

Dresden Generating Station

ILT-N-1

SHUTDOWN U2 EDG FOLLOWING SURVEILLANCE TESTING

CONTROL ROD RPIS FAILURE

RFP VENT FAN TRIPS WITH FAILURE OF STANDBY TO AUTO START

SPURIOUS ERV OPENING

FWLC CONTROLLER SETPOINT DRIFTS HIGH

RBCCW PUMP TRIP

LOSS OF RBCCW DUE TO LEAK / MANUAL SCRAM

ECCS SUCTION LINE BREAK

Rev. 00

09/08

Developed By:

Exam Author

Date

Approved By:

Facility Representative

Date

Scenario Outline

Station: <u>Dresden Generating Station</u>	Scenario No.: <u>ILT-N-1</u>	Class ID: <u>2009-301</u>
Evaluators <hr/> <hr/> <hr/>	Operators / crew position <hr/> <div style="text-align: right;">/ ATC</div> <hr/> <div style="text-align: right;">/ BOP</div> <hr/> <div style="text-align: right;">/ CRS</div> <hr/>	
Initial Conditions: <u>Rx Power ~ 2%</u> <hr/> <hr/>		
Turnover: <u>Awaiting REMA to Continue Startup</u> <u>Shutdown U2 EDG Following Surveillance</u> <hr/> <hr/>		

Event No.	Malf. No.	Event Type*	Event Description
1	NONE	N BOP CRS	EDG - Shutdown U2 EDG Following Surveillance Testing.
2	RDFAILF5	I ATC CRS	CRD - RPIS failure for rod F-05. ^T
3	FWDVF3 FWDVF4	C ATC CRS	RFP - 2A Vent Fan Trips with Failure of 2B to Auto Start.
4	ADS3CBN ADS3CSD	C BOP CRS	ERV - Spurious ERV Opening. ^T
5	RLLMLS	I ATC CRS	FWLC - FWLC Controller Drifts High.
6	Q01	C BOP CRS	RBCCW - Pump Trip.
7	SER1784WR PPDSH1 SER1735 SER0369 SER0322 RRMPMAHI RRMPMBHI	M TEAM	RBCCW - Loss of RBCCW / Manual Scram.
8	CSBRKSEV	M TEAM	Torus - Lowering Level from ECCS Suction Line Break.

* (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:

1. Unit is at 2% power.
2. Procedure DGP 01-01, Unit Startup, is in progress.
3. The following equipment is OOS:
 - a. None
4. LCOs:
 - a. Tech Spec 3.8.1 for U2 EDG surveillance.

Scenario Sequence

- The Team shuts down the U2 EDG following surveillance completion.
- Control rod F-05 loses all RPIS indication. The Team will insert the control rod, reference Tech Specs and direct taking it OOS.
- 2A RFP vent fan trips. 2B RFP vent fan fails to auto start. The Team will start 2B RFP vent fan.
- An ERV spuriously opens due to an electrical failure. Pulling its fuses closes the ERV.
- The FWLC setpoint drifts high. The Team will take manual control of the FWLC system.
- A RBCCW pump trips. The Team will start the standby pump.
- A large leak develops in the RBCCW system. The Team will scram the reactor and trip the recirculation pumps to prevent damage to them.
- An ECCS suction line break occurs resulting in a lowering torus water level. The HPCI System operation should be prevented and an emergency depressurization performed as directed by the DEOP for primary containment control. If HPCI operation is not prevented, it will spuriously initiate as Torus level drops.

Event One – Shutdown U2 EDG Following Surveillance Testing

- The crew shuts down the U2 EDG following surveillance testing.

Malfunctions required: 0

- None.

Success Path:

- Performs DOS 6600-01, Diesel Generator Surveillance Tests

Event Two – Control Rod RPIS Failure

- Control rod F-05 will lose all RPIS indication.

Malfunctions required: 1

- (Loss of Control Rod F-05 RPIS indication)

Success Path:

- Inserts Control Rod F-05 and references Tech Specs

Event Three – RFP Vent Fan Trips With Failure Of Standby To Auto Start

- The team recognizes and responds to a RFP Vent Fan Trip.

Malfunctions required: 1

- (2A RFP Vent Fan trip)

Success Path:

- The Team starts the standby RFP Vent Fan.

Event Four – Spurious ERV Opening

- An ERV spuriously opens.

Malfunctions Required: 1

- (ERV fails open)

Success Path:

- Performs DOA 0250-01, Relief Valve Failure, and pulls the ERV's control power fuses.

Event Five – FWLC Setpoint Drifts High

- The FWLC setpoint will drift high.

Malfunctions required: 1

- (FWLC setpoint failure)

Success Path:

- The Team performs DOA 0600-01, Transient Level Control, and takes manual control of FWLC.

Event Six – RBCCW Pump Trip

- A RBCCW pump trips.

Malfunctions required: 1

- (RBCCW pump trip)

Success Path:

- The team starts the standby RBCCW pump.

Event Seven – Loss of RBCCW / Manual Scram

- A leak develops in the RBCCW system.

Malfunctions required: 1

- (RBCCW system leak)

Success Path:

- The team performs DOA 3700-01, Loss of Reactor Building Closed Cooling Water (RBCCW) System.

Event Eight – Torus Leak

- The crew should recognize and respond to a lowering torus water level. If the Team does not prevent HPCI operation, a spurious HPCI initiation will occur while Torus level is dropping.

Malfunctions required: 1

- (Torus Leak)

Success Path:

- Prevent HPCI operation.
- Emergency Depressurize.

PRE-SCENARIO ACTIVITIES

- 1 If applicable, conduct pre-scenario activities in accordance with TQ-JA-150-08, SIMULATOR EXAMINATION BRIEFING.
 - a. Inform the crew that the QNE is preparing a new REMA and pulling control rods will resume when the QNE returns.
 - b. Direct the crew to perform their briefs prior to entering the simulator.
 - c. Provide the crew with a copy of applicable procedure(s) marked up and completed through the appropriate steps:
 - 1) DGP 01-01, Unit Startup
 - 2) DOP 0400-01, Reactor Manual Control System Operation
 - 3) DOP 0400-02, Rod Worth Minimizer
 - 4) DOP 5600-06, Unit 2 Turbine Startup (Shell warming in progress)
 - 5) DOS 6600-01, Diesel Generator Surveillance Tests (Ready to shutdown U2 EDG)
- 2 Simulator Setup (the following steps can be done in any logical order)
 - a. Initialize simulator in password protected IC 159 which has the following setup:
 - 1) Mode Switch in STARTUP.
 - 2) One Turbine Bypass valve partially open. (~2% RX power)
 - 3) Control Rod F-05 at position 48. (Sequence XI.1.0.8333)
 - 4) Rod Move step 21 in progress with rods C11, N05 & N11 withdrawn to position 48.
 - 5) Shell warming in progress
 - b. Cut in/out Cond Demins as needed, to maintain DP within limits.
 - c. Remove Process Computer point E208 from scan. (Causing nuisance alarms)
 - d. Ensure running Condensate pump amps within limits.
 - e. Advance the chart recorders.
- 3 Verify the following simulator conditions:
 - a. Turbine Shell warming in progress.
 - b. 2A and 2/3 (on bus 24) RBCCW pumps running.
 - c. 2B RBCCW pump OFF.
 - d. 2A RFP vent fan running with 2B off.
 - e. Start and load U2 EDG per DOS 6600-01:
 - 1) At the instructor station, set the U2 EDG droop to 55. (irf t02 true)
 - 2) At the instructor station, acknowledge the local U2 EDG annunciator panel. (irf t20 acknowledge)
 - 3) Reset the U2 EDG Trouble alarm on the 902-8 panel.
 - 4) Place the U2 EDG control switch to START.
 - 5) Turn the Synchroscope for the U2 EDG output breaker ON.
 - 6) Adjust the U2 EDG voltage and frequency for synchronization.
 - 7) Close the U2 EDG output breaker.
 - 8) Adjust the U2 EDG load and frequency to the values directed by DOS 6600-01.
 - 9) Turn the Synchroscope for the U2 EDG output breaker OFF.

4 Place the following equipment out of service:

- a. None

NOTE: Perform the above setup prior to running the setup CAEP file.

5 Run the initial setup CAEP file: ILT-N-1.cae. Then perform the following:

NOTE: Variables with more than one array dimension will not load into the EVENT program from a CAEP file. Therefore it is necessary to load variables fwdvf_drw(2,1) and fwdvf_drw(1,3) directly into the EVENT program.

a. Open the EVENT program and perform the following:

- 1) Double click line 5 to select Event 5. ("dor fwdvf4" should already be in the Command box)
- 2) In the Event Action box, enter variable: fwdvf_drw(2,1)
- 3) Click "Accept New Event". Verify the variable was added to Line 5.
- 4) Double click line 23 to select Event 23. ("dor fwlfind5" should already be in the Command box)
- 5) In the Event Action box, enter variable: fwdvf_drw(1,3)
- 6) Click "Accept New Event". Verify the variable was added to Line 23.
- 7) Double click line 24 to select Event 24. ("mmf ser1336 normal" should already be in the Command box)
- 8) In the Event Action box, enter variable: fwdvf_drw(1,3)
- 9) Click "Accept New Event". Verify the variable was added to Line 24.

NOTE: Some analog overrides do not load correctly from a CAEP file. (See SWR #8652) Therefore it is necessary to setup override WRPPDSH1 manually.

b. Open the ACTION Program and perform the following:

- 1) Select tab OVERRIDE AO
- 2) Locate override WRPPDSH1 and open it.
- 3) Set Ramp Start Value 65.0
- 4) Set Ramp time to 5:00
- 5) Set Delay Time to 10:00
- 6) Set Analog Value to 10.0
- 7) Set Event Trigger to 10
- 8) Click Insert.

6 Complete the Simulator Setup Checklist.

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

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

Event One – Shutdown U2 EDG Following Surveillance Testing		
Trigger	Position	Actions or Behavior
1 2		<p><u>Simulator Operator / Role Play:</u></p> <p>NLO to set U2 EDG droop to 5: Wait 1 min, activate trigger 1 which sets the droop to 5 and forces up alarm 902-8 A-7, U2 Diesel Gen Trouble.</p> <p>Verify trigger 2 activates automatically when alarm 902-8 A-7 comes in. This returns the alarm to normal after 10 seconds.</p> <p>Then report “The U2 EDG droop is set to 5”.</p>
		<p><u>Role Play:</u></p> <p>NLO to check the lubrication oil level with the dipstick: wait 1 min, and then report “the U2 EDG oil level is midway between the FULL and LOW marks”.</p> <p>For other operator direction, respond as needed.</p>
	CRS	<input type="checkbox"/> Directs the BOP to Shutdown U2 EDG per DOS 6600-01, Diesel Generator Surveillance Tests.
	BOP	<p>Performs DOS 6600-01, Diesel Generator Surveillance Tests.</p> <input type="checkbox"/> Reduces the D/G load to less than 100 kW using the GOVERNOR control switch. <ul style="list-style-type: none"> ■ Opens the circuit breaker from the D/G 2 to 4 kV Bus 24-1 and records time. ■ Directs the NLO at the D/G governor to set the droop setting to 5 and reset the local annunciator. <input type="checkbox"/> Resets annunciator 902-8 A-7, U2 DIESEL GEN TROUBLE. <ul style="list-style-type: none"> ■ Adjusts D/G speed to 60 Hz with the GOVERNOR control switch. ■ Adjusts D/G voltage to 4160 volts with the VOLTAGE REG control switch. ■ Moves the D/G control switch to the STOP position momentarily, then moves the switch to the AUTO position and records time.
		<p><u>Floor Instructor Role Play:</u></p> <p>When the NSO moves the D/G control switch to the AUTO position, notify him that as the U3 ANSO, you have been directed to complete the surveillance.</p> <p>When the U2 D/G stops, acknowledge, announce and reset expected alarms:</p> <ul style="list-style-type: none"> ❖ 902-7 G-8, U2 Diesel Gen Clg Wtr PP Trip/Lockout. ❖ 902-8 A-7, U2 Diesel Gen Trouble.
<p align="center"><u>Event 1 Completion Criteria:</u></p> <ul style="list-style-type: none"> • U2 EDG shutdown, (Or in the cooldown period) <p>AND/OR,</p> <ul style="list-style-type: none"> • OR, at the direction of the Lead Examiner. 		

Event Two – Control Rod RPIS Failure		
Trigger	Position	Crew Actions or Behavior
3		<u>SIMULATOR OPERATOR:</u> At the direction of the Lead Examiner, activate trigger 3 , RPIS failure for control rod F-05.
		<u>ROLE PLAY:</u> Respond as Support Groups notified.
	ATC	Reports and responds to DANs 902-5 A-3 ROD DRIFT, and B-3 ROD WORTH MIN BLOCK. <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.
	ATC	Recognizes loss of control rod F-05 position indication on Full Core Display, Four Rod Display, RWM, and/or Process Computer.
	CRS	Enters DOA 0300-06, RPIS Failure, and directs its actions.
	ATC	Performs subsequent actions of DOA 0300-06, RPIS Failure: <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.
	CRS	References appropriate plant licensing documents and determines: <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.
		<u>ROLE PLAY</u> As QNE acknowledge reports. If concurrence is requested for any action, report “I concur with (insert requested action here)”
	BOP	<ul style="list-style-type: none"> ❑ Monitors panel, provides assistance as directed.

Event Two – Control Rod RPIS Failure		
Trigger	Position	Crew Actions or Behavior
	TEAM	<input type="checkbox"/> May enter DOA 0300-12, Mispositioned Control Rod. <input type="checkbox"/> Notifies the Shift Manager, QNE, Work Week Manager, Fin team, IMD, OR EMD.
		<u>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).
	ATC	<input type="checkbox"/> Records failed RPIS indication per DOS 0300-06, CRD Abnormality Record.
<p style="text-align: center;"><u>Event 2 Completion Criteria:</u></p> <ul style="list-style-type: none"> • DOA 0300-06 actions have been taken, • Technical Specifications have been referenced, <p>AND/OR,</p> <ul style="list-style-type: none"> • At the direction of the Lead Examiner. 		

Event Three – RFP Vent Fan Trips With Failure Of Standby To Auto Start.		
Trigger	Position	Crew Actions or Behavior
		<u>NOTE:</u> Ensure the ATC operator performs this Event
4 5 20-22 23-24		<u>Simulator Operator:</u> At the discretion of the Lead Examiner, activate trigger 4 , which causes 2A RFP vent fan to trip. The initial setup prevents 2B RFP vent fan from auto starting. Verify trigger 5 automatically activates when 2B RFP vent fan control switch is placed to CLOSE. This allows 2B RFP vent fan to start. Verify triggers 20-22 automatically activate when Trigger 5 activates. This deletes 2B RFP vent fan light overrides. Verify triggers 23-24 automatically activate when 2A RFP vent fan control switch is placed to PTL. This returns 2A RFP vent fan AUTO TRIP light and trip alarm to normal.
		<u>Role Play:</u> NLO to check operation of 2B RFP vent fan: Wait 2 min, and then report that “2B RFP vent fan is operating normally”. NLO to check 2A RFP vent fan breaker: Wait 2 min, and then report “2A RFP vent fan breaker tripped on over current”.
	ATC	Acknowledges and announces alarm 902-6 F-8, RFP Vent Fan Trip: <ul style="list-style-type: none"> ■ Determines 2B RFP Vent Fan did not auto start as expected and manually starts it. ❑ Sends operators to check status of the RFP vent fans. ❑ Performs DOP 6700-20, 480V Circuit Breaker Trip.
	CRS	<ul style="list-style-type: none"> ❑ Directs starting 2B RFP vent fan. ❑ Enters DOP 6700-20, 480V Circuit Breaker Trip.
	BOP	<ul style="list-style-type: none"> ❑ Assists as directed.
	TEAM	<ul style="list-style-type: none"> ❑ May reference DOA 5750-01, Ventilation System Failure.
<u>Event 3 Completion Criteria:</u> <ul style="list-style-type: none"> • 2B RFP vent fan is started, AND / OR; <ul style="list-style-type: none"> • At the direction of the Lead Examiner. 		

Event Four – Spurious ERV Opening.		
Trigger	Position	Crew Actions or Behavior
6		<p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 6, which causes “C” ERV to spuriously open due to an electrical failure.</p> <p>As the NLO sent to pull control power fuses for the “C” ERV (wait 3 min) activate trigger 7, which removes control power fuses for the “C” ERV, then call the control room on the phone and report: “I have pulled the “C” ERV fuses”.</p> <p>As the QNE called to evaluate core parameters (wait 2 min) then report: “core parameters are within limits”.</p>
7		
	BOP	<p>Determines/announces that “C” ERV is open. Performs DOA 0250-01, Relief Valve Failure, immediate actions:</p> <ul style="list-style-type: none"> ■ Places the “C” ERV control switch to OFF.
	ATC	<ul style="list-style-type: none"> <input type="checkbox"/> Verifies FWLCS has stabilized level.
	CRS	<ul style="list-style-type: none"> ■ Enters DOA 0250-01, Relief Valve Failure, and directs actions.
	BOP	<p>Determines that “C” ERV is still open and performs subsequent actions of DOA 0250-01:</p> <ul style="list-style-type: none"> ■ Cycles C ERV control switch to MAN and OFF twice. ■ Cycles the ADS INHIBIT switch from NORMAL to INHIBIT to NORMAL several times. ■ Directs C ERV control power fuses pulled. ■ When torus temp is greater than circulating water inlet temperature, starts torus cooling as directed. ■ Reports when > 95° and DEOP 0200-01, Primary Containment Control, entry is required. <input type="checkbox"/> Checks hydrogen addition operation. <input type="checkbox"/> May monitor torus temp per DOS 1600-20, Suppression Pool Temp Monitoring. <input type="checkbox"/> Resets the acoustic monitor.
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> May direct scram preparatory actions per DGP 02-03, Reactor Scram. <input type="checkbox"/> May enter DEOP 200-01, Primary Containment Control, for high Torus level. <p>If Torus temperature reaches 95°F, then enters DEOP 200-1, Primary Containment Control, and performs/directs:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Monitoring of PC/P ■ Initiation of torus cooling. (May already be started per DOA 0250-01) <input type="checkbox"/> Monitoring of Torus level. <input type="checkbox"/> Verifying initiation of drywell and torus H₂/O₂ monitors.
	ATC	<ul style="list-style-type: none"> <input type="checkbox"/> Performs scram preparatory actions per DGP 02-03, Reactor Scram, as directed. <ul style="list-style-type: none"> ○ Scram preparatory conditions already exist.
	BOP	<ul style="list-style-type: none"> ■ Determines/announces that C ERV closed when fuses pulled.

Event Four – Spurious ERV Opening.		
Trigger	Position	Crew Actions or Behavior
	CRS	<ul style="list-style-type: none"> ■ Declares “C” ERV inoperable. ■ Determines following Technical Specifications apply: <ul style="list-style-type: none"> • 3.4.3, Safety and Relief Valves, Condition A.1: Restore the relief valve to OPERABLE status within 14 days. • 3.5.1, ECCS Operating, Condition G.1: Restore ADS valve to OPERABLE status within 14 days. • 3.6.1.8, Suppression Chamber–to–Drywell Vacuum Breaker, SR 3.6.1.8.2: Perform a functional test of each required vacuum breaker within 12 hours. • May reference 3.6.2.1.A for Torus Temperature • May reference 3.3.6.3.A for ERV instrumentation • May reference 3.6.1.6, Low Set Relief Valves, Condition A.1: Restore to Operable status within 14 days.
	CRS	<ul style="list-style-type: none"> ❑ Directs performance of Suppression Chamber–to–Drywell Vacuum Breaker testing.
	TEAM	<ul style="list-style-type: none"> ❑ May enter and perform DGA 7, Unpredicted Reactivity Addition
<p style="text-align: center;"><u>Event 4 Completion Criteria:</u></p> <ul style="list-style-type: none"> • The failed ERV is closed, • Technical Specification determination completed, <p>AND/OR,</p> <ul style="list-style-type: none"> • At the direction of the Lead Examiner. 		

Event Five – FWLC Controller Setpoint Drifts High		
Trigger	Position	Crew Actions or Behavior
8		<u>Simulator Operator:</u> At the discretion of the Lead Examiner, activate trigger 8 , which causes the FWLC setpoint to drift high.
		<u>Role Play:</u> Support Personnel: respond you will assist as directed.
	TEAM	<input type="checkbox"/> Determines RPV level is increasing.
	CRS	<input type="checkbox"/> Enters DOA 0600-01, Transient Level Control. <input checked="" type="checkbox"/> Directs ATC to control RPV level manually.
	ATC	<input checked="" type="checkbox"/> Places FWLC in MAN and manually controls RPV level.
	BOP	<input checked="" type="checkbox"/> Assists as directed.
	TEAM	<input type="checkbox"/> May enter DGA 07, Unpredicted Reactivity Addition.
	CRS	<input type="checkbox"/> Contacts support personnel for assistance.
<p style="text-align: center;"><u>Event 5 Completion Criteria:</u></p> <ul style="list-style-type: none"> • RPV level stabilized, <p>AND/OR,</p> <ul style="list-style-type: none"> • At the direction of the Lead Examiner. 		

Event Six – RBCCW Pump Trip		
Trigger	Position	Crew Actions or Behavior
9		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 9, which trips 2A RBCCW pump.</p>
		<p><u>Role Play:</u></p> <p>NLO to check 2B RBCCW pump operation: Wait 2 min, then report “2B RBCCW pump is operating normally”.</p> <p>NLO to check 2A RBCCW pump breaker: Wait 2 min, then report “2A RBCCW pump breaker has an overcurrent target up”.</p> <p>NLO to check 2A RBCCW pump: Wait 2 min, then report “2A RBCCW pump motor is very hot to the touch”.</p>
	BOP	<p><input type="checkbox"/> Acknowledges and announces alarm(s):</p> <ul style="list-style-type: none"> ○ 923-1 C-1, U2 or U3 RBCCW Pump Trip ○ 923-1 D-1, U2 or U3 RBCCW Press Lo (may not come up) <p>■ Starts 2B RBCCW pump.</p> <p><input type="checkbox"/> Sends an operator to check RBCCW system status.</p> <p><input type="checkbox"/> Performs DOA 6500-10, 4KV Circuit Breaker Trip, actions as directed.</p>
	CRS	<p><input type="checkbox"/> May enter DOA 3700-01, Loss of Reactor Building Closed Cooling Water (RBCCW) System.</p> <p>■ Directs BOP to start 2B RBCCW pump.</p> <p><input type="checkbox"/> Enters DOA 6500-10, 4KV Circuit Breaker Trip.</p>
	ATC	<p><input type="checkbox"/> Assists as directed.</p>
	CRS	<p><input type="checkbox"/> Contacts support personnel for assistance.</p>
<p style="text-align: center;"><u>Event 6 Completion Criteria:</u></p> <ul style="list-style-type: none"> • Standby RBCCW pump started, <p>AND/OR,</p> <ul style="list-style-type: none"> • At the direction of the Lead Examiner. 		

Event Seven –Loss of RBCCW		
Trigger	Position	Crew Actions or Behavior
10		<p><u>SIMULATOR OPERATOR:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 10, which simulates a leak in the Reactor Building from the RBCCW system.</p> <p>As the NLO sent to defeat the RBV high Drywell pressure and RPV water level interlocks (wait 5 min) activate trigger 11 and then report: “the RBV high Drywell pressure and RPV water level interlocks are defeated”.</p> <p>Verify trigger 12 automatically activates when East RBFDS mass is >7950.0 (variable wamrfsa2). This holds the East RBFDS mass above the High High level.</p> <p>Verify triggers 16 thru 19 automatically activate when all RBCCW pumps are OFF. This returns overrides to normal.</p>
11		
12		
16-19		
		<p><u>ROLE PLAY:</u></p> <p>As the NLO sent to check RBCCW head tank level (wait 2 min) then report: “RBCCW head tank level is out of the sight glass low. The head tank makeup valve is open”.</p> <p>As the NLO to check RBCCW head tank drain sightglass (wait 1 min) then report “there is no flow through the RBCCW head tank drain sightglass”.</p> <p>As the NLO sent to check RBCCW system (wait 2 min) then report: “There is a very large leak coming from the RBCCW HX area. The floor is flooded with water”.</p> <p>If asked as the NLO about isolating the leak, report: The leak cannot be isolated”.</p> <p>As the NLO sent to check the RBFDS (wait 2 min) then report: “the East Reactor Building Floor Drain sump is overflowing onto the Torus basement floor”.</p> <p>If called as the Radwaste Control Room Operator and asked about the inputs into the Radwaste sumps, report: “the Floor Drain input has increased significantly”.</p>
	BOP	<ul style="list-style-type: none"> ■ Announces alarm 923-1 F-1, U2 RBCCW Head Tank Lvl Hi/Lo <ul style="list-style-type: none"> • Refers to DAN and performs actions. • Monitors operation of the RBCCW system. • Dispatches NLO to check U2 RBCCW Head tank level. • Announces entry into DOA 3700-01, Loss of Cooling by Reactor Building Closed Cooling Water (RBCCW) System, is required.
	CRS	<ul style="list-style-type: none"> ■ Enters DOA 3700-01, Loss of Cooling by Reactor Building Closed Cooling Water (RBCCW) System, and directs actions.
	BOP	<ul style="list-style-type: none"> ■ Performs DOA 3700-01, Loss of Cooling by Reactor Building Closed Cooling Water (RBCCW) System, actions as directed. ■ Announces alarm 923-4 A-3, U2 E. Rbfd Sump Lvl Hi-Hi <ul style="list-style-type: none"> • Dispatches operators to check sumps • Announces entry to DEOP 300-01, Secondary Containment Control, is required.
	CRS	<ul style="list-style-type: none"> ■ Enters DEOP 0300-01, Secondary Containment Control. ■ May enter DOA 0040-02, Localized Flooding in Plant, and direct actions.

Event Seven –Loss of RBCCW		
Trigger	Position	Crew Actions or Behavior
	BOP	<input type="checkbox"/> Performs DOA 0040-02, Localized Flooding in Plant, actions as directed.
	CRS	<input type="checkbox"/> May direct scram preparatory actions per DGP 02-03, Reactor Scram.
	ATC	<input type="checkbox"/> Performs scram preparatory actions per DGP 02-03, Reactor Scram, as directed. <ul style="list-style-type: none"> Scram preparatory actions already exist.
	CRS	Determines RBCCW System loss CANNOT be prevented and performs / directs: <ul style="list-style-type: none"> Manual scram per DGP 02-03, Reactor Scram. May enter DOA 0202-01, Recirculation (Recirc) Pump Trip – One or Both Pumps and direct tripping both Recirc pumps. Directs tripping RBCCW pumps.
	ATC / BOP	<ul style="list-style-type: none"> Performs the scram actions per their hardcards. Trips Recirc pumps Trips RBCCW pumps
<p style="text-align: center;"><u>Event 7 Completion Criteria:</u></p> <ul style="list-style-type: none"> Reactor scram ordered, <p>AND/OR,</p> <ul style="list-style-type: none"> At the direction of the Lead Examiner. 		

Event Eight – An ECCS suction line break occurs resulting in a lowering torus water level.		
Trigger	Position	Crew Actions or Behavior
13		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 13 which starts an ECCS suction line break in the torus basement.</p> <p><u>Note:</u></p> <p>It takes about 20 minutes for torus level to reach 11 feet. <i>At the discretion of the lead examiner, use the cues later in this event to jump ahead in time to expedite the level drop if desired.</i></p>
	BOP	<ul style="list-style-type: none"> ■ Reports the following alarms: <ul style="list-style-type: none"> • 923 A-3 (B-2), U2 E(W) RBFD SUMP LVL HI-HI • 902-4 C-23, Torus Narrow Range Wtr Lvl Lo ■ Checks the torus narrow range level indicator. Reports level dropping. □ Directs NLO to perform DOS 1600-02, Torus Level Verification Using Local Sight Glass. ■ Directs NLO to investigate leakage to torus basement. ■ Verifies proper operation of the RBFD Sump pumps. (Will require resetting the Group 2 isolation at both the 902-5 panel and the 923-4 panel for the sump pumps to operate if a Group 2 Isolation occurs).
		<p><u>Role Play:</u></p> <p>As the NLO sent to verify Torus level locally using sight glass (wait 4 min), then report: “Local Torus level is ... (use value from variable ppc232, unless it is <20”, then report it is below the sightglass)”.</p> <p>As the NLO sent to investigate leakage (wait 2 min) or if not sent, then as the NLO on his round, report: “there is a large rupture from a pipe attached between the Torus shell and the Torus suction ring header near the East LPCI Corner room. The Torus basement floor is covered with water”. There is no valve on the line”.</p> <p>As the NLO sent to report LPCI corner status (wait 2 min), then report: “there is no water in either LPCI corner room”.</p> <p>As Maintenance sent to determine if the leak can be stopped (wait 3 min), then report: “Maintenance cannot stop the leak”.</p>
	CRS	<ul style="list-style-type: none"> □ May enter DOA 0040-02, Localized Flooding in Plant.
	BOP	<p>Performs the following actions per DOA 0040-02, Localized Flooding in Plant, as directed:</p> <ul style="list-style-type: none"> ■ Makes PA announcement. ■ Directs NLO to investigate leakage to torus basement. □ Notifies Radiation Protection and Security as time permits.
		<p><u>Cue: (if desired for time compression) (to be handled by Lead Examiner)</u></p> <p>When torus level is < 14.5 feet and/or at the discretion of the lead examiner, cue the crew that we are taking a time jump and that both torus wide range level meters indicate 12.5 feet and are dropping at about 1 foot per 10 minutes.</p>

Event Eight – An ECCS suction line break occurs resulting in a lowering torus water level.

Trigger	Position	Crew Actions or Behavior
14		<p><u>Simulator Operator:</u></p> <p>If the Team has not prevented HPCI operation prior to reaching a Torus level of 12 feet and at the discretion of the Lead Examiner, activate trigger 14, which causes a spurious initiation of HPCI.</p>
	CRS	<p>Enters and directs performance of DEOP 0200-01, Primary Containment Control:</p> <ul style="list-style-type: none"> <input type="checkbox"/> May attempt to add water to the Torus by opening the HPCI 14 valve. <input type="checkbox"/> May decide to anticipate RPV Blowdown: <ul style="list-style-type: none"> • Directs opening turbine bypass valves. ■ ✓ Directs BOP to prevent HPCI from operating before torus level reaches 12 feet.
	BOP	<ul style="list-style-type: none"> ■ Opens turbine bypass valves. (if directed)
	BOP	<p>Performs the following actions per DEOP 200-01, Primary Containment Control, as directed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> May attempt to add water to the torus by opening the HPCI 14 valve. ■ Monitors/Reports DEOP 200-01 entry parameters. ■ ✓ Prevents HPCI from operating.
	CRS	<p>Enters DEOP 0300-01, Secondary Containment Control, and directs:</p> <ul style="list-style-type: none"> <input type="checkbox"/> If Reactor Building Ventilation isolates when unit is scrammed, directs restarting Reactor Building Ventilation.
	BOP	<p>Performs DEOP 300-01, Secondary Control, as directed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Time permitting, restarts Reactor Building Ventilation (if it isolates when the reactor is scrammed).
		<p><u>Cue: (if time compression was used above)</u></p> <p>10 minutes after the initial time compression cue was given and/or at the discretion of the lead examiner, cue the crew that both the Torus wide range level meters indicate 11.5 feet and are dropping at a rate of about 1 foot per 10 minutes.</p>
	CRS	<p>When informed that torus level is approaching 11 feet:</p> <p>Enters DEOP 0400-02, Emergency Depressurization, and directs:</p> <ul style="list-style-type: none"> ■ Initiation of Isolation Condenser to maximum flow. <input type="checkbox"/> Verification that SP/L >6 feet. ■ ✓ Opening all ADS valves. (Only 4 ADSVs available; fuses pulled on “C”) <input type="checkbox"/> Verification relief valves are open. <input type="checkbox"/> Directs other Emergency Depressurization systems initiated: <ul style="list-style-type: none"> ○ May direct fuses installed for “C” ADSV. ○ Directs turbine bypass valves opened. (May already be open for anticipation of Emergency Depressurization)

Event Eight – An ECCS suction line break occurs resulting in a lowering torus water level.

Trigger	Position	Crew Actions or Behavior
	BOP	<p>Performs DEOP 0400-02, Emergency Depressurization, actions as directed:</p> <ul style="list-style-type: none"> ■ Initiates Isolation Condenser to maximum flow □ Verifies that SP/L >6 feet. ■ √ Opens ADS valves. (Only 4 ADSVs available; fuses pulled on “C”) □ Verifies all relief valves are open. □ Initiates other Emergency Depressurization systems as directed: <ul style="list-style-type: none"> ○ May direct fuses installed for “C” ADSV. ○ Opens turbine bypass valves. (May already be open for anticipation of Emergency Depressurization)
<p style="text-align: center;"><u>Events 8 / Scenario Completion Criteria:</u></p> <ul style="list-style-type: none"> • HPCI operation prevented, • RPV depressurization in progress, <p>AND/OR,</p> <ul style="list-style-type: none"> • At the direction of the Lead Examiner. 		

Critical Tasks:	
(PC-3.2)	When suppression pool level cannot be maintained above top elevation of the HPCI Exhaust (12'), TRIP AND PREVENT HPCI operation irrespective of adequate core cooling.
(PC-3.3)	When it is determined that suppression pool water level cannot be held above 11 feet wide range, INITIATE emergency depressurization

REFERENCES

PROCEDURE	TITLE
DAN 902-4 C-23	TORUS NARROW RANGE WTR LVL LO
DAN 902-5 A-3	ROD DRIFT ALARM
DAN 902-5 B-3	ROD WORTH MIN BLOCK
DAN 902-5 C-3	ROD OUT BLOCK
DAN 902-6 F-8	RFP VENT FAN TRIP
DAN 902-8 A-7	U2 DIESEL GEN TROUBLE
DAN 923-1 C-1	U2 OR U3 RBCCW PUMP TRIP
DAN 923-1 D-1	U2 OR U3 RBCCW PRESS LO
DAN 923-1 F-1	U2 RBCCW HEAD TANK LVL HI/LO
DAN 923-4 A-3 (B-2)	U2 E(W) RBFD SUMP LVL HI-HI
DEOP 0100-00	RPV CONTROL
DEOP 0200-01	PRIMARY CONTAINMENT CONTROL
DEOP 0300-01	SECONDARY CONTAINMENT CONTROL
DEOP 0400-02	EMERGENCY DEPRESSURIZATION
DGA 07	UNPREDICTED REACTIVITY ADDITION
DGP 02-03	REACTOR SCRAM
DGP 03-04	CONTROL ROD MOVEMENTS
DOA 0040-02	LOCALIZED FLOODING IN PLANT
DOA 0250-01	RELIEF VALVE FAILURE
DOA 0300-06	RPIS FAILURE
DOA 0300-12	MISPOSITIONED CONTROL ROD
DOA 0600-01	TRANSIENT LEVEL CONTROL
DOA 3700-01	LOSS OF COOLING BY REACTOR BUILDING CLOSED COOLING WATER (RBCCW) SYSTEM
DOA 5750-01	VENTILATION SYSTEM FAILURE
DOA 6500-10	4KV CIRCUIT BREAKER TRIP
DOP 0400-02	ROD WORTH MINIMIZER
DOP 6700-20	480V CIRCUIT BREAKER TRIP
DOS 0300-06	CRD ABNORMALITY RECORD
DOS 1600-02	TORUS LEVEL VERIFICATION USING LOCAL SIGHT GLASS
DOS 6600-01	DIESEL GENERATOR SURVEILLANCE TESTS.
T.S. 3.1.3	CONTROL ROD OPERABILITY
T.S. 3.3.6.3	ERV INSTRUMENTATION
T.S. 3.4.3	SAFETY AND RELIEF VALVES
T.S. 3.5.1	ECCS OPERATING
T.S. 3.6.1.6	LOW SET RELIEF VALVES
T.S. 3.6.1.8	SUPPRESSION CHAMBER-TO-DRYWELL VACUUM BREAKER
T.S. 3.6.2.1	TORUS TEMPERATURE

EXAM ILT-N-1 QUANTITATIVE ATTRIBUTES	
7	Total malfunctions inserted (4 to 8) / (10 to 14)
1	Malfunctions that occur after EOP entry (1 to 4) / (3 to 6)
3	Abnormal events (1 to 2) / (2 to 3)
1	Major transients (1 to 2) / (2 to 3)
3	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

NRC Exam ILT 08-1
SCENARIO ILT-N-1.cae
Written by FRF
Rev 00
Date 09/08

INITIAL CONDITIONS

Overrides alarm 902-3 C-03 off.
imf ser0004 off
imf ser0019 off

Overrides W. LPCI/CS sump alarm OFF
imf ser0557 off

Prevents 2B RFP vent fan from starting
ior fwdvf4 trip

Overrides 2B RFP vent fan lights. Necessary to prevent flickering when fan started.
ior fwlvfind2 on|2
ior fwlvfind4 off|2
ior fwlvfind6 off|2

Inserts C ERV binding of 20%.
imf ads3cbn 20.0|2

Removes alarm 902-3 A-2, MSL Rad Mon Hi alarm. (Should not be up)
imf ser0024 off|4
imf ser0058 off|4
imf ser0060 off|4
imf ser0062 off|4

EVENT TRIGGERS

Event Trigger 1 Sets U2 EDG droop to 5 and forces up alarm 902-8 A-7, U2 Diesel Gen Trouble.
trgset 1 "0"|6
irf t02 (1) false|6
imf ser1589 (1) on|6

Event Trigger 2 clears alarm 902-8 A-7.
trgset 2 "sezpoint(1589)"|6
trg 2 "imf ser1589 (0 10) normal"|6

Event Trigger 3 Fails all control rod F-05 RPIS indications.
trgset 3 "0"|8
imf rdfailf5 (3)|8
imf cr043s (3) bad|8

Event Trigger 4 trips 2A RFP vent fan.
trgset 4 "0"|8
ior fwdvf1 (4) off|10
ior fwdvf3 (4) trip|10
ior fwlvfind5 (4) on|10
imf ser1336 (4) on|10

Event Trigger 5 Automatically activates when 2B RFP vent fan control switch is placed to CLOSE.


```

# Deletes the override for the 2B RFP vent fan control switch TRIP position.
# NOTE: The digital control switch variable {fwdvf_drw(2,1)} to trigger the Event must be manually
# entered in the EVENT program because the CAEP program will not handle it.
trgset 5 "0"|12
trg 5 "dor fwdvf4"|12

# Event trigger 6 causes the C ERV setpoint to drift to fail it open.
Trgset 6 "0"|12
imf ads3csd (6) 75.0|12

# Event Trigger 7 Deletes C ERV binding malfunction so valve will close and removes fuses for the C ERV.
Trgset 7 "0"|14
trg 7 "dmf ads3cbn"|14
irf adsrfe (7) pulled|14

# Event Trigger 8 Drifts the FWLCS setpoint.
Trgset 8 "0"|14
irf rllmls (8) 50.0 5:00|14

# Event Trigger 9 Trips 2A RBCCW pump.
Trgset 9 "0"|16
imf q01 (9)|16

# Trigger 10 Simulates a RBCCW leak in the Rx Bldg.
# Ramps E. RBFDS mass to fill it.
# Overrides alarm 923-1 E-2 RBCCW Head Tank Lvl Lo.
# After 10 min, ramps RBCCW Disch pressure meter to 10 psig over 5 min.
# After 11 min, overrides alarm 923-1 D-1.
# After 12 min, overrides 902-4 G-3 ON.
# After 12:15 min, overrides 902-4 G-7 ON.
Trgset 10 "0"|16
trg 10 "ramp wamrfsa2 5000.0 8000.0 3:00"|16
imf ser1784 (10) on|18
imf ser1735 (10 11:00) on|18
imf ser0369 (10 12:00) on|18
imf ser0322 (10 12:15) on|18

# Trigger 11 Jumps the RBV Group II Isolation signal.
Trgset 11 "0"|20
irf cirbvnt (11) lifted|20

# Event Trigger 12 Activates when E. RBFDS mass is >7950.0, which holds E. RBFDS mass above Hi Hi level.
Trgset 12 "wamrfsa2 .gt. 7950.0"|20
trg 12 "ramp wamrfsa2 7950.0 8000.0 10:00"|20

# Event Trigger 13 Inserts an ECCS suction line break.
trgset 13 "0"|22
trg 13 "ramp wamwlps 200.0 201.0 1:00:00"|22
imf csbrksev (13) 100.0|22
imf cspbbbrk (13) 100.0|22

# Event Trigger 14 Inserts a spurious HPCI initiation.
trgset 14 "0"|24
imf hpinit (14)|24

##### Triggers 16-19 Activate when no RBCCW pumps are running. #####

# Event Trigger 16 Deletes RBCCW pressure meter override.
Trgset 16 ".not. (wrsp(1) .or. wrsp(2) .or. wrsp(3))"|28
trg 16 "dor wrppdsh1"|24

```

Event Trigger 17 Returns alarm 923-1 D-1 override to normal.
Trgset 17 ".not. (wrsp(1) .or. wrsp(2) .or. wrsp(3))"|30
trg 17 "imf ser1735 normal"|24

Event Trigger 18 Returns alarm 902-4 G-3 override to normal.
Trgset 18 ".not. (wrsp(1) .or. wrsp(2) .or. wrsp(3))"|32
trg 18 "imf ser0369 normal"|26

Event Trigger 19 Returns alarm 902-4 G-7 override to normal.
Trgset 19 ".not. (wrsp(1) .or. wrsp(2) .or. wrsp(3))"|34
trg 19 "imf ser0322 normal"|26

Triggers 20-22 Activate when Trigger 5 activates.

Event Trigger 20 Deletes 2B RFP vent fan CLOSE light override.
Trgset 20 "et_array(5)"|36
trg 20 "dor fwlvfind4"|36

Event Trigger 21 Deletes 2B RFP vent fan AUTO TRIP light override.
Trgset 21 "et_array(5)"|36
trg 21 "dor fwlvfind6"|36

Event Trigger 22 Deletes 2B RFP vent fan OFF light override.
Trgset 22 "et_array(5)"|38
trg 22 "dor fwlvfind2"|38

Triggers 23-24 Activate when 2A RFP vent fan is placed to PTL.

NOTE: The digital control switch variable {fwdvf_drw(1,3)} to trigger Events 23-24 must be manually
entered in the EVENT program because the CAEP program will not handle it.

Event Trigger 23 Deletes 2A RFP vent fan AUTO TRIP light override.
Trgset 23 "0"|38
trg 23 "dor fwlvfind5"|38

Event Trigger 24 returns SER for 2A RFP vent fan trip alarm to NORMAL..
Trgset 24 "0"|40
trg 24 "mmf ser1336 normal"|40

END

Date: TODAY

Unit 2 Turnover

Online Information

0 MWe

Online Risk: Green

Risk Equipment:

Protected Pathway(s)

Shutdown Information

Time to Boil: N/A

Shutdown Risk: N/A

Reactivity Management

Limit: MFLCPRN/A

Action Level: N/A

S/D Method: DGP 02-01

Unit 2 Priorities

Continue Unit Startup.

Complete U2 EDG Surveillance

LCORAs

2	<table border="1"><tr><td>LCORA</td><td>3.8.1.B</td></tr><tr><td>Title</td><td>U2 EDG</td></tr></table>	LCORA	3.8.1.B	Title	U2 EDG	DOS 6600-01	Start 2 hours ago Clock Ends in 7 days
LCORA	3.8.1.B						
Title	U2 EDG						

Compensatory Actions

Degradation
Documentation

Frequency
Responsible

Compensatory Action

Unit 2 Conditions, Status, Abnormalities

Reactor Power on IRM range 8 with one bypass valve partially open.

The QNE is preparing a new REMA. Expected to be ready in ½ hour.

The U2 EDG is ready to be shutdown. All data has been collected.

Unit 2 Abnormal Component Position

U2 Open Operability Determinations with Compensatory Actions

Shift 1 Activities (X = Completed)

☐
☐

Shift 2 Activities

- ☐ DGP 01-01
- ☐ DOP 5600-06
- ☐ DOS 6600-01

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, Unit Startup

DOP 5600-06, Main Turbine Startup

Unit 2 Surveillances in Progress

DOS 6600-01, Ready to continue procedure at step I.15.g.

Date: TODAY

Unit 2 Turnover

Online Information

0 MWe

Online Risk: Green

Risk Equipment:

Protected Pathway(s)

I.

II.

Shutdown Information

Time to Boil: N/A

Shutdown Risk: N/A

Reactivity Management

Limit: MFLCPRN/A

Action Level: N/A

S/D Method: DGP 02-01

Unit 2 Priorities

Start 2B RBCCW Pump, secure 2/3 Pump
for Oil change.
Continue Unit Startup.

LCORAs

LCORA Title None

Start
Clock Ends

Compensatory Actions

Degradation
Documentation

Frequency
Responsible

Compensatory Action

Unit 2 Conditions, Status, Abnormalities

Reactor Power on IRM range 8 with one bypass valve partially open.

The QNE recommends single notching control rod move step 21 out to rod position 32. This is to avoid short periods due to proximity of the rods to the SRMs.

NLO in field for RBCCW pump swap.

Unit 2 Abnormal Component Position

U2 Open Operability Determinations with Compensatory Actions

Shift 1 Activities (X = Completed)

☐
☐

Shift 2 Activities

☐ DGP 01-01
☐ DOP 5600-06
☐ DOP 3700-02

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, Unit Startup

DOP 5600-06, Main Turbine Startup

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

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-2

RAISE REACTOR POWER USING RECIRCULATION FLOW

CORE SPRAY SYSTEM INOPERABLE

RFP DEVELOPS OIL LEAK

MASTER RECIRC FLOW CONTROLLER FAILS DOWNSCALE

SWAP TBCCW PUMPS

INSTRUMENT AIR COMPRESSOR TRIP

LOSS OF INSTRUMENT AIR / REACTOR SCRAM

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

Rev. 00

09/08

Developed By:

Exam Author

Date

Approved By:

Facility Representative

Date

Scenario Outline

Station: <u>Dresden Generating Station</u>	Scenario No.: <u>ILT-N-2</u>	Class ID: <u>2009-301</u>
---	-------------------------------------	----------------------------------

Evaluators <hr/> <hr/> <hr/>	<table style="width: 100%;"> <tr> <td style="width: 60%;">Operators</td> <td style="width: 40%; text-align: right;">/ crew position</td> </tr> <tr> <td><hr/></td> <td style="text-align: right;">/ ATC</td> </tr> <tr> <td><hr/></td> <td style="text-align: right;">/ BOP</td> </tr> <tr> <td><hr/></td> <td style="text-align: right;">/ CRS</td> </tr> </table>	Operators	/ crew position	<hr/>	/ ATC	<hr/>	/ BOP	<hr/>	/ CRS
Operators	/ crew position								
<hr/>	/ ATC								
<hr/>	/ BOP								
<hr/>	/ CRS								

Initial Conditions: Rx Power ~ 33%

Turnover: Raise Power With Recirculation Flow

Event No.	Malfunction No.	Event Type*	Event Description
1	NONE	R ATC CRS	Recirc - Raise Reactor Power using Recirculation Flow.
2	CSV4A SCAFILOF	C BOP CRS	Core Spray - 'A' CS System Low Pressure. ^T
3	NONE	C ATC CRS	RFP - 2B RFP Develops an Oil Leak, Must Swap.
4	RRMASDND	I ATC CRS	Recirc - Master Recirc Flow Controller Fails Downscale / Secondary Containment Doors Found Open. ^T
5	NONE	N BOP CRS	TBCCW - Swap TBCCW Pumps.
6	N33	C BOP CRS	Inst Air - Instrument Air Compressor Trip.
7	NP2	M TEAM	Inst Air - Instrument Air Leak / Manual Scram.
8	ICSTM RB	M TEAM	Iso Cond - Steam Inlet Line Leak into Reactor Building.

* (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 30% reactor power.
- Unit 3 is in Mode 1.

Scenario Sequence

- The Team raises reactor power using recirculation flow.
- A Core Spray System low-pressure alarm is received and the CRS must review Tech Specs and declare the loop INOP.
- The Team receives a report from the field that 2B RFP has an oil leak. The Team starts 2A RFP and secures 2B RFP.
- The Master Recirc Flow Controller fails downscale. The NSO will lockout both recirc scoop tubes. A short time later, a report from the field that Secondary Containment is breached by doors found open. The crew directs the doors be closed.
- The Team swaps TBCCW pumps.
- 3C Instrument Air Compressor (IAC) trips. Instrument Air pressure begins slowly dropping. Standby Air Compressor 2B is started to restore air pressure.
- A large leak develops in the Instrument Air system. The Team will scram the reactor due to the leak severity. An electrical ATWS occurs and ARI is used to insert the control rods.
- After the Team has stabilized the plant, an unisolable Isolation Condenser Steam Line Leak into the Reactor Building occurs. Due to a Fuel Element Failure (FEF), Rx Bldg rad levels will increase to the point that the Team will perform an Emergency Depressurization.

Event One – Raises Reactor Power Using Recirculation Flow

- The Team raises reactor power using recirculation flow as directed by the QNE.

Malfunctions required: 0

None

Success Path:

- Raises reactor power using recirculation flow.

Event Two – A Core Spray System Low Pressure Alarm

- A Core Spray System low-pressure alarm is received.

Malfunctions required: 1

- (A Core Spray System low-pressure)

Success Path:

- CRS declares the system INOP and references Tech Specs.

Event Three – 2B RFP develops an oil leak, must swap

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

Malfunctions required: 1

- 2B RFP oil leak

Success Path:

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

Event Four – Master Recirc Flow Controller Failure / Secondary Containment Doors Open

- Master Recirc Flow Controller fails downscale. The NSO will lock out scoop tubes. Later a report is received that Secondary Containment Doors are open.

Malfunctions Required: 1

- (Master Recirc Flow Controller fails down)

Success Path:

- Locks out both scoop tubes.
- Performs DOA 0202-03, Reactor Recirc System Flow Control Failure.
- Directs the Secondary Containment Doors closed.

Event Five – Swap TBCCW Pumps

- The crew swaps TBCCW pumps.

Malfunctions required: 0

- None.

Success Path:

- 2B TBCCW pump started and the 2A TBCCW pump stopped.

Event Six – Instrument Air Compressor Trip

- 3C Instrument Air Compressor trips. Instrument Air pressure begins slowly dropping.

Malfunctions required: 1

- 3C Instrument Air Compressor trips

Success Path:

- Standby Air Compressor 2B is started.

Event Seven – Loss of Instrument Air / Reactor Scram

- A large leak develops in the Instrument Air system. An electrical ATWS occurs.

Malfunctions required: 2

- Instrument Air Leak
- Electrical ATWS

Success Path:

- Initiate ARI.

Event Eight – 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 IAW with TQ-JA-150-08, SIMULATOR EXAMINATION BRIEFING.
 - a. Provide the Crew with a copy of DGP 03-01, Power Changes.
 - b. Provide the Crew with a copy of DOP 3200-03, Startup Of Second Or Third Reactor Feed Pump Or Shifting To Alternate Reactor Feed Pump.
 - c. Provide the Crew with a copy of DOP 3800-01, Turbine Building Closed Cooling Water System (TBCCW).
 - d. 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)
 - a. Initialize simulator in an IC with the Unit at 33% power. (IC 152 on the Exam Jump drive is setup for the following conditions)
 - b. Establish the following conditions:
 - 1) Core flow at ~40 Mlbm/hr. (Adjust control rods if necessary to maintain ~33% power)
 - c. Verify:
 - 1) 2B RFPs running.
 - 2) 2A RFP OFF.
 - 3) 2C RFP in STBY on Bus 22.
 - d. Verify:
 - 1) 2A and 2C Condensate pumps running.
 - 2) 2B Condensate pump OFF.
 - 3) 2D Condensate pump in STBY
 - e. Verify running Condensate pump amps within operational limits.
 - f. Verify 2A FRV in Master Auto with 2B FRV in MAN.
 - g. Verify 2A TBCCW pump running and 2B off.
 - h. Verify 2A and 3C IACs running with 2B IAC off. (The CAEP file will close 2B IAC disc vlv per OPS)

NOTE: Complete the above setup before running the CAEP file.

 - i. Run the initial setup CAEP file: ILT-N-2.cae
 - j. Open, BUT DO NOT RUN YET, CAEP file: ILT-N-2 Rad.cae

- 3 Complete the Simulator Setup Checklist.

NOTE: The variables changed in CAEP file "ILT-N-2 Rad.cae" do not reset when the simulator is reset. CAEP file "ILT-N-2 Clear Rad.cae" will reset the variables.

- 4 After scenario completion and when the Lead Examiner releases the simulator, perform the following:
 - a. Place the simulator in RUN.
 - b. Run CAEP file: ILT-N-2 Clear Rad.cae
 - c. Freeze and reset the simulator to the desired IC.
 - d. Verify the Rad levels are indicating normal values.

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

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

Event One – Raise Reactor Power using Recirculation Flow		
Trigger	Position	Crew Actions or Behavior
		<u>NOTE:</u> If the Team attempts to start the RFP before Event 3, report that “contractors are cleaning around the 2A RFP. Wait to start it”.
1		<u>FLOOR INSTRUCTOR / SIMULATOR OPERATOR / ROLE PLAY:</u> If the team announces that they will adjust gains, inform them an extra NSO will perform the adjustment. Then: <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. (Note: trigger 1 can be toggled OFF, then back ON as many times as necessary to adjust gains)
		<u>SIMULATOR OPERATOR / ROLE PLAY:</u> NLO to cut in condensate demin beds: Use instructor station drawing FW4 to cut in condensate demin beds and acknowledge the local trouble alarm. Provide appropriate communications.
	CRS	<ul style="list-style-type: none"> ■ Directs ATC to raise load with recirc flow to 58 Mlbm/hr core flow.
	ATC	Performs the following actions per DGP 03-01, Power Changes, and DOP 0202-03, Reactor Recirculation Flow Control System Operation, as directed: <ul style="list-style-type: none"> ■ Uses MASTER RECIRC FLOW CONTLR, 2(3)-262-22, potentiometer to raise flow AND control reactor power.
	BOP	Monitors Panels.
<u>Event 1 Completion Criteria:</u> <ul style="list-style-type: none"> • Sufficient power increase as determined by the Lead Examiner. 		

Event Two– Core Spray System Low Pressure Alarm

Trigger	Position	Crew Actions or Behavior
2		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 2, which closes ECCS Keep Fill to 2A Core Spray loop and cracks open Core Spray 4A valve to bleed the pressure down.</p>
		<p><u>Role Play:</u></p> <p>NLO to investigate ECCS Jockey pump, (wait 3 min.): Report, “the ECCS jockey pump appears to be operating normally but I hear flow noise in the area”.</p> <p>If asked, wait 2 minutes: Report, “Water is spraying onto the 2A Core Spray motor from the flange of relief valve RV 2-1402-28A”.</p> <p>If asked local Core Spray system pressure, wait 1 minute: Report, “Local Core Spray system pressure is approximately (Use pressure from instructor station drawing CS1) psig.</p> <p>If sent to vent system: Report, “No water is coming out the vent.”</p> <p>If calling radwaste to ask about RBEDT levels: Report, “The rate of input into the Unit 2 RBEDT has increased, the level is currently 60%.”</p>
	BOP	<p>Reports alarm to CRS.</p> <p>Carries out actions of DAN 902-3 D-7, 2A/B CORE SPRAY HDR PRESS LO:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verify FLOW TEST VLV MO 2-1402-4A is fully closed. <input type="checkbox"/> Verify PP DISCH VLV MO 2-1402-24A is fully open. <input type="checkbox"/> Check for relief valve RV 2-1402-28A 2A CORE SPRAY PMP DISCH HDR RV leaking to Reactor Building Equipment Drain Tank OR valves leaking into Torus. <input type="checkbox"/> Notify Operations Shift Supervisor. <input type="checkbox"/> Directs WEC to send Operators out to investigate. <input type="checkbox"/> Directs an Equipment Attendant to inspect ECCS jockey pump for proper operation. ■ Places 2A Core Spray pump in PTL. <input type="checkbox"/> May direct 2A Core Spray pump discharge valve closed.
	ATC	<ul style="list-style-type: none"> <input type="checkbox"/> Assists BOP with carrying out actions of DAN as necessary.

Event Two– Core Spray System Low Pressure Alarm		
Trigger	Position	Crew Actions or Behavior
	CRS	<input type="checkbox"/> Directs carrying out actions of the DAN. <input checked="" type="checkbox"/> References Tech Spec 3.5.1 Condition B1. ⇒ Required action, restore Low pressure ECCS injection/spray subsystem to OPERABLE status within 7 days. (Surveillance Requirement SR 3.5.1.1.) <input checked="" type="checkbox"/> Orders 2A Core Spray pump placed in PTL. <input type="checkbox"/> May direct closing keepfill to 2A Core Spray system. (2-1425-500) OR <input checked="" type="checkbox"/> May direct closing keepfill to 2A Core Spray system. (2-1402-36A) <input type="checkbox"/> May direct 2A Core Spray pump discharge valve closed. <input type="checkbox"/> Notifies Shift manager <input type="checkbox"/> Notifies maintenance groups.
<p style="text-align: center;"><u>Event 2 Completion Criteria:</u></p> <ul style="list-style-type: none"> • 2A Core Spray system declared inoperable, <p>AND/OR,</p> <ul style="list-style-type: none"> • At the discretion of the Lead Examiner. 		

Event Three - 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, "While I was on rounds, I found 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 2B RFP".</p>
	ATC	<ul style="list-style-type: none"> ■ Acknowledges report from the field and relays it to the CRS.
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> May enter DOA 0600-01, Transient Level Control. ■ Directs ATC to start 2A RFP and secure 2B RFP.
	ATC	<p>Starts 2A RFP per DOA 0600-01, Transient Level Control, OR 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"> <input type="checkbox"/> Places RFPs Standby Selector switch, STBY PP SELECT in OFF position. <input type="checkbox"/> Closes MO 2-3201A, <input type="checkbox"/> Opens 2A RFP RECIRC VLV PCV 2-3201A by placing control switch in OPEN. <input type="checkbox"/> Verifies reactor water level is stable. <input type="checkbox"/> Verifies sufficient system pressures. <input type="checkbox"/> If previously closed, places MO 2-3201A, 2A PP DISCH VLV control switch to OPEN position. ■ Starts 2A RFP. <input type="checkbox"/> Verifies reactor water level is stable. ■ Verify RFP Auxiliary Oil Pump AUTO stops. <input type="checkbox"/> WHEN MO 2-3201A, 2C PP DISCH VLV, is fully open (the RED valve position indicating light is extinguished), THEN places 2A RFP RECIRC VLV PCV 2-3201A control switch in AUTO. <input type="checkbox"/> Directs NLO to perform checks on 2A RFP.

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

Trigger	Position	Actions or Behavior
	ATC	<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 2A and 2B RFPs. After a few minutes, report that the steps are completed.</p>
	CRS	<input type="checkbox"/> Directs 2B RFP Aux Oil PP secured to stop leak.
	ATC	<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>
	TEAM	<input type="checkbox"/> May direct Zinc injection lined up to 2A RFP per DOP 3200-09, Zinc Injection System Operation.
		<p><u>Role Play:</u></p> <p>Acknowledge request to realign Zinc Injection.</p>
<p style="text-align: center;"><u>Event 3 Completion Criteria:</u></p> <ul style="list-style-type: none"> • 2A RFP started and 2B RFP secured <p>AND/OR,</p> <ul style="list-style-type: none"> • At the direction of the Lead Examiner. 		

Event Four – Master Recirc Flow Controller Fails Downscale / Secondary Containment Doors Open		
Trigger	Position	Crew Actions or Behavior
3		<p><u>Simulator Operator:</u></p> <p>When the BOP is NOT near the 902-4 panel and at the discretion of the Lead Examiner, activate trigger 3, which will cause Master Recirc Flow Controller to fail downscale.</p>
	ATC	<ul style="list-style-type: none"> ■ Determines and announces Recirculation Flow transient occurring by observing any of the following: <ul style="list-style-type: none"> ○ Decrease in Recirc Loop Flow as indicated on FR 2-260-7. ○ Decrease in Rx Power indicated on WI 2-6040-59. ○ Decrease in Core Flow and DP on DPR/FR 2-263-110. ○ Decrease in Total Stm Flow on UR 2-640-27. ○ Decrease in Rx Pressure on P/FR 2-640-28. ○ Decrease in Total Feedwater Flow on UR 2-640-26. ○ Decrease in Power Level on RR 2-750-10A/D, & RR 2-750-10B/C.
	CRS	<ul style="list-style-type: none"> ■ Enters DOA 0202-03 Reactor Recirc System Flow Control Failure. □ May enter DGA 07, Unpredicted Reactivity Addition.
	ATC	<p>Performs the following actions per DOA 0202-03, Reactor Recirc System Flow Control Failure:</p> <ul style="list-style-type: none"> ■ Places 2A & B M-G Set Scoop Tube Power Lockout Reset Switches in the Lockout position. □ Verifies Core thermal power <2957 MWt. □ Verifies Recirc Pump NOT operating in the instability region of the MG Set voltage regulator AND uncontrolled pump flow AND speed oscillations are NOT occurring. □ Verifies NOT operating in the unstable region of the Power / Flow Map.
	ATC	<p>Completes actions of Recirc M-G Lockout in DOP 0202-12, Recirculation Pump Motor Generator Set Scoop Tube Operation.</p> <ul style="list-style-type: none"> □ Verifies alarm is received on annunciator 902-4 C-1(5), 2A(B) RECIRC M-G SCOOP TUBE PWR FAILURE. □ Places BOTH recirc pump speed control transfer stations in manual (MAN) at panel 902-4: <ul style="list-style-type: none"> • 2A(B) RECIRC PP SPEED CONTRL, 2-262-25A(B) □ Verify MASTER RECIRC FLOW CONTRL, 2-262-22, is in manual (MAN). ■ At the recirc pump speed control transfer station with the locked out scoop tube, rotate the potentiometer counterclockwise to set speed demand to minimum (30%): <ul style="list-style-type: none"> • 2A(B) RECIRC PP SPEED CONTRL, 2-262-25A(B) □ At panel 902-4, place an Equipment Status Tag on 2A(B) M-G SET SCOOP TUBE POWER LOCKOUT RESET switch stating the reason the recirc MG set scoop tube is locked out.
	BOP	<ul style="list-style-type: none"> □ Assist ATC as directed.

Event Four – Master Recirc Flow Controller Fails Downscale / Secondary Containment Doors Open		
Trigger	Position	Crew Actions or Behavior
	CRS	<input type="checkbox"/> Verifies actions of DOA 0202-03 and DOP 0202-12 are carried out.
		<p><u>Role Play:</u></p> <p>Call the control as the U2 NLO and report, “Both the inner and outer U2 Reactor Building Truck Interlock doors are blocked open with an air hose running through them”.</p> <p>NLO to have the doors unblocked and closed: Wait 5 min, then report, Both the inner and outer U2 Reactor Building Truck Interlock doors are blocked closed”.</p>
	TEAM	<ul style="list-style-type: none"> ■ Receives report that both the inner and outer U2 Reactor Building Truck Interlock doors are blocked open. ■ Directs NLO to close the doors.
	CRS	<ul style="list-style-type: none"> ■ References Technical Specifications and determines: <ul style="list-style-type: none"> ❖ TS 3.6.4.1.A: Determines must restore Secondary Containment within 4 hours.
	CRS	<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
<p style="text-align: center;"><u>Event 4 Completion Criteria:</u></p> <ul style="list-style-type: none"> • 2A & 2B Recirc Scoop Tubes locked out, • Secondary Containment Doors closed and Tech Specs referenced, <p>AND/OR,</p> <ul style="list-style-type: none"> • At the discretion of the Lead Examiner. 		

Event Five – Swap TBCCW Pumps		
Trigger	Position	Actions or Behavior
		<p><u>Role Play:</u></p> <p>As the NLO sent to verify 2B TBCCW pump suction and discharge valves open (wait 1 min), then report: “2B TBCCW pump suction and discharge valves are open”.</p> <p>As the NLO sent to verify 2B TBCCW pump oil levels (wait 1 min), then report: “2B TBCCW pump oil levels are normal”.</p> <p>As the NLO sent to report on operation of 2B TBCCW pump, report: “2B TBCCW pump is operating normally”.</p> <p>As the NLO sent to check TBCCW system parameters after 2A pump is secured (wait 1 min), then report: “TBCCW system parameters are normal”.</p>
	CRS	<input type="checkbox"/> Directs swapping from 2A TBCCW pump to 2B TBCCW pump per DOP 3800-01, Turbine Building Closed Cooling Water System (TBCCW).
	BOP	<p>Performs the following actions per DOP 3800-01, Turbine Building Closed Cooling Water System (TBCCW):</p> <ul style="list-style-type: none"> ■ Directs NLO to verify 2B TBCCW pump suction and discharge valves open. ■ Directs NLO to verify 2B TBCCW pump oil levels. ■ Starts 2B TBCCW pump and verifies proper operation. ■ Stops 2A TBCCW pump. <input type="checkbox"/> Verifies system parameters normal.
	ATC	Monitors panels and assists as directed.
<p style="text-align: center;"><u>Event 5 Completion Criteria:</u></p> <ul style="list-style-type: none"> • TBCCW Pump swap completed <p>AND/OR</p> <ul style="list-style-type: none"> • At the direction of the Lead Examiner. 		

Event Six –Instrument Air Compressor Trip		
Trigger	Position	Crew Actions or Behavior
4		<p><u>SIMULATOR OPERATOR:</u></p> <p>At the direction of the Lead Examiner, activate trigger 4, which trips the 3C Instrument Air Compressor and inserts a small IA leak to cause pressure to slowly drop.</p> <p><u>ROLE PLAY:</u></p> <p>NLO to investigate 3C IAC trip: (Wait 2 min)</p> <p>Report “the 3C IAC tripped on low lube oil pressure. There is nothing else abnormal at the compressor”.</p> <p>NLO to check 3C IAC breaker: (Wait 2 min)</p> <p>Report “the 3C IAC breaker is closed and looks normal”.</p> <p>Note: The compressor will NOT be restored to operation.</p>
	5	<p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>NLO to lineup 2B IAC to U2 Instrument Air System, wait 2 min, activate trigger 5 and then report “2B IAC is lined up to U2 Instrument Air System”.</p> <p><u>ROLE PLAY:</u></p> <p>NLO to verify proper operation of 2B IAC: (Wait 2 min)</p> <p>Report “the 2B IAC is operating normally”. If not yet directed to line up 2B IAC to U2 Instrument Air System, then also report that “2B IAC Dryer is not lined up to the Instrument Air header”.</p>
	BOP	<p>Announces alarm 923-1 B-5, U2 OR U3 INST AIR COMP TRIP:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Reports 3C IAC tripped <input type="checkbox"/> Directs an NLO to investigate the cause of the 3C Instrument Air Compressor trip. <input type="checkbox"/> May send a NLO to check 3C IAC breaker.
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> May enter DOA 4700-01, Instrument Air System Failure. <input type="checkbox"/> Directs BOP to perform DOP 6700-20, 480 Volt Breaker Trip.
	BOP	<p>Performs DOA 4700-01, Instrument Air System Failure, as directed:</p> <ul style="list-style-type: none"> ■ Starts the 2B IAC. <input type="checkbox"/> Directs an NLO to verify proper operation of 2B IAC. <input type="checkbox"/> Performs DOP 6700-20, 480 Volt Breaker Trip.
<p align="center"><u>Event 6 Completion Criteria:</u></p> <ul style="list-style-type: none"> • Unit 2 Standby IAC started, <p>AND/OR,</p> <ul style="list-style-type: none"> • At the discretion of the Lead Evaluator. 		

Event Seven – Instrument Air Leak / Reactor Scram		
Trigger	Position	Crew Actions or Behavior
		Note: The next Event begins automatically when the Mode Switch is placed to S/D.
6		<p>Simulator Operator:</p> <p>At the direction of the Lead Examiner, activate trigger 6 to initiate the Instrument Air leak at 40% severity.</p> <p>Role Play:</p> <p>NLO sent to check air compressor and air dryer operation, wait 3 min. then report, “The air compressors are all running loaded and there are no problems at the air dryers.”</p> <p>Personnel sent to inspect IA system for rupture, acknowledge the order.</p> <p>If asked, U1 air system is not in service</p>
7 8		<p>Simulator Operator / Role Play:</p> <p>NLO sent to open the U2 – U3 SA Crosstie valve, verify trigger 7 is inserted then report, “The U2 – U3 SA Crosstie valve is open.”</p> <p>NLO sent to cross-connect Instrument Air (4 min.) initiate trigger 8 then report the cross-connect valve is open.</p>
	BOP	<input type="checkbox"/> Announces alarm 923-1 F-4, U2 Inst Air Press Low <input type="checkbox"/> Verifies U2 SA to IA Auto Crosstie Valve opens at 85 psig
	CRS	<input checked="" type="checkbox"/> Announces entry into DOA 4700-01, Instrument Air System Failure, and directs team actions. <input checked="" type="checkbox"/> Briefs team to be prepared to manually scram the reactor and close the outboard MSIVs IF Instrument Air pressure drops to 55 psig. <input type="checkbox"/> Announces entry into DOA 0600-01, Transient Level Control, and directs concurrent performance with DOA 4700-01, IA System Failure.
	BOP	<input type="checkbox"/> Directs NLO(s) to check air compressors and air dryers for proper operation <input type="checkbox"/> Directs in-plant personnel to inspect U2 IA system for proper lineup and leaks. <input type="checkbox"/> May direct NLO to cross-connect U2 to U3 IA Systems per DOP 4700-03, U2/3 IA Cross-Connect Operation. <input type="checkbox"/> May direct NLO to cross-connect U2 to U3 SA Systems
	CRS	<input type="checkbox"/> May direct scram preparations per DGP 02-03, Reactor Scram.
	ATC	<input type="checkbox"/> Performs scram preparations per DGP 02-03, Reactor Scram, as directed: <ul style="list-style-type: none"> ○ Starts the turbine motor suction pump AND turning gear oil pump. ○ Trips H2 addition.

Event Seven – Instrument Air Leak / Reactor Scram		
Trigger	Position	Crew Actions or Behavior
		<p>NOTE:</p> <p>The following portion of the 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 CRS enters DEOP 400-05, Failure to Scram.</p>
	CRS	<p>When IA pressure drops to 55 psig, directs team to:</p> <ul style="list-style-type: none"> ■ Scram the reactor per DGP 02-03, Reactor Scram. ■ Close the outboard MSIVs.
	ATC	<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. ■ Determines all rods are not inserted. ■ √ Initiates ARI. <input type="checkbox"/> Verifies rods inserted and announces: <ul style="list-style-type: none"> ○ Rods did not go in, Electrical ATWS, ARI initiated, all rods in. ○ Maintains RPV level as directed by CRS. ○ Inserts SRMs and IRMs.
	CRS	<p>Enters DEOP 100, RPV Control, and may enter DEOP 400-05, Failure to Scram, depending on timing of reports from ATC regarding status of rods. If DEOP 400-05 is entered, it will be exited as soon as report of 'all rods in' is received.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Directs actions of DEOP 100. <input type="checkbox"/> Directs actions of DGP 02-03. <input type="checkbox"/> Verification of all isolations, ECCS and EDGs starts. <input type="checkbox"/> Holding RPV/L +8 to +48 inches. <input type="checkbox"/> Maintaining RPV/P <1060 psig using the Iso Cond to control RPV/P (may use Hardcard)
	BOP	<ul style="list-style-type: none"> ■ Closes the outboard MSIVs. ■ Performs Reactor Scram actions per his Hardcard.
	CRS	<ul style="list-style-type: none"> ■ Directs the outboard MSIVs closed when IA pressure drops to
<p style="text-align: center;"><u>Event 7 Completion Criteria:</u></p> <ul style="list-style-type: none"> • The reactor is scrammed and ARI initiated, <p>AND/OR</p> <ul style="list-style-type: none"> • At the discretion of the Lead Examiner. 		

Events Eight – Unisolable Isolation Condenser Steam Line Leak into the Reactor Building / Emergency Depressurization		
Trigger	Position	Crew Actions or Behavior
		<p><u>NOTE:</u></p> <p>This Event automatically starts 3 min. after the Mode Switch is placed to S/D.</p>
9		<p><u>SIMULATOR OPERATOR:</u></p> <p>Verify trigger 9 automatically activates when the Mode SW is placed to S/D. After 3 min, this starts the next Event by causing:</p> <ul style="list-style-type: none"> • A FEF to be inserted. • An Iso Cond Steam line leak into the RX Bldg between the 1 and 2 valves. <p>4 min. after trigger 9 is activated, RUN CAEP file: ILT-N-2 Rad.cae. This causes the following ARMs to increase:</p> <ul style="list-style-type: none"> • Isolation Condenser Area. • Vessel Instrument Rack Area. • West CRD Area. • RX Bldg South Access Area.
10 11		<p><u>SIMULATOR OPERATOR</u></p> <p>Verify Trigger 10 activates automatically when Isolation Condenser Area radiation reaches 500 mr/hr. (variable ppr216 >500.0) This causes the RWCU Area Radiation Monitor to ramp full scale and alarm by using overrides.</p> <p>Verify Trigger 11 activates automatically when the RWCU Area Radiation Monitor is bypassed. This clears its SER alarm.</p> <p><u>ROLE PLAY:</u></p> <p>As a dispatched NLO OR as a NLO on rounds, (wait 2 min. after the leak starts) 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></p> <p>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>
	BOP	<p><input type="checkbox"/> Announces numerous alarms due to the Iso Cond steam line break and fuel element failure such as:</p> <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 <p><input type="checkbox"/> Dispatch NLO(s) and/or Rad Tech(s) to check areas for leaks and radiation levels.</p>
	BOP	<p><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>

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

Trigger	Position	Crew Actions or Behavior
	BOP	<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 SGBT 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).
	BOP	<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 CRS. <input type="checkbox"/> Closes RX Outlet Isol MO 2-1301-2 Valve, attempts closure of the RX Outlet Isol MO 2-1301-1 Valve (will not close). ■ Determines leak is unisolable (between 1 and 2 valves) due to the Iso 1 valve being unable to close.
	BOP	<ul style="list-style-type: none"> <input type="checkbox"/> Should periodically check backpanel ARM temperature recorders to determine rate and/or trend of the areas affected from steam leak.
	CRS	<ul style="list-style-type: none"> ■ Enters DEOP 300-1 Secondary Containment Control, when informed area rad or temperature level(s) are above Max Normal.
	CRS	<p>√ When notified of 2 or more areas above Max Safe, enters DEOP 0400-02, Emergency Depressurization, and directs:</p> <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. ■ Opening all ADS valves. <input type="checkbox"/> Verifying all ADS valves are open.
	BOP	<p>√ Executes DEOP 0400-02, Emergency Depressurization, as directed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verifies SP/L >6 feet. ■ Opens all ADS valves. <input type="checkbox"/> Verifies all ADS are open.
	CRS	<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 8 / Scenario Completion Criteria:

- Emergency Depressurization in progress,
- AND/OR,
- At the direction 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 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 D-7	2A/B CORE SPRAY HDR PRESS LO
DAN 902-3 H-2	ISOL COND LINE BREAK
DAN 902-4 C-1(5)	2A(B) RECIRC M-G SCOOP TUBE PWR FAILURE
DAN 923-1 B-5	U2 OR U3 INST AIR COMP TRIP
DAN 923-1 F-4	U2 INST AIR PRESS LOW
DEOP 0100	RPV CONTROL
DEOP 0300-01	SECONDARY CONTAINMENT CONTROL
DEOP 0400-02	EMERGENCY DEPRESSURIZATION
DGA 07	UNPREDICTED REACTIVITY ADDITION
DGP 02-03	REACTOR SCRAM
DGP 03-01	POWER CHANGES
DOA 0202-03	REACTOR RECIRC SYSTEM FLOW CONTROL FAILURE
DOA 4700-01	TRANSIENT LEVEL CONTROL
DOA 4700-01	INSTRUMENT AIR SYSTEM FAILURE
DOA 6500-10	4KV CIRCUIT BREAKER TRIP
DOA 0600-01	TRANSIENT LEVEL CONTROL
DOA 4700-01	INSTRUMENT AIR SYSTEM FAILURE
DOP 0202-03	REACTOR RECIRCULATION FLOW CONTROL SYSTEM OPERATION
DOP 0202-12	RECIRCULATION PUMP MOTOR GENERATOR SET SCOOP TUBE 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
DOP 3800-01	TURBINE BUILDING CLOSED COOLING WATER SYSTEM (TBCCW)
DOP 4700-03	U2/3 IA CROSS-CONNECT OPERATION
DOP 6700-20	480 VOLT BREAKER TRIP
TS 3.5.1	ECCS-OPERATING
TS 3.6.4.1	SECONDARY CONTAINMENT

EXAM ILT-N-2 QUANTITATIVE ATTRIBUTES	
8	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)
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 EXAM SCENARIO ILT-N-2 Initial Setup CAEP:

SCENARIO ILT-N-2.cae

Written by FRF

Rev 00

Date 09/08

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

imf ser0063 off

Close 2B IAC Disch Vlv (OPS says it would be closed if the Comp is OFF)

irf vp2 0.0

Sets APRM Master gain pot to 1.0

irf niagain 1.0|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 causes 2A/B Core System Low Pressure Alarm (902-3 D-7)

Cracks open 4A VLV and isolates Keep Fill to 2A Loop

trgset 2 "0"|4

trg 2 "set csv4a = 0.002"|4

irf csafilof (2) closed|4

Event Trigger 3 Causes master recirc flow controller to fail downscale.

trgset 3 "0"|4

imf rmasdnd (3) 0.3 2:00 0.6|4

Event trigger 4 inserts an IAC trip and IA leak to cause pressure to slowly drop.

trgset 4 "0"|6

imf n33 (4)|6

imf np2 (4) 12.0|6

Event trigger 5 Opens 2B IAC Disch Vlv and deletes the IA leak malfunction.

trgset 5 "0"|8

trg 5 "dmf np2"|8

irf vp2 (5) 100.0|8

Event trigger 6 Inserts a large IA leak.

trgset 6 "0"|10

trg 6 "imf np2 87.0 10:00 40.0"|10

Event trigger 7 Opens the U2/U3 Service Air crosstie.

trgset 7 "0"|10

irf vpc (7) 50.0|10

Event trigger 8 Opens the U2/U3 Instrument Air crosstie.

trgset 8 "0"|12

irf vp4 (8) 50.0|12

Event Trigger 9 Activates when the Mode Switch is placed to S/D.

After 3 min, inserts a FEF.

After 3 min, starts an Iso Steam line leak into the RX Bldg between the 1 and 2 valves.

trgset 9 "rpdmode4_drw"|12

imf radffd (9 3:00) 8.0 20:00 0.0|14

imf icstmr (9 3:00) 2.5|14

Event Trigger 10 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.

trgset 10 "ppr216 .gt. 500.0"|14

ior mrgrwcu (10) 1.0 3:00|14

ior mrlrwcu (10 2:00) on|16

imf ser0260 (10 2:00) on|16

Event Trigger 11 Activates when RWCU Area Rad (STA 7) alarm is bypassed.

Returns SER alarm to OFF.

trgset 11 "mrdwrcub_drw"|18

trg 11 "imf ser0260 off"|18

END

ILT-N-2 Rad.cae

Written by FRF

Rev 00

Date 09/08

Ramps IC Area Rad monitor to 3000 mr/hr.

set rmarmfailf(8) = true

ramp rmarmfaild(8) 5.0 3000.0 12:00

After 1 min, ramps Vessel Instru Rack Area Rad monitor to full scale over 2 min.

set rmarmfailf(9) = true|60

ramp rmarmfaild(9) 0.5 100.0 2:00|60

After 2 min, ramps W CRD Area Rad monitor to full scale over 2 min.

set rmarmfailf(5) = true|120

ramp rmarmfaild(5) 5.0 100.0 2:00|120

After 3 min, ramps RB South Access Area Rad monitor to full scale over 2 min.

set rmarmfailf(7) = true|180

ramp rmarmfaild(7) 5.0 100.0 2:00|180

END

ILT-N-2 Clear Rad.cae

Written by FRF

Rev 00

Date 09/08

Clears IC Area Rad monitor.

set rmarmfailf(8) = false

Clears Vessel Instru Rack Area Rad monitor.

set rmarmfailf(9) = false

```
# Clears W CRD Area Rad monitor.  
set rmarmfailf(5) = false
```

```
# Clears RB South Access Area Rad monitor.  
set rmarmfailf(7) = false
```

```
# END
```

Date: TODAY

Unit 2 Turnover

Online Information

250 MWe

Online Risk: Green

Risk Equipment:

Protected Pathway(s)

NONE

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

Raise power with recirc flow.

Swap TBCCW pumps.

LCORAs

LCORA Title None

Start
Clock Ends

Compensatory Actions

Degradation
Documentation

Frequency
Responsible

Compensatory Action

Unit 2 Conditions, Status, Abnormalities

An Emergency Load drop was performed 2 shifts ago due to concerns with Feedwater Heater level controllers. IMD has resolved the issue and the QNE recommends immediately raising power by increasing recirc flow to 58 Mlbm/hr core flow. Then before starting 2A RFP, the QNE will evaluate core parameters and recommend how to pick up load after that. The TSO has been notified.

Engineering is taking vibration readings on 2A TBCCW pump. Next will be vibration readings on 2B TBCCW pump. The shift manager will notify the control room when to start 2B TBCCW pump and shutdown 2A TBCCW pump. 2A RFP has been prepped for starting. The Unit 2 NLO has been briefed for starting 2A RFP. The RFP will be started after the load pickup with recirc flow.

Unit 2 Abnormal Component Position

None

U2 Open Operability Determinations with Compensatory Actions

None

Shift 1 Activities (X = Completed)

☐
☐

Shift 2 Activities

☐ DGP 03-01
☐ Swap TBCCW pumps

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 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

Dresden Generating Station

ILT-N-3

CIRC WATER PUMP TRIP

TRIP OF RPS MG SET, RE-ENERGIZE FROM RESERVE POWER

CRD FLOW CONTROLLER FAILS HIGH

SPURIOUS HPCI ISOLATION WITH FAILURE TO ISOLATE

STATOR COOLING PUMP TRIP WITH FAILURE OF STANDBY TO START

SMALL STEAM LEAK IN DRYWELL / MANUAL SCRAM

HYDRAULIC ATWS / DRYWELL LEAK GETS WORSE

Rev. 00

09/08

Operations Review:

Facility Representative

Date

Training Approval:

Exam Author

Date

Scenario Outline

Station: <u>Dresden Generating Station</u>	Scenario No.: <u>ILT-N-3</u>	Class ID: <u>2009-301</u>
Evaluators <hr/> <hr/> <hr/>	Operators / crew position <hr/> / ATC <hr/> / BOP <hr/> / CRS	
Initial Conditions: <u>Rx Power ~ 95%</u> <hr/> <hr/>		
Turnover: <u>Maintain Current Power Level per TSO Direction</u> <u>Swap Service Water Pumps</u> <hr/>		

Event No.	Malfunction No.	Event Type*	Event Description
1	HP6	C BOP CRS	Circ Water - 2A Pump Trip
2	B02	C ATC CRS	RPS - Trip of MG Set, Re-energize from Reserve Power. ^T
3	RDFCFHI	C ATC CRS	CRD - CRD Flow Controller Fails High.
4	HPGP4RLY AT46	I BOP CRS	HPCI - Spurious HPCI Isolation with Failure to Isolate. ^T
5	K11 MGDSCBTR	C ATC CRS	Stator Cooling - 2A Pump Trip With Failure of 2B to Start.
6	I21	M TEAM	Steam Leak - Small Leak in Drywell / Manual Scram.
7	RDHLVFPA RDHLDEGA I21	M TEAM	ATWS - Hydraulic ATWS / Drywell Leak Gets Worse.

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

Scenario Objective

Evaluate the Team's ability to operate the plant with a hydraulic ATWS condition.

Scenario Summary

1. Unit is at full power.
2. The following equipment is OOS:
 - a. None
3. LCOs:
 - a. None

Scenario Sequence

- Circulating water pump 2A then trips on overload and the BPO manually starts circulating water pump 2B to maintain condenser vacuum.
- The Team receives a report that the Engineering department determined that EPAs 2B-1 and 2B-2 are inoperable. The CRS determines Tech Spec requirements and then a trip of RPS EPA 2B-1 causes a loss of RPS Bus A. The Team will reenergize RPS Bus A from reserve power and begin restoration of affected systems to a normal condition.
- 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 DRIVE HI TEMP alarm comes up. The Team takes manual control of the CRD Flow Controller to restore system parameters to normal.
- A HPCI steam flow GP 4 isolation instrument fails causing an isolation signal. The HPCI steam valves fail to isolate and the Team manually closes them. The CRS addresses Tech Spec requirements.
- The 2A stator cooling water pump trips on overload and the standby pump fails to start automatically. The team should manually start the 2B stator cooling water pump.
- A small steam leak in the Drywell occurs upstream of the steam line restrictors occurs. The Team will perform a manual scram due to the increasing Drywell pressure.
- A Hydraulic ATWS occurs when the reactor is scrammed. The Team inserts control rods by repeated scrams and / or driving control rods. The steam leak worsens requiring the Team to spray the Drywell.

Event One – Circulating Water Pump Trip

- The crew should recognize and respond to Circulating water pump 2A tripping on overload.

Malfunctions required: 1

- (Circulating Water Pump trip)

Success Path:

- Start 2B Circulating Water Pump.

Event Two – RPS MG Set Trip / Re-energize from Reserve Power

- The Team receives a report that the Engineering department determined that EPAs 2B-1 and 2B-2 are inoperable. Then a trip of RPS EPA 2B-1 causes a loss of RPS Bus A.

Malfunctions required: 1

- (RPS EPA 2B-1 trips)

Success Path:

- The CRS determines Tech Spec requirements.
- Re-energize RPS Bus A from Reserve Power.

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 – Spurious HPCI Isolation

- HPCI steam flow GP 4 isolation instrument fails causing an isolation signal. The HPCI steam valves fail to isolate.

Malfunctions required: 1

- (HPCI Isolation with Failure to Isolate)

Success Path:

- The Team isolates the HPCI steam supply.

Event Five – 2A Stator Water Cooling Pump Trips

- The team recognizes and responds to trip of 2A stator water cooling pump and failure of 2B stator water cooling pump to automatically start.

Malfunctions required: 1

- (Stator Cooling Water Pump Trip.)

Success Path:

- Manually start 2B stator water cooling pump.

Event Six – Small Steam Leak in Drywell / Manual Scram

A small steam leak in the Drywell occurs upstream of the steam line restrictors occurs.

Malfunctions required: 1

- (Small steam line leak)

Success Path:

- Performs a manual scram.

Event Seven – Hydraulic ATWS / Drywell Leak Gets Worse

A hydraulic ATWS occurs when the reactor is scrammed.

Malfunctions required: 1

- (Hydraulic ATWS)

Success Path:

- The Team inserts control rods by repeated scrams and / or driving control rods.
- The Team sprays the Drywell.

PRE-SCENARIO ACTIVITIES

- 1 If applicable, conduct pre-scenario activities in accordance with TQ-JA-150-08, SIMULATOR EXAMINATION BRIEFING.
 - a. 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)
 - a. Initialize simulator in a full power IC.
 - b. Cut in/out Cond Demins as needed, to maintain DP within limits.
 - c. Ensure running Condensate pump amps within limits.
 - d. Advance the chart recorders.
- 3 Verify the following simulator conditions:
 - a. Verify 2A and 2C Circ Water PPs running with 2B OFF.
 - b. Verify 2A Stator Cooling Water pump running with 2B OFF.

NOTE: Do NOT run the initial setup CAEP file until the above setup is completed.

- 4 Run the initial setup CAEP file: ILT-N-3.cae
- 5 Open but do NOT run CAEP file: ILT-N-3_ClrHydLk.cae
- 6 Place the following equipment out of service:
 - a. None
- 7 Complete the Simulator Setup Checklist.

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

- ✓ Critical Tasks
- ⌚ Time Critical Tasks
- 🔑 PRA Key Operator Actions
- Required Actions
- Optional Actions

Event One – Circulating Water Pump 2A Trips on Overload.

Trigger	Position	Crew Actions or Behavior
1		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 1, which trips 2A Circulating Water pump.</p>
	BPO	<p>Performs the following actions 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"> ■ Starts 2B Circulating Water pump. (immediate action) □ Verifies condenser vacuum returning to normal. □ Verifies 2A Circulating Water pump discharge valve closes. □ Sends NLO to check 2A Circulating Water pump breaker and operation of 2B Circulating Water pump. □ Places 2A Circulating Water pump control switch in PTL. □ Verifies Circulating Water Flow reversal valves lined up normally. □ May send NLO to check Cribhouse bar racks and traveling screens.
		<p><u>Role Play:</u></p> <p>As the NLO sent to 2A Circulating Water pump breaker (wait 3 min), then report: “2A Circulating Water pump breaker has an overcurrent target up”.</p> <p>As the NLO sent to 2A Circulating Water pump (wait 3 min), then report: “2A Circulating Water pump motor is hot to the touch”.</p> <p>As the NLO sent to check 2B Circulating Water pump operation (wait 2 min), then report: “2B Circulating Water pump is operating normally”.</p> <p>As the NLO sent to check Cribhouse bar racks and traveling screens (wait 3 min), then report: “the Cribhouse bar racks and traveling screens are clear”.</p>
	CRS	<ul style="list-style-type: none"> ■ Enters and directs performance of DOA 4400-01, Circulating Water System Failure, and DOA 6500-10, 4KV Circuit Breaker Trip. □ Notifies the Shift Manager and EMD.
	ATC	<ul style="list-style-type: none"> □ Monitors panels and assists as directed.
<p align="center"><u>Event 1 Completion Criteria:</u></p> <ul style="list-style-type: none"> • 2B Circulating Water pump started, <p>AND/OR,</p> <ul style="list-style-type: none"> • At the direction of the Lead Examiner. 		

Event Two – RPS MG Set Trip / Re-energize From Reserve Power

Trigger	Position	Crew Actions or Behavior
		<p><u>ROLE PLAY:</u></p> <p>At the discretion of the Lead Examiner, call the CRS as the Shift Manager and inform him that “Engineering has determined that defective components were installed in RPS EPAs 2B-1 and 2B-2 during their last preventative maintenance. Therefore, RPS EPAs 2B-1 and 2B-2 are inoperable and may exhibit erratic operation. Engineering considers all other EPAs operable”.</p>
	CRS	<ul style="list-style-type: none"> ■ References Licensing Documents and determines the following applies: <ul style="list-style-type: none"> • TS 3.3.8.2, Reactor Protection System (RPS) Electric Power Monitoring, Condition B: Remove associated inservice power supply from service within 1 hour. <input type="checkbox"/> Directs WEC to brief an operator to transfer RPS Bus A to Reserve Power. <input type="checkbox"/> May direct Team to review DOA 0500-05, Loss of Reactor Protection System Bus.
	ATC / BOP	<ul style="list-style-type: none"> <input type="checkbox"/> Reviews DOA 0500-05, Loss of Reactor Protection System Bus, as directed.
2		<p><u>SIMULATOR OPERATOR:</u></p> <p>After the CRS has addressed Tech Specs and / or at the discretion of the Lead Examiner, activate trigger 2, which inserts a 2B RPS MG Set overcurrent trip. This simulates RPS EPA 2B-1 tripping.</p>
		<p>NOTE: Communications from the AEER should be over the phone (not the radio)</p> <p><u>ROLE PLAY:</u></p> <p>NLO to check RPS power supplies: wait 2 min. and call and report, “the RPS EPA 2B-1 is tripped”.</p> <p>NLO to power the 2A RPS bus from the reserve power: wait five minutes, call the U2 NSO on the phone and report “Steps G.3.I.(1) thru (4) of DOP 0500-03, for supplying power to RPS 2A bus are your steps.</p>
3		<p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>When notified to re-energize RPS Bus 2A, wait a minute, and then activate trigger 3. Report “RPS Bus 2A has been reenergized from the alternate power supply”. If asked: “AC voltage is 120”.</p>
	ATC	<p>Announces loss of 2A RPS Bus.</p> <p>Performs the following:</p> <ul style="list-style-type: none"> ■ Perform actions of DOA 0500-05, Loss of Reactor Protection System Bus. ■ Directs an NLO to restore power to the 2A RPS Bus per DOP 0500-03, RPS Power Supply Operation. <input type="checkbox"/> May bypass APRM 6. ■ Resets the RPS CH A half scram per DOP 0500-07, Insertion/Reset of Manual Half Scram.

Event Two – RPS MG Set Trip / Re-energize From Reserve Power

Trigger	Position	Crew Actions or Behavior
	BOP	<ul style="list-style-type: none"><input type="checkbox"/> Resets the Division 2 Refuel Floor Rad Monitor and Reactor Building Vent Rad Monitor.<input type="checkbox"/> Restores Reactor Building Ventilation IAW DOP 5750-02, Reactor Building Ventilation and secures SBTG IAW DOP 7500-01, SBTG Operation.<input type="checkbox"/> Resets ACAD/CAM system per DOP 2400-01 to reclose the 2-2499-3B and 4B valves.
	CRS	<ul style="list-style-type: none">■ Enters DOA 0500-05, Loss of Reactor Protection System Bus, and directs actions.<input type="checkbox"/> Coordinates restoration of affected plant systems.

Event 2 Completion Criteria:

- Tech Specs referenced,
 - RPS Bus A reenergized and restoration of affected plant systems in progress,
- AND/OR,
- At the discretion of the Lead Examiner.

Event Three – CRD Flow Controller Failure

Trigger	Position	Applicant's Actions or Behavior
4		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 4, 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 ~ 5 min.</p>
5		<p><u>Simulator Operator:</u></p> <p>If CRD Temperature variable rdgtemp(21) reaches 250.0 deg. F, verify the following automatic triggers:</p>
6		<p>❖ Trigger 5: automatically activates when variable rdgtemp(21) is >250.0 deg. F. Forces up alarm 902-5 F-3, ROD DRIVE HI TEMP.</p> <p>❖ Trigger 6: automatically activates alarm 902-5 F-3 is up and variable rdgtemp(21) is <245.0 deg. F. Returns alarm 902-5 F-3, ROD DRIVE HI TEMP, TO NORMAL.</p>
	ATC	<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.
	CRS	<ul style="list-style-type: none"> ■ Enters and directs performance of DOA 0300-01, Control Rod Drive System Failure. ❑ Notifies Shift Manager and IMD of CRD Flow Controller failure. ❑ May reference TRM 3.3.h, Reactor Vessel Water Level Instrumentation System (RVWLIS) Backfill System, due to short loss of RVWLIS supply.
		<p><u>Role Play:</u></p> <p>NLO to check CRD FCV operation: (wait 2 min) Report “ the CRD FCV appears to be operating normally and is at position (Use position displayed on Instructor Station drawing RD2; report as percent)”.</p> <p>NLO to check CRD system flow locally (FI 2-302-56); (wait 1 min) Report “CRD system flow indicates >100 gpm (pegged high)”.</p> <p>NLO to check drive water flow locally (FI 2-302-64): (wait 1 min) Report “CRD drive water flow indicates (same as control room meter)”.</p> <p>NLO to check cooling water flow locally (FI 2-302-65): (wait 1 min) Report “CRD cooling water flow indicates (same as control room meter)”.</p> <p>Respond as groups notified.</p>
	BOP	Monitors panels and assists as directed.

Event 3 Completion Criteria:

- Team has taken manual control of the CRD Flow Controller,
AND/OR
- At the discretion of the Lead Examiner.

Event Four – Spurious HPCI Isolation with Failure to Isolate

Trigger	Position	Applicant's Actions or Behavior
7		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead examiner, activate trigger 7, which causes a HPCI steam flow GP 4 isolation instrument failure resulting in an isolation signal. The HPCI steam valves fail to isolate.</p>
		Support Personnel to investigate: wait several min, then report "There is relay damage which will take 12 hrs to repair".
	BOP	<ul style="list-style-type: none"> Announces alarm 902-3 C-12, HPCI Stm Line Flow Hi.
	TEAM	<ul style="list-style-type: none"> Determines HPCI GP 4 isolation should have occurred.
	CRS	<ul style="list-style-type: none"> Directs BOP to close the HPCI GP 4 isolation valves.
	BOP	<ul style="list-style-type: none"> Isolates HPCI as directed: <ul style="list-style-type: none"> Closes MO 2-2301-4. Closes MO 2-2301-5.
	TEAM	<ul style="list-style-type: none"> May enter DEOP 0300-01, Secondary Containment Control.
	CRS	<ul style="list-style-type: none"> Notifies Shift Manager and IMD of Event.
	ATC	<ul style="list-style-type: none"> Monitors panels and assists as directed.
		Note: The Tech Spec LCOs apply once the Team learns the length of time to repair.
	CRS	<ul style="list-style-type: none"> References Technical Specifications and determines: <ul style="list-style-type: none"> TS 3.3.6.1 Action A.1, Place Channel in trip within 24 hrs. TS 3.5.1 Action A.1, Place Channel in trip within 24 hrs. TS 3.5.1 Action B.1, Restore Isolation capability within one hour. TS 3.5.1 Action F.1, Verify Isolation Condenser is OPERABLE immediately AND restore HPCI System to OPERABLE status within 14 days.
<p align="center"><u>Event 4 Completion Criteria:</u></p> <ul style="list-style-type: none"> Actions taken to isolate HPCI steam line, And, Tech Specs addressed, <p>AND/OR,</p> <ul style="list-style-type: none"> At the direction of the Lead examiner. 		

Event Five – 2A Stator Water Cooling Pump Trips

Trigger	Position	Actions or Behavior								
8		<u>Simulator Operator / Role Play:</u> At the discretion of the Lead Examiner, activate trigger 8 , which causes 2A stator cooling water pump to trip on overload and 2B to fails to auto start. Verify trigger 9 activates automatically, when 2B stator cooling water pump control switch is placed to close, to remove the trip override inserted in the initial setup. Verify trigger 10 activates automatically, when 2B Stator Clg Wtr PP control switch Trip position override is deleted. Closes 2B stator cooling water pump breaker. Verify trigger 11 activates automatically, when 2B stator cooling water pump breaker closes. Returns the 2B Stator Clg Wtr PP trip SER alarm to NORMAL.								
9										
10										
11										
		<u>NOTE:</u> If the operator starts the standby Stator Cooling PP quickly, not all the alarms below may come in.								
	BOP	Announces the following alarms: <ul style="list-style-type: none">■ DAN 902-7 B-10, Stator Clg PP Trip■ DAN 902-7 C-10, Stator Clg Panel Trouble■ DAN 902-7 E-11, H2 Seal Oil & Alterrex Pnl Trouble■ DAN 902-7 C-3, Turb Stator Coolant Runback Performs appropriate actions per DOA 7400-01, Failure of the Stator Coolant System: <ul style="list-style-type: none">■ Starts 2B Stator Cooling Water Pump (Immediate Action)■ Verifies Runback condition clears.■ Sends NLO to verify 2B Stator Cooling Water Pump operating normally.■ Sends NLO to check breaker and 2A Stator Cooling Water Pump for cause of trip.■ Performs DOP 6700-20, 480V Circuit Breaker Trip.■ Places 2A Stator Cooling Water Pump control switch in PTL.								
		<u>NOTE:</u> Before making the reports below, check to see which alarms come up on the 902-7 panel. If the operator is fast, not all may alarm.								
12		<u>Simulator Operator / Role Play:</u> As the NLO sent to acknowledge the stator cooling water trouble and/or the H2 Seal Oil & Alterrex Pnl Trouble alarm (wait 2 min), activate trigger 12 and report: "I have acknowledged stator cooling water trouble and/or the H2 Seal Oil & Alterrex Pnl Trouble alarm. The alarms are cleared and were ...". (Use table below to determine report)								
		<table><tr><th>902-7 alarm received</th><th>Local alarm to report</th></tr><tr><td>902-7 C-10, Stator Clg Panel Trouble</td><td>Inlet Flow Low, & Inlet Pressure Low</td></tr><tr><td>902-7 E-11, H2 Seal Oil & Alterrex Pnl Trouble</td><td>Rectifier Coolant Flow Low.</td></tr><tr><td>902-7 C-3, Turb Stator Coolant Runback</td><td>Turbine Runback</td></tr></table>	902-7 alarm received	Local alarm to report	902-7 C-10, Stator Clg Panel Trouble	Inlet Flow Low, & Inlet Pressure Low	902-7 E-11, H2 Seal Oil & Alterrex Pnl Trouble	Rectifier Coolant Flow Low.	902-7 C-3, Turb Stator Coolant Runback	Turbine Runback
902-7 alarm received	Local alarm to report									
902-7 C-10, Stator Clg Panel Trouble	Inlet Flow Low, & Inlet Pressure Low									
902-7 E-11, H2 Seal Oil & Alterrex Pnl Trouble	Rectifier Coolant Flow Low.									
902-7 C-3, Turb Stator Coolant Runback	Turbine Runback									

Event Five – 2A Stator Water Cooling Pump Trips

Trigger	Position	Actions or Behavior
		<p><u>Role Play:</u></p> <p>As the NLO sent to check operation of 2B Stator Cooling Water Pump (wait 2 min) then report: “2B Stator Cooling Water Pump is operating normally”.</p> <p>As the NLO sent to check cause of 2A Stator Cooling Water Pump trip (wait 2 min), then report: “2A Stator Cooling Water Pump tripped on overload”.</p>
	CRS	<ul style="list-style-type: none"> ■ Enters and directs performance of DOA 7400-01, Failure of the Stator Coolant System. ❑ Enters and directs performance of DOP 6700-20, 480V Circuit Breaker Trip. ❑ Notifies Work Week Manager, IMD and/or EMD
	ATC	Monitors panels and assists as directed.
<p style="text-align: center;"><u>Event 5 Completion Criteria:</u></p> <ul style="list-style-type: none"> • 2B Stator Cooling Water Pump started, <p>AND/OR,</p> <ul style="list-style-type: none"> • At the direction of the Lead Examiner. 		

Event Six and Seven – Small Steam Leak In Drywell / Manual Scram / Hydraulic ATWS / Drywell Leak Gets Worse

Trigger	Position	Crew Actions or Behavior
13		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 13, which causes a small Main Steam line leak to develop in the Drywell.</p>
		<p><u>Role Play:</u></p> <p>NLO to search for leak Report, "I am on my way out to check for leaks".</p> <p>NLO to check Cribhouse inlet temperature: (wait 5 min.) Report, "Cribhouse inlet temp is 70°F".</p> <p>NLO to check Drywell CAM: (wait 2 min) Report that "the Unit 2 Drywell CAM is trending up".</p>
14 15 16		<p><u>Simulator Operator / Role Play:</u></p> <p>When requested: Wait several min, activate the appropriate trigger and report completed.</p> <p>Trigger 14: bypasses MSL GP 1 RPV/L and Offgas High Rad.</p> <p>Trigger 15: installs scram jumpers.</p> <p>Trigger 16: pulls ARI fuses.</p>
	ATC / BOP	<ul style="list-style-type: none"> ■ Recognizes and announces that Drywell pressure is slowly rising. Performs the following actions per DOA 0040-01, Slow Leak, as directed: <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. ■ Initiates Torus cooling per "Hard Card". (May be operating from previous event)
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> Enters and directs performance of DOA 0040-01, Slow Leak. <input type="checkbox"/> Sets Scram contingency of 1.5 psig DW pressure. <input type="checkbox"/> May enter DGP 02-03, Reactor Scram, and direct scram preparatory actions. ■ Prior to reaching the Drywell Pressure scram setpoint, enters DGP 02-03, Reactor Scram, and directs a manual reactor scram.

Event Six and Seven – Small Steam Leak In Drywell / Manual Scram / Hydraulic ATWS / Drywell Leak Gets Worse

Trigger	Position	Crew Actions or Behavior
	ATC/BOP	<p>Performs DGP 02-03, Reactor Scram, scram preparatory actions as directed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Inserts control rods to reduce FCL <93%. <input type="checkbox"/> Reduces power with recirc flow to 56 Mlbm/hr, <input type="checkbox"/> Starts the motor suction pump and the turning gear oil pump. <input type="checkbox"/> Trips hydrogen addition.
	ATC	<p>Performs the following actions per DGP 02-03, Reactor Scram, as directed:</p> <ul style="list-style-type: none"> ■ Presses scram pushbuttons ■ Places mode switch in shutdown ■ Check rods inserted. ■ Determines control rods did not insert. <input type="checkbox"/> Initiates ARI ■ Announces ATWS condition and RX power is >6%. ■ Runs back Recirc Pumps. ■ Trips recirc pumps. ■ Initiates SBLC. <input type="checkbox"/> Maintains RPV/L between +8 and +48 inches or as directed by Unit Supervisor.
	BOP	<ul style="list-style-type: none"> <input type="checkbox"/> Performs DGP 02-03, Reactor Scram, as directed.
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> Enters DEOP 100, RPV Control, and directs actions. <p>Due to report of ATWS condition, exits DEOP 100 AND enters DEOP 0400-05, Failure to Scram, and directs/performs actions:</p> <ul style="list-style-type: none"> <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 performing Scram/Reset/Scram. <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.

Event Six and Seven – Small Steam Leak In Drywell / Manual Scram / Hydraulic ATWS / Drywell Leak Gets Worse

Trigger	Position	Crew Actions or Behavior
	ATC	<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.
	BOP	<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"> • HPCI is already prevented. • PLACES LPCI 22 valves in Pull-to-Close.
	ATC	<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. • Maximizes CRD drive water pressure. • Inserts Control Rods by either using the ROD MOVEMENT CONTROL switch or the EMERG ROD IN position of the ROD OUT NOTCH OVERRIDE switch. ■ √ Performs Scram/Reset/Scram per DEOP 500-05, Alternate Insertion Of Control Rods, as follows: (RPV-6.1) <ul style="list-style-type: none"> • Directs ARI fuses pulled if RPV level is lowered below – 59 in. • Directs scram jumpers installed. • Places SDV Hi Water Bypass in the BYPASS position. • Closes the SDV vent and drain valves. • Resets the scram. • Opens SDV Vent and Drain valves. • Manually scrams the reactor when the SDV is drained. • Repeats as necessary.
		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Examiner, if it is desired to allow the control rods to fully insert during Scram/Reset/Scram actions, then when the scram is reset, Run CAEP file “ILT-N-3_ClrHydLk.cae”, which clears the SDV hydraulic lock.</p>
		<p><u>Note:</u></p> <p>The following actions are required only if the scenario runs long enough for the Team to get the control rods inserted.</p>

Event Six and Seven – Small Steam Leak In Drywell / Manual Scram / Hydraulic ATWS / Drywell Leak Gets Worse

Trigger	Position	Crew Actions or Behavior
	CRS	<input type="checkbox"/> Based on report that all control rods are inserted exits DEOP 0400-05 and enters DEOP 0100. <ul style="list-style-type: none"> • Directs securing SBLC.
	ATC	<ul style="list-style-type: none"> ■ Performs as directed: <ul style="list-style-type: none"> • Secures SBLC.
	ATC / BOP	<ul style="list-style-type: none"> ■ Performs as directed: <ul style="list-style-type: none"> • Re-establishes injection using available injection systems to MAINTAIN RPV water level above -164" (in band directed by Unit Supervisor).
17		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 17, which increases the Main Steam line leak size so that Drywell Sprays are required.</p>
	TEAM	Reports Drywell pressure increasing at a faster rate.
	CRS	<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.
	BOP	<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.
	CRS	<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 ■ √ Initiation of DW sprays (PC-5.1)
	BOP	<ul style="list-style-type: none"> ■ √ Initiates drywell sprays per Hard Card LPCI/CCSW OPERATION, as directed (PC 5.1)

Event Six and Seven – Small Steam Leak In Drywell / Manual Scram / Hydraulic ATWS / Drywell Leak Gets Worse

Trigger	Position	Crew Actions or Behavior
	CRS	<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
<p style="text-align: center;"><u>Event 6 & 7 / Scenario Completion Criteria:</u></p> <ul style="list-style-type: none"> • Control rod insertion in progress, • Drywell sprays initiated, <p>AND/OR,</p> <ul style="list-style-type: none"> • At the discretion of the Lead Examiner. 		

Critical Tasks	
(PC 5.1)	When drywell pressure exceeds the suppression chamber spray initiation pressure (9 psig), Initiate drywell sprays, while in the safe region of the drywell spray initiation limit.
(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-6.2)	With a reactor scram required, reactor not shutdown, and conditions for ADS blowdown are met, INHIBIT ADS to prevent an uncontrolled RPV depressurization, to prevent causing a significant power excursion. (Conditions may not occur to cause this to be critical for this scenario)
(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”.

REFERENCES

PROCEDURE	TITLE
DAN 902-3 C-12	HPCI STM LINE FLOW HI
DAN 902-5 F-3	ROD DRVE HI TEMP
DAN 902-7 B-10	STATOR CLG PP TRIP
DAN 902-7 C-10	STATOR CLG PANEL TROUBLE
DAN 902-7 C-3	TURB STATOR COOLANT RUNBACK
DAN 902-7 E-11	H2 SEAL OIL & ALTERREX PNL TROUBLE
DEOP 0200-01	PRIMARY CONTAINMENT CONTROL
DEOP 0400-05	FAILURE TO SCRAM
DEOP 0500-05	ALTERNATE INSERTION OF CONTROL RODS
DEOP 100	RPV CONTROL
DGP 02-03	REACTOR SCRAM
DOA 0040-01	SLOW LEAK
DOA 0300-01	CONTROL ROD DRIVE SYSTEM FAILURE
DOA 0500-05	LOSS OF REACTOR PROTECTION SYSTEM BUS
DOA 4400-01	CIRCULATING WATER SYSTEM FAILURE
DOA 7400-01	FAILURE OF THE STATOR COOLANT SYSTEM
DOP 0500-03	RPS POWER SUPPLY OPERATION
DOP 0500-07	INSERTION/RESET OF MANUAL HALF SCRAM
DOP 5750-02	REACTOR BUILDING VENTILATION
DOP 6700-20	480V CIRCUIT BREAKER TRIP
DOP 7500-01	SBGT OPERATION
TRM 3.3.h	REACTOR VESSEL WATER LEVEL INSTRUMENTATION SYSTEM
TS 3.3.8.2	REACTOR PROTECTION SYSTEM (RPS) ELECTRIC POWER MONITORING
TS 3.5.1	ECCS - OPERATING

Simulator Scenario Review Checklist (cont'd)

ILT-N-3 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)
40%	EOP run time (40 to 70% of scenario run time)
4	Crew critical tasks (2 to 5) / (5 to 8)
Yes	Technical Specifications exercised (Yes or No)

CAEP Files

ILT-N-3.cae
For ILT Class 08-1 NRC Exam
Written by FRF
Rev 00
Date 09/08

INITIAL CONDITIONS

Inserts a SDV hydraulic lock and blockage.
imf rdhlvpa 94.0
imf rdhldega 94.0

Lifts leads to HPCI GP 4 Isolation Relays
irf hpgp4rly lifted

Overrides the 2B Stator Clg Wtr PP control switch Trip position to TRIP
so the pump will not auto start.
ior mgdscbtr trip

Overrides the AUTO TRIP light OFF so it does not flash ON during the start.
ior mglschat off|2

Overrides the 2B Stator Clg Wtr PP trip SER alarm OFF.
imf ser0777 off|2

Sets APRM Master Gain pot to 1.0
irf niagain 1.0|2

#EVENT TRIGGERS

Event Trigger 1 inserts a 2A circulating water pump trip
trgset 1 "0"|2
imf hp6 (1)|2

Trigger 2 Trips 2B RPS MG Set
trgset 2 "0"|4
imf b02 (2)|4

Trigger 3 Transfers RPS Bus 2A to the normally energized reserve power EPAs
trgset 3 "0"|4
irf b03 (3) true|4

Event Trigger 4 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 4 "0"|6
imf rdhcfhi (4)|6
trg 4 "set rdhmech(21) = 190.0"|6

Event trigger 5 Activates when CRD temp high is reached.
Forces alarm 902-5 F-3 up.
trgset 5 "rdgtemp(21) .gt. 250.0"|6
imf ser0973 (5) on|6

Event trigger 6 Returns alarm 902-5 F-3 to normal.
trgset 6 "sezpoint(973) .and. (rdgtemp(21) .lt. 245.0)"|8
trg 6 "imf ser0973 normal"|8

Event Trigger 7 Fails HPCI steam flow switch to insert a GP 4 isolation signal.

trgset 7 "0"|8
imf at46 (7) 1038.5|8

Event Trigger 8 Trips 2A Stator Cooling Water pump.

trgset 8 "0"|10
imf k11 (8)|10

Event Trigger 9 activates when 2B Stator Clg Wtr PP control switch

is placed to the Normal After Close position. This deletes 2B Stator Clg Wtr PP
control switch Trip position override.

This allows the 2B Stator Clg Wtr PP to start.

trgset 9 "mgdscbnc_drw"|10
trg 9 "dor mgdscbtr"|10

Event Trigger 10 Activates when 2B Stator Clg Wtr PP control switch Trip

position override is deleted. Closes 2B stator cooling water pump breaker.

trgset 10 ".not. mgdscatr_drw(2)"|12
trg 10 "set mgzsccl(2) = true"|12

Event Trigger 11 Activates when 2B stator cooling water pump breaker closes.

Returns the 2B Stator Clg Wtr PP trip SER alarm to NORMAL.

trgset 11 "mgzsccl(2) .and. (.not. sezpoint(777))"|12
trg 11 "imf ser0777 normal"|12

Event Trigger 12 acknowledges stator cooling water & H2 Seal Oil/Alterrex Pnl trouble alarms.

trgset 12 "0" |14
irf t22 (12) acknowledge|14
irf t81 (12) true|14

Event Trigger 13 Inserts a steam leak upstream of the restrictors.

trgset 13 "0"|14
imf i21 (13) 0.0015 5:00 0.002|14

Event Trigger 14 installs MSL Group 1 RPV level byp and Offgas High Rad byp jumpers.

trgset 14 "0"|16
irf ci59jp (14) in|16
irf ogogjp (14) in|16

Event Trigger 15 installs scram jumpers.

trgset 15 "0"|16
irf rpjumpas (15) on|16

Event Trigger 16 pulls ARI fuses

trgset 16 "0"|18
irf aw4 (16) pulled|18

Event Trigger 17 Increases size of steam leak upstream of the restrictors.

trgset 17 "0"|18
trg 17 "mmf i21 0.5"|18

END

Date: TODAY

Unit 2 Turnover

Online Information

912 MWe

Online Risk: Green

Risk Equipment:

Protected Pathway(s)

Shutdown Information

Time to Boil: N/A

Shutdown Risk: N/A

Reactivity Management

Limit: MFLCPR N/A

Action Level: N/A

S/D Method: DGP 02-01

Unit 2 Priorities

Maintain power per TSO.

LCORAs

LCORA Title None

Start
Clock Ends

Compensatory Actions

Degradation
Documentation

Frequency
Responsible

Compensatory Action

Unit 2 Conditions, Status, Abnormalities

Unit 2 Abnormal Component Position

U2 Open Operability Determinations with Compensatory Actions

Shift 1 Activities (X = Completed)

☐
☐

Shift 2 Activities

☐ DOP 3900-01
☐

Shift 3 Activities

☐
☐

Common Unit Activities

Shift 1 Activities (X = Completed)

☐
☐

Shift 2 Activities

☐
☐

Shift 3 Activities

☐
☐

Unit 2 Procedures in Progress (Non-Surveillance)

None

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