lowering.
	US	<ul style="list-style-type: none"> □ May direct team to enter and execute DOA 3300-02, Loss of Condenser Vacuum
	NSO	If directed, enters DOA 3300-02, Loss of Condenser Vacuum, and performs as directed: <ul style="list-style-type: none"> □ Trips Hydrogen addition, □ Checks condenser water box DP, □ Verifies Turbine Vacuum Breaker closed.
	NSO / ANSO	May announce the following alarms indicating continued air leakage: <ul style="list-style-type: none"> □ 902-7 H-3, TURB VACUUM LO □ 902-5 F-5, CONDR VACUUM LO

Events 5 and 6 Completion Criteria:

- Reactor scram, with plant stabilized.
- OR, at the direction of the NRC Lead Examiner.

**Events Seven – Unisolable Isolation Condenser Steam Line Leak into the Reactor Building /
Emergency Depressurization**

Trigger	Position	Crew Actions or Behavior
<p>8</p> <p>9</p> <p>10</p> <p>11</p>		<p><u>NOTE:</u> This Event automatically starts 5 min. after the previous Event is started.</p> <p><u>SIMULATOR OPERATOR</u> Verify Trigger 8 activates automatically when Isolation Condenser Area radiation reaches 500 mr/hr. (variable ppr216 >500.0) This causes the RWCU and Vessel Instrument Area Radiation Monitors to ramp full scale and alarm by using overrides.</p> <p>Verify Trigger 9 activates automatically when the RWCU Area Radiation Monitor is bypassed. This clears its SER alarm.</p> <p>Verify Trigger 10 activates automatically when the Vessel Instrument Area Radiation Monitor is bypassed. This clears its SER alarm.</p> <p>If needed to drive Isolation Condenser Area Radiation to >2500 R/hr, activate Trigger 11.</p> <p><u>ROLE PLAY:</u> As dispatched NLO OR as an NLO on rounds, (wait 2 min) then report over the radio: "There is steam accumulating on 3rd and 4th floor of Unit 2 reactor building. It appears to be coming from the Iso Cond 2 valve room area, and it is getting very hot and humid up here".</p> <p><u>ROLE PLAY:</u> If dispatched as RPT to take surveys, wait until the 902-11 panel indication for the Isolation Condenser Area is >3000 mr/hr and when directed by the Lead Evaluator to make the report. Then report: "The Unit 2 reactor building 2nd floor, near 5 & 6 racks, 3rd floor, near 2 valve room door, and the entire 4th floor rad levels are > 3000 mr/hr.</p>
	<p>ANSO</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Announces numerous alarms due to the Iso Cond steam line break and fuel element failure such as: <ul style="list-style-type: none"> • 902-3 A-1, RX BLDG RAD HI • 902-3 B-1, REFUEL FLOOR RAD HI • 902-3 B-4, ISOL COND VLVS OFF NORM <input type="checkbox"/> Dispatch NLO(s) and/or Rad Tech(s) to check areas for leaks and radiation levels.
	<p>ANSO</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Checks backpanel ARMs and temperature recorders to determine the areas affected are the Iso Condenser, RWCU and Vessel Instrument Rack areas.
	<p>ANSO</p>	<p>Performs DEOP 0300-01, Secondary Containment Control actions as directed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verifies Rx Bldg Vent. isolates and SBGT starts. <input type="checkbox"/> Monitors affected areas temperatures and radiation levels. <input type="checkbox"/> Operates all available area coolers (LPCI/CS and HPCI room coolers).

**Events Seven – Unisolable Isolation Condenser Steam Line Leak into the Reactor Building /
Emergency Depressurization**

Trigger	Position	Crew Actions or Behavior
	ANSO	<ul style="list-style-type: none"> <input type="checkbox"/> Makes PA announcement to evacuate the reactor building. <input type="checkbox"/> Determines leak is from the Iso Cond 2 valve room from knowledge, reports from field, or by receiving alarm 902-3 H-2, ISOL COND LINE BREAK (GRP 5 ISOL) and reports to US. <input type="checkbox"/> Closes Iso Cond 2 Valve, attempts closure of the 1 Valve (will not close). <input checked="" type="checkbox"/> Determines leak is unisolable (between 1 and 2 valve) due to the Iso 1 valve being unable to close.
	ANSO	<ul style="list-style-type: none"> <input type="checkbox"/> Should periodically check backpanel ARMs temperature recorders to determine rate and/or trend of the areas affected from steam leak.
	US	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Enters DEOP 300-1 Secondary Containment Control, when informed area rad or temperature level(s) are above Max Normal.
	US	<ul style="list-style-type: none"> √ When notified of 2 or more areas above Max Safe, enters DEOP 0400-02, Emergency Depressurization, and directs: <ul style="list-style-type: none"> <input type="checkbox"/> Verifying all rods in to at least position 04. <input type="checkbox"/> Drywell Pressure < 2.0 psig. <input type="checkbox"/> Verifying SP/L >6 feet. <input checked="" type="checkbox"/> Opening all ADS valves. <input type="checkbox"/> Verifying all ADS valves are open.
	ANSO	<ul style="list-style-type: none"> √ Executes DEOP 0400-02, Emergency Depressurization, as directed: <ul style="list-style-type: none"> <input type="checkbox"/> Verifies SP/L >6 feet. <input checked="" type="checkbox"/> Opens all ADS valves. <input type="checkbox"/> Verifies all ADS are open.
	US	<ul style="list-style-type: none"> <input type="checkbox"/> May request a RPT to update DEOP related area rad levels which are fullscale on the ARMs.

Events 7 / Scenario Completion Criteria:

Emergency Depressurization in progress.

OR, at the direction of the NRC Lead Examiner.

Critical Tasks:

(RPV-6.1)	With a reactor scram required and the reactor not shutdown, TAKE ACTION TO REDUCE POWER by inserting control rods.
(SC-1.2)	With a primary system discharging into the secondary containment and area radiation exceed maximum safe operating levels in more than one area, INITIATE emergency depressurization.

REFERENCES

PROCEDURE	TITLE
DAN 902-3 A-1	RX BLDG RAD HI
DAN 902-3 B-1	REFUEL FLOOR RAD HI
DAN 902-3 B-4	ISOL COND VLVS OFF NORM
DAN 902-3 C-15	ADS MAIN DC PWR FAILURE
DAN 902-3 H-2	ISOL COND LINE BREAK
DAN 902-4 D-23	2A TARGET ROCK RELIEF VALVE INOP
DAN 902-5 A-3	ROD DRIFT
DAN 902-5 B-3	ROD WORTH MIN BLOCK
DAN 902-5 C-15	CHANNEL B RX SCRAM
DAN 902-5 C-3	ROD OUT BLOCK
DAN 902-5 F-3	ROD DRIVE HI TEMP
DAN 902-7 A-15	CIRC WTR PP TRIP
DEOP 0100	RPV CONTROL
DEOP 0300-01	SECONDARY CONTAINMENT CONTROL
DEOP 0400-02	EMERGENCY DEPRESSURIZATION
DEOP 0400-05	FAILURE TO SCRAM
DGP 01-01	UNIT STARTUP
DGP 02-03	REACTOR SCRAM
DGP 03-04	CONTROL ROD MOVEMENTS
DOA 0040-01	SLOW LEAK
DOA 0300-01	CONTROL ROD DRIVE SYSTEM FAILURE
DOA 0300-06	RPIS FAILURE
DOA 0300-12	MISPOSITIONED CONTROL ROD
DOA 3300-02	LOSS OF CONDENSER VACUUM
DOA 4400-01	CIRCULATING WATER SYSTEM FAILURE
DOA 6500-10	4KV CIRCUIT BREAKER TRIP
DOP 0400-01	REACTOR MANUAL CONTROL SYSTEM OPERATION
DOP 0400-02	ROD WORTH MINIMIZER
DOS 0300-06	CONTROL ROD DRIVE ABNORMALITY RECORD
TS 3.1.3	CONTROL ROD OPERABILITY
TS 3.4.3	SAFETY AND RELIEF VALVES
TS 3.5.1	ECCS-OPERATING

NRC EXAM ILT-N-1 QUANTITATIVE ATTRIBUTES	
7	Total malfunctions inserted (4 to 8) / (10 to 14)
2	Malfunctions that occur after EOP entry (1 to 4) / (3 to 6)
4	Abnormal events (1 to 2) / (2 to 3)
2	Major transients (1 to 2) / (2 to 3)
2	EOPs used beyond primary scram response EOP (1 to 3) / (3 to 5)
1	EOPs contingency procedures used (0 to 3) / (1 to 3)
60	Approximate scenario run time (45 to 60 min) / (one scenario may approach 90 minutes)
40%	EOP run time (40 to 70% of scenario run time)
2	Crew critical tasks (2 to 5) / (5 to 8)
Yes	Technical Specifications exercised (Yes or No)

ILT 06-1 NRC EXAM SCENARIO ILT-N-1 Initial Setup CAEP:

SCENARIO ILT-N-1.cae

Written by FRF

Rev 00

Date 11/06

INITIAL CONDITIONS

Causes a failure of RPS electrical scram but ARI works.

imf b12

Binds Iso Cond 1 valve 90% open.

imf ic1vbn 90.0

Overrides Iso Cond Rad Mon Dnscl OFF.

imf ser0004 off

imf ser0019 off

Overrides 902-3 C-1 OFF due to nuisance alarms.

imf ser0063 off

Puts in IRM high for OOS condition.

imf nii11pot 125.0

Sets APRM Master gain pot to 1.0

irf niagain 1.0|2

This changes the mass of RBCCW water so the Head tank alarm does not come up.

set wrmtot = 676450|2

Inserts a 15% Service Water Strainer Leak to reduce pressure to normal.

imf q31 15.0|2

EVENT TRIGGERS

Event Trigger 1 sets gain for all 6 APRMs.

trgset 1 "0"|2

trg 1 "irf niagainf true"|2

Event Trigger 2 inserts a RPIS failure for rod F5

trgset 2 "0"|2

imf rdfailf5 (2)|4

imf cr043s (2) bad|4

Event Trigger 3 inserts a failure high of the indicated flow to the CRD flow controller.

Sets one of the CRD's enthalpy higher, so alarm 902-5 F-3 comes up sooner.

trgset 3 "0"|4

imf rdhcfhi (3)|4

trg 3 "set rdhmech(21) = 190.0"|4

Event trigger 4 Returns alarm 902-5 F-3 to normal.

trgset 4 "rdgtemp(21) .gt. 250.0"|4

imf ser0973 (4) on|4

Event trigger 5 inserts Target Rock Bellows failure.

trgset 5 "0"|6

imf ads3abf (5)|6

Event Trigger 6 trips 2A circ water pump on OC, prevents 2B from starting,
causes air leak into cond over 1 min. and
Inserts a FEF.
After 5 min, starts an Iso Steam line leak into the RX Bldg between the 1 and 2 valves.
trgset 6 "0"|6
imf hp6 (6)|6
imf hp7 (6)|6
imf hp5 (6 1:00) 100.0 1:00|6
imf radffd (6 4:00) 40.0 15:00 10.0|8
imf icstmr (6 4:00) 2.0|8

Event trigger 7 Activates when alarm 902-5 A-1 is received.
trgset 7 "sezpoint(905)"|8
trg 7 "dmf b12"|8

Event Trigger 8 Activates when IC Area rad is >500 mr/hr.
Ramps RWCU Area Rad meter to full scale over 3 min. using override.
After 2 min, overrides RWCU Area Rad Hi light ON and inserts SER alarm.
Ramps Vessel Instru Rack Area Rad to full scale over 2 min using override.
After 80 sec, overrides Vessel Instru Rack Area Rad Hi light ON and inserts SER alarm.
trgset 8 "ppr216 .gt. 500.0"|8
ior mrgrwcu (8) 1.0 3:00|8
ior mrlrwcu (8 2:00) on|10
imf ser0260 (8 2:00) on|10
imf r215 (8) 100.0 2:00|10
ior mrginst (8) 1.0 2:00|10
ior mrlinsth (8 80) on|10
imf ser0268 (8 80) on|10

Event Trigger 9 Activates when RWCU Area Rad (STA 7) alarm is bypassed.
Returns SER alarm to OFF.
trgset 9 "mrdrw cub_drw"|12
trg 9 "imf ser0260 off"|12

Event Trigger 10 Activates when Vessel Instru Rack Area Rad (STA 8) alarm is bypassed.
Returns SER alarm to OFF.
trgset 10 "mrdinstb_drw"|12
trg 10 "imf ser0268 off"|12

Event trigger 11 If needed, ramps Iso Cond Area Rad indication to >2500 R/hr.
trgset 11 "0"|14
ior mrgic (11) 0.9 5:00|14

Event trigger 16 Returns alarm 902-5 F-3 to normal.
trgset 16 "sezpoint(973) .and. (rdgtemp(21) .lt. 245.0)"|14
trg 16 "imf ser0973 normal"|14

END

Support CAEP File

sets drywell and torus O2 and N2 masses so the Primary Containment is inerted.
set pcmo2dw(1) = 20
set pcmo2dw(2) = 20
set pcmo2dw(3) = 20
set pcmo2dw(4) = 20
set pcmo2dw(5) = 20

```
set pcmo2dw(6) = 20|2
set pcmo2dw(7) = 20|2
set pcmo2dw(8) = 20|2
set pcmo2dw(9) = 20|2
set pcmo2dw(10) = 20|2
set pcmo2dw(11) = 20|4
set pcmo2dw(12) = 20|4
set pcmo2dw(13) = 20|4
set pcmo2dw(14) = 20|4
set pcmo2dw(15) = 20|4
set pcmo2dw(16) = 20|6
set pcmo2dw(17) = 20|6
set pcmo2dw(18) = 20|6
set pcmo2ww(1) = 5|6
set pcmo2ww(2) = 5|6
set pcmo2ww(3) = 5|8
set pcmo2ww(4) = 5|8
set pcmo2ww(5) = 5|8
set pcmo2ww(6) = 5|10
set pcmo2ww(7) = 5|10
set pcmo2ww(8) = 5|10
set pcmndw(1) = 550|10
set pcmnww(1) = 750|10
# opens the N2 makeup inlet isolation.
irf p33 true
```

OSG VALIDATION CHECKLIST

Scenario Number: SCENARIO ILT-N-1

TR Number: N/A

- 1 ____ Title and lesson plan number logged into lesson plan database
- 2 ____ Verify that if not run from a protected IC that setup information is provided to reproduce the stated initial conditions.
- 3 ____ Verify that all stated objectives are identified in the body of the SEG.
- 4 ____ PSA items identified. Important Operator Actions identified, systems affected with a high RPA/PSA significance identified, etc. State NONE if there are no actions.
- 5 ____ Verify that turnover sheets are completed, and agree with scenario conditions.
- 6 ____ Verify that if the scenario requires documents to be provided to the crew, they are filled out as appropriate (i.e., LCO Board Conditions Sheet, DOS cover sheet and applicable portions filled in).
- 7 ____ If this is the initial validation or the revision affects ramp times, event triggers, malfunctions, overrides, remote functions or procedure changes that could affect the scenario, then validate the scenario for proper response using a crew if possible. Verify the following:
 - The scenario runs as written and all tasks can be performed.
 - Critical task statements clearly define the expected plant and student response. They should also be achievable as written. If any question exists, it is preferable to have operations management participate in the validation.
 - Anticipated instructor role play/cues are identified Role play instructions should match turnover conditions in terms of staffing, etc
 - Management expectations are captured and re-enforced.
 - Key points/issues in training scenarios that are an opportunity for discussion of the basis for an action, step, or plant response are identified.
 - Verify administrative documentation requirements (i.e., CRs) are identified.
 - Verify reportability requirements (i.e., ESF actuations) are identified.
 - Verify Technical Specification items / LCO declarations are correct.
 - Verify soft skills expectations are captured and re-enforced.
- 8 ____ Shutdown scenarios include shutdown risk assessment, time to boil calculations and shutdown status board information.
- 9 ____ Dynamic Scenario Validation Checklist attached to scenario and completed (OP Exams only).
- 10 ____ For training scenarios, basic Fundamentals questions and answers have been added.
- 11 ____ CAEP, Batch, Function Key or other electronic file verified correct.

SME/Instructor

Date

SME/Instructor

Date

- 12 ____ Transfer electronic copy of the scenario to the approved lesson plan directory. (Forward this form to Training Document's Coordinator and note file location.)

Date: TODAY

Unit 2 Turnover

Online Information

0 MWe
Online Risk: Green
Risk Equipment:

Protected Pathway(s)

Shutdown Information

Time to Boil: 0
Shutdown Risk: N/A

Reactivity Management

Limit: MFLCPR NA
Action Level: NA
S/D Method: DGP 02-01

Unit 2 Priorities

Continue Unit Startup.

LCORAs

LCORA None
Title

Start
Clock Ends

Compensatory Actions

Degradation
Documentation

Frequency
Responsible

Compensatory Action

Unit 2 Conditions, Status, Abnormalities

2 hr ago IRM 11 OOS due to power supply failure. IMD waiting for replacement power supply to arrive from Quad Cities Station.
7 hr ago 2C RFP OOS, expected to return later this shift.

Unit 2 Abnormal Component Position

U2 Open Operability Determinations with Compensatory Actions

Shift 1 Activities (X = Completed)

Shift 2 Activities

 Startup

Shift 3 Activities

Common Unit Activities

Shift 1 Activities (X = Completed)

Shift 2 Activities

Shift 3 Activities

Unit 2 Procedures in Progress (Non-Surveillance)

DGP 01-01 and 03-04 in progress. The QNE is present in the control room. The Unit is at ~ 15 % power.

Unit 2 Surveillances in Progress

None

Date: TODAY

Unit 3 Turnover

Online Information

912 MWe

Online Risk: Green

Risk Equipment:

Protected Pathway(s)

Shutdown Information

Time to Boil: 0

Shutdown Risk: N/A

Reactivity Management

Limit: MFLCPR 0.78 Increasing slowly

Action Level: 0.980

S/D Method: DGP 02-01

Unit 3 Priorities

Maintain load per TSO direction.

LCORAs

LCORA # None

Title

Start

Clock Ends

Compensatory Actions

Degradation
Documentation

Frequency
Responsible

Compensatory Action

Unit 3 Conditions, Status, Abnormalities

None

Unit 3 Abnormal Component Position

U3 Open Operability Determinations with Compensatory Actions

Shift 1 Activities (X = Completed)

Shift 2 Activities

Shift 3 Activities

Common Unit Activities

Shift 1 Activities (X = Completed)

Shift 2 Activities

Shift 3 Activities

Unit 3 Procedures in Progress (Non-Surveillance)

None

Unit 3 Surveillances in Progress

None

```
# SCENARIO ILT-N-1.cae
# Written by FRF
# Rev 00
# Date 11/06

# INITIAL CONDITIONS

# Causes a failure of RPS electrical scram but ARI works.
imf b12

# Binds Iso Cond 1 valve 90% open.
imf iclvbn 90.0

# Overrides Iso Cond Rad Mon Dnscl OFF.
imf ser0004 off
imf ser0019 off

# Overrides 902-3 C-1 OFF due to nuisance alarms.
imf ser0063 off

# Puts in IRM high for OOS condition.
imf niillpot 125.0

# Sets APRM Master gain pot to 1.0
irf niagain 1.0|2

# This changes the mass of RBCCW water so the Head tank alarm does not come up.
set wrmtot = 676450|2

# Inserts a 15% Service Water Strainer Leak to reduce pressure to normal.
imf q31 15.0|2

# EVENT TRIGGERS

# Event Trigger 1 sets gain for all 6 APRMs.
trgset 1 "0"|2
trg 1 "irf niagainf true"|2

# Event Trigger 2 inserts a RPIS failure for rod F5
trgset 2 "0"|2
imf rdfailf5 (2)|4
imf cr043s (2) bad|4

# Event Trigger 3 inserts a failure high of the indicated flow to the CRD flow
controller.
# Sets one of the CRD's enthalpy higher, so alarm 902-5 F-3 comes up sooner.
trgset 3 "0"|4
imf rdrcfhi (3)|4
trg 3 "set rdhmech(21) = 190.0"|4

# Event trigger 4 Returns alarm 902-5 F-3 to normal.
trgset 4 "rdgtemp(21) .gt. 250.0"|4
imf ser0973 (4) on|4

# Event trigger 5 inserts Target Rock Bellows failure.
trgset 5 "0"|6
```

```

imf ads3abf (5)|6

# Event Trigger 6 trips 2A circ water pump on OC, prevents 2B from starting,
# causes air leak into cond over 1 min. and
# Inserts a FEF.
# After 5 min, starts an Iso Steam line leak into the RX Bldg between the 1 and
2 valves.
trgset 6 "0"|6
imf hp6 (6)|6
imf hp7 (6)|6
imf hp5 (6 1:00) 100.0 1:00|6
imf radffd (6 4:00) 40.0 15:00 10.0|8
imf icstmr (6 4:00) 2.0|8

# Event trigger 7 Activates when alarm 902-5 A-1 is received.
trgset 7 "sezpoint(905)"|8
trg 7 "dmf b12"|8

# Event Trigger 8 Activates when IC Area rad is >500 mr/hr.
# Ramps RWCU Area Rad meter to full scale over 3 min. using override.
# After 2 min, overrides RWCU Area Rad Hi light ON and inserts SER alarm.
# Ramps Vessel Instru Rack Area Rad to full scale over 2 min using override.
# After 80 sec, overrides Vessel Instru Rack Area Rad Hi light ON and inserts
SER alarm.
trgset 8 "ppr216 .gt. 500.0"|8
ior mrgrwcu (8) 1.0 3:00|8
ior mrlrwcu (8 2:00) on|10
imf ser0260 (8 2:00) on|10
imf r215 (8) 100.0 2:00|10
ior mrginst (8) 1.0 2:00|10
ior mrlinsth (8 80) on|10
imf ser0268 (8 80) on|10

# Event Trigger 9 Activates when RWCU Area Rad (STA 7) alarm is bypassed.
# Returns SER alarm to OFF.
trgset 9 "mrdrcub_drw"|12
trg 9 "imf ser0260 off"|12

# Event Trigger 10 Activates when Vessel Instru Rack Area Rad (STA 8) alarm is
bypassed.
# Returns SER alarm to OFF.
trgset 10 "mrdinstb_drw"|12
trg 10 "imf ser0268 off"|12

# Event trigger 11 If needed, ramps Iso Cond Area Rad indication to >2500 R/hr.
trgset 11 "0"|14
ior mrgic (11) 0.9 5:00|14

# Event trigger 16 Returns alarm 902-5 F-3 to normal.
trgset 16 "sezpoint(973) .and. (rdgtemp(21) .lt. 245.0)"|14
trg 16 "imf ser0973 normal"|14

# END

```

Dresden Generating Station

ILT-N-2

RAISE REACTOR POWER BY WITHDRAWING CONTROL RODS

STUCK CONTROL ROD

PARTIAL HALF SCRAM

SERVICE WATER PUMP TRIP

SPURIOUS HPCI INITIATION

STEAM LEAK INSIDE THE DRYWELL

EMERGENCY DEPRESSURIZATION

Rev. 00

11/06

Developed By:

Exam Author

Date

Approved By:

Facility Representative

Date

Facility: DresdenScenario No: ILT-N-2Op-Test No: 2007-301

Examiners: _____ Operators: _____

Initial Conditions: Reactor power ~15%, C RFP and IRM 11 OOS.Turnover: Continue with startup per DGP 1-1

Event No.	Malf. No.	Event Type*		Event Description
1	NONE	R	NSO SRO	Raise power by withdrawing control rods
2	RODJ07ST	C	NSO SRO	Stuck Control Rod ^T
3	NIA2POT	I	NSO SRO	APRM Fails Downscale with failure of half scram ^T
4	Q22	C	ANSO SRO	Service Water Pump Trip
5	HPINIT	I	ANSO SRO	Spurious HPCI Initiation ^T
6	I21	M	TEAM	Small steam leak inside the Drywell
7	K23 K40	M	TEAM	Overcurrent on Busses 23-1 & 28 / Inability to Spray DW / Emergency Depressurization

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

Scenario Objective

Evaluate the operators in using the Emergency Depressurization DEOP contingency procedure.

Scenario Summary

Initial Conditions:

- Mode 1 at approximately 13% reactor power.
- Load ascension in progress per DGP 01-01.
- IRM channel 11 out of service.
- 2C Reactor Feed Pump OOS.
- Unit 3 is in Mode 1.

Scenario Sequence

- The Team continues the power ascension for unit startup by control rod withdrawal.
- During the control rod withdrawal, a control rod is difficult to move. NSO must increase drive water pressure.
- IRM 12 fails upscale followed a short time later by companion APRM 2 failing downscale generating a RPS CH A half scram signal. A RPS failure results in a partial half scram. The Team manually scrams RPS CH A.
- 2B Service Water Pump trips. The team will start a standby pump and address automatic start of the 2/3 DFP.
- A spurious HPCI initiation occurs. The team will take action to stop HPCI and address Tech Spec requirements.
- The crew recognizes and responds to a steam leak in the Drywell. Bus 23-1 trips resulting in a loss of one Division of Drywell Spray. The Primary Containment pressure will exceed the PSP limit and require the Team to Emergency Depressurize.

Event One – Raise Reactor power by withdrawing control rods

- The crew increases reactor power by withdrawing control rods per DOP 0400-01, and DGP 01-01.

Malfunctions required:

- 0

Success Path:

- Control rods pulled per applicable procedures.

Event Two – Stuck Control Rod

- Control Rod R-09 will not withdraw from its current position using normal drive water pressure.

Malfunctions required:

- 1 (inserted in initial setup – deleted after drive water pressure increased).

Success Path:

- Control Rod R-09 has been withdrawn after increasing control rod drive pressure.

Event Three – Partial Half Scram

- Nuclear instrumentation failures and a RPS failure result in a partial half scram.

Malfunctions required:

- 1 (Partial Half Scram).

Success Path:

- Team manually inserts a half scram.

Event Four – Service Water Pump Trip

- 2B Service Water Pump trips.

Malfunctions required:

- 1 (2B Service Water Pump trip).

Success Path:

- The Team starts a standby Service Water Pump.
- Addresses 2/3 DFP auto start.

Event Five – Spurious HPCI Initiation

- A Spurious HPCI Initiation occurs.

Malfunctions required:

- 1 (Spurious HPCI Initiation).

Success Path:

- The Team isolates the HPCI steam supply.

Event Six And Seven –Steam Leak Inside The Drywell / Emergency Depressurization

- The crew recognizes and responds to a steam leak in the Drywell. The Primary Containment pressure will exceed the PSP limit and require the Team to Emergency Depressurize.

Malfunctions required:

- 2 (Steam leak in the Drywell).
(Loss of Drywell Sprays).

Success Path:

- The Team performs an Emergency Depressurization.

PRE-SCENARIO ACTIVITIES

- 1 If applicable, conduct pre-scenario activities in accordance with TQ-AA-106-0107, SIMULATOR EXAMINATION BRIEFING.
 - a. Provide the crew with a copy of DGP 01-01 Unit Startup marked up and completed through steps necessary for ~13% power.
 - b. Inform the crew that (select an individual) is the QNE present in the Control Room.
 - c. Direct the crew to perform their briefs prior to entering the simulator.

- 2 Simulator Setup (the following steps can be done in any logical order)

NOTE: If a pre-snapped IC 153 is not available, then see ILT-N-1 to make an IC 153.

- a. Copy the saved Snapshot of IC 153 to the simulator server as follows:
 - 1) Stop MST.
 - 2) Copy file **d_ic.153** (saved on the exam jump drive) to simulator server directory **s:\loads\training\lopslic**.
 - 3) Restart MST.

NOTE: After completion of the examination or exam development, snap over IC 153 with IC 12 for exam security.

- b. Initialize simulator in IC 153 (~15% Rx power, startup in progress, Primary Containment inerted) and perform the following before continuing below:
 - 1) Verify RWM displays that control rod step 42 withdrawal is complete. (Sequence XH.0.1 used)
 - 2) Verify Recirc pump speed at 30%.
- c. Secure the following equipment and tag out of service:
 - 1) IRM channel 11.
 - 2) 2C RFP Pump.
 - 3) 2C RFP Aux Oil Pump.
- d. Verify control rod R-09 will be moved shortly into the scenario.

NOTE: Due to the stuck control rod inserted by the initial setup CAEP file, wait to run it after rod moves are completed for setup.

- e. Run the initial setup CAEP file: **ILT-N-2.CAE**.
- f. Cut in/out Cond Demin Beds as needed, to maintain DP within operational limit.
- g. Ensure running Condensate pump amps within operational limits.
- h. Verify 902-5 panel digital displays are clear.
- i. Advance the chart recorders.
- j. Clear the 902-5 panel Digital Displays

- 3 Verify the following simulator conditions:
 - a. Reactor Power ~ 13%.
 - b. Drywell and Torus pressures are normal.

- 4 Complete the Simulator Setup Checklist.

Legend for team actions:

■ - Required Actions □ - Optional Actions √ - Critical Task

Event One – Raise Reactor power by withdrawing control rods		
Trigger	Position	Crew Actions or Behavior
		FLOOR INSTRUCTOR NOTE: The simulator models Circulating Water Pump amps higher than procedurally allowed. If the team points this out, inform them that Circulating Water Pump amps indicate 275. (SWR 9727)
1		<p>FLOOR INSTRUCTOR / SIMULATOR OPERATOR / ROLE PLAY:</p> <p>If the team announces that they will adjust gains, inform them an extra NSO will perform the adjustment. Then:</p> <ul style="list-style-type: none"> ❖ Tell the team you are time compressing. ❖ Direct the simulator operator to activate trigger 1 and verify gains within limits. ❖ Inform the team the gains are adjusted. <p>(Note: trigger 1 can be toggled OFF, then back ON as many times as necessary to adjust gains)</p>
	US	<p>Directs pulling control rods:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Reviews REMA. <input type="checkbox"/> Designates second verifier. <input type="checkbox"/> Directs NSO to pulls rods.
	NSO	<p>Performs the following actions per DOP 0400-01, Reactor Manual Control System Operation, and DGP 03-04, Control Rod Movements, as directed</p> <p><u>Verifies the following prior to moving any control rod:</u></p> <ul style="list-style-type: none"> ■ Control rod selected on the select matrix is correct rod. ■ Second Verification requirements satisfied. ■ Rod Out Permit light is illuminated. <p><u>Withdraws rods as follows:</u></p> <ul style="list-style-type: none"> ■ Moves RONOR Switch to NOTCH OVERRIDE (use of RONOR is optional) and the Rod Movement Control switch to ROD OUT. ■ Verifies ON light and proper Control Rod Timer operation. ■ Releases switches before target position is reached. <p><u>Verifies rod settles to target position and proper response of nuclear instrumentation.</u></p>

Event One – Raise Reactor power by withdrawing control rods

Trigger	Position	Crew Actions or Behavior
	<p>ANSO</p>	<p>Performs second verification checks.</p> <p><u>For first rod in a step:</u></p> <ul style="list-style-type: none"> ■ Verifies correct control rod pattern ■ Verifies correct step and array. ■ Verifies RWM rod blocks enabled <p><u>For all rods moved:</u></p> <ul style="list-style-type: none"> ■ Verifies correct control rod selected. ■ Verifies planned control rod motion is correct. <p><u>Verifies control rod at target position.</u></p>

Event 1 Completion Criteria:

- **Sufficient rod moves (event 2 starts when the TEAM attempts to move control rod R-09).**
- **OR, at the direction of the Lead Examiner.**

Event Two - Stuck Control Rod		
Trigger	Position	Actions or Behavior
		NOTE: Stuck rod (R-09) malfunction is inserted when the setup CAEP file is run.
2		<u>Simulator Operator:</u> Verify trigger 2 automatically activates when CRD Drive Water pressure is raised above 325 psid and the Team attempts to move control rod R-09.
	NSO	<ul style="list-style-type: none"> ■ Reports control rod R-09 failure to withdraw (stuck)
	US	<ul style="list-style-type: none"> □ May announce entry into DOA 0300-05, Inoperable or Failed Control Rod Drives. ■ Refers to DOP 0400-01, RMCS Operation, and directs NSO to raise drive water pressure and attempt to withdraw the control rod.
	NSO	<p>Refers to DOP 0400-01 and raises drive water pressure to 300 psid.</p> <ul style="list-style-type: none"> □ Attempts to withdraw rod and reports control rod did not withdraw.
	NSO	<ul style="list-style-type: none"> ■ Raises drive water pressure to 350 psid. ■ Attempts to withdraw rod and reports control rod movement. □ Records in DOS 0300-06, Control Rod Drive Abnormality Record, the use of elevated drive water pressure.
		<ul style="list-style-type: none"> ■ References Technical Specifications and determines: <ul style="list-style-type: none"> ❖ TS 3.1.3 Action A1 may apply. Verify stuck control rod separation criteria.
	ANSO	<ul style="list-style-type: none"> ■ Monitors panels, provide assistance as directed.
	US	<ul style="list-style-type: none"> □ Directs team to continue unit startup by control rod withdrawal.
	NSO	<ul style="list-style-type: none"> □ Withdraws control rods per approved control rod sequence.
<u>Event 2 Completion Criteria:</u>		
<ul style="list-style-type: none"> • Actions to respond to a stuck control rod, per DOP 0400-01, are completed. • OR, at the direction of the Lead Examiner. 		

Event Three – Partial Half Scram		
Trigger	Position	Crew Actions or Behavior
3		<p><u>Simulator Operator Actions:</u></p> <p>At the discretion of the NRC Lead Examiner, activate trigger 3, which fails IRM 12 upscale and after 3 min, fails companion APRM 2 downscale causing a RPS CH A half scram signal. The initial setup CAEP file inserts a RPS CH A partial half scram failure, so the Team will manually insert a RPS CH A half scram.</p>
	NSO	<ul style="list-style-type: none"> <input type="checkbox"/> Announces alarms: <ul style="list-style-type: none"> ❖ 902-5 A-5, IRM HI. ❖ 902-5 C-10, CHANNEL A IRM HI HI/INOP. ❖ 902-5 B-11, CHANNEL A/B NEUTRON MONITOR. ❖ 902-5 C-6, APRM DOWNSCALE. ❖ 902-5 D-10, CHANNEL A RX SCRAM
	NSO	<ul style="list-style-type: none"> ■ Announces the partial half scram condition on the A RPS channel. <input type="checkbox"/> Scram Solenoid Group lights A2 and A3 did NOT extinguish. ■ Performs DOA 0500-02, Partial ½ or Full Scram Actuation. (May insert the manual half scram as an immediate action of DOA 0500-02 then refer to the procedure) ■ Depresses RPS Channel A Manual Scram pushbutton.
	ANSO	<ul style="list-style-type: none"> ■ Monitors panels, provide assistance as directed.
	US	<ul style="list-style-type: none"> <input type="checkbox"/> Enters and directs performance of DOA 0500-02, Partial ½ or Full Scram Actuation. <input type="checkbox"/> May direct placing APRM #2 in BYPASS.
	NSO	<ul style="list-style-type: none"> <input type="checkbox"/> If directed, places APRM #2 in BYPASS.
	US	<ul style="list-style-type: none"> ■ References Technical Specifications and determines: <ul style="list-style-type: none"> ❖ TS 3.3.1.1 Action A1 or A2 and C1 apply. Most limiting is Restore RPS trip capability within 1 hour.
	US	<p>May contact any/all of the following to inform of situation or request assistance:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Shift Manager <input type="checkbox"/> IMD <input type="checkbox"/> Operations Manager <input type="checkbox"/> Shift Operating Supervisor <input type="checkbox"/> Duty Maintenance Supervisor <input type="checkbox"/> Duty Engineering Manager <input type="checkbox"/> Work Week Manager
		<p><u>Role Play:</u></p> <p>Respond as Department Personnel contacted.</p>

Event Three – Partial Half Scram

Trigger

Position

Crew Actions or Behavior

Event 3 Completion Criteria:

- **Half Scram inserted**
 - **Appropriate Tech Specs referenced**
- AND,**
- **At the discretion of the Lead Examiner.**

Event Four – Service Water Pump Trip		
Trigger	Position	Actions or Behavior
4		<p><u>Simulator Operator:</u></p> <p>At the discretion of the NRC Lead Examiner, activate trigger 4, which trips 2B Service Water pump.</p>
		<p><u>Role Play:</u></p> <p>NLO to check 2B Service Water pump breaker: Wait 2 min. and report “the 2B Service Water pump breaker tripped on overcurrent”.</p> <p>NLO to check Service Water system in Cribhouse: Wait 2 min. and report “I found nothing abnormal in the Cribhouse”.</p> <p>NLO to check 2/3 DFP: Wait 2 min. and report “The 2/3 DFP operation appears normal”.</p>
5		<p><u>Simulator Operator / Role Play:</u></p> <p>NLO to STOP 2/3 DFP: Wait 1 min, activate trigger 5, and report “the 2/3 DFP is secured.”</p>
	ANSO	<ul style="list-style-type: none"> ■ Announces and references DAN for alarms: <ul style="list-style-type: none"> ❖ 923-1 C-3, U2 or U3 Inst Air Comp Trip. ❖ 923-1 F-3, Fire Prot Water Hdr Press Lo ❖ 923-1 G-4, U2/3 Diesel Fire PP Running
	US	<ul style="list-style-type: none"> <input type="checkbox"/> Enters DOA 3900-01, Loss Of Cooling By Service Water System. <input type="checkbox"/> Enters DOA 6500-10, 4KV Circuit Breaker Trip.
	ANSO	<p>Performs the following actions of DOA 3900-01:</p> <ul style="list-style-type: none"> ■ Starts standby Service Water Pump(s). <input type="checkbox"/> Monitors the Service Water System parameters and verify: <ul style="list-style-type: none"> ❖ Service Water pressure between 70 - 100 psig. ❖ Service Water temperature less than 95 deg. F.
	ANSO	Performs DOA 6500-10, 4KV Circuit Breaker Trip, as directed.
	US	<input type="checkbox"/> May direct 2/3 DFP secured after Service Water pressure is returned to normal.
	ANSO	<input type="checkbox"/> Directs NLO to secure 2/3 DFP as directed.
	NSO	■ Monitors panels, provide assistance as directed.
	US	<input type="checkbox"/> Notifies appropriate departments.

Event 4 Completion Criteria:

- Standby Service Water Pump started.

OR,

- At the discretion of the Lead Examiner.

Event Five – Spurious HPCI Initiation

Trigger	Position	Applicant's Actions or Behavior
6		<p><u>SIMULATOR OPERATOR:</u></p> <p>At the discretion of the NRC chief examiner, activate trigger 6, which causes a Spurious HPCI Initiation. The HPCI pump is also degraded to prevent exceeding RPV feed requirements.</p>
	ANSO	<ul style="list-style-type: none"> ■ Announces initiation of HPCI.
	TEAM	<ul style="list-style-type: none"> ■ Determines and announces HPCI injection not needed.
	ANSO	<ul style="list-style-type: none"> ☐ May place HPCI Flow Controller to MAN and adjust demand to 0 to stop injection.
	US	<ul style="list-style-type: none"> ☐ Directs ANSO to shutdown HPCI either per DOP 2300-04, High Pressure Coolant Injection System (HPCI) Shutdown, or its Hard Card.
	ANSO	<ul style="list-style-type: none"> ■ Shuts HPCI down as directed: <ul style="list-style-type: none"> ❖ Places MO 2-2301-4 valve control switch in Pull-To-Lock. ❖ Places MO 2-2301-14 valve control switch in Pull-To-Lock. ❖ Places HPCI on the turning gear.
	US	<ul style="list-style-type: none"> ☐ May enter DGA 07, Unpredicted Reactivity Addition. ☐ Notifies Shift Manager and IMD of Event.
		<p><u>ROLE PLAY:</u></p> <p>Respond as individual notified.</p> <p>QNE to evaluate effect of transient on the RX: wait 2 min, then report that “RX parameters are within their limits”.</p>
	NSO	Monitors panels and assists as directed.
	US	<ul style="list-style-type: none"> ■ References Technical Specifications and determines: <ul style="list-style-type: none"> ❖ TS 3.5.1 Action F applies. Verify Isolation Condenser is OPERABLE immediately AND restore HPCI System to OPERABLE status within 14 days.

Event 5 Completion Criteria:

- **Actions taken to shutdown HPCI,**
- **And, Tech Specs addressed**
- **OR, at the direction of the NRC chief examiner.**

Event Six And Seven –Steam Leak Inside The Drywell / Emergency Depressurization

Trigger	Position	Crew Actions or Behavior
7		<p><u>SIMULATOR OPERATOR:</u> At the discretion of the NRC chief examiner, activate trigger 7, which causes a small Main Steam line leak to develop in the Drywell.</p>
		<p><u>Role Play:</u> U-3 NSO for trend of U-3 Drywell pressure: report that “U-3 Drywell pressure is 1.2 psig and steady.</p>
	<p>NSO / ANSO</p>	<ul style="list-style-type: none"> ■ Recognizes and announces that Drywell pressure is slowly rising. □ May ask U-3 NSO trend of U-3 Drywell pressure. <p>Performs the following actions per DOA 0040-01 Slow Leak, as directed:</p> <ul style="list-style-type: none"> □ Maintain Level with FWLCS (immediate action). □ Notifies Shift Supervisor and Rad Protection. □ Directs search for leak. □ Shutdown H₂ Addition. □ Makes PA announcement. □ Monitors leakage rate, reactor water level, and Drywell pressure. □ Verify Crib House inlet temperature is <95°F. □ Initiates Torus cooling per “Hard Card”. □ Inserts manual reactor scram prior to 1.5 psig DW pressure
		<p><u>Role Play:</u> NLO to check Cribhouse inlet temperature: (wait 5 min.) then report, “ Cribhouse inlet temp is 70°F”.</p>
	<p>US</p>	<ul style="list-style-type: none"> □ Enters and directs performance of DOA 0040-01, Slow Leak. □ Set Scram contingency of 1.5 psig DW pressure. □ May enter DGP 02-03, Reactor Scram, and direct taking scram preparatory actions. □ Prior to reaching the Drywell Pressure scram setpoint, directs a manual reactor scram per DGP 02-03, Reactor Scram.
	<p>NSO / ANSO</p>	<p>Performs scram preparatory actions per DGP 02-03, Reactor Scram, as directed.</p> <ul style="list-style-type: none"> □ Validates FCL is acceptable to reduce recirc flow. □ Reduces power with Recirc flow to 56 Mlbm/hr. □ Starts MSP and TGOP. □ Trips H₂ addition.

Event Six And Seven –Steam Leak Inside The Drywell / Emergency Depressurization

Trigger	Position	Crew Actions or Behavior
	NSO	<p>Performs the following actions per DGP 02-03, Reactor Scram, as directed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Presses scram pushbuttons <input type="checkbox"/> Places mode switch in shutdown <input type="checkbox"/> Check rods inserted. <input type="checkbox"/> Maintains RPV/L between +25 and +35 inches or as directed by DEOPs. <input type="checkbox"/> Verifies Turbine and Generator tripped. <input type="checkbox"/> Verifies Recirc Pumps run back. <input type="checkbox"/> Check auxiliary power transferred to RAT. <input type="checkbox"/> Inserts SRM/IRMs. <p>Verifies the following as time allows:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Group Isolations <input type="checkbox"/> Automatic start of ECCS systems <input type="checkbox"/> Automatic start of EDGs.
	SRO	<p>Enters DEOP 100, RPV Control, due to high Drywell Pressure and/or low Reactor water level and performs, directs:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Entering DGP 02-03. <input type="checkbox"/> Verification of all isolations, ECCS and EDGs start. <input type="checkbox"/> Holding Reactor water level +8" to +48". <p>Enters DEOP 0200-01, Primary Containment Control, when Drywell pressure reaches 2 psig and performs/directs:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verifying of Torus water level <27.5 ft. <input type="checkbox"/> Initiation of Torus sprays. <input type="checkbox"/> Monitoring of Drywell temperature (Drywell sprays may be initiated for temperature control) <input type="checkbox"/> Monitoring Torus Temperature and initiation of Torus cooling. <input type="checkbox"/> Monitors Torus level.
		<p><u>Role Play:</u></p> <p>NLO to check operation of EDGs after auto start: Wait 3 minutes and then report "the EDGs are operating normally".</p>
	ANSO	<p>Performs DEOP 0200-1, Primary Containment Control, actions as directed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Monitors Drywell temperature and pressure and attempts to initiate torus sprays and drywell sprays pre Hard Card LPCI/CCSW OPERATION, as directed.

Event Six And Seven –Steam Leak Inside The Drywell / Emergency Depressurization

Trigger	Position	Crew Actions or Behavior
8 9		<p><u>SIMULATOR OPERATOR:</u></p> <p>After the Team has put on Torus Sprays and at the discretion of the NRC chief examiner, activate trigger 8, which increases the Main Steam line leak enough to require the Team to initiate Drywell Sprays.</p> <p>Verify trigger 9 automatically activates when MO 1501-27A begins to open. This trips Bus 23-1 on overcurrent. As a result, Div. I of Drywell sprays cannot be initiated.</p>
	US	<p>Per DEOP 0200-01, Primary Containment Control, when Drywell pressure reaches 9 psig directs:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verifying Recirc Pumps and Drywell Coolers tripped. <input type="checkbox"/> Verifies the Drywell spray initiation curve prior to the operator manually opening any of the Drywell spray valves. Then directs the Operator to attempt to open the 2-1501-27B, DW “B” LOOP Spray valve. <input checked="" type="checkbox"/> √ Initiation of Drywell sprays.
	NSO / ANSO	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> √ Initiates Drywell Sprays. <input type="checkbox"/> Notices and reports the loss of ECCS equipment powered from Bus 23-1. <input type="checkbox"/> Reports the loss of Bus 23-1 and 28. <input checked="" type="checkbox"/> Reports the “B” LOOP of Drywell Spray is initiated, but “A” LOOP could not be initiated.
	US	<ul style="list-style-type: none"> <input type="checkbox"/> Directs Operators to investigate the loss of Bus 23-1. Directs entry into DGA-12 for Partial Loss of AC Power.
	ANSO	<ul style="list-style-type: none"> <input type="checkbox"/> Refers to DAN 902(3)-8 F-5, 4KV Bus 23-1 Overcurrent annunciator. As directed, Performs DGA-12, Partial or Complete Loss of AC power: <input type="checkbox"/> Takes actions per DGA 12 for any faulted buses. <input type="checkbox"/> Recognizes the loss of Bus 28. <input type="checkbox"/> Dispatches NLO to Bus 23-1 to investigate the loss of Bus 23-1. <input type="checkbox"/> May enter DOA 6500-01 4kV Breaker Trip.
		<p><u>Role Play:</u></p> <p>NLO to bus 23-1: Wait 2 min. then report “The feed breaker to Bus 23-1 from Bus 23 has an overcurrent flag up on it and will not reset”.</p> <p>NLO to Bus 28: Wait 2 min. then report “I see nothing wrong at Bus 28”</p>
		<p><u>ROLE PLAY:</u></p> <p>If contacted as EMD Foreman: Respond “I will report to Bus 23-1”.</p> <p>Note: EMD personnel will not report back.</p> <p>DO NOT REPORT BACK ON ATTEMPTS TO OPEN DW SPRAY VALVE TILL after Torus bottom pressure is > 20 #</p> <p>If they look @ point 7 (RWCU) on Leak Detection TR and card is NOT on, tell them point is BAD, will have to obtain local readings.</p>

Event Six And Seven –Steam Leak Inside The Drywell / Emergency Depressurization

Trigger	Position	Crew Actions or Behavior
	NSO / ANSO	<input type="checkbox"/> May dispatch an Operator to attempt to manually open “A” LOOP of drywell spray.
		<p><u>Role Play:</u> NLO to open “A” LOOP of drywell spray: Wait 2 min, then report “The handwheel for MO 2-1501-28A will not engage”.</p>
10		<p><u>SIMULATOR OPERATOR:</u> After the Team has attempted to put on Drywell Sprays and at the discretion of the NRC chief examiner, activate trigger 10, which increases the Main Steam line leak enough to require the Team to Emergency Depressurize due to exceeding PSP curve.</p>
	US	<ul style="list-style-type: none"> ■ Recognizes that Emergency Depressurization per DEOP 0400-02 is necessary due to one of the below: <ul style="list-style-type: none"> o Drywell temperature cannot be maintained below 281°F. o Exceeding the PSP. □ May “Anticipate” ED and order depressurization with Bypass valves and Iso Cond. (If they choose this path, WILL meet the intent of “Emergency Depressurization.”) <p>√ Enters DEOP 400-02, Emergency Depressurization, and directs:</p> <ul style="list-style-type: none"> ■ If Drywell pressure >2 psig, prevention of injection from LPCI/CS pumps not needed for core cooling. □ Initiation of Iso Condenser to maximum flow. □ Verification of Torus level > 6ft. ■ Opening all ADS valves. □ Verifying all relief valves open.
	NSO	<p>√ Performs DEOP 400-02, Emergency Depressurization, as directed.</p> <ul style="list-style-type: none"> □ If Drywell pressure is greater than +2 psig, prevents injection from LPCI/CS pumps not needed for Core cooling per Hard Card, LPCI INJ/CC CONTROL/SHUTDOWN. □ Initiates Iso Condenser to maximum flow per Hard Card, ISOLATION CONDENSER. □ Verifies Torus level >6 feet. ■ B √ Open all ADS valves □ Verifies all relief valves open.

Scenario Completion Criteria:

- **Emergency depressurization in progress.**
- **Or at the discretion of the NRC Chief Examiner.**

Critical Tasks:

(PC-5.1)

When drywell pressure exceeds 9 psig, INITIATE drywell sprays, while in the safe region of the spray initiation limit.

(PC-6.1)

When suppression chamber pressure cannot be maintained below the pressure suppression pressure, INITIATE emergency depressurization before drywell design pressure is exceeded.

REFERENCES

PROCEDURE	TITLE
DAN 902-5 A-5	IRM HI
DAN 902-5 B-11	CHANNEL A/B NEUTRON MONITOR
DAN 902-5 C-10	CHANNEL A IRM HI HI/INOP
DAN 902-5 C-3	ROD OUT BLOCK
DAN 902-5 C-6	APRM DOWNSCALE
DAN 902-5 D-10	CHANNEL A RX SCRAM
DAN 923-1 C-3	U2 OR U3 SERV WATER PP TRIP
DAN 923-1 F-3	FIRE PROT WATER HDR PRESS LO
DAN 923-1 G-4	U2/3 DIESEL FIRE PP RUNNING
DEOP 0100	RPV CONTROL
DEOP 0200-01	PRIMARY CONTAINMENT CONTROL
DEOP 0400-02	EMERGENCY DEPRESSURIZATION
DEOP 500-02	BYPASSING INTERLOCKS AND ISOLATIONS
DGA-07	UNPREDICTED REACTIVITY ADDITION
DGA-12	PARTIAL OR COMPLETE LOSS OF AC POWER
DGP 02-03	REACTOR SCRAM
DGP 03-04	CONTROL ROD MOVEMENTS
DOA 0040-01	SLOW LEAK
DOA 0300-05	INOPERABLE OR FAILED CONTROL ROD DRIVES
DOA 0500-02	PARTIAL ½ OR FULL SCRAM ACTUATION
DOA 3900-01	LOSS OF COOLING BY SERVICE WATER SYSTEM
DOA 6500-01	4 KV BUS FAILURE
DOA 6500-10	4KV CIRCUIT BREAKER TRIP
DOP 0400-01	RMCS OPERATION
DOP 2300-04	HIGH PRESSURE COOLANT INJECTION SYSTEM (HPCI) SHUTDOWN
DOS 0300-06	CONTROL ROD DRIVE ABNORMALITY RECORD
DOS 0300-06	CONTROL ROD DRIVE ABNORMALITY RECORD
TS 3.13	CONTROL ROD OPERABILITY
TS 3.3.1.1	REACTOR PROTECTION SYSTEM (RPS) INSTRUMENTATION
TS 3.3.3.1	POST ACCIDENT MONITORING (PAM) INSTRUMENTATION
TS 3.5.1	ECCS-OPERATING
TS 3.3.6.1	PRIMARY CONTAINMENT ISOLATION INSTRUMENTATION

NRC EXAM ILT-N-2 QUANTITATIVE ATTRIBUTES	
6	Total malfunctions inserted (4 to 8) / (10 to 14)
1	Malfunctions that occur after EOP entry (1 to 4) / (3 to 6)
4	Abnormal events (1 to 2) / (2 to 3)
2	Major transients (1 to 2) / (2 to 3)
2	EOPs used beyond primary scram response EOP (1 to 3) / (3 to 5)
1	EOPs contingency procedures used (0 to 3) / (1 to 3)
60	Approximate scenario run time (45 to 60 min) / (one scenario may approach 90 minutes)
50%	EOP run time (40 to 70% of scenario run time)
2	Crew critical tasks (2 to 5) / (5 to 8)
Yes	Technical Specifications exercised (Yes or No)

ILT 06-1 NRC EXAM SCENARIO ILT-N-2 Initial Setup CAEP:

SCENARIO ILT-N-2.cae

Written by FRF

Rev 00

Date 11/06

INITIAL CONDITIONS

Sticks rod R-09.

imf rodr09st

Inserts RPS CH A partial half scram.

imf b14

Prevents Bus 29 & Bus 28 Tie ACB from closing.

ior acdcl98 off

Overrides Iso Cond Rad Mon Dnscl OFF.

imf ser0004 off

imf ser0019 off

Puts in IRM high for OOS condition.

imf nii11pot 125|2

Degrades HPCI pump to lessen severity of HPCI spurious initiation event.

imf hppmpdg 45.0|2

This changes the mass of RBCCW water so the Head tank alarm does not come up.

set wrmtot = 676450|2

Sets APRM Master gain pot to 1.0

irf niagain 1.0|2

Changes Remote for locally stopping 2/3 DFP back to false.

irf w14 false|2

Inserts a 10% Service Water Strainer Leak to reduce pressure to normal.

imf q31 10.0|2

EVENT TRIGGERS

Event Trigger 1 sets gain for all 6 APRMs.

trgset 1 "0"|4

trg 1 "irf niagainf true"|4

Event Trigger 2 Activates when CRD R-09 is selected, the Rod Movement Control Switch is used,

and drive water pressure exceeds 325 psig.

Deletes rod J-09 stuck malfunction.

trgset 2 "rdlslw(111) .and. (rds302ot_drw .or. rds302in_drw) .and. (rddpdriv .gt. 325.0)"|6

trg 2 "dmf rodr09st"|4

Event Trigger 3 fails IRM 12 upscale

After 3 min, fails APRM 2 downscale

trgset 3 "0"|8

imf nii12pot (3) 125|8

imf nia2pot (3 5:00) 1.0|8

Event Trigger 4 Trips 2B Service Water Pump
trgset 4 "0"|8
imf q22 (4)|8

Event Trigger 5 Stops 2/3 DFP locally.
trgset 5 "0"|10
trg 5 "irf w14 true"|10

Event Trigger 6 Inserts a spurious HPCI initiation.
trgset 6 "0"|10
imf hpinit (6)|10

Event Trigger 7 Inserts a steam leak in the drywell that starts at 0.001% and ramps to 0.015%.
trgset 7 "0"|10
imf i21 (7) 0.015 10:00 0.001|10

Event Trigger 8 Increases the steam leak to 0.3%.
trgset 8 "0"|12
trg 8 "mmf i21 0.5"|12

Event Trigger 9 Activates when DW Spray valve MO 1501-27A starts to open.
Trips Bus 23-1 on over current.
trgset 9 "lpv27a .gt. 0.01"|12
imf k23 (9)|12

Event Trigger 10 Increases the steam leak from 2.0% to 6% over 5 minutes.
trgset 10 "0"|12
trg 10 "mmf i21 6.0 5:00 2.0"|12

END

Date: TODAY

Unit 2 Turnover

Online Information

0 MWe
Online Risk: Green
Risk Equipment:

Protected Pathway(s)

Shutdown Information

Time to Boil: 0
Shutdown Risk: N/A

Reactivity Management

Limit: MFLCPR NA
Action Level: NA
S/D Method: DGP 02-01

Unit 2 Priorities

Continue Unit Startup.

LCORAs

LCORA Title None

Start
Clock Ends

Compensatory Actions

Degradation
Documentation

Frequency
Responsible

Compensatory Action

Unit 2 Conditions, Status, Abnormalities

2 hr ago IRM 11 OOS due to power supply failure. IMD waiting for replacement power supply to arrive from Quad Cities Station.
7 hr ago 2C RFP OOS, expected to return later this shift.

Unit 2 Abnormal Component Position

U2 Open Operability Determinations with Compensatory Actions

Shift 1 Activities (X = Completed)

Shift 2 Activities

 Startup

Shift 3 Activities

Common Unit Activities

Shift 1 Activities (X = Completed)

Shift 2 Activities

Shift 3 Activities

Unit 2 Procedures in Progress (Non-Surveillance)

DGP 01-01 and 03-04 in progress. The QNE is present in the control room.

Unit 2 Surveillances in Progress

None

Date: TODAY

Unit 3 Turnover

Online Information

912 MWe

Online Risk: Green

Risk Equipment:

Protected Pathway(s)

Shutdown Information

Time to Boil: 0

Shutdown Risk: N/A

Reactivity Management

Limit: MFLCPR 0.78

Action Level: 0.980

S/D Method: DGP 02-01

Unit 3 Priorities

Maintain load per TSO direction.

LCORAs

LCORA # None

Title

Start

Clock Ends

Compensatory Actions

Degradation
Documentation

Frequency
Responsible

Compensatory Action

Unit 3 Conditions, Status, Abnormalities

None

Unit 3 Abnormal Component Position

U3 Open Operability Determinations with Compensatory Actions

Shift 1 Activities (X = Completed)

Shift 2 Activities

Shift 3 Activities

Common Unit Activities

Shift 1 Activities (X = Completed)

Shift 2 Activities

Shift 3 Activities

Unit 3 Procedures in Progress (Non-Surveillance)

None

Unit 3 Surveillances in Progress

None

Dresden Generating Station

ILT-N-3

REDUCE POWER WITH RECIRC FLOW

REMOVE 'B' FWRV FROM SERVICE

U2 EMERGENCY DIESEL GENERATOR INOPERABLE DUE TO COOLING WATER PUMP FAILURE

2B RFP DEVELOPS AN OIL LEAK, REQUIRING IT TO BE SECURED

LOSS OF FEEDWATER / MANUAL SCRAM, WITH A PARTIAL ATWS RESULTING

LOSS OF RPV WATER LEVEL INDICATION / RPV FLOODING

Rev. 00

11/06

Developed By:

Exam Author

Date

Approved By:

Facility Representative

Date

Facility: <u>Dresden</u>		Scenario No: <u>ILT-N-3</u>		Op-Test No: <u>2007-301</u>	
Examiners: _____			Operators: _____		
_____			_____		
_____			_____		
<u>Initial Conditions:</u> Reactor power ~79%, IRM 11 OOS.					
<u>Turnover:</u> Reduce power with Recirc, to remove 'B' FWRV from service for maintenance					
Event No.	Malf. No.	Event Type*		Event Description	
1	NONE	R	NSO SRO	Reduce power with Recirc flow	
2	NONE	N	NSO SRO	Remove 'B' FWRV from service	
3	SER1589 SER0710 T18	C	ANSO SRO	U2 Emergency Diesel Generator Inoperable due to cooling water pump failure ^T	
4	None	C	NSO	2B RFP develops an oil leak, requiring it to be secured.	
5	H33/H34	M	TEAM	Loss of Feedwater / Manual scram, with a partial ATWS resulting	
6	NVM100AP NVM100BP NVML29AP NVML29BP	M	TEAM	Loss of RPV water level indication, requires entry into DEOP 400-1 RPV FLOODING	

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

Scenario Objective

Evaluate the operators in using the Emergency Depressurization DEOP contingency procedure.

Scenario Summary

Initial Conditions:

- Mode 2 at approximately 79% reactor power.
- IRM channel 11 out of service.
- Unit 3 is in Mode 1.

Scenario Sequence

- The Team reduces power to reduce Feedwater flow enough to allow removing a Feedwater Regulating Valve (FWRV) from service.
- The Team removes 'B' FWRV from service.
- The Unit 2 Emergency Diesel Generator (EDG) cooling water pump breaker fails rendering the EDG Inoperable.
- The Team receives a report from the field that 2B RFP has an oil leak. The Team starts 2C RFP and secures 2B RFP.
- Shortly after swapping RFPs, 2C RFP trips. The Team will manually scram the reactor. An electrical ATWS prevents some rods from inserting and ARI fails. Pulling scram fuses or venting the scram air header successfully insert control rods.
- After dealing with the ATWS, a loss of RPV level indication will require the Team to perform RPV Flooding.

Event One – Reduce power with Recirc flow

- The Team reduces reactor power using recirc flow per DGP 03-01.

Malfunctions required:

- 0

Success Path:

- he Team reduces reactor power using recirc flow per DGP 03-01..

Event Two – Remove ‘B’ FWRV from Service

- The Team removes ‘B’ FWRV from service.

Malfunctions required:

- 0 (none).

Success Path:

- The Team removes ‘B’ FWRV from service.

Event Three – U2 EDG Cooling Water Pump Breaker Failure

- The Unit 2 EDG cooling water pump breaker fails rendering the EDG Inoperable.

Malfunctions required:

- 1 (U2 EDG cooling water pump breaker trip)

Success Path:

- Places U2 EDG control switch to STOP.
- Determines Technical Specifications requirements.

Event Four – 2B RFP develops an oil leak, requiring it to be secured

- Report from the field of an oil leak on 2B RFP.

Malfunctions required:

- 1 (2B RFP oil leak)

Success Path:

- The Team starts 2C RFP and secures 2B RFP.

Event Five – Loss Of Feedwater / Electrical ATWS

- 2C RFP trips resulting in insufficient Feedwater flow. The Team performs a manual scram, which results in an electrical ATWS.

Malfunctions required:

- 2 (Loss of Feedwater)
(Electrical ATWS)

Success Path:

- The team either pulls scram fuses or vents the scram air header to successfully insert the controls rods.

Event Six and Seven – Loss Of RPV Water Level Indication / RPV Flooding

- The Team recognizes and responds to loss of RPV level indication.

Malfunctions required:

- 1 (Failure Of RPV Level Indication)

Success Path:

- The Team performs RPV Flooding.

PRE-SCENARIO ACTIVITIES

- 1 If applicable, conduct pre-scenario activities in accordance with TQ-AA-106-0107, SIMULATOR EXAMINATION BRIEFING.
 - a. Provide the crew with a copy of DGP 03-01, Power Changes.
 - b. Direct the crew to perform their briefs prior to entering the simulator.
 - c. Crew directed to reduce power to remove 'B' FWRV from service for maintenance.

- 2 Simulator Setup (the following steps can be done in any logical order)
 - a. Initialize simulator in IC 12 (full power) and perform the following before continuing below:
 - 1) Insert control rods to establish FCL between 90 – 92%.
 - 2) Reduce recirc flow to establish 720 MWe (~79% power).
 - 3) Place 2C RFP in Standby, on Bus 22.
 - 4) Verify 2D Condensate/Booster pump in standby.
 - b. Secure the following equipment and tag out of service:
 - 1) IRM channel 11.
 - c. Run the initial setup CAEP file: **ILT-N-3.CAE**.
 - d. Cut in/out Cond Demin Beds as needed, to maintain DP within operational limit.
 - e. Ensure running Condensate pump amps within operational limits.
 - f. Verify 902-5 panel digital displays are clear.
 - g. Advance the chart recorders.

- 3 Verify the following simulator conditions:
 - a. Reactor Power ~ 79%.
 - b. Drywell and Torus pressures are normal.

- 4 Complete the Simulator Setup Checklist.

Legend for team actions:

■ - Required Actions □ - Optional Actions √ - Critical Task

Event One – Reduce Power with Recirc Flow		
Trigger	Position	Crew Actions or Behavior
		FLOOR INSTRUCTOR NOTE: The simulator models Circulating Water Pump amps higher than procedurally allowed. If the team points this out, inform them that Circulating Water Pump amps indicate 275. (SWR 9727)
1		<p>FLOOR INSTRUCTOR / SIMULATOR OPERATOR / ROLE PLAY:</p> <p>If the team announces that they will adjust gains, inform them an extra NSO will perform the adjustment. Then:</p> <ul style="list-style-type: none"> ❖ Tell the team you are time compressing. ❖ Direct the simulator operator to activate trigger 1 and verify gains within limits. ❖ Inform the team the gains are adjusted. <p>(Note: trigger 1 can be toggled OFF, then back ON as many times as necessary to adjust gains)</p>
		<p>SIMULATOR OPERATOR / ROLE PLAY:</p> <p>If Team directs cutting out a Cond Demin Bed, (wait 3 minutes) then on Instructor Station Display FW4, cut out a Cond Demin Bed and report when it is cut out.</p>
	US	<ul style="list-style-type: none"> ■ Directs NSO to drop load per DGP 03-01, Power Changes, to reduce Feedwater flow to ≤ 8.3 Mlbm/hr. (Max recommended Feedwater flow for single FWRV operation on Unit 2)
	NSO	<ul style="list-style-type: none"> ■ Reduces recirc flow to establish Feedwater flow of ≤ 8.3 Mlbm/hr.
	ANSO	<ul style="list-style-type: none"> <input type="checkbox"/> Monitors panels
<u>Event 1 Completion Criteria:</u>		
<ul style="list-style-type: none"> • Feedwater flow reduced to ≤ 8.3 Mlbm/hr. • OR, at the direction of the NRC Lead Examiner. 		

Event Two - Remove 'B' FWRV from Service

Trigger	Position	Actions or Behavior
	US	<ul style="list-style-type: none"> ■ Directs ANSO to remove 'B' FWRV from service per DOP 0600-06, Feedwater Regulating Valve (FWRV) Operation.
	ANSO	<p>Removes 'B' FWRV from service per DOP 0600-06, Feedwater Regulating Valve (FWRV) Operation.</p> <ul style="list-style-type: none"> ■ Verifies total Feedwater flow is ≤ 8.3 Milbm/hr. <input type="checkbox"/> Verifies reactor level stable. ■ Places 'B' FWRV REG VLV CONTROL STATION in MAN. ■ Slowly reduces 'B' FWRV DEMAND to close 'B' FWRV while verifying 'A' FWRV automatically adjusts. ■ Closes isolation valve MO 2-3206B. <input type="checkbox"/> Places 'B' FWRV in test at the OIS
		<p>CUE: When the operator goes to the OIS station, which is not modeled in the simulator, cue the operator that 'B' FWRV is in test.</p>
	NSO	<ul style="list-style-type: none"> <input type="checkbox"/> Monitors panels.

Event 2 Completion Criteria:

- 'B' FWRV removed from service.
- OR, at the direction of the NRC Lead Examiner.

Event Three – U2 EDG Cooling Water Pump Breaker Failure

Trigger	Position	Crew Actions or Behavior
<p>2</p> <p>3</p>		<p><u>SIMULATOR OPERATOR:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 2, which simulates Unit 2 EDG cooling water pump breaker control power transformer failure.</p> <p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>HVO/NLO to U2 EDG to check Trouble alarm: wait 3 min, activate trigger 3, which clears the U2 EDG Trouble alarm. Then report “I acknowledged the local alarm which is ‘Diesel Clg Wtr Pump Failure Or Locked Out’. It will not reset”.</p> <p><u>ROLE PLAY:</u></p> <p>HVO/NLO in U2 EDG room to check cooling water pump control switch: report “the cooling water pump control switch is in its normal position and all control switch indicating lights are OFF”.</p> <p>NLO to check the U2 EDG cooling water pump breaker: Wait 2 min, then report “the U2 EDG cooling water pump breaker is closed, but there is an acrid smell coming from the cubicle”.</p> <p>Support personnel: Acknowledge requests.</p>
	<p>ANSO</p>	<ul style="list-style-type: none"> ■ Announces alarms: <ul style="list-style-type: none"> ❖ 902-8 A-7, U2 Diesel Gen Trouble. ❖ 902-7 G-8, U2 Diesel Gen Clg Wtr PP Trip/Lkout ■ Sends an operator to check the U2 EDG Trouble alarm. ■ Sends an operator to check the U2 EDG cooling water pump breaker. ■ Performs DOA 6600-01, Diesel Generator Failure, as directed: <ul style="list-style-type: none"> ❖ Places the U2 EDG output breaker to the Pull-To-Lock position. (Optional / required only if EDG is running) ❖ Places the U2 EDG control switch to STOP. ■ Informs the Unit Supervisor of the field reports.
	<p>NSO</p>	<ul style="list-style-type: none"> ■ Monitors panels, provide assistance as directed.
	<p>US</p>	<ul style="list-style-type: none"> ■ Enters DOA 6600-01, Diesel Generator Failure, and directs actions. ■ Declares the U2 EDG inoperable.

Event Three – U2 EDG Cooling Water Pump Breaker Failure

Trigger	Position	Crew Actions or Behavior
	US	<ul style="list-style-type: none"> ■ Determines following Technical Specifications apply: <ul style="list-style-type: none"> • TS 3.7.2, Diesel Generator Cooling Water (DGCW) System, Condition A.1: Declare associated DG inoperable immediately. • TS 3.8.1, AC Sources—Operating, Condition: <ul style="list-style-type: none"> ❖ B.1: Perform SR 3.8.1.1 for OPERABLE required offsite circuit(s) within 1 hour and once per 8 hours thereafter. ❖ B.3.1: Determine OPERABLE DG(s) are not inoperable due to common cause failure OR B.3.2: perform SR 3.8.1.2 for OPERABLE DG(s) within 24 hours. ❖ B.4: Restore required DG to OPERABLE status within 7 days.
	US	<ul style="list-style-type: none"> ❑ Directs performance of DOS 0040-08, Unit 2 Operating Power Sources And Distribution. ❑ Directs Engineering to determine the EDG is not inoperable due to common cause failure OR directs performing operability surveillance for the 2/3 EDG.

Event 3 Completion Criteria:

- **U2 EDG declared inoperable; and,**
- **Technical Specification determination completed.**
- **OR, at the direction of the NRC Lead Examiner.**

Event Four - 2B RFP develops an oil leak, requiring it to be secured

Trigger	Position	Actions or Behavior
		<p><u>Role Play:</u></p> <p>Call the control room as the U-2 NLO and report, “2B RFP has an oil leak on a line to the speed changer. It cannot be stopped”.</p> <p>If asked “the oil is contained on the bed plate and I plugged the drain before the oil reached it”.</p> <p>If asked, “The oil level is below the sight glass”.</p> <p>If asked, “I recommend securing 2B RFP as soon as possible”.</p> <p>If asked, “Zinc injection is lined up to 2A RFP”.</p>
16		<p><u>SIMULATOR OPERATOR:</u></p> <p>If the crew is not making adequate progress and at the discretion of the Lead Examiner, activate trigger 16, which drives up the 2B RFP Brg Oil Press Lo alarm.</p>
	NSO	<ul style="list-style-type: none"> ■ Acknowledges report from the field and relays it to the US.
	US	<ul style="list-style-type: none"> □ May enter DOA 0600-01, Transient Level Control. ■ Directs ANSO to start 2C RFP and secure 2B RFP.
	ANSO	<p>Starts 2C RFP per DOP 3200-03, Startup Of Second Or Third Reactor Feed Pump Or Shifting To Alternate Reactor Feed Pump.</p> <ul style="list-style-type: none"> □ Places RFPs Standby Selector switch, STBY PP SELECT in OFF position. □ Closes MO 2-3201C, □ Opens 2C RFP RECIRC VLV PCV 2-3201C by placing control switch in OPEN. □ Verifies reactor water level is stable. □ Verifies sufficient system pressures. □ If previously closed, places MO 2-3201C, 2C PP DISCH VLV control switch to OPEN position. ■ Starts 2C RFP. □ Verifies reactor water level is stable. □ Verify RFP Auxiliary Oil Pump AUTO stops. □ WHEN MO 2-3201C, 2C PP DISCH VLV, is fully open (the RED valve position indicating light is extinguished), THEN places 2C RFP RECIRC VLV PCV 2-3201C control switch in AUTO. □ Directs NLO to perform checks on 2C RFP.

Event Four - 2B RFP develops an oil leak, requiring it to be secured

	ANSO	<p>Secures 2B RFP per DOP 3200-05, Reactor Feed Pump Shutdown.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Places RFPs standby selector switch, STBY PP SELECT, in OFF. <input type="checkbox"/> Verifies the 2B AUX OIL PP control switch in AUTO. <input type="checkbox"/> Opens 2B RFP recirculation valve, by placing 2B RFP RECIRC VLV PCV 2-3201B control switch in OPEN position. <input type="checkbox"/> Verifies reactor water level is stable. <input type="checkbox"/> Closes MO 2-3201B, 2B RFP DISCH VLV. <input type="checkbox"/> Verifies reactor water level remains stable. ■ Stops 2B RFP. <input type="checkbox"/> As the RFP slows down, verifies the associated auxiliary oil pump automatically starts. <input type="checkbox"/> Close 2B RFP recirculation valve, by placing 2B RFP RECIRC VLV control switch in AUTO position. <input type="checkbox"/> Direct a NLO to verify the 2B RFP has come to rest. <input type="checkbox"/> WHEN 2B RFP has come to rest, THEN opens MO 2- 3201B, 2B RFP DISCH VLV. <input type="checkbox"/> Directs NLO to perform remaining in plant steps for securing 2B RFP.
		<p><u>Role Play:</u></p> <p>NLO to verify 2B RFP is at rest: Wait 1 min, then report, "2B RFP is at rest".</p> <p>Acknowledge request to perform procedural steps for 2B and 2C RFPs. After a few minutes, report that the steps are completed.</p>
	US	<ul style="list-style-type: none"> <input type="checkbox"/> Directs 2B RFP Aux Oil PP secured to stop leak.
	ANSO	<ul style="list-style-type: none"> <input type="checkbox"/> Places 2B RFP Aux Oil PP in PTL.
		<p><u>Role Play:</u></p> <p>If asked after 2B RFP Aux Oil PP is placed in PTL: Report, the oil leak on 2B RFP has stopped.</p>
<p style="text-align: center;"><u>Event 4 Completion Criteria:</u></p> <ul style="list-style-type: none"> • 2C RFP started and 2B RFP secured. • OR, at the direction of the Lead Examiner. 		

Event Five – Loss of Feedwater / Electrical ATWS

Trigger	Position	Crew Actions or Behavior
<p>4</p> <p>5</p> <p>6</p> <p>7</p>		<p><u>SIMULATOR OPERATOR:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 4, which trips 2C RFP.</p> <p>Verify Trigger 5 automatically activates when the Mode SW is placed to S/D. This pulls some of the scram fuses to simulate a partial electrical ATWS..</p> <p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>Operator to pull scram fuses: wait 4 min, then activate trigger 6. This sequentially pulls the scram fuses.</p> <p>Operator to vent the scram air header: wait 5 min, the activate trigger 7. This vents the scram air header.</p> <p><u>ROLE PLAY:</u></p> <p>Operator to jumper the MSIV Group1 -59 in. and offgas hi hi radiation isolations: acknowledge the request. No trigger is provided, as it is not intended to complete this action. Stall if status is requested.</p>
	ANSO	<p><input type="checkbox"/> Announces 2C RFP trip and that RPV level is dropping.</p>
	US	<p><input type="checkbox"/> Determines that in a short time the Unit will scram automatically on low RPV level. Directs a manual scram per DGP 02-03, Reactor Scram.</p>
	NSO	<p>Performs DGP 02-03, Reactor Scram, as directed:</p> <ul style="list-style-type: none"> ■ Presses scram pushbuttons ■ Places Mode Switch in S/D. ■ Verifies control rods inserted and determines some rods are still not inserted ■ Initiates ARI and determines rods are still not inserted. ■ Announces ATWS condition. ■ Runs Recirc pumps back to minimum. ■ √ IF reactor power is >6%, THEN trips the recirc pumps AND Initiates SBLC.

Event Five – Loss of Feedwater / Electrical ATWS

Trigger	Position	Crew Actions or Behavior
	US	<ul style="list-style-type: none"> <input type="checkbox"/> Enters DEOP 100, RPV Control and directs actions. Due to report of ATWS condition, exits DEOP 100 AND enters DEOP 400-05, Failure to Scram, and directs/performs actions: <input type="checkbox"/> Placing ADS to inhibit. (Not expected to be a Critical Task for this scenario) <input type="checkbox"/> Placing Core Spray pumps in PTL. ■ √ Inserting control rods using Alternate Rod Insertion. <ul style="list-style-type: none"> ❖ Directs driving control rods. ❖ Directs pulling scram fuses. ❖ Directs venting scram air header. <input type="checkbox"/> Verifying required auto actions. <input type="checkbox"/> Installing of the jumpers for the MSIV low level isolations and the Off Gas high Rad isolations. ■ √ If RX power >6%, terminating and preventing all injection except boron and CRD until RPV level ≤35 inches. ■ √ Holding RPV level between –164 inches and the level lowered to. ■ Stabilizing RPV pressure below 1060 psig.
	NSO	<ul style="list-style-type: none"> ■ √ Terminates and prevents all injection except boron and CRD at the 902-5 panel in automatic as follows: <ul style="list-style-type: none"> ❖ Using the RX LOW FLOW CONTROL STATION, 2(3)-640-20, lowers FWLC SETPOINT to –40 inches.
	ANSO	<ul style="list-style-type: none"> ■ √ Terminates and prevents all injection except boron and CRD at the 902-3 panel as follows: <ul style="list-style-type: none"> ❖ Place HPCI Aux Oil Pump AND HPCI 14 valve in PTL. ❖ Verify HPCI flow controller in AUTO AND reduce setpoint to 2000 gpm. ❖ PLACES LPCI 22 valve(s) in Pull-to-Close.
	NSO	<ul style="list-style-type: none"> ■ √ Drives control rods per DEOP 500-05, Alternate Insertion Of Control Rods, as follows: (RPV-6.1) <ul style="list-style-type: none"> ❖ Bypasses the RWM. ❖ Starts a second CRD pump. ❖ Maximizes CRD drive water pressure. ❖ Inserts the Control Rods by either using the ROD MOVEMENT CONTROL switch or the EMERG ROD IN position of the ROD OUT NOTCH OVERRIDE switch.

Event Five – Loss of Feedwater / Electrical ATWS

Trigger	Position	Crew Actions or Behavior
	US	<ul style="list-style-type: none"> ❑ Based on report that all control rods are inserted, exits DEOP 0400-05 and enters DEOP 0100. ❖ Directs SBLC secured.
	NSO	<ul style="list-style-type: none"> ■ Performs as directed: ❖ Secures SBLC.
	NSO / ANSO	<ul style="list-style-type: none"> ■ Performs as directed: ❖ √ Re-establishes injection using available injection systems to MAINTAIN RPV water level above -164" (in band directed by Unit Supervisor).

Event 5 Completion Criteria:

- **Control rod inserted.**
- **OR, at the direction of the Lead Examiner.**

Event Six and Seven– Loss Of RPV Water Level Indication / RPV Flooding		
Trigger	Position	Crew Actions or Behavior
8		<p><u>SIMULATOR OPERATOR:</u></p> <p>At the discretion of the NRC Lead Examiner, activate trigger 8. This causes failure of the RPV level instruments.</p>
		<p><u>ROLE PLAY:</u></p> <p>If directed to report local reactor water levels at the Reactor Building instrument racks, report the following:</p> <ul style="list-style-type: none"> – Fuel Zones (2202-7, -8 racks, respectively on 1st floor of RB) <ul style="list-style-type: none"> • FZ A: Upscale • FZ B: Upscale – Medium Ranges on (2202-5, -6 racks, respectively on 2nd floor of RB) <ul style="list-style-type: none"> • MR A: Report as shown on the Monitor screen • MR B: Report as shown on the Monitor screen <p>NLO to check ATS panels: wait 2 min. and report that “both fuel zone instruments have gross failure lights”.</p>
		<p><u>ROLE PLAY:</u></p> <p>IMD: If asked, OIS screen is not responding.</p> <p>IMD: Acknowledge order to report availability of the RPV level instruments.</p>
9		<p><u>SIMULATOR OPERATOR:</u></p> <p>Coordinate with the Role Play below and activate trigger 9, which opens the RFP high RPV level trip switches</p>
		<p><u>ROLE PLAY:</u></p> <p>When the operator informs you that they are opening the RPV high level trip cutout knife switches, verify trigger 9 activated and inform the operator that the RPV high level trip cutout knife switches are open.</p>
		<p>If IMD is requested to determine the availability of any of the following:</p> <ul style="list-style-type: none"> – Narrow Range A – Narrow Range B – Medium Range A – Medium Range B – Fuel Zone A – Fuel Zone B – Wide Range <p>Report that these instruments are not responding as expected and should NOT be considered available.</p>
	NSO	<ul style="list-style-type: none"> ■ Reports diverging RPV level indications on Narrow Range and Medium Range instruments

Event Six and Seven– Loss Of RPV Water Level Indication / RPV Flooding

Trigger	Position	Crew Actions or Behavior
	US	Exits DEOP 100 and enters DEOP 0400-01, RPV Flooding, and performs / directs: <ul style="list-style-type: none"> <input type="checkbox"/> Verifying Torus level above 6 feet. ■ √ B Opening all 5 ADSVs. ■ Isolating the following steam lines: <ul style="list-style-type: none"> ❖ MSIVs. ❖ Main Steam line drains. ❖ IC. ❖ HPCI. ■ √ Flooding the RPV to the Main Steam lines. ■ Keeping the RPV flooded to the Main Steam lines with injection flow as low as possible.
	NSO / ANSO	Performs DEOP 400-1, RPV Flooding, as directed: <ul style="list-style-type: none"> <input type="checkbox"/> Verifies Torus level above 6 feet. ■ √ B Opens all 5 ADSVs. ■ Isolates the following steam lines: <ul style="list-style-type: none"> ❖ MSIVs. ❖ Main Steam line drains. ❖ IC. ❖ HPCI. ■ √ Floods the RPV to the Main Steam lines. ■ Keeps the RPV flooded to the Main Steam lines with injection flow as low as possible.
	US	If Torus temperature reaches 95 deg. F, enters DEOP 200-1, Primary Containment Control, and directs actions: <ul style="list-style-type: none"> <input type="checkbox"/> Monitoring PC/P. <input type="checkbox"/> Monitoring DW/T <input type="checkbox"/> B Initiating torus cooling per Hard Card LPCI/CCSW OPERATION. <input type="checkbox"/> Monitoring SP/L. <input type="checkbox"/> Verifying initiation of drywell and torus H₂/O₂ monitors.
	ANSO	Performs DEOP 200-1, Primary Containment Control, actions as directed: <ul style="list-style-type: none"> <input type="checkbox"/> Monitors PC/P. <input type="checkbox"/> Monitors DW/T <input type="checkbox"/> B Monitors SP/T and initiates torus cooling per Hard Card LPCI/CCSW OPERATION as directed. <input type="checkbox"/> Monitors SP/L. <input type="checkbox"/> Verifies initiation of drywell and torus H₂/O₂ monitors.
	US	<ul style="list-style-type: none"> ■ Directs performing DEOP 0500-02, Bypassing Interlocks and Isolations, to restart reactor feed pumps.
	ANSO	<ul style="list-style-type: none"> <input type="checkbox"/> Starts RFP's (only 2A RFP available)

Event Six and Seven– Loss Of RPV Water Level Indication / RPV Flooding

Trigger	Position	Crew Actions or Behavior
	NSO / ANSO	■ Slows down RPV injection once ERV tailpipe temperatures drop below saturation and pressure is steady.
	US	☐ Requests IMD to restore RPV level instruments.

Event 6 and 7 / Scenario Completion Criteria:

- **RPV has been flooded**
AND,
- **At the discretion of the Lead Examiner.**

Critical Tasks:

(RPV-6.1)	With a reactor scram required and the reactor not shutdown, TAKE ACTION TO REDUCE POWER by injecting boron and/or inserting control rods, to prevent exceeding the primary containment design limits.
(RPV-6.3)	During an ATWS with conditions met to perform power/level control TERMINATE AND PREVENT INJECTION, with exception of boron and CRD, into the RPV until conditions are met to re-establish injection.
(RPV-6.4)	When conditions are met to re-establish injection use available injection systems to MAINTAIN RPV water level above -164".
(RPV 2.1)	When RPV water level cannot be determined, INITIATE emergency depressurization.
(RPV 2.2)	When reactor water level cannot be determined, INJECT into the RPV to flood up to the Main Steam Lines.

REFERENCES

PROCEDURE	TITLE
DAN 902-6 H-8	2B RFP BRG OIL PRESS LO
DAN 902-7 G-8	U2 DIESEL GEN CLG WTR PP TRIP/LKOUT
DAN 902-8 A-7	U2 DIESEL GEN TROUBLE
DEOP 0100	RPV CONTROL
DEOP 0200-01	PRIMARY CONTAINMENT CONTROL
DEOP 0400-01	RPV FLOODING
DEOP 0400-05	FAILURE TO SCRAM
DEOP 0500-02	BYPASSING INTERLOCKS AND ISOLATIONS
DEOP 0500-05	ALTERNATE INSERTION OF CONTROL RODS
DGP 02-03	REACTOR SCRAM
DGP 03-01	POWER CHANGES
DOA 0600-01	TRANSIENT LEVEL CONTROL
DOA 6600-01	DIESEL GENERATOR FAILURE
DOP 0600-06	FEEDWATER REGULATING VALVE (FWRV) OPERATION
DOP 3200-03	STARTUP OF SECOND OR THIRD REACTOR FEED PUMP OR SHIFTING TO ALTERNATE REACTOR FEED PUMP
DOP 3200-05	Reactor Feed Pump Shutdown
DOS 0040-08	UNIT 2 OPERATING POWER SOURCES AND DISTRIBUTION
TS 3.7.2	DIESEL GENERATOR COOLING WATER (DGCW) SYSTEM
TS 3.8.1	AC SOURCES-OPERATING

NRC EXAM ILT-N-3 QUANTITATIVE ATTRIBUTES	
5	Total malfunctions inserted (4 to 8) / (10 to 14)
2	Malfunctions that occur after EOP entry (1 to 4) / (3 to 6)
2	Abnormal events (1 to 2) / (2 to 3)
2	Major transients (1 to 2) / (2 to 3)
2	EOPs used beyond primary scram response EOP (1 to 3) / (3 to 5)
2	EOPs contingency procedures used (0 to 3) / (1 to 3)
60	Approximate scenario run time (45 to 60 min) / (one scenario may approach 90 minutes)
50%	EOP run time (40 to 70% of scenario run time)
5	Crew critical tasks (2 to 5) / (5 to 8)
Yes	Technical Specifications exercised (Yes or No)

ILT 06-1 NRC EXAM SCENARIO ILT-N-3 Initial Setup CAEP:

SCENARIO ILT-N-3.cae

Written by FRF

Rev 00

Date 11/06

INITIAL CONDITIONS

Inserts electrical ATWS

imf b12

Overrides Panel 2202-70A(B) Trouble alarm points OFF so pulling ARI fuses does not cause alarm.

Pulls ARI fuses.

Imf ser1026 off

imf ser1060 off

irf aw4 pulled|2

Sets APRM gain pot to 1.0

irf niagain 1.0

#SETUP EVENT TRIGGERS

Event Trigger 1 sets gain for all 6 APRMs to 1.0

trgset 1 "0"

trg 1 "irf niagainf true"

Event trigger 2 Simulates U2 EDG cooling water pump breaker control power transformer failure:

Forces up alarm 902-8 A-7, U2 Diesel Gen Trouble.

Forces up alarm 902-7 G-8, U2 Diesel Gen Clg Wtr PP Trip/lkout.

Inserts U2 Diesel Gen Clg Wtr PP Trip malfunction.

Trgset 2 "0"|2

imf ser1589 (2) on|2

imf ser0710 (2) on|2

imf t18 (2)|2

Event trigger 3 Clears alarm 902-8 A-7, U2 Diesel Gen Trouble.

Trgset 3 "0"|4

trg 3 "imf ser1589 normal"|4

Event trigger 4 Trips 2C RFP

Trgset 4 "0"|4

imf h33 (4)|4

imf h34 (4)|4

Event trigger 5 Activates when the Mode SW is placed to S/D.

Pulls some of the scram fuses to simulate a partial electrical ATWS.

Trgset 5 "rpdmode4_drw"|4

irf rpfusea1 (5) pulled|6

irf rpfuseb1 (5) pulled|6

irf rpfuseb2 (5) pulled|6

irf rpfuseb3 (5) pulled|6

irf rpfuseb4 (5) pulled|6

Event trigger 6 Simulates pulling RPS scram fuses.

Trgset 6 "0"|8

irf rpfusea2 (6) pulled|8

irf rpfusea3 (6 15) pulled|8
irf rpfusea4 (6 30) pulled|8

Event trigger 7 Simulates venting scram air header.
Trgset 7 "0"|8
irf rdsclair (7) open|8

Event Trigger 8 fails RPV medium range A level instrument to 120 inches on 10-minute ramp.
Fails RPV medium range B level instrument to -120 inches on 15-minute ramp.
Fails RPV narrow range A level instrument to 60 inches on 15-minute ramp.
Fails RPV narrow range B level instrument to minus -60 inches on 10-minute ramp.
Fails RPV Wide Range and Fuel Zone level instruments upscale.
trgset 8 "0"|10
imf nvm100ap (8) 120.0 10:00|10
imf nvm100bp (8) -120.0 5:00|10
imf nvml29ap (8) 60.0 5:00|10
imf nvml29bp (8) -60.0 10:00|10
imf nvm106ap (8) 400.0|12
imf nvm106bp (8) -400.0|12
imf nvml112p (8) 400.0|12

Event Trigger 9 bypasses the RFP high level trip.
trgset 9 "0"|12
irf fwknife (9) closed|12

Event trigger 16 Forces up alarm 902-6 H-8, 2B RFP Brg Oil Press Lo.
Trgset 16 "0"|14
imf ser1375 (16) on|14

END

Date: TODAY

Unit 2 Turnover

Online Information

720 MWe

Online Risk: Green

Risk Equipment:

Protected Pathway(s)

Shutdown Information

Time to Boil: 0

Shutdown Risk: N/A

Reactivity Management

Limit: MFLCPR 0.78 Increasing slowly

Action Level: 0.980

S/D Method: DGP 02-01

Unit 2 Priorities

Reduce power to remove 'B' FWRV from service for maintenance..

LCORAs

LCORA Title None

Start Clock Ends

Compensatory Actions

Degradation Documentation

Frequency Responsible

Compensatory Action

Unit 2 Conditions, Status, Abnormalities

2 hr ago IRM 11 OOS due to power supply failure. IMD waiting for replacement power supply to arrive from Quad Cities Station.

7 hr ago 2C RFP returned to service last shift from breaker inspections.

Unit 2 Abnormal Component Position

U2 Open Operability Determinations with Compensatory Actions

Shift 1 Activities (X = Completed)

Shift 2 Activities

 Load drop

Shift 3 Activities

Common Unit Activities

Shift 1 Activities (X = Completed)

Shift 2 Activities

Shift 3 Activities

Unit 2 Procedures in Progress (Non-Surveillance)

DGP 03-01, Power Changes

Unit 2 Surveillances in Progress

None

Date: TODAY

Unit 3 Turnover

Online Information

912 MWe

Online Risk: Green

Risk Equipment:

Protected Pathway(s)

Shutdown Information

Time to Boil: 0

Shutdown Risk: N/A

Reactivity Management

Limit: MFLCPR 0.78

Action Level: 0.980

S/D Method: DGP 02-01

Unit 3 Priorities

Maintain load per TSO direction.

LCORAs

LCORA # None

Title

Start

Clock Ends

Compensatory Actions

Degradation
Documentation

Frequency
Responsible

Compensatory Action

Unit 3 Conditions, Status, Abnormalities

None

Unit 3 Abnormal Component Position

U3 Open Operability Determinations with Compensatory Actions

Shift 1 Activities (X = Completed)

Shift 2 Activities

Shift 3 Activities

Common Unit Activities

Shift 1 Activities (X = Completed)

Shift 2 Activities

Shift 3 Activities

Unit 3 Procedures in Progress (Non-Surveillance)

None

Unit 3 Surveillances in Progress

None

Dresden Generating Station

ILT-N-4

VACUUM BREAKER STUCK 20% OPEN

CRD PUMP SWAP

TBCCW PUMP TRIP

TRIP OF RPS MG SET

SMALL STEAM LEAK IN DRYWELL / TWO CONTROL RODS REMAIN WITHDRAWN

THE LEAK IN DRYWELL GETS WORSE / SPRAY THE DRYWELL

Rev. 00

11/06

Developed By:

Exam Author

Date

Approved By:

Facility Representative

Date

Facility: <u>Dresden</u>		Scenario No: <u>ILT-N-4</u>		Op-Test No: <u>2007-301</u>	
Examiners: _____			Operators: _____		
_____			_____		
_____			_____		
Initial Conditions: Rx at Full Power, IRM 11 OOS.					
Turnover: DOS 1600-09, just completed. Restore normal Primary Containment pressure control.					
Event No.	Malfunction Number	Event Type*		Event Description	
1	P00	C	ANSO SRO	Vacuum breaker stuck approximately 20% open ^T	
2	RDPPATRP	C	NSO SRO	2A CRD Pump is making a grinding noise, must swap	
3	Q11	C	ANSO SRO	TBCCW Pump Trip	
4	B02	C	NSO SRO	Trip of RPS MG Set, re-energize from reserve power ^T	
5	RODST I21	M	TEAM	Small steam leak in Drywell / Scram / Two control rods remain withdrawn.	
6	I21	M	TEAM	The leak in drywell gets worse / Spray the Drywell	

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

Scenario Objective

Evaluate the crew's ability to control the plant during a condition requiring Emergency Depressurization.

Scenario Summary

1. Unit is in Mode 1 at full power, operating per BPO.
2. Drywell to Torus DP has been equalized for 2 hours for vacuum breaker surveillance.
3. The following equipment is OOS:
 - a. IRM Channel 11
4. LCOs:
 - a. None

Scenario Description

- After shift turnover, a Torus to Drywell vacuum breaker sticks open 20% while restoring normal Primary Containment pressure control following performance of DOS 1600-09.
- 2A CRD pump begins degrading. The report from the field is that the 2A CRD pump is making a loud grinding noise. The NSO will swap CRD pumps, placing 2B CRD pump in service.
- 2A TBCCW pump trips. The Team will start 2B TBCCW pump.
- An RPS MG Set trips. The Team places the lost RPS Bus on the Alternate Power supply.
- A small steam leak upstream of the restrictors occurs. The Team will begin to execute the DOA for slow leak. Eventually the Team will scram the reactor.
- Two rods stick out during the scram. The Team manually inserts them. The steam leak worsens requiring the Team to spray the Drywell to control Primary Containment pressure.

Scenario Sequence

Event One – Torus to Drywell Vacuum Breaker Fails Open

After shift turnover, a Torus to Drywell vacuum breaker sticks open 20% while restoring normal Primary Containment pressure control following performance of DOS 1600-09. Attempts by the team to close the valve are unsuccessful. The team references Tech Specs and determines a plant shutdown is required.

Malfunctions required: 1

- Torus/D/W vacuum breaker failed 20% open

Success Path:

- Identifies Tech Spec requires unit shutdown.

Event Two – CRD Pump Swap

2A CRD pump fails. The NSO will swap CRD pumps, placing 2B CRD pump in service.

Malfunctions required: 1

- CRD pump degradation.

Success Path:

- NSO swaps running CRD pumps.

Event Three – TBCCW Pump Trip

2A TBCCW pump trips.

Malfunctions Required: 1

- TBCCW pump trip.

Success Path:

- Start 2B TBCCW pump.

Event Four – Trip of RPS MG Set

- A trip of 2B RPS MG Set causes a loss of RPS Bus A.

Malfunctions required: 1

- 2B RPS MG Set trip.

Success Path:

- Perform DOA 500-05, Loss of Reactor Protection System Bus.

Event Five - Small Steam Leak in Drywell / Two Control Rods Remain Withdrawn

A small steam leak upstream of the restrictors occurs.

Malfunctions required: 2

- Small steam leak before restrictors.
- Stuck control rods.

Success path:

- Performs DOA 0040-01, Slow Leak.
- Performs a manual scram.

Event Six - Drywell Leak Worsens / Spray the Drywell

Two rods stick out during the scram. The Team manually inserts them. The steam leak worsens requiring the Team to spray the Drywell to control Primary Containment pressure.

Malfunctions required: 1

- Steam leak worsens.

Success Path:

- Manually drives in stuck control rods.
- Sprays the Drywell

PRE-SCENARIO ACTIVITIES

- 1 If applicable, conduct pre-scenario activities in accordance with TQ-AA-106-0107, SIMULATOR EXAMINATION BRIEFING.
 - a. Direct the crew to perform their briefs prior to entering the simulator.
 - b. Inform the crew to maintain full power operations per Bulk Power direction.
 - c. Inform the Crew that Torus to Drywell vacuum breaker surveillance, DOS 1600-09 Pressure Suppression Chamber to Drywell Vacuum Breaker Full Stroke Exercise Test, is completed.
 - d. Provide the Crew with a copy of DOP 1600-18, Temporary Drywell To Suppression Chamber Pressure Equalization, marked up to the point of equalization of the Drywell and Torus. Inform the Crew that they are to reestablish normal Primary Containment pressure control per this procedure.

 - 2 Simulator Setup
 - a. Initialize simulator in IC 12 (full power) and perform the following before continuing below:
 - b. Establish the DW to Torus DP equalization lineup as it would be per DOP 1600-18 as follows:
 - 1) Place the DW pressure controller PIC 2-8540-1 to manual and set for zero demand
 - 2) Place the DW/Torus DP controller PIC 2-1602-14 to manual and set for zero demand
 - 3) Open AO 2-1601-21
 - 4) Wait until DW to Torus DP equalizes, then close AO 2-1601-56
 - 5) Open AO 2-1601-58
 - 6) Open AO 2-1601-59
 - c. 2A CRD pump is running.
- NOTE: The above setup must be completed prior to running the CAEP file.**
- d. Run the initial setup CAEP file: ILT-N-4.cae.
- 3 Verify the following simulator conditions:
 - a. Verify 902-5 panel digital displays are clear.
 - b. 2A TBCCW pump is running.
 - c. Set H2 Cooling Water controller in Auto balanced at 40°C.
 - d. RWCU flow 610- 650 gpm.
 - e. If alarm 902-4 C-23 for Torus low level comes up, then to quickly raise Torus level:
Open Instructor Station Drawing CS1, Core Spray System, to observe valve operation in the steps below.
 - 1) Activate trigger 16, which opens core spray CST suction valve 1402-2A.
 - 2) Verify trigger 17 automatically activates when 1402-2A reaches full open. This will close the valve.
 - 3) Check if the Torus level alarm clears.
 - 4) If the alarm does not clear, toggle triggers 16 and 17 OFF and repeat the above steps.
-
- 4 Place the following equipment out of service:
 - a. IRM Channel 11
-
- 5 Complete the Simulator Setup Checklist.

Symbols are used throughout the text to identify specific items as indicated below:

- √ Critical Tasks
- ⌚ Time Critical Tasks
- B PRA Key Operator Actions
- Required Actions
- Optional Actions

Event One – Torus to Drywell Vacuum Breaker Fails Open		
Trigger	Position	Crew Actions or Behavior
		FLOOR INSTRUCTOR NOTE: The simulator models Circulating Water Pump amps higher than procedurally allowed. If the team points this out, inform them that Circulating Water Pump amps indicate 275. (SWR 9727)
1		<p>FLOOR INSTRUCTOR / SIMULATOR OPERATOR / ROLE PLAY:</p> <p>If the team announces that they will adjust gains, inform them an extra NSO will perform the adjustment. Then:</p> <ul style="list-style-type: none"> ❖ Tell the team you are time compressing. ❖ Direct the simulator operator to activate trigger 1 and verify gains within limits. ❖ Inform the team the gains are adjusted. <p>(Note: trigger 1 can be toggled OFF, then back ON as many times as necessary to adjust gains)</p>
2		<p>Simulator Operator:</p> <p>Verify trigger 2 automatically activates when the Team closes AO 2-1601-58, which fails Torus to DW Vacuum Breaker 2-1601-32A 20% open.</p>
		<p>Role Play:</p> <p>NLO to check 2-1601-32A position indicating lights in RX Bldg: Wait 2 min. and report “both indicating lights for 2-1601-32A are NOT lit”.</p> <p>NLO to check 2-1601-32A: wait 2 min, then report, I found a scaffolding pole leaning against Torus to Drywell Vacuum Breaker 2-1601-32A. The valve is about 20% open and will not move. It appears there is something broken in the valve”.</p> <p>MMD if asked on time to repair, “There is something broken internal to the valve, the repair will take at least 16 hours”.</p>
		Note: The remainder of this 4 hr. clock can be used to attempt to close the vacuum breaker and reestablish 1 psid DW to Torus.
	US	<input type="checkbox"/> Directs ANSO to perform DOP 1600-18, Temporary Drywell To Suppression Chamber Pressure Equalization, to restore normal Primary Containment pressure control.
	ANSO	<input type="checkbox"/> Begins performing DOP 1600-18, Temporary Drywell To Suppression Chamber Pressure Equalization: <ul style="list-style-type: none"> • Place DW PRESS CONTRL, PIC 2-8540-1 in MANUAL and adjust for zero demand. • Place DW PRESS CONTRL, PIC 2-1602-14 in MANUAL and adjust for zero demand.
	ANSO	Announces the following alarms: <ul style="list-style-type: none"> ■ DAN 902-4 G-14, Torus to DW Div I Vac Bkr Vlv Open ■ DAN 902-4 H-14, Torus to DW Div II Vac Bkr Vlv Open

Event One – Torus to Drywell Vacuum Breaker Fails Open

Trigger	Position	Crew Actions or Behavior
	TEAM	<input type="checkbox"/> Reviews DGP 02-01, Unit Shutdown, and DGP 02-03, Reactor Scram, in preparation for Unit Shutdown as directed.
	US	Following the MMD report, references Tech Specs and determines the following: <ul style="list-style-type: none"> ■ LCO 3.6.1.8 Condition B1, close the open vacuum breaker within 4 hours.
	US	<ul style="list-style-type: none"> ■ Based on TS requirement to close the valve within 4 hours, then be in MODE 3 within 12 hours, may direct preparatory actions for DGP 02-01, Unit Shutdown, and DGP 02-03, Reactor Scram.
	TEAM	<input type="checkbox"/> Notifies QNE, IMs, and Chemistry for RETs for the impending shutdown.
		<p><u>Role Play:</u></p> <p>If requested as QNE to prepare a shutdown REMA: respond that you will bring one to the control room shortly”.</p>
	TEAM	May contact any/all of the following to inform of situation or request assistance: <ul style="list-style-type: none"> <input type="checkbox"/> Shift Manager <input type="checkbox"/> Operations Manager <input type="checkbox"/> Shift Operating Supervisor <input type="checkbox"/> Duty Maintenance Supervisor <input type="checkbox"/> Duty Engineering Manager <input type="checkbox"/> Work Week Manager

Event 1 Completion Criteria:

- **References Tech Specs**
 - **Determines that a unit Shutdown is required.**
- OR,**
- **At the discretion of the Lead Examiner.**

Event Two – CRD Pump Swap

Trigger	Position	Crew Actions or Behavior
<p>3 4</p>		<p><u>Simulator Operator:</u></p> <p>At the discretion of the NRC Lead Examiner, activate trigger 3, which begins failure of the 2A CRD pump. If after 9 min. the Team has not swapped CRD pumps, 2A CRD pump will trip.</p> <p>Verify Trigger 4 automatically activates when the 2A CRD pump breaker opens. This deletes the override on the pump ammeter.</p>
		<p><u>ROLE PLAY:</u></p> <p>NLO to check CRD FCV: wait 2 min. and the report “the CRD FCV appears to be operating normally”.</p> <p>NLO to check 2A CRD pump: Wait 3 min, then report, “The 2A CRD pump is making a loud metallic grinding noise, I cannot see any oil in the pump, smoke is starting to come from the pump, and it is very hot”.</p> <p>NSO may follow DOP 0300-01 and have the NLO vent the pump. Wait 1 minute and report, “2B CRD pump has been vented”.</p>
	<p>NSO</p>	<p>Announces alarm 902-5 F-2, Accumulator Charging Wtr Press Lo, and that CRD system parameters are outside normal bands and are fluctuating.</p>
	<p>NSO</p>	<p>Carries out actions of DOA 0300-01, Control Rod Drive System Failure:</p> <ul style="list-style-type: none"> ■ Starts 2B CRD pump. ■ Secures 2A CRD pump. □ Verifies normal CRD system pressures and flows.
	<p>ANSO</p>	<ul style="list-style-type: none"> ■ Monitors panels, provide assistance as directed.
		<p><u>Role Play:</u></p> <p>NLO to check 2B CRD pump, report, “2B CRD pump is operating normally.”</p>
	<p>US</p>	<ul style="list-style-type: none"> ■ Enters DOA 300-01, Control Rod Drive System Failure, due to failure of 2A CRD pump. ■ Directs swapping CRD pumps.
	<p>TEAM</p>	<p>May contact any/all of the following to inform of situation or request assistance:</p> <ul style="list-style-type: none"> □ Shift Manager □ WEC Supervisor □ Operations Manager □ Shift Operating Supervisor □ Duty Maintenance Supervisor □ Duty Engineering Manager □ Work Week Manager

Event Two – CRD Pump Swap

Trigger	Position	Crew Actions or Behavior
<p style="text-align: center;"><u>Event 2 Completion Criteria:</u></p> <ul style="list-style-type: none">• 2B CRD pump has been started and the immediate actions of DOA 0300-01 are complete, OR,• At the discretion of the NRC Lead Examiner.		

Event Three – TBCCW Pump Trip

Trigger	Position	Crew Actions or Behavior
5		<p><u>SIMULATOR OPERATOR:</u> At the discretion of the NRC Lead Examiner, activate trigger 5, which will cause the 2A TBCCW Pump to trip.</p>
		<p><u>Role Play:</u> NLO to investigate: wait 2 min, then report that “the 2B TBCCW pump is operating normally and the 2A TBCCW pump motor is very hot”. NLO to check 2A TBCCW pump breaker: wait 2 min. and report “the breaker tripped on overcurrent”.</p>
	ANSO	<ul style="list-style-type: none"> <input type="checkbox"/> Announces trip of 2A TBCCW pump. <input checked="" type="checkbox"/> Per DAN 923-1 C-2, U2 or U3 TBCCW PP Trip, and DAN 923-1 D-2, U2 or U3 TBCCW Press Lo, starts 2B TBCCW pump. <input type="checkbox"/> Monitors TBCCW temperature and pressure. <input type="checkbox"/> Performs DOP 6700-20, 480V Circuit Breaker Trip. <ul style="list-style-type: none"> o Places 2A TBCCW Pump control switch in PTL. <input type="checkbox"/> Sends operator to investigate.
	NSO	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Monitors panels, provide assistance as directed.
	US	Directs operator actions and makes appropriate notifications.
	TEAM	<p>May contact any/all of the following to inform of situation or request assistance:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Shift Manager <input type="checkbox"/> WEC Supervisor <input type="checkbox"/> Operations Manager <input type="checkbox"/> Shift Operating Supervisor <input type="checkbox"/> Duty Maintenance Supervisor <input type="checkbox"/> Duty Engineering Manager <input type="checkbox"/> Work Week Manager

Event 3 Completion Criteria:

- 2B TBCCW pump started,
- OR,
- At the discretion of the NRC Lead Examiner.

Event Four – Trip of RPS MG Set		
Trigger	Position	Crew Actions or Behavior
6		<p><u>SIMULATOR OPERATOR ACTIONS:</u></p> <p>At the discretion of the NRC Lead Evaluator, activate trigger 6, which inserts a 2B RPS MG Set overcurrent trip.</p> <p><u>ROLE PLAY:</u></p> <p>NLO to check 2B RPS MG set: wait 2 min. and call and report, “the 2B RPS MG Set motor is very hot and its breaker indicates an overcurrent trip”.</p>
7		<p><u>SIMULATOR OPERATOR/ROLE PLAY:</u></p> <p>If directed to energize RPS Bus 2A from reserve power, coordinate with the Role Play below and activate Trigger 7, transfers RPS Bus 2A to the normally energized reserve power EPAs.</p> <p><u>ROLE PLAY:</u></p> <p>NLO sent to the AEER: If directed to restore RPS Bus 2A from reserve power, wait approx. 3 minutes, then call the control room on the phone that you’re are ready to re-energize RPS Bus 2A. Direct the Simulator Operator to activate Trigger 7, then wait approx. 1 minute and report the bus is energized and indications are normal.</p>
	NSO	<p><input type="checkbox"/> Announces loss of 2A RPS Bus.</p> <p>Performs the following:</p> <p><input type="checkbox"/> Directs an NLO to restore power to the 2A RPS Bus per DOP 0500-03, RPS Power Supply Operation</p> <p><input type="checkbox"/> Perform actions of DOA 0500-05, Loss of RPS.</p> <p><input type="checkbox"/> Resets the RPS CH A half scram per DOP 0500-07, Insertion/Reset of Manual Half Scram</p> <p><input type="checkbox"/> Resets ACAD/CAM system per DOP 2400-01 to reclose the 2-2499-3B and 4B valves</p>
	ANSO	<p><input checked="" type="checkbox"/> Monitors panels, provide assistance as directed.</p>
	US	<p><input type="checkbox"/> Enters DOA 0500-05, Loss of Reactor Protection System Bus, and directs actions.</p> <p><input type="checkbox"/> Coordinates restoration of affected plant systems.</p>
	US	<p><input type="checkbox"/> References Technical Specifications. TS 3.3.8.2 addresses RPS power monitoring. Determines no LCOs exist.</p>
		<p><u>NOTE:</u></p> <p>The intent here is to ONLY have the team restore the RPS power to the lost bus. Once the team identifies systems that need restored, provide the following Role Play.</p> <p><u>ROLE PLAY:</u></p> <p>As the shift Manager, inform the Unit Supervisor “I will direct the WEC supervisor and available operators to return affected systems to normal lineups”.</p>

Event Four – Trip of RPS MG Set

Trigger	Position	Crew Actions or Behavior
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Event 4 Completion Criteria:

- **RPS Bus A reenergized and restoration of affected plant systems addressed.**
- **OR,**
- **At the discretion of the NRC Lead Evaluator.**

Event Five - Small Steam Leak in Drywell / Two Control Rods Remain Withdrawn

Trigger	Position	Crew Actions or Behavior
8		<p><u>SIMULATOR OPERATOR:</u> At the discretion of the NRC chief examiner, activate trigger 8, which causes a small Main Steam line leak to develop in the Drywell.</p>
		<p><u>Role Play:</u> U-3 NSO to report Drywell pressure status: Report "U-3 Drywell pressure is 1.2 psig and steady".</p>
	NSO / ANSO	<ul style="list-style-type: none"> ■ Recognizes and announces that Drywell pressure is slowly rising. <p>Performs the following actions per DOA 0040-01 Slow Leak, as directed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Maintain Level with FWLCS (immediate action). <input type="checkbox"/> Notifies Shift Supervisor and Rad Protection. <input type="checkbox"/> Monitors for EP conditions. <input type="checkbox"/> Directs search for leak. <input type="checkbox"/> Shutdown H₂ Addition. <input type="checkbox"/> Makes PA announcement. <input type="checkbox"/> Monitors leakage rate, reactor water level, and Drywell pressure. <input type="checkbox"/> Verify Crib House inlet temperature is <95°F. <input type="checkbox"/> Initiates Torus cooling per "Hard Card". <input type="checkbox"/> Inserts manual reactor scram prior to 1.5 psig DW pressure
		<p><u>Role Play:</u> NLO to search for leak Report, "I am on my way out to check for leaks". NLO to check Cribhouse inlet temperature: (wait 5 min.) Report, "Cribhouse inlet temp is 70°F".</p>
	SRO	<ul style="list-style-type: none"> <input type="checkbox"/> Enters and directs performance of DOA 0040-01, Slow Leak. <input type="checkbox"/> Set Scram contingency of 1.5 psig DW pressure. <input type="checkbox"/> May enter DGP 02-03, Reactor Scram, and direct taking scram preparatory actions. <input type="checkbox"/> Prior to reaching the Drywell Pressure scram setpoint, directs a manual reactor scram per DGP 02-03, Reactor Scram.
	NSO / ANSO	<p>Performs scram preparatory actions per DGP 02-03, Reactor Scram, as directed.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Reduces FCL to <93%. <input type="checkbox"/> Reduces power with Recirc flow to 56 Mlbm/hr. <input type="checkbox"/> Starts MSP and TGOP. <input type="checkbox"/> Trips H₂ addition.

Event Five - Small Steam Leak in Drywell / Two Control Rods Remain Withdrawn

Trigger	Position	Crew Actions or Behavior
	NSO	Performs the following actions per DGP 02-03, Reactor Scram, as directed: <ul style="list-style-type: none"> ■ Presses scram pushbuttons ■ Places mode switch in shutdown ■ Check rods inserted. ■ Determines 2 control rods are not inserted. <input type="checkbox"/> Initiates ARI ■ Announces ATWS condition and RX power is <6%. <input type="checkbox"/> Verifies Recirc Pumps run back. <input type="checkbox"/> Maintains RPV/L between +25 and +35 inches or as directed by Unit Supervisor. <input type="checkbox"/> Inserts SRM/IRMs.
	ANSO	<ul style="list-style-type: none"> <input type="checkbox"/> Verifies Turbine and Generator tripped. <input type="checkbox"/> Check auxiliary power transferred to RAT. <input type="checkbox"/> May starts maximum torus cooling per DGP 02-03 Hardcard.
	TEAM	Verifies the following as time allows: <ul style="list-style-type: none"> <input type="checkbox"/> Group Isolations <input type="checkbox"/> Automatic start of ECCS systems <input type="checkbox"/> Automatic start of EDGs.
	US	<ul style="list-style-type: none"> ■ Enters DEOP 100, RPV Control, due to high Drywell Pressure and/or low Reactor water level. Due to ATWS report, exits DEOP 100, enters DEOP 0400-05, Failure to Scram and performs/directs the following: <ul style="list-style-type: none"> <input type="checkbox"/> Inhibiting ADS. <input type="checkbox"/> Placing Core Spray in PTL. <input type="checkbox"/> Verification of all isolations, ECCS and EDGs start. <input type="checkbox"/> Holding Reactor water level +8" to +48". ■ √ Inserting control rods. (RPV 6.1) <input type="checkbox"/> Maintaining RPV pressure <1060 psig.
	ANSO	<ul style="list-style-type: none"> <input type="checkbox"/> Inhibits ADS. <input type="checkbox"/> Places Core Spray in PTL. <input type="checkbox"/> Controls RPV pressure as directed.

Event Five - Small Steam Leak in Drywell / Two Control Rods Remain Withdrawn

Trigger	Position	Crew Actions or Behavior
	NSO	<p>√ Performs manual control rod insertion per DEOP 500-5, Alternate Insertion of Control Rods, as directed (this method will be successful): (RPV 6.1)</p> <ul style="list-style-type: none"> ■ Bypasses the RWM ■ Starts the available CRD pump or use CRD x-tie from Unit 3. ■ Maximizes drive water pressure using one or more of the methods in DEOP 500-05. ■ Inserts rods using RONOR in EMERG ROD IN or the normal rod movement control switch
9 10		<p><u>Simulator Operator:</u></p> <p>Verify Triggers 9 and 10 automatically activate when either of the stuck control rods is inserted. This immediately increases the leak size enough to drive the Team to spray the Torus. After 5 min, the leak size increases again to drive the Team to spray the Drywell. This starts the next Event automatically.</p>
11 12 13		<p><u>Simulator Operator / Role Play:</u></p> <p>When requested: Wait several min, activate the appropriate trigger and report completed.</p> <p>Trigger 11: installs scram jumpers.</p> <p>Trigger 12: bypasses MSL Gp 1 RPV/L and Offgas High Rad.</p> <p>Trigger 13: pulls ARI fuses.</p>
14 15		<p><u>Simulator Operator:</u></p> <p>Verify the following triggers automatically activate when the associated rod is selected, drive water pressure is restored to > 200 psig and an “insert” signal is given:</p> <p>Trigger 14: deletes the stuck malfunction for J05.</p> <p>Trigger 15: deletes the stuck malfunction for L07</p>
	US	<ul style="list-style-type: none"> ■ When control rods are inserted, exits DEOP 0400-05 and enters DEOP 100.

Event 5 Completion Criteria:

- **Control Rods inserted.**
- OR,
- **Or at the discretion of the NRC Chief Examiner.**

Event Six - Drywell Leak Worsens / Spray the Drywell

Trigger	Position	Crew Actions or Behavior
		<p>NOTE: This event starts automatically when the TEAM inserts control rods in the previous Event.</p>
	TEAM	Reports Drywell pressure increasing at a faster rate.
	US	<p>Enters DEOP 0200-01, Primary Containment Control, when Drywell pressure reaches 2 psig and performs/directs:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verifying of Torus water level <27.5 ft. <input type="checkbox"/> Initiation of Torus sprays. <input type="checkbox"/> Monitoring of Drywell temperature (Drywell sprays may be initiated for temperature control) <input type="checkbox"/> Monitoring Torus Temperature and initiation of Torus cooling. <input type="checkbox"/> Monitors Torus level.
	ANSO	<p>Performs DEOP 0200-1, Primary Containment Control, actions as directed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Monitors Drywell temperature and pressure and initiates torus sprays per Hard Card LPCI/CCSW OPERATION, as directed.
	US	<p>When PC/P is above 9 psig or before DW/T reaches 281°F, performs/directs:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verification of DSIL <input type="checkbox"/> Tripping of recirc pumps <input type="checkbox"/> Tripping of DW coolers <input checked="" type="checkbox"/> √ Initiation of DW sprays (PC-5.1)
	ANSO	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> √ Initiates drywell sprays per Hard Card LPCI/CCSW OPERATION, as directed (PC 5.1)
	US	<p>May contact any/all of the following to inform of situation or request assistance:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Operations Manager <input type="checkbox"/> Shift Operating Supervisor <input type="checkbox"/> Duty Maintenance Supervisor <input type="checkbox"/> Duty Engineering Manager <input type="checkbox"/> Work Week Manager

Event 6 / Scenario Completion Criteria:

- Drywell Sprays initiated,
OR,
- At the discretion of the NRC Lead Examiner.

Critical Tasks:

(RPV-6.1)

With a reactor scram required and the reactor not shutdown, TAKE ACTION TO REDUCE POWER by injecting boron and/or inserting control rods, to prevent exceeding the primary containment design limits.

(PC 5.1)

When drywell pressure exceeds the suppression chamber spray initiation pressure (Mark I, II) or before containment pressure exceeds the Pressure suppression Pressure (mark III), Initiate drywell/containment sprays, while in the safe region of the drywell spray initiation limit (Mark I, II) or above the containment spray initiation pressure (Mark III).

REFERENCES

PROCEDURE	TITLE
DAN 902-4 G-14	TORUS TO DW DIV I VAC BKR VLV OPEN
DAN 902-4 H-14	TORUS TO DW DIV II VAC BKR VLV OPEN
DAN 902-4 B-15	DW TO TORUS DP HI/LO
DAN 902-5 B-2	ROD DRIVE PUMP TRIP
DAN 902-5 F-2	ACCUMULATOR CHARGING WTR PRESS LO
DAN 923-1 C-2	U2 OR U3 TBCCW PP TRIP
DAN 923-1 D-2	U2 OR U3 TBCCW PRESS LO
DEOP 0100	RPV CONTROL
DEOP 0200-01	PRIMARY CONTAINMENT CONTROL
DEOP 0400-05	FAILURE TO SCRAM
DEOP 0500-05	ALTERNATE INSERTION OF CONTROL RODS
DGP 02-01	UNIT SHUTDOWN
DGP 02-03	REACTOR SCRAM
DOA 0040-01	SLOW LEAK
DOA 0300-01	CRD SYSTEM FAILURE
DOA 0500-05	LOSS OF REACTOR PROTECTION SYSTEM BUS
DOP 0500-03	RPS POWER SUPPLY OPERATION
DOP 0500-07	INSERTION/RESET OF MANUAL HALF SCRAM
DOP 1600-18	TEMPORARY DRYWELL TO SUPPRESSION CHAMBER PRESSURE EQUALIZATION
DOP 2400-01	CAM SYSTEM H2 AND O2 DETECTION SUBSYSTEM OPERATION
DOP 5750-02	REACTOR BUILDING VENTILATION
DOP 6700-20	480V CIRCUIT BREAKER TRIP
DOP 7500-01	SBGT OPERATION
TS 3.3.8.2	REACTOR PROTECTION SYSTEM (RPS) ELECTRIC POWER MONITORING
TS 3.6.1.8	SUPPRESSION CHAMBER-TO-DRYWELL VACUUM BREAKERS

ILT-N-4 QUANTITATIVE ATTRIBUTES	
7	Total malfunctions inserted (4 to 8) / (10 to 14)
2	Malfunctions that occur after EOP entry (1 to 4) / (3 to 6)
4	Abnormal events (1 to 2) / (2 to 3)
1	Major transients (1 to 2) / (2 to 3)
2	EOPs used beyond primary scram response EOP (1 to 3) / (3 to 5)
1	EOPs contingency procedures used (0 to 3) / (1 to 3)
60	Approximate scenario run time (45 to 60 min) / (one scenario may approach 90 minutes)
40%	EOP run time (40 to 70% of scenario run time)
2	Crew critical tasks (2 to 5) / (5 to 8)
Yes	Technical Specifications exercised (Yes or No)

Computer Aided Exercise Programs

SCENARIO ILT-N-4.cae
Written by FRF
Rev 00
Date 11/06

INITIAL CONDITIONS

Sets APRM gain pot to 1.0
imf niagain 1.0

Sticks 2 rods, J-5 and L-7
imf rodj05st
imf rodl07st

Puts in IRM high for OOS condition.
imf nii11pot 125.0

Inserts a 10% Service Water Strainer Leak to reduce pressure to normal.
imf q31 10.0|2

#SETUP EVENT TRIGGERS

Event Trigger 1 sets gain for all 6 APRMs to 1.0
trgset 1 "0"
trg 1 "if niagainf true"

Event Trigger 2 Activates when AO 1601-58 open light turns OFF.
Fails Torus to Drywell vacuum breaker 1601-32A to 20% open.
Trgset 2 ".not. pclip58"|2
imf P00 (2)|2

Event Trigger 3 ramps 2A CRD PP speed lower over 9:00 min.
This simulates binding of the pump and will result in the pump tripping on overcurrent.
trgset 3 "0"|4
trg 3 "ramp rdnpump(1) 0.95 0.87 9:00"|4
imf rdppatp (3 8:58)|4

Trigger 4 Stops the 2A CRD PP speed ramp when the pump breaker opens.
trgset 4 "et_array(3) .and. (.not. rdnpump(1))"|4
trg 4 "ramp rdnpump(1) 0.87 0.10 2"|4

Event Trigger 5 Trips 2A TBCCW pump.
trgset 5 "0"|6
imf q11 (5)|6

Event Trigger 6 Trips 2B RPS MG Set
trgset 6 "0"|2
imf b02 (6)|2

Event Trigger 7 Transfers RPS Bus 2A to the normally energized reserve power EPAs
trgset 7 "0"|2
imf b03 (7) true|2

Event Trigger 8 Inserts a 0.01% steam leak upstream of the restrictors
trgset 8 "0"|6
imf i21 (8) 0.01|6

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# Event Trigger 9 Activates when either of the stuck rods is fully inserted.
# Increases the size of the steam leak upstream of the restrictors to 0.2%.
trgset 9 "rdlfling(46) .or. rdlfling(77)"|6
trg 9 "mmf l21 0.15"|6

# Trigger 10 increases the steam leak to 2% after a 5:00 min. delay
trgset 10 "et_array(9) .and. nbm459d .gt. 0.0019"|8
trg 10 "imf i21 (0 5:00) 1.75"|8

# Event Trigger 11 installs scram jumpers
trgset 11 "0"|8
irf rpjumpas (11) on|8

# Event Trigger 12 installs MSL Group 1 RPV level bypass and Offgas High Radiation bypass jumpers.
trgset 12 "0"|10
irf ci59jp (12) in|10
irf ogogjp (12) in|10

# Event Trigger 13 pulls ARI fuses
trgset 13 "0"|10
irf aw4 (13) pulled|10

# Event Trigger 14 clears stuck rod J-05.
trgset 14 "rdlsselw(46) .and. (rds303em .or. rds302in) .and. (rddpdriv .gt. 250.0)"|12
trg 14 "dmf rodj05st"|10

# Event Trigger 15 clears stuck rod L-07.
trgset 15 "rdlsselw(77) .and. (rds303em .or. rds302in) .and. (rddpdriv .gt. 250.0)"|14
trg 15 "dmf rodl07st"|10

# Event Trigger 16 opens core spray CST suction valve 1402-2A.
trgset 16 "0"|16
trg 16 "irf csppacst open"|16

# Event Trigger 17 activates when 1402-2A reaches full open. This will close the valve.
trgset 17 "csv2a .gt. 0.99"|16
trg 17 "irf csppacst closed"|16

# END
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Date: TODAY

Unit 2 Turnover

Online Information

912 MWe

Online Risk: Green

Risk Equipment:

Protected Pathway(s)

Shutdown Information

Time to Boil: 0

Shutdown Risk: N/A

Reactivity Management

Limit: MFLCPR 0.78

Action Level: 0.980

S/D Method: DGP 02-01

Unit 2 Priorities

Maintain load per TSO direction.

LCORAs

LCORA None

Title

Start

Clock Ends

Compensatory Actions

Degradation
Documentation

Frequency
Responsible

Compensatory Action

Unit 2 Conditions, Status, Abnormalities

DOS 1600-09 Pressure Suppression Chamber to Drywell Vacuum Breaker Full Stroke Exercise Test, was just completed. Next is to restore Primary Containment pressure control to normal per DOP 1600-18.
IRM 11 OOS for power supply replacement.

Unit 2 Abnormal Component Position

U2 Open Operability Determinations with Compensatory Actions

Shift 1 Activities (X = Completed)

Shift 2 Activities

Shift 3 Activities

Common Unit Activities

Shift 1 Activities (X = Completed)

Shift 2 Activities

Shift 3 Activities

Unit 2 Procedures in Progress (Non-Surveillance)

DOP 1600-18, Time clocks started 2 hours ago.

Unit 2 Surveillances in Progress

None

Date: TODAY

Unit 3 Turnover

Online Information

912 MWe
Online Risk: Green
Risk Equipment:

Protected Pathway(s)

Shutdown Information

Time to Boil: 0
Shutdown Risk: N/A

Reactivity Management

Limit: MFLCPR 0.78
Action Level: 0.980
S/D Method: DGP 02-01

Unit 3 Priorities

Maintain load per TSO direction.

LCORAs

LCORA # None
Title

Start
Clock Ends

Compensatory Actions

Degradation
Documentation

Frequency
Responsible

Compensatory Action

Unit 3 Conditions, Status, Abnormalities

None

Unit 3 Abnormal Component Position

U3 Open Operability Determinations with Compensatory Actions

Shift 1 Activities (X = Completed)

Shift 2 Activities

Shift 3 Activities

Common Unit Activities

Shift 1 Activities (X = Completed)

Shift 2 Activities

Shift 3 Activities

Unit 3 Procedures in Progress (Non-Surveillance)

None

Unit 3 Surveillances in Progress

None