

Dresden Generating Station

ILT-N-1

SECURE SBO DIESEL FROM SURVEILLANCE RUN

RAISE POWER USING CONTROL RODS

CRD FCV FAILS HIGH CAUSING A ROD TO DRIFT IN

ERV SPURIOUS OPENING

INSTRUMENT AIR COMPRESSOR TRIP

MASTER RECIRCULATION FLOW CONTROLLER FAILS UPSCALE

EARTHQUAKE CAUSES PLANT DAMAGE / TORUS LEAK / MANUAL SCRAM

SMALL STEAM LEAK / EMERGENCY DEPRESSURIZE DUE LOW TORUS LEVEL

Rev. 00

11/14

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>14-1 (2015-301)</u>
Evaluators	Operators	/ crew position
_____	_____	/ ATC
_____	_____	/ BOP
_____	_____	/ CRS
Initial Conditions:	<u>70% Power, steady state, and equilibrium xenon</u>	
	<u>U2 SBO Diesel Generator running for surveillance</u>	
Turnover:	<u>Shutdown the U2 SBO Diesel Generator</u>	
	<u>Then, raise power using control rods.</u>	

Event No.	Malf. No.	Event Type*	Event Description
1	NONE	N	AUX POWER – SBO Diesel, Secure from Surveillance Run (BOP)
2	NONE	R	Raise Power Using Control Rods (ATC)
3	RODF08DI	C/T	CRD FCV Fails High Causing Rods to Drift IN (TS) (ATC)
4	ADS3EBN / ADS3ESD	C/T	ERV - Spurious Opening (T/S) (BOP)
5	N33	C	INSTRUMENT AIR – Compressor, Trip Due to Overcurrent (BOP)
6	ASDMRHGH	I	RECIRC – Master Recirculation Flow Controller Fails Upscale (ATC)
7	CSBRKSEV	M	Manual Scram – Earthquake Causes Plant Damage/Torus Leak
8	F41	M	Small Steam Leak/Emergency Depressurize Due Low Torus Level

* (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 Torus leak that requires an Emergency Depressurization.

Scenario Summary

1. Unit is at ~70%.
2. The following equipment is OOS:
 - a. None.
3. LCOs:
 - a. None

Scenario Sequence

- After completing shift turnover, the BOP will shutdown the U2 SBO Diesel Generator per DOS 6620-07, SBO 2(3) Diesel Generator Surveillance Tests.
- After completing DOS 6620-07, the Team will raise power using control rods per procedure DGP 03-01, Power Changes.
- After the change in power has been observed, a CRD FCV controller failure occurs causing control rod P-08 to drift in. The Team should take actions per DOA 0300-05, Inoperable or Failed Control Rod Drives. Technical Specifications 3.1.3, Condition C, applies.
- After the CRD FCV failure is addressed, ERV E spuriously opens. The BOP must perform actions per DOA 0250-01, Relief Valve Failure, to close the ERV. Technical Specifications 3.4.3.A.1, 3.5.1.H.1 and 3.6.1.8 apply.
- After the ERV failure is addressed, an IAC trips on overcurrent. The Team starts a standby IAC and directs it lined up to the Unit 2 air system.
- After the IAC trip is addressed, the Master Recirculation Flow Controller fails upscale. The CRS/ATC will enter DOA 0202-03, Reactor Recirculation System Flow Control Failure to address the failure.
- After the Master Recirc failure is addressed, an earthquake causes plant damage, including a torus leak, which will require the Team to implement DOA 0010-03, Earthquakes, and manually scram the reactor.
- After the scram, a small steam leak occurs. Emergency Depressurization will ultimately be required due to torus level.
- Completion criteria: When the RPV is depressurized and at the discretion of the Lead Examiner, Place the simulator in FREEZE.

Event One – Shutdown the U2 SBO Diesel Generator

- The BOP will shutdown the U2 SBO Diesel Generator.

Malfunctions required: 0

- (None)

Success Path:

- Performs DOS 6620-07, SBO 2(3) Diesel Generator Surveillance Tests.

Event Two – Raise Power Using Control Rods

- The Team will raise power by withdrawing control rods.

Malfunctions required: 0

- (None)

Success Path:

- Performs DGP 03-01, Power Changes.
- Performs DGP 03-04, Control Rod Movements
- Performs DOP 0400-01, Reactor Manual Control System Operation

Event Three – CRD FCV Controller Fails High Causing a Rod to Drift In

- The CRD FCV fails open due to a failed low flow signal to the controller. The higher cooling water flow causes rod P-08 to drift in.

Malfunctions required: 1

- (Control Rod Drifts In)

Success Path:

- Takes manual control of the CRD Flow Controller.
- Performs DOA 300-05, Inoperable or Failed Control Rod Drives.
- Determines Technical Specifications requirements.

Event Four – ERV Spurious Opening

- ERV E spuriously opens.

Malfunctions required: 1

- (ERV E spuriously opens)

Success Path:

- Performs DOA 0250-01, Relief Valve Failure. Pulling the control power fuses is successful.

Event Five – Instrument Air Compressor Trip

- An IAC trips and IA pressure slowly drops.

Malfunctions required: 1

- (IAC Trip)

Success Path:

- Performs DOA 4700-01, Instrument Air System Failure.
- Starts and lines up a standby IAC.

Event Six – Master Recirculation Flow Controller Fails Upscale

- The Master Recirculation Flow Controller fails upscale.

Malfunctions required: 1

- (Master Recirculation Flow Controller fails upscale)

Success Path:

- .DOA 0202-03, Reactor Recirculation System Flow Control Failure.

Event Seven – Earthquake Causes Plant Damage / Torus Leak / Manual Scram

- An earthquake causes plant damage, including a torus leak.

Malfunctions required: 1

- (Earthquake Causing Torus Leak)

Success Path:

- Performs DGP 02-03, Reactor Scram.
- Performs DEOP 0100, RPV Control
- Performs DEOP 0200-01, Primary Containment Control.

Event Eight – Small Steam Leak / Emergency Depressurize Due Low Torus Level

- A small steam leak occurs. Emergency Depressurization will ultimately be required due to torus level

Malfunctions required: 1

- (Small Steam Leak)

Success Path:

- Performs DEOP 0200-01, Primary Containment Control.

PRE-SCENARIO ACTIVITIES

- 1 If applicable, conduct pre-scenario activities in accordance with TQ-JA-155-04, SIMULATOR EXAMINATION BRIEFING.
 - a. Direct the Team to perform their briefs prior to entering the simulator.
 - b. Provide the Team a copy of DOS 6620-07, SBO 2(3) Diesel Generator Surveillance Tests, marked-up ready to shutdown the U2 SBO Diesel Generator. (Step 45 next of Rev. 40)
 - c. Provide the Team a copy of DGP 03-01, Power Changes, marked-up for plant conditions below.
 - d. Provide the Team a copy of DGP 03-04, Control Rod Movements.
 - e. Provide the Team a copy of DOP 0400-01, Reactor Manual Control System Operation.

- 2 Simulator Setup (the following steps can be done in any logical order)
 - a. Initialize simulator in an IC with the following:
 - 1) Reactor power ~63%. (Old Training Load IC 153 used for validation, Seq. 2S.0.0, 1646, ready to pull step 13)
 - 2) Adjust Core flow to 58-60 Mlbm/hr. (MWe ~560)
 - 3) Run CAEP file: Set Torus Temp to 78 Deg.cae. This sets Torus temperature to 78 degs. for the ERV spurious opening event.

- 3 Verify the following simulator conditions:
 - a. Verify 2A and 2B Instrument Air Compressors running.
 - b. Verify 3C IAC off.
 - c. Verify one Service Air Compressor supplying both Units.
 - d. Load the U2 SBO Diesel Generator to Bus 24 per DOS 6620-07, SBO 2(3) Diesel Generator Surveillance Tests. (Step 45 next of Rev. 40)

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

- 4 Run the initial setup CAEP file: 14-1 ILT-N-1.cae

- 5 Open but do NOT RUN YET CAEP file: Recirc_up.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 / Sensitive Actions (Includes PRA Actions)
- Required Actions
- Optional Actions

Event One – Shutdown the U2 SBO Diesel Generator

Trigger	Position	Crew Actions or Behavior
28		<p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>At any time during the scenario the Team requests gains set to 1, (wait 3 min) activate trigger 28, then report: “gains set to 1”. (This trigger can be toggled OFF, then back ON to adjust the gains more than once).</p>
		<p><u>ROLE PLAY:</u></p> <p>EO at SBO DG directed to perform local operations: wait 3 min, and then report “I completed the [fill in the requested operation]”.</p> <p>TSO: Acknowledge reports from the Team.</p>
	CRS	<input type="checkbox"/> Directs BOP to shutdown the U2 SBO Diesel Generator per DOS 6620-07, SBO 2(3) Diesel Generator Surveillance Tests.
	BOP	<p>Performs DOS 6620-07, SBO 2(3) Diesel Generator Surveillance Tests, as directed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Notifies TSO of Unit 2 SBO D/G shutdown. <input type="checkbox"/> Announces on the PA system that the U2 SBO Diesel Generator is being shutdown. ■ Reduces U2 SBO D/G load. ■ Removes U2 SBO D/G feed from Bus 24. <input type="checkbox"/> Notifies TSO that Unit 2 SBO D/G is removed from the Grid. ■ Opens 4 kV bus SBO tie breaker BUS 61 TO BUS 24 TIE GCB. ■ Restores BUS 61 to normal feed (Bus 11). ■ Reduces U2 SBO D/G load to between 250 and 500 kW. ■ Removes U2 SBO D/G feed from BUS 61. ■ Prepares U2 SBO D/G 2 for subsequent start.
		<p><u>CUE:</u></p> <p>When U2 SBO D/G is placed in Cooldown mode, inform the Team that another NSO will complete the remainder of DOS 6620-07, SBO 2(3) Diesel Generator Surveillance Tests.</p>
	ATC	<input type="checkbox"/> Assists BOP as directed.

Event 1 Completion Criteria:

- U2 SBO DG in Cooldown Mode,
- AND/OR,
- At the discretion of the Lead Examiner.

Event Two – Raise Power Using Control Rods

Trigger	Position	Crew Actions or Behavior
	CRS	Directs pulling control rods: <ul style="list-style-type: none"> <input type="checkbox"/> Reviews REMA. <input type="checkbox"/> Designates second verifier. <input type="checkbox"/> Directs ATC to pulls rods.
	ATC	Performs the following actions per DOP 0400-01, Reactor Manual Control System Operation, and DGP 03-04, Control Rod Movements, as directed <u>Verifies the following prior to moving any control rod:</u> <ul style="list-style-type: none"> ■ Control rod selected on the select matrix is correct rod. ■ Second Verification requirements satisfied. ■ Rod Out Permit light is illuminated. <u>Withdraws rods as follows:</u> <ul style="list-style-type: none"> ■ Moves RONOR Switch to NOTCH OVERRIDE (use of RONOR is optional) and the Rod Movement Control switch to ROD OUT. ■ Verifies ON light and proper Control Rod Timer operation. ■ Releases switches before target position is reached. ■ Verifies rod settles to target position and proper response of nuclear instrumentation.
	BOP	Performs second verification checks. <u>For first rod in a step:</u> <ul style="list-style-type: none"> ■ Verifies correct control rod pattern ■ Verifies correct step and array. ■ Verifies RWM rod blocks enabled <u>For all rods moved:</u> <ul style="list-style-type: none"> ■ Verifies correct control rod selected. ■ Verifies planned control rod motion is correct. ■ Verifies control rod at target position.

Event 2 Completion Criteria:

- Sufficient power increase,
- AND/OR**
- At the direction of the Lead Examiner.

Event Three – CRD FCV Controller Fails High Causing a Rod to Drift In

Trigger	Position	Crew Actions or Behavior
		Note: The failure of CRD flow controller input low causes the FCV to open which increases drive water and cooling water pressure. This has been known to cause Control Rods to drift in.
1		<p>Simulator Operator:</p> <p>At the discretion of the Lead examiner, activate trigger 1, which causes:</p> <ul style="list-style-type: none"> ▪ CRD Flow Controller flow input to fail low. ▪ Control Rod P-08 to drift in.
		<p>Role Play:</p> <p>EO to check P-08 accumulator: Wait 2 min, then report “At the HCU for P-08, the line with the 112 valve is hotter than normal.</p> <p>WEC/EO to hydraulically isolate and/or electrically disarm P-08: acknowledge the request. It is not intended to complete the request.</p> <p>QNE to evaluate core limits: Acknowledge the request. Wait 2 min. and report, “core parameters are within limits”.</p>
16		<p>Simulator Operator:</p> <p>When CRD flow has been returned to normal, activate trigger 16, which deletes Control Rod P-08 drift in malfunction.</p>
16		<p>Simulator Operator / Role Play:</p> <p>EO to close CRD P-08’s 2-0305-102, WITHDRAW VLV: Wait 2 min, then activate Trigger 16 and report, “CRD P-08’s 2-0305-102 is closed”.</p>
	ATC	<ul style="list-style-type: none"> <input type="checkbox"/> Announces 902-5 A-3, Rod Drift, alarm. <input type="checkbox"/> Notices and announces that Control Rod P-08 is drifting in. <input type="checkbox"/> May select Rod P-08 and receives alarm DAN 902-5 B-3, Rod Worth Min Block. <p>Performs actions of DOA 0300-05, Inoperable Or Failed Control Rod Drives as directed.</p> <p><u>Immediate:</u></p> <ul style="list-style-type: none"> ■ Bypasses the Rod Worth Minimizer. ■ Inserts the CRD to 00 using Emergency Rod In.
	CRS	<ul style="list-style-type: none"> ■ Enters DOA 0300-05, Inoperable or Failed Control Rod Drives, and directs actions. <input type="checkbox"/> May refer to Tech. Spec 3.3.2.1 Condition C. (Not required with RX power >20%) <input type="checkbox"/> May enter DGA 07, Unpredicted Reactivity Addition.

Event Three – CRD FCV Controller Fails High Causing a Rod to Drift In

Trigger	Position	Crew Actions or Behavior
	<p>ATC</p> <p>CRS</p>	<ul style="list-style-type: none"> ■ Announces that procedure directs entering DOA 0300-12, Mispositioned Control Rod. □ Discontinues ALL non-emergency control rod motion and notifies CRS and QNE to evaluate core parameters. □ Directs EO to close CRD P-08's 2-0305-102, WITHDRAW VLV, to prevent CRD discharge volume from filling. ■ References TS 3.1.3, Condition C, and determines the following actions are required: <ul style="list-style-type: none"> • C.1 Fully insert inoperable control rod within 3 hours. (DOA 0300-05, Inoperable or Failed Control Rod Drives, directs inserting the rod) • C.2 Disarm the associated CRD within 4 hours. □ Directs disarming rod P-08.hours.
	CRS	<ul style="list-style-type: none"> ■ Enters DOA 0300-12, Mispositioned Control Rod.
	CRS	<ul style="list-style-type: none"> □ Directs taking rod P-08 OOS on the RWM.
	ATC	<ul style="list-style-type: none"> □ Takes rod P-08 OOS on the RWM.
		<p>Note:</p> <p>The following actions for the CRD FCV controller failure may be performed concurrently with the drifting CRD actions.</p>
	CRS	<ul style="list-style-type: none"> ■ Due to reports of abnormal CRD system flows and pressures, enters DOA 0300-01, Control Rod Drive System Failure.
	ATC	<ul style="list-style-type: none"> ■ Performs DOA 0300-01, Control Rod Drive System Failure: <ul style="list-style-type: none"> • Places FIC 2-340-1, CRD Flow Controller, in MANUAL. • Adjusts flow to between 40 and 60 gpm.

Event 3 Completion Criteria:

- **CRD Flow Controller in MAN with flow restored to normal, AND**
- **Control Rod P-08 Has Been Inserted To Position 00, AND**
- **Tech Specs Have Been Addressed,**

AND/OR,

- **At the direction of the Lead Examiner.**

Event Four – ERV Spurious Opening

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

Event Four – ERV Spurious Opening

Trigger	Position	Crew Actions or Behavior
	BOP	<p>Initiates Torus cooling per “Hard Card”:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Places 316A/B and 318A/B keylock switches in MANUAL OVERRD. <input type="checkbox"/> Verifies the third circ water pump is secured prior to starting the first CCSW pump. <input type="checkbox"/> IF starting torus cooling during a LOCA, THEN verifies RWCU recirc pump is tripped PRIOR to starting the first CCSW pump. <input checked="" type="checkbox"/> Starts one CCSW pump in each loop and verifies 3A/B valves open. <input checked="" type="checkbox"/> Starts at least one LPCI pump in each loop. (Starts additional LPCI pumps as required.) <input checked="" type="checkbox"/> Adjusts CCSW flow controller to approximately 3500 gpm for one pump; > 5000 gpm two pumps. [Maintain LPCI/CCSW dP ≥ 7 psid (1 LPCI Pump/loop) OR ≥ 20 psid (two LPCI Pumps/loop)] <input checked="" type="checkbox"/> Momentarily places 11A/B valve control switches to close. (IF 11A/B remain open or re-opened due to LPCI logic, then close valves as soon as possible.) <input type="checkbox"/> IF required, obtains Unit Supervisor permission, THEN places 317 keylock switches to MANUAL OVERRD. <input checked="" type="checkbox"/> Opens 21A/B and 20A/B valves in desired loop. <input checked="" type="checkbox"/> Throttles open 38A/B valves until > 5000 gpm per LPCI pump is established (maintains LPCI pump discharge pressure > 125 psig). <input type="checkbox"/> Starts additional CCSW pumps if desired: <ul style="list-style-type: none"> <input type="checkbox"/> IF TR 86(32) LTC in MANUAL, THEN PRIOR to starting 3rd OR 4th CCSW PP, verifies voltage on applicable ECCS bus > 4000 volts, preferred target 4160V. <input type="checkbox"/> (Unit 2 Only) If 2/3 EDG is loaded, then refers to DOP 1500-02 prior to starting additional pumps. <input type="checkbox"/> Adjusts CCSW flow controller to > 5000 gpm for two CCSW pumps [Maintain LPCI/CCSW dP ≥ 7 psid (1 LPCI Pump/loop) OR ≥ 20 psid (two LPCI Pumps/loop)].
	CRS	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Declares “E” ERV inoperable. <input checked="" type="checkbox"/> Determines following Technical Specifications apply: <ul style="list-style-type: none"> <input type="checkbox"/> 3.4.3, Safety and Relief Valves, Condition A.1: Restore the relief valve to OPERABLE status within 14 days. <input type="checkbox"/> 3.5.1, ECCS Operating, Condition H.1: Restore the ADSV to OPERABLE status within 14 days. <input type="checkbox"/> 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. <input type="checkbox"/> May refer to 3.3.6.3, Relief Valve Instrumentation.
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> Directs performance of Suppression Chamber–to–Drywell Vacuum Breaker testing.
	TEAM	<ul style="list-style-type: none"> <input type="checkbox"/> May enter and perform DGA-07, Unpredicted Reactivity Addition

Event Four – ERV Spurious Opening

Trigger

Position

Crew Actions or Behavior

Event 4 Completion Criteria:

- The failed ERV is closed,
 - Technical Specification determination completed,
- AND/OR,
- At the direction of the Lead Examiner.

Event Five – Loss of Instrument Air

Trigger	Position	Crew Actions or Behavior
4 6		<p>Simulator Operator:</p> <p>At the discretion of the evaluators, activate trigger 4, which trips the 2B Instrument Air Compressor and inserts an IA leak to cause pressure to drop.</p> <p>Verify trigger 6 automatically activates when 3C IAC loads. (Amps > 90) This ramps 3C IA pressure up. Goes very slow otherwise.</p>
		<p>Role Play:</p> <p>EO to investigate 2B IAC trip: (Wait 4 min)</p> <p>Report “the 2B IAC tripped on low lube oil pressure. There is nothing else abnormal at the compressor”.</p> <p>At Bus 27 breaker report “the breaker is closed and appears normal”.</p> <p>Note: The compressor will NOT be restored to operation.</p>
5		<p>Simulator Operator / Role Play:</p> <p>Coordinate with the NSO to start and lineup 3C IAC.</p> <p>After 3C IAC is started and its air pressure is greater than U2 IA pressure, call the Control Room and report “the 3C IAC is ready to lineup to U2, do you want me to continue?”</p> <p>If directed to lineup 3C IAC to U2 IA: wait 1 min, then activate trigger 5 to lineup 3C IAC to U2. Also valves 2A IAC back in.</p>
		<p>Role Play:</p> <p>EO to verify 2-4701-500 opened: (wait 2 min)</p> <p>Verify annunciator 923-1 F-4 is in alarm, then report, “2-4701-500 is open”.</p>
7		<p>Simulator Operator / Role Play:</p> <p>EO to reset Service Air to Instrument Air backup valve 2-4701-500. Wait 2 min, activate trigger 7 and then report “Service Air to Instrument Air backup valve 2-4701-500 is reset and closed”.</p>
		When/if asked report that the U2 and U1 Service Air Systems are not cross-tied.
	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 2B IAC tripped <input type="checkbox"/> Directs an EO to investigate the cause of the 2B Instrument Air Compressor trip
	CRS	<input type="checkbox"/> Enters DOA 4700-01, Instrument Air System Failure:
	CRS	<input type="checkbox"/> If required, enters DOA 4600-01, Service Air System Failure

Event Five – Loss of Instrument Air

Trigger	Position	Crew Actions or Behavior
	BOP	<p>Performs DOA 4700-01, Instrument Air System Failure, as directed:</p> <ul style="list-style-type: none"> ■ Starts 3C IAC and directs it lined up to U2 □ Directs an EO to investigate the cause of the 2B Instrument Air Compressor trip □ Verifies U2 Service Air to U2 Inst. Air cross-tie (2-4701-500) valve opens
	BOP	<ul style="list-style-type: none"> □ Reports 923-1, F-4, U2 INST PRESS LO ALARM.
	ATC	<ul style="list-style-type: none"> □ If received, reports 902-6 H-10, FW REG VLVS BACKUP AIR ACTIVE.
	BOP	<p>If received, announces 923-1, D-5 U2 SERV AIR PRESS LO and refers to DAN:</p> <ul style="list-style-type: none"> □ Verifies Unit 2 to Unit 1 Service Air not cross-tied. □ Performs DOA 4600-1, Service Air System Failure, as directed. □ Announces loss of service air on the plant PA for people who may be using this as breathing air.

Event 5 Completion Criteria:

**Unit 2 Instrument Air pressure has recovered or is recovering,
OR,
At the discretion of the Floor Instructor / Lead Evaluator.**

Event Six – Master Recirculation Flow Controller Fails Upscale

Trigger	Position	Applicant's Actions or Behavior
CAEP: Recirc_up.cae		<p><u>SIMULATOR OPERATOR:</u> At the discretion of the Lead Examiner, run CAEP: Recirc_up.cae, which will cause Master Recirc Flow Controller to fail upscale.</p>
		<p><u>ROLE PLAY:</u> QNE to check core parameters: Wait 5 min, and then report “all core parameters are within limits”.</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"> ○ Increase in Recirc Loop Flow as indicated on FR 2-260-7. ○ Increase in Rx Power indicated on WI 2-6040-59. ○ Increase in Core Flow and DP on DPR/FR 2-263-110. ○ Increase in Total Stm Flow on UR 2-640-27. ○ Increase in Rx Pressure on P/FR 2-640-28. ○ Increase in Total Feedwater Flow on UR 2-640-26. ○ Increase in Power Level on RR 2-750-10A/D, & RR 2-750-10B/C.
	CRS	<ul style="list-style-type: none"> ■ Enters and directs actions of DOA 0202-03, Reactor Recirc System Flow Control Failure. □ Enters 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"> ■ Momentarily places 2A & 2B ASD SPEED HOLD switches 2-202-60-302A & B to HOLD at Panel 902-4. □ Verifies Core thermal power <2957 MWt. □ Verifies NOT operating in the unstable region of the Power / Flow Map.
	ATC	<p>Completes actions of DOP 0202-16, Reactor Recirculation System Manual Hold and Local Manual Operation. (None required)</p>
	BOP	<ul style="list-style-type: none"> □ Assists NSO as directed.

Event 6 Completion Criteria:

- Both Recirc pumps in Speed Hold;
- OR,**
- At the direction of the Lead Examiner.

Event Seven – Earthquake Causes Plant Damage / Torus Leak / Manual Scram

Trigger	Position	Applicant's Actions or Behavior
8		<p><u>Role Play:</u> At the discretion of the Lead Examiner, call the Control Room, as Security and report there has been a confirmed earthquake felt throughout the plant.</p> <p><u>SIMULATOR OPERATOR:</u> After the above report, activate trigger 8, which starts an ECCS suction line break in the torus basement.</p> <p><u>Note:</u> It takes about 20 minutes for torus level to reach 11 feet. <i>At the discretion of the lead examiner, use the cues in this event to jump ahead in time to expedite 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 EO to perform DOS 1600-02, Torus Level Verification Using Local Sight Glass. ■ Directs EO 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 EO 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 EO sent to investigate leakage (wait 2 min) or if not sent, then as the EO 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 EO 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 could be stopped (wait 3 min), then report: "Maintenance cannot stop the leak".</p> <p>As the EO sent to check the seismic monitor, report: "the seismic monitor has been activated (red light lit)".</p> <p>If contacted as any outside agencies, regarding the earthquake, confirm there has been an earthquake in the area but there is no more information at this time.</p>
	CRS	<ul style="list-style-type: none"> □ May enter DOA 0040-02, Localized Flooding in Plant. □ May reference DOA 0010-03, Earthquakes.

Event Seven – Earthquake Causes Plant Damage / Torus Leak / Manual Scram

Trigger	Position	Applicant's Actions or Behavior
	BOP	Performs the following actions per DOA 0040-02, Localized Flooding in Plant, as directed: <ul style="list-style-type: none"> ■ Makes PA announcement. ■ Directs EO to investigate leakage to torus basement. □ Notifies Radiation Protection and Security as time permits.
		<p><u>CUE (if desired for time compression):</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 6 inches every 5 minutes.</p>
	CRS	<ul style="list-style-type: none"> ■ √ When suppression pool water level cannot be held above 12 feet, directs tripping HPCI and preventing HPCI from starting. (PC-4.3)
	BOP	<ul style="list-style-type: none"> ■ √ Trips HPCI and prevents it from starting. (PC-4.3) <ul style="list-style-type: none"> • Place HPCI Aux Oil Pump in PTL. • Place HPCI 14 Valve in PTL. <p><u>OR</u></p> <ul style="list-style-type: none"> • Place HPCI flow controller in MANUAL <u>AND</u> reduce output to zero (0).
	CRS	<ul style="list-style-type: none"> □ If time permits, due to both “E” ERV and HPCI inoperable, determines following Technical Specifications apply: <ul style="list-style-type: none"> • 3.5.1, ECCS—Operating, Condition K: Restore the relief valve to OPERABLE status within 14 days. Enter LCO 3.0.3 immediately. • 3.0.3, Action shall be initiated within 1 hour to place the unit, as applicable, in MODE 3 within 13 hours; and MODE 4 within 37 hours.
	CRS	Enters and directs performance of DEOP 0200-01, Primary Containment Control: <ul style="list-style-type: none"> □ May attempt to add water to the Torus per DOP 1600-02. □ May direct scram preparatory actions per DGP 02-03, Reactor Scram. ■ May conservatively direct the Team to perform a manual reactor scram while determining if leak can be isolated.
	ATC / BOP	<ul style="list-style-type: none"> □ Performs scram preparatory actions per DGP 02-03, Reactor Scram, as directed. <ul style="list-style-type: none"> ○ IF FCL > 93%, THEN reduce FCL to < 93% by inserting CRAM rods per DGP 03-04 OR in sequence rods per DGP 03-04. ○ Start the motor suction pump AND turning gear oil pump. ○ Trip hydrogen addition.

Event Seven – Earthquake Causes Plant Damage / Torus Leak / Manual Scram

Trigger	Position	Applicant's Actions or Behavior
	ATC / BOP	<ul style="list-style-type: none"> ■ Performs manual scram per DGP 02-03, Reactor Scram, as directed. <ul style="list-style-type: none"> • Depresses BOTH Scram buttons. • Places RX MODE SW in SHUTDOWN. <ul style="list-style-type: none"> ○ Verifies Recirc pumps run back to minimum. ○ Inserts SRMs and IRMs. ○ Controls reactor water level +25 to +35 inches or as directed by the Unit Supervisor. ○ Verifies turbine tripped. ○ Verifies generator tripped. ○ Verifies aux power transfers.
	BOP	<p>Performs the following actions per DEOP 200-01, Primary Containment Control, as directed:</p> <ul style="list-style-type: none"> □ May attempt to add water to the torus by opening the HPCI 14 valve. □ Monitors/Reports DEOP 0200-01 entry parameters.
	CRS	<ul style="list-style-type: none"> □ May decide to anticipate RPV Blowdown: □ Directs opening turbine bypass valves.
	BOP	<ul style="list-style-type: none"> □ Opens turbine bypass valves. (If directed to anticipating Blowdown)
	CRS	<p>Enters DEOP 0300-01, Secondary Containment Control, and directs:</p> <ul style="list-style-type: none"> □ If Reactor Building Ventilation isolates when unit is scrammed, directs restarting Reactor Building Ventilation.
	BOP	<p>Performs DEOP 0300-01, Secondary Control, as directed:</p> <ul style="list-style-type: none"> □ Time permitting, restarts Reactor Building Ventilation (if it isolates when the reactor is scrammed).

Event 7 Completion Criteria:

- Team has performed a reactor scram,
AND/OR
- At the discretion of the Lead Examiner.

Event Eight – Small Steam Leak / Emergency Depressurize Due Low Torus Level

Trigger	Position	Crew Actions or Behavior
9		<p><u>SIMULATOR OPERATOR:</u> After the Team has stabilized the plant and at the discretion of the Lead Evaluator, activate trigger 9, which causes a small steam leak.</p> <p><u>ROLE PLAY:</u> EO sent to check EDG operation: wait 3 min, then report: “Both EDGs are operating normally”.</p> <p><u>ROLE PLAY:</u> Acknowledge other requests; delay as necessary.</p>
	TEAM	<ul style="list-style-type: none"> ■ Determines/announces Drywell pressure rapidly rising.
	CRS	<p>Re-enters DEOP 0200-01, Primary Containment Control, when PC/P reaches 2 psig and performs/directs:</p> <ul style="list-style-type: none"> □ Monitoring of PC/P. □ Initiation of torus sprays before PC/P of 9 psig. ■ When PC/P is above 9 psig or before DW/T reaches 281°F: <ul style="list-style-type: none"> • Verification of DSIL. • Tripping of recirc pumps. • Tripping of DW coolers. • √ Initiation of DW sprays. (PC-1.1) ■ √ Directs terminating drywell sprays before drywell pressure drops to < 0 psig. (PC-1.2) (This may not apply based on scenario run time)
	BOP	<ul style="list-style-type: none"> ■ √ Initiates Torus sprays and Drywell sprays as directed. (PC-1.1)
	BOP	<ul style="list-style-type: none"> ■ √ Secures torus sprays and Drywell sprays before 0.0 psig. (PC-1.2) (This may not apply based on scenario run time)
		<ul style="list-style-type: none"> ■ Re-enters DEOP 0200-01, Primary Containment Control, when torus bulk temperature reaches 95°F and performs/directs: <ul style="list-style-type: none"> • ⌚ Initiation of Torus Cooling. (TCA13, 10 min.) (May already be running)
		<ul style="list-style-type: none"> ■ ⌚ Initiates Torus Cooling per the Hardcard. (TCA13, 10 min.) (May already be running)
		<p><u>Note:</u> Once the Team determines the Torus leak cannot be stopped, they may anticipate blowdown by using the Isolation Condenser and the Turbine Bypass valves.</p>
	CRS	<ul style="list-style-type: none"> □ May anticipate blowdown and directs: <ul style="list-style-type: none"> ○ Initiating the Isolation Condenser. ○ Opening the Turbine Bypass valves.

Event Eight – Small Steam Leak / Emergency Depressurize Due Low Torus Level

Trigger	Position	Crew Actions or Behavior
	BOP	Anticipates blowdown as directed: <ul style="list-style-type: none"> <input type="checkbox"/> Initiates Isolation Condenser to full flow. <input type="checkbox"/> Opens the Turbine Bypass valves.
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> May direct an EO to standby to re-install 'E' ADSV fuses.
		<p><u>CUE (if desired for time compression):</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	<ul style="list-style-type: none"> √ When suppression pool water level cannot be held above 11 feet, manually scrams and then performs an emergency depressurization. Enters DEOP 0400-02, Emergency Depressurization, and directs: (PC-4.4) Enters DGP 02-03, Reactor Scram, and directs a manual scram. (May be already done) Enters DEOP 0400-02, Emergency Depressurization, and directs: <ul style="list-style-type: none"> <input type="checkbox"/> Initiation of Isolation Condenser to maximum flow. ■ Verification that SP/L >6 feet. ■ √ Opening all ADS valves. (RPV-2.1) ('E' ADSV fuses are pulled) <input type="checkbox"/> May direct EO to install 'E' ADSV fuses. ■ Verification relief valves are open. ■ IF less than 5 ADSVs open, directs other Emergency Depressurization systems initiated: <ul style="list-style-type: none"> • √ Directs turbine bypass valves opened. (May already be open for anticipation of Emergency Depressurization) (RPV-2.3)
10		<p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>EO to re-install 'E' ADSV fuses: wait 1 min, the activate trigger 10, which re-installs 'E' ADSV fuses. Call the Control Room and report "the 'E' ADSV fuses are re-installed".</p>
	BOP	<ul style="list-style-type: none"> √ Performs DGP 02-03, Reactor Scram. (May be already done, see actions earlier in previous Event) (PC-4.4) √ Performs DEOP 0400-02, Emergency Depressurization, actions as directed: (PC-4.4) <ul style="list-style-type: none"> ■ Initiates Isolation Condenser to maximum flow <input type="checkbox"/> Verifies that SP/L >6 feet. ■ √ Opens ADS valves. (If 'E' ADSV fuses are pulled, it does not open) (RPV-2.1)
	BOP	<ul style="list-style-type: none"> ■ √ Opens turbine bypass valves. (RPV-2.3) (May already be open due to anticipating Blowdown)

Event Eight – Small Steam Leak / Emergency Depressurize Due Low Torus Level

Trigger

Position

Crew Actions or Behavior

Event 8 / Scenario Completion Criteria:

- **Sprays the Drywell; AND,**
 - **RPV depressurization in progress,**
- AND / OR,**
- **At the direction of the Lead Examiner.**

Critical Tasks	
(PC-4.3)	When executing DEOP 200-1, Primary Containment Control, when suppression pool water level cannot be held above 12 feet, trip HPCI.
(PC-4.4)	When executing DEOP 200-1, Primary Containment Control, when suppression pool water level cannot be held above 11 feet, manually scram and then perform an emergency depressurization of the reactor.
(RPV-2.1)	When conditions are met per DEOP 400-2, Emergency Depressurization, the minimum number of available SRV's required for emergency depressurization (MNSRED) are opened.
(RPV-2.3)	After DEOP 400-2, Emergency Depressurization, has been entered, an attempt has been made to open all ERV's, and less than the minimum number of available SRV's required for emergency depressurization (MNSRED) are open, alternate emergency depressurization methods are used until RPV pressure is less than the decay heat removal pressure (DHRP).
(PC-1.1)	While executing DEOP 200-1, Primary Containment Control, when drywell pressure exceeds 9 psig and only if operating within the safe region of the drywell spray initiation limit (DSIL), initiate drywell sprays.
(PC-1.2)	After initiating drywell sprays per the primary containment pressure or temperature legs of DEOP 200-1, Primary Containment Control, terminate drywell sprays before drywell pressure drops to < 0 psig. (This may not apply based on scenario run time)

REFERENCES

PROCEDURE	TITLE
DAN 902-4 C-23	TORUS NARROW RANGE WTR LVL LO
DAN 902-5 A-3	ROD DRIFT
DAN 902-5 B-3	ROD WORTH MIN BLOCK
DAN 923 A-3 (B-2)	U2 E(W) RBFD SUMP LVL HI-HI
DEOP 0100	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 03-01	POWER CHANGES
DGP 02-03	REACTOR SCRAM
DGP 03-04	CONTROL ROD MOVEMENTS
DOA 0010-03	EARTHQUAKES
DOA 0040-02	LOCALIZED FLOODING IN PLANT
DOA 0202-03	REACTOR RECIRC SYSTEM FLOW CONTROL FAILURE
DOA 0250-01	RELIEF VALVE FAILURE
DOA 0300-01	CONTROL ROD DRIVE SYSTEM FAILURE
DOA 0300-05	INOPERABLE OR FAILED CONTROL ROD DRIVES
DOA 0300-12	MISPOSITIONED CONTROL ROD
DOA 4700-01	INSTRUMENT AIR SYSTEM FAILURE
DOP 0202-16	REACTOR RECIRCULATION SYSTEM MANUAL HOLD AND LOCAL MANUAL OPERATION
DOP 0400-01	REACTOR MANUAL CONTROL SYSTEM OPERATION
DOP 6700-20	480V CIRCUIT BREAKER TRIP
DOS 1600-02	TORUS LEVEL VERIFICATION USING LOCAL SIGHT GLASS
DOS 6620-07	SBO 2(3) DIESEL GENERATOR SURVEILLANCE TESTS
TS 3.1.3	CONTROL ROD OPERABILITY
TS 3.3.2.1	CONTROL ROD BLOCK INSTRUMENTATION
TS 3.3.6.3	RELIEF VALVE INSTRUMENTATION
TS 3.4.3	SAFETY AND RELIEF VALVES
TS 3.5.1	ECCS-OPERATING
TS 3.6.1.8	SUPPRESSION CHAMBER-TO-DRYWELL VACUUM BREAKERS

Simulator Scenario Review Checklist

ILT-N-1 Quantitative Attributes	
6	Total malfunctions (5 to 8)
1	Malfunctions after EOP entry (1 to 2)
4	Abnormal events (2 to 4)
2	Major transients (1 to 2)
2	EOPs entered/requiring substantive actions (1 to 2)
1	EOPs contingency requiring substantive actions (0 to 2)
5	Crew critical tasks (2 to 3)

CAEP Files

```
# 14-1 ILT-N-1.cae
# For ILT Class 14-1 NRC Exam
# Written by MP
# Rev 00
# Date 11/14
```

INITIAL CONDITIONS

```
# Sets APRM Master Gain pot to 1.0
irf niagain 1.0
```

```
# E ERV bind malfunction is set to 100%
imf ads3ebn 100.0
```

```
# Closes 2A IAC to U2 valve to simulate 2A IAC is failing to load.
irf vp1 0.0
```

```
# Closes 3C IAC to U2 valve and sets 3C IA pressures to S/D values.
irf vp6 0.0
set iap2 = 20.0
set iapcompr(5) = 20.0
```

EVENT TRIGGERS

```
# Event Trigger 1 Fails CRD Flow Controller input low.
# After 20 sec, drifts CRD P-08 in.
trgset 1 "0"|2
imf rdcflo (1)|2
imf rodp08di (1 20)|2
```

```
# Event Trigger 16 deletes CRD P-08 drift in.
trgset 16 "0"|2
trg 16 "dmf rodp08di"|2
```

```
# Event trigger 2 causes the E ERV setpoint to drift to fail it open.
Trgset 2 "0"|4
imf ads3esd (2) 75.0|4
```

```
# Event Trigger 3 Deletes E ERV binding malfunction so valve will close and removes fuses for the E ERV.
Trgset 3 "0"|4
trg 3 "dmf ads3ebn"|4
irf adsrfe (3) pulled|4
```

```
# Event Trigger 4 Trips 2B IAC and starts an IA leak to cause IA pressure to slowly drop.
trgset 4 "0"|6
imf n22 (4)|6
imf np2 (4) 10.0 5:00 5.0|6
irf vp2 (4) 0.0 60|6
```

```
# Event Trigger 5 Valves in 3C IAC to U2. Deletes IA leak.
# Valves 2A IAC back in
trgset 5 "0"|8
trg 5 "dmf np2"|8
irf vp6 (5) 100.0 60.0|8
irf vp1 (5) 100.0 60.0|8
```

```

# Event Trigger 6 Activates when 3C IAC loads. (> 100amps)
# Ramps 3C IA pressure up. Goes very slow otherwise.
trgset 6 "iaicompr(5) .gt. 90.0"|10
trg 6 "ramp iap2 20.0 110.0 2:00"|10

# Event Trigger 7 Resets Service Air to Instrument Air Backup valve.
trgset 7 "0"|10
irf ia1 (7) reset|10

# Event Trigger 8 Inserts an ECCS suction line break.
trgset 8 "0"|12
trg 8 "ramp wamwlp 200.0 201.0 1:00:00"|12
imf csbrksev (8) 100.0|12
imf cspbbbrk (8 4:00) 100.0|12

# Event Trigger 9 Starts a small steam leak in the DW.
trgset 9 "0"|14
imf i21 (9) 0.4|14

# Event Trigger 10 Installs fuses for the E ERV.
Trgset 10 "0"|14
trg 10 "irf adsrfe in"|14

# Event Trigger 28 sets gain for all 6 APRMs.
trgset 28 "0"|14
trg 28 "irf niagainf true"|14

# END

```

```

# Recirc_up.cae
# For ILT Class 14-1 NRC Exam
# Written by MP
# Rev 00
# Date 11/14

```

```

# Causes Recirc Master Control to Run Up.
ior asdmrhgh 2
ior asdmrhgh 1|4

```

```

ior asdmrhgh 2|20
ior asdmrhgh 1|24

```

```

ior asdmrhgh 2|40
ior asdmrhgh 1|44

```

```

ior asdmrhgh 2|60
ior asdmrhgh 1|64

```

```

ior asdmrhgh 2|80
ior asdmrhgh 1|84

```

```

ior asdmrhgh 2|100
ior asdmrhgh 1|104

```

```

ior asdmrhgh 2|120
ior asdmrhgh 1|124

```

ior asdmrgh 2|140
ior asdmrgh 1|144

ior asdmrgh 2|160
ior asdmrgh 1|164

END

Set Torus Temp to 78 Deg.cae
For ILT Class 14-1 NRC Exam
Written by MP
Rev 00
Date 11/14

Sets Torus Temp to 78 Deg.

set pcheqwl(1) = 46.0
set pcheqwl(2) = 46.0
set pcheqwl(3) = 46.0
set pcheqwl(4) = 46.0
set pcheqwl(5) = 46.0
set pcheqwl(6) = 46.0
set pcheqwl(7) = 46.0
set pcheqwl(8) = 46.0

END

Unit 2 Risk: GREEN

Unit 2 is 560 MWe
Leading Thermal Limit: MAPRAT @ 0.818
Action limit: 0.980
Equipment Unavailable: None
Protected Equipment: None

Unit 3 Risk: GREEN

Unit 3 is in Mode 1 at Full Power
Leading Thermal Limit: MAPRAT @ 0.819
Action Limit: 0.980
Equipment Unavailable: None
Protected Equipment: None

Current Action Statements

None

LCO Started:

LCO Expires:

TS

Cause:

Unit 1 Plant Status

Today U1 Diesel Oil Storage Tank Transfer House has grating removed. Currently roped off with pump installed to pump to U1 Oil Separator Pit as required. Outside operator monitor and pump as necessary.

Today Chem Cleaning ventilation status:
HV-1A/EF-1A are secured due to HV-1A inlet and outlet dampers being shut with fan on, IR# 913157, WO 1239746.
HV-1B/EF-1B are secured due to HV-1B throwing its belts. WO 1156150.
HVAC -1 ON.
HV-2 running.

Switchyard Status

Today TSO notified of oil leaks on 345 Kv BT 2-3 CB (IR 810135) ComEd WO 6396128

Today 138 KV Bus 1 Feed To TR 22 Combi Units has low oil in the 'C' phase, ComEd WO #276162

Today HVO: Exercise CAUTION while in the 345 kV Yard due to excavation being performed in the area.
Marv Evans reports holes being dug near manual switch disconnects 345kV Blue Bus. Plywood will be installed over the holes if access is needed, but be aware there are holes under the plywood.
SSC called from the 345Kv yard reporting that the cable trough covers are removed to prep for upcoming work. Be careful.

Unit 2 Plant Status

Today

Unit 2 Activities

**** Shift 1 Activities ****

-
-

**** Shift 2 Activities ****

- Immediately after assuming the shift, shutdown the U2 SBO Diesel Generator per DOS 6620-07, SBO 2(3) Diesel Generator Surveillance Tests.
- Then raise power by pulling step 13 of the control rod sequence. The QNe is on site and just completed review of the REMA and has determined the REMA is acceptable to use for this power increase.

**** Shift 3 Activities ****

- -
-

Today

**** Unit 2 Procedures In-Progress **** Do Not Delete ****

- DGP 03-01, Power Changes
- DOS 6620-07, SBO 2(3) Diesel Generator Surveillance Tests

Dresden Generating Station

ILT-N-2

SWAP RFP DUE TO OIL LEAK

RAISE REACTOR POWER USING RECIRCULATION FLOW

TBCCW PUMP DEGRADING / SWAP TBCCW PUMPS

CRD FLOW CONTROL VALVE FAILS CLOSED

ISOLATION CONDENSER INADVERTENT INITIATION

SMALL STEAM LEAK IN THE DRYWELL / MANUAL SCRAM

ELECTRICAL ATWS / ARI UNSUCCESSFUL

STEAM LEAK IN THE DRYWELL INCREASES / EMERGENCY DEPRESSURIZATION

Rev. 00

11/14

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>14-1 (2015-301)</u>		
Evaluators			Operators			/crew position		
_____			_____			/ ATC		
_____			_____			/ BOP		
_____			_____			/ CRS		
Initial Conditions:								
70% power _____								

Turnover:								
After shift turnover, raise power using Recirc flow. _____								

Event No.	Malf. No.	Event Type*	Event Description					
1	NONE	C	FW – RFP, Swap Due to Oil Leak (ATC)					
2	NONE	R	RECIRC – Reactivity, Raise Power Using Recirculation Flow (ATC)					
3	WTNP	C	TBCCW - Pump, Swap Due To Degrading Pump (BOP)					
4	RDFCVFBL	C / T	CRD - FCV, Fails Closed (ATC)					
5	ICSPDFT	I / T	ISO COND - System, Spurious Initiation (BOP)					
6	I21	M	MANUAL SCRAM - Steam Leak in the Drywell					
7	B12 SER1026 SER1060 AW4	M	ATWS – Electrical, ARI Unsuccessful					
8	I21 K23 K40	M	EMERGENCY DEPRESSURIZE – On Exceeding Pressure Suppression Pressure Due To Steam Leak inside the Drywell And Partial Loss of Ability to Spray the Drywell					

* (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 Drywell Steam Leak requiring Emergency Depressurization.

Scenario Summary

1. Unit is at 70% power.
2. The following equipment is OOS:
 - a. None
3. LCOs:
 - a. None

Scenario Sequence

- The Team receives a report from the field that 2B RFP has an oil leak. The Team starts 2C RFP and secures 2B RFP
- The Team raises reactor power using recirculation flow.
- 2B TBCCW pump degrades causing pump discharge pressure to drop. The Team swaps TBCCW pumps.
- The CRD Flow Control Valve fails closed. This causes the controller demand to the CRD FCV to fail high, but all indications are the valve is closed. If the team does not recognize the failure quickly and restore CRD cooling flow, the ROD DRIVE TEMP HI alarm comes up. The Team directs in-plant operators to swap CRD flow control valves and restores CRD flow control to normal.
- The Isolation Condenser initiates due to setpoint drift. The Team will stop operation of the Isolation Condenser and reference Tech Specs.
- A small steam leak in the Drywell begins. The Team manually scrams the Reactor before the automatic Scram occurs.
- When the Reactor scrams, an electrical ATWS occurs. The Team successfully inserts control rods by pulling scram fuses or venting the scram air header.
- The steam leak worsens causing Drywell pressure to rise rapidly. When the Team attempts to spray the Drywell, Bus 23-1 trips resulting in a loss of one Division of Drywell Spray. Eventually Primary Containment pressure will exceed the PSP limit and require the Team to Emergency Depressurize.

Event One – Swap RFP Due to Oil Leak

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

Malfunctions required: 1

- 2B RFP oil leak

Success Path:

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

Event Two – 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 Three – TBCCW Pump Degrading / Swap TBCCW pumps.

- 2B TBCCW pump degrades causing pump discharge pressure to drop.

Malfunctions required: 1

- (2B TBCCW pump degrades)

Success Path:

- Swap TBCCW pumps.

Event Four –CRD Flow Control Fails Closed

- The CRD Flow Control valve fails closed.

Malfunctions required: 1

- (CRD Flow Control Valve fails Closed)

Success Path:

- The Team directs in-plant operators to swap the CRD Flow Control valves.
- The Team references Technical Requirements.

Event Five – Isolation Condenser Inadvertent Initiation

- The Isolation Condenser initiates due to setpoint drift.

Malfunctions required: 1

- (Isolation Condenser initiation setpoint drift)

Success Path:

- The Team will stop operation of the Isolation Condenser and reference Tech Specs.

Event Six – Small Steam Leak in the Drywell / Reactor Scram

A small MSL steam leak develops in the Drywell causing Drywell pressure to rise.

Malfunctions required: 1

- (Small Steam Leak in the Drywell)

Success Path:

- Performs a manual scram.

Event Seven – Electrical ATWS / ARI Unsuccessful

- An electrical ATWS occurs when the reactor is scrammed. ARI is unsuccessful.

Malfunctions required: 1

- (Electrical ATWS)

Success Path:

- The Team inserts control rods by pulling scram fuses, venting the scram air header, and / or driving control rods.

Event Eight – Steam Leak Inside the Drywell / Emergency Depressurization

The steam leak in the Drywell worsens. When the Team attempts to spray the Drywell, Bus 23-1 trips on overcurrent. The leak worsens and Primary Containment pressure exceeds the PSP limit. The Team performs an Emergency Depressurization.

Malfunctions required: 2

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

Success Path:

- The Team performs an Emergency Depressurization.

PRE-SCENARIO ACTIVITIES

- 1 If applicable, conduct pre-scenario activities in accordance with TQ-JA-150-08, SIMULATOR EXAMINATION BRIEFING.
 - a. Direct the crew to perform their briefs prior to entering the simulator.
 - b. Provide the Team a copy of DGP 03-01, Power Changes, marked up for load drop through inserting control rods to reduce FCL prior to reducing recirc flow.
 - c. Provide the Team a marked up copy of DOP 0202-03, Reactor Recirculation Flow Control System Operation.
 - d. Provide a marked up CRSP for the load pickup.

 - 2 Simulator Setup (the following steps can be done in any logical order)
 - a. Initialize simulator in an IC which allows establishing the following: (IC 152 used for validation, Rod sequence 2S.0.0, 1646)
 - 1) FCL @ ~100%.
 - 2) Core flow @ 58 to 60 Mlbm/hr.
 - 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. 2A and 2B RFPs running with 2C RFP in STBY on Bus 22.
 - b. Verify Zinc Injection label in place for lined up to 2A RFP.
 - c. 2B TBCCW pump running with 2A available.
 - d. TR 86 Tap Changer in REMOTE / MANUAL.
- NOTE:** Do NOT run the initial setup CAEP file until the above setup is completed.
- 4 Run the initial setup CAEP file: ILT-N-2.cae

 - 5 Place the following equipment out of service:
 - a. None

 - 6 Complete the Simulator Setup Checklist.

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

- √ Critical Tasks
- ⌚ Time Critical / Sensitive Actions (Includes PRA Actions)
- Required Actions
- Optional Actions

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

Trigger	Position	Actions or Behavior
28		<p><u>FLOOR INSTRUCTOR / SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>If the team announces that they will adjust gains, inform them an extra NSO will perform the adjustment. Then:</p> <ul style="list-style-type: none"> ❖ Tell the team you are time compressing. ❖ Direct the simulator operator to activate trigger 28 and verify gains within limits. ❖ Inform the team the gains are adjusted. <p>(Note: trigger 28 can be toggled OFF, then back ON as necessary to adjust gains)</p>
		<p><u>Role Play:</u></p> <p>Call the control room as the U-2 EO 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 to quantify the leak, "I can't tell".</p> <p>If asked, "The oil level is below the sight glass".</p> <p>If asked, "I recommend securing 2B RFP as soon as possible".</p> <p>If asked, "Zinc injection is lined up to 2A RFP".</p> <p>If asked, "2C RFP has been checked and is ready to start".</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"> ❑ May enter DOA 0600-01, Transient Level Control. ■ Directs ATC to start 2C RFP and secure 2B RFP.
	ATC	<p>Starts 2C 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"> ❑ Places RFPs Standby Selector switch, STBY PP SELECT in OFF position. ❑ Closes MO 2-3201C, ❑ Opens 2C RFP RECIRC VLV PCV 2-3201C by placing control switch in OPEN. ❑ Verifies reactor water level is stable. ❑ Verifies sufficient system pressures. ❑ If previously closed, places MO 2-3201C, 2C PP DISCH VLV control switch to OPEN position. ■ Starts 2C RFP. ❑ Verifies reactor water level is stable. ■ Verify RFP Auxiliary Oil Pump AUTO stops. ❑ WHEN MO 2-3201C, 2C PP DISCH VLV, is fully open, THEN places 2C RFP RECIRC VLV PCV 2-3201A control switch in AUTO. ❑ Directs EO to perform checks on 2C RFP.

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

Trigger	Position	Actions or Behavior
		<p><u>Role Play:</u> If asked following start, "2C RFP is operating normally".</p>
	<p>ATC</p>	<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 an EO 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 EO to perform remaining in plant steps for securing 2B RFP.
		<p><u>Role Play:</u> EO to verify 2B RFP is at rest: Wait 1 min, then report, "2B RFP is at rest". Acknowledge request to perform procedural steps for 2C and 2B RFPs. After a few minutes, report that the steps are completed.</p>
	<p>CRS</p>	<ul style="list-style-type: none"> ■ Directs 2B RFP Aux Oil PP secured to stop leak.
	<p>ATC</p>	<ul style="list-style-type: none"> ■ Places 2B RFP Aux Oil PP in PTL.
		<p><u>Role Play:</u> If asked after 2B RFP Aux Oil PP is placed in PTL: Report, the oil leak on 2B RFP has stopped.</p>

Event 1 Completion Criteria:

- 2C RFP started and 2B RFP secured
- AND/OR,**
- At the direction of the Lead Examiner.

Event Two – Raise Reactor Power using Recirculation Flow

Trigger	Position	Crew Actions or Behavior
		<u>ROLE PLAY:</u> Call the Control Room as the TSO and request: “Raise load by 75 MWe”.
		<u>SIMULATOR OPERATOR / ROLE PLAY:</u> EO 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 by 75 MWe.
	ATC	<p>Performs the following actions per DGP 03-01, Power Changes, and DOP 0202-03, Reactor Recirculation Flow Control System Operation, as directed:</p> <ul style="list-style-type: none"> ■ RAISES Recirc Pump speed using Panel 902-5 Recirc Master Manual Control speed pushbuttons.
	BOP	Monitors Panels.
<u>Event 2 Completion Criteria:</u>		
<ul style="list-style-type: none"> • Sufficient power increase. <p>AND / OR,</p> <ul style="list-style-type: none"> • At the discretion of the Lead Examiner. 		

Event Three – TBCCW Pump Degrading / Swap TBCCW pumps.

Trigger	Position	Crew Actions or Behavior
		<p><u>ROLE PLAY:</u></p> <p>At the discretion of the Floor Instructor/Evaluator, as the Unit 2 EO, make the following report to the Control Room:</p> <p>“The 2B TBCCW pump is making a lot of noise and the motor is very hot”.</p> <p>If asked for recommendation about tripping 2B TBCCW pump, respond “I recommend tripping 2B TBCCW pump”.</p>
1 & 2		<p><u>SIMULATOR OPERATOR:</u></p> <p>When the Communicator makes the above report, activate Trigger 1. This simulates the 2B TBCCW pump degrading. Trigger 2 automatically activates when 2B TBCCW pump breaker opens.</p>
		<p><u>ROLE PLAY:</u></p> <p>EO to check operation of 2A TBCCW pump following start: report the “2A TBCCW pump is operating normally”.</p>
	BOP	<ul style="list-style-type: none"> <input type="checkbox"/> Acknowledges report from the field and updates the Team. <input type="checkbox"/> Checks TBCCW system parameters <input type="checkbox"/> Acknowledges and announces alarm(s): <ul style="list-style-type: none"> ❖ 923-1 D-2, U2 or U3 TBCCW Press Lo.
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> Enters DOA 3800-01, Loss of Turbine Building Closed Cooling Water. ■ Directs swapping TBCCW pumps.
	BOP	<ul style="list-style-type: none"> <input type="checkbox"/> Performs DOA 3800-01, Loss of Turbine Building Closed Cooling Water. ■ Starts 2A TBCCW pump. (Immediate action) ■ Secures 2B TBCCW pump. <input type="checkbox"/> Directs EO to check operation of 2A TBCCW pump.
	ATC	<ul style="list-style-type: none"> <input type="checkbox"/> Assists as directed.

Event 3 Completion Criteria:

- TBCCW pumps swapped.
- AND/OR,
- At the direction of the Lead Examiner.

Event Four – CRD Flow Control Valve Fails Closed

Trigger	Position	Crew Actions or Behavior
3		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 3, which causes the CRD Flow Control Valve to fail closed.</p> <p>NOTE: If the team does not recognize the failure quickly and restore CRD cooling flow, use the Triggers below to cause the ROD DRIVE HI TEMP alarm.</p>
4		<p><u>Simulator Operator:</u></p> <p>To cause a CRD Temperature to reach >250.0 deg. F, activate Trigger 4. This drives up a CRD temperature causing alarm 902-5 F-3, ROD DRIVE HI TEMP.</p>
5		<p>If Trigger 4 was activated and CRD cooling flow is reestablished, activate Trigger 5. This allows the CRD temperature to drop and alarm 902-5 F-3, ROD DRIVE HI TEMP, to reset.</p>
6		<p><u>Simulator Operator / Role Play:</u></p> <p>After CRD FLOW CONTRLR FIC 340-1 is in manual mode <u>AND</u> controller demand is set to minimum and at the discretion of the Lead Examiner, activate trigger 6, which simulates swapping CRD FCVs by deleting the failed closed malfunction.</p>
		<p><u>Role Play:</u> (The following may be requested at any time during the Event)</p> <p>EO to check CRD FCV operation: See below for proper response.</p> <p>EO to check CRD system flow locally (FI 2-302-56); (wait 1 min) Report “CRD system flow indicates (same as control room meter)”.</p> <p>EO 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>EO 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>EO to check CRD pumps locally: (wait 1 min) Report, “CRD Pumps appear to be operating normally”.</p> <p>Respond as groups notified.</p>
	ATC	<ul style="list-style-type: none"> <input type="checkbox"/> From panel monitoring or alarm 902-5 F-3, ROD DRIVE HI TEMP, notices and announces loss of CRD system flow. <input checked="" type="checkbox"/> Diagnoses failure of the CRD Flow Control Valve.
	BOP	<ul style="list-style-type: none"> <input type="checkbox"/> May obtain CRD temperatures on the back panel.
	CRS	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Directs entering and performing actions of DOA 0300-01, Control Rod Drive System Failure. <input type="checkbox"/> Notifies Shift Manager and IMD of CRD Flow Controller failure.
	ATC	<p>Performs DOA 0300-01, Control Rod Drive System Failure, actions as directed by the CRS:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Attempts to manually control AO 2-0302-6B, 2B CRD FCV, by placing FIC 2-340-1, CRD FLOW CONTROLLER, in MANUAL and adjusting flow to between 40 and 60 gpm. <input type="checkbox"/> <u>IF</u> the Master control station has failed, <u>THEN</u> manually adjust the CRD FCV by taking local manual control of the valve.

Event Four – CRD Flow Control Valve Fails Closed

Trigger	Position	Crew Actions or Behavior
		<p><u>Role Play:</u> EO to check CRD FCV and/or take local manual control: wait 2 min, then report, “AO 2-0302-6B, 2B CRD FCV, is in-service, is full closed and its positioner is leaking air. I cannot control it locally”.</p>
	ATC	<p>Continues performing DOA 0300-01, Control Rod Drive System Failure, actions as directed by the CRS:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Directs the EO to transfer the CRD FCVs per DOP 0300-03, Control Rod Drive System Flow Control Valve Transfer.
		<p><u>Role Play:</u> EO performing DOP 0300-03, Control Rod Drive System Flow Control Valve Transfer: wait several min, then report to NSO that “I’m ready for you to perform step G.6 of DOP 0300-03”.</p>
	ATC	<ul style="list-style-type: none"> <input type="checkbox"/> At Panel 902-5, verifies CRD FLOW CONTRL FIC 340-1 is in manual mode <u>AND</u> controller demand is set to minimum. <input type="checkbox"/> Informs EO step G.6 of DOP 0300-03 is completed.
		<p><u>Role Play:</u> EO performing DOP 0300-03, Control Rod Drive System Flow Control Valve Transfer: wait several min, then report to NSO that “I’m ready for you to perform step G.10 of DOP 0300-03”.</p>
	ATC	<ul style="list-style-type: none"> <input type="checkbox"/> Directs EO to slowly close 2-0301-41B, U2 CRD SYS B FCV OUTLET VLV.
		<p><u>Role Play:</u> EO to NSO: wait several min, and then report that “2-0301-41B, U2 CRD SYS B FCV OUTLET VLV is closed”. If requested below: “the 2A CRD FCV is operating normally”.</p>
	ATC	<ul style="list-style-type: none"> <input type="checkbox"/> Raises CRD flow until normal system flow rate is achieved. <input type="checkbox"/> Returns CRD Flow Control to AUTOMATIC.

Event 4 Completion Criteria:

- Team has transferred CRD Flow Control valves and restored normal flow control, AND/OR,
- At the direction of the Lead Examiner.

Event Five – Isolation Condenser Inadvertent Initiation

Trigger	Position	Crew Actions or Behavior
7		<p><u>SIMULATOR OPERATOR:</u> At the direction of the Lead Examiner, activate trigger 7, which drifts the Isolation Condenser Initiation setpoint.</p>
		<p><u>ROLE PLAY:</u> Respond as Support Groups notified.</p>
	BOP	<p>Reports and responds to DANs:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 902-3 B-4, ISOL CONDR VLVS OFF NORM. <input type="checkbox"/> 902-3 C-4, ISOL CONDR TEMP HI. <input type="checkbox"/> 902-4 A-15, ISOL CONDR CH A/B INITIATION. <input checked="" type="checkbox"/> Determines Isolation Condenser in operation due to MO 2-1301-3 valve open.
	TEAM	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Determines Isolation Condenser initiation spurious due to RPV pressure in normal band.
	CRS	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Directs removing the Isolation Condenser from service.
	BOP	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Places MO 2-1301-3 in PTL. <input type="checkbox"/> When MO 2-1301-3 indicates closed, reports that the Isolation Condenser is removed from service.
	ATC	<ul style="list-style-type: none"> <input type="checkbox"/> Monitors reactor water level, pressure, and power.
	TEAM	<ul style="list-style-type: none"> <input type="checkbox"/> May enter DGA 07, Unpredicted Reactivity Addition.
	CRS	<p>References appropriate plant licensing documents and determines:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> TS 3.5.3, condition A. required actions: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> A.1 Verify by administrative means High Pressure Coolant Injection System is OPERABLE immediately, AND, <input checked="" type="checkbox"/> A.2 Restore IC System to OPERABLE status within 14 days. <input type="checkbox"/> TS 3.3.5.2, condition A. required actions: (May wait for IMD investigation) <ul style="list-style-type: none"> <input checked="" type="checkbox"/> A.1 Declare IC System inoperable within 1 hour; AND, <input checked="" type="checkbox"/> A.2 Place channel(s) in trip within 24 hours.
	TEAM	<ul style="list-style-type: none"> <input type="checkbox"/> Notifies Security to limit access to area under Isolation Condenser vent. <input type="checkbox"/> Notifies Radiation Protection to survey under the Isolation Condenser vent.

Event Five – Isolation Condenser Inadvertent Initiation

Trigger	Position	Crew Actions or Behavior
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Event 5 Completion Criteria:

- Isolation Condenser removed from operation,
 - Technical Specifications have been referenced,
- AND/OR,**
- At the direction of the Lead Examiner.

Event Six - Small Steam Leak in Drywell / Manual Scram

Trigger	Position	Crew Actions or Behavior
8		<p><u>SIMULATOR OPERATOR:</u> At the discretion of the Lead examiner, activate Trigger 8, which causes a small Main Steam line leak to develop in the Drywell.</p>
		<p><u>Role Play:</u> U-3 NSO to report Drywell pressure status: Report “U-3 Drywell pressure is 1.2 psig and steady”.</p>
	TEAM	<ul style="list-style-type: none"> ■ Recognizes and announces that Drywell pressure is slowly rising.
	CRS	<ul style="list-style-type: none"> ■ Enters and directs performance of DOA 0040-01, Slow Leak.
	ATC	<p>Performs the following actions per DOA 0040-01, Slow Leak, as directed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Maintain Level with FWLCS (immediate action). <input type="checkbox"/> Monitors leakage rate, reactor water level, and Drywell pressure. ■ Inserts manual reactor scram prior to 1.5 psig DW pressure
	BOP	<p>Performs the following actions per DOA 0040-01 Slow Leak, as directed:</p> <ul style="list-style-type: none"> <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"/> Verify Crib House inlet temperature is <95°F. ■ ☒ Initiates Torus cooling per “Hard Card”. (TCA13, 10 min.)
		<p><u>Role Play:</u> EO to check Drywell CAM: (wait 2 min.) Report, “The Drywell CAM had a step jump to 25K and is trending up”. EO to search for leak Report, “I am on my way out to check for leaks”. EO to check Cribhouse inlet temperature: (wait 5 min.) Report, “Cribhouse inlet temp is 70°F”.</p>
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> Sets Scram contingency of 1.5 psig DW pressure. <input type="checkbox"/> May enter DGP 02-03, Reactor Scram, and direct taking scram preparatory actions. ■ Prior to reaching the Drywell Pressure scram setpoint, directs a manual reactor scram per DGP 02-03, Reactor Scram.

Event Six - Small Steam Leak in Drywell / Manual Scram

Trigger	Position	Crew Actions or Behavior
	ATC / BOP	Performs scram preparatory actions per DGP 02-03, Reactor Scram, as directed. <ul style="list-style-type: none"> <input type="checkbox"/> Reduces FCL to < 93% by inserting CRAM rods per DGP 03-04 OR in-sequence rods per DGP 03-04. <input type="checkbox"/> Reduces power with Recirc flow to no lower than 56 Mlbm/hr core flow. <input type="checkbox"/> Starts MSP and TGOP. <input type="checkbox"/> Trips H₂ addition.
	ATC	Performs the following actions per DGP 02-03, Reactor Scram, as directed: <ul style="list-style-type: none"> ■ Presses scram pushbuttons ■ Places mode switch in shutdown ■ Check rods inserted and determines an electrical ATWS. <input type="checkbox"/> Initiates ARI / Determines ARI did not insert control rods. <input type="checkbox"/> Announces the electrical ATWS.
	TEAM	Verifies the following as time allows: <ul style="list-style-type: none"> <input type="checkbox"/> Group Isolations <input type="checkbox"/> Automatic start of ECCS systems <input type="checkbox"/> Automatic start of EDGs.
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> Enters DEOP 100, RPV Control, due to high Drywell Pressure and/or low Reactor water level.

Event 6 Completion Criteria:

- Reactor scrammed.

AND/OR,

- Or at the discretion of the Lead Examiner.

Event Seven – Electrical ATWS / ARI Unsuccessful		
Trigger	Position	Crew Actions or Behavior
9 10		<p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>Operator to pull scram fuses: wait 4 min, then activate trigger 9. This sequentially pulls the scram fuses.</p> <p>Operator to vent the scram air header: wait 5 min, the activate trigger 10. This vents the scram air header.</p>
11		<p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>Operator to install GP 1 -59 in. and Off Gas Hi Hi Rad jumpers: wait 3 min, activate trigger 11, and then report “the GP 1 -59 in. and Off Gas Hi Hi Rad jumpers are installed”.</p> <p>EO to CLOSE / OPEN the 2-0301-25, U2 CRD Sys Charging Wtr Hdr SV: wait 2 min, and then from Instructor Station drawing RD2, place the 25 vlv in the requested position. Report “the 2-0301-25, U2 CRD Sys Charging Wtr Hdr SV is (insert requested position)”.</p>
	ATC	<p>Continues performing the following actions per DGP 02-03, Reactor Scram, as directed:</p> <ul style="list-style-type: none"> ■ Runs Recirc pumps back to minimum. ■ Using the RX LOW FLOW CONTROL STATION, 2(3)-640-20, lowers FWLC SETPOINT to –40 inches. ■ Trips Recirc pumps. ■ Initiates SBLC.
	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"/> Due to report of ATWS condition, exits DEOP 100 AND enters DEOP 0400-05, Failure to Scram, and directs/performs: <input type="checkbox"/> Placing ADS to inhibit. (RPV-5.4) (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. (RPV-5.1) <ul style="list-style-type: none"> ❖ Directs driving control rods. ❖ Directs pulling scram fuses. ❖ Directs venting scram air header. <input type="checkbox"/> Verifying required auto actions. <input type="checkbox"/> Installing of the jumpers for the MSIV low level isolations and the Off Gas high Rad isolations. ■ Stabilizing RPV pressure below 1060 psig.
	BOP	<ul style="list-style-type: none"> <input type="checkbox"/> Places ADS to inhibit. (RPV-5.4) (Not expected to be a Critical Task for this scenario) <input type="checkbox"/> Places Core Spray pumps in PTL.

Event Seven – Electrical ATWS / ARI Unsuccessful

Trigger	Position	Crew Actions or Behavior
	ATC	<ul style="list-style-type: none"> ■ √ Inserts control rods per DEOP 500-05, Alternate Insertion Of Control Rods, as follows: (RPV-5.1) <ul style="list-style-type: none"> ❖ Pulling scram fuses. ❖ Venting scram air header. ❖ Drives rods by: <ul style="list-style-type: none"> ⇒ Bypassing the RWM. ⇒ Maximizing CRD drive water pressure. ⇒ Uses either the ROD MOVEMENT CONTROL switch or the EMERG ROD IN position of the ROD OUT NOTCH OVERRIDE switch.
	CRS	<ul style="list-style-type: none"> □ 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).

Event 7 / Completion Criteria:

- Control rods inserted,
- AND / OR,**
- At the discretion of the Lead Examiner.

Event Eight –Steam Leak Inside The Drywell Increases / Emergency Depressurization

Trigger	Position	Applicant's Actions or Behavior
12		<p><u>SIMULATOR OPERATOR:</u> After the Team has inserted control rods, and at the discretion of the Lead Evaluator, activate trigger 12, which increases the Main Steam line leak enough to require the Team to Emergency Depressurize due to exceeding PSP curve.</p>
	TEAM	<ul style="list-style-type: none"> ■ Recognizes and announces that Drywell pressure is rising rapidly.
	CRS	<p>Enters DEOP 0200-01, Primary Containment Control, when Drywell pressure reaches 2 psig and / or Torus bulk temperature reaches 95 deg. F 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"/> ⌘ Initiating Torus cooling per “Hard Card”. (TCA13, 10 min.) <input type="checkbox"/> Monitors Torus level.
		<p><u>ROLE PLAY:</u> EO to check operation of the EDGs after auto start: Wait 3 minutes and then report “the EDGs are operating normally”.</p>
	CRS	<p>Per DEOP 0200-01, Primary Containment Control, when Drywell pressure reaches 9 psig directs:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verifying Recirc Pumps and Drywell Coolers tripped. <input type="checkbox"/> Verifies the Drywell spray initiation curve prior to the operator manually opening any of the Drywell spray valves. Then directs the Operator to initiate Drywell Sprays. ■ Initiation of Drywell sprays.
	BOP	<p>Performs DEOP 0200-01, Primary Containment Control, actions as directed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Monitors Drywell temperature and pressure and attempts to initiate torus sprays and drywell sprays pre Hard Card LPCI/CCSW OPERATION, as directed. ■ ⌘ Initiates Torus cooling per “Hard Card”. (TCA13, 10 min.)
13		<p><u>SIMULATOR OPERATOR:</u> Verify trigger 13 automatically activates when MO 1501-27A begins to open. This trips Bus 23-1 on overcurrent. As a result, Div. I of Drywell sprays cannot be initiated.</p>
	ATC / BOP	<ul style="list-style-type: none"> ■ Initiates Drywell Sprays. <input type="checkbox"/> Notices and reports the loss of ECCS equipment powered from Bus 23-1. <input type="checkbox"/> Reports the loss of Bus 23-1 and 28. ■ Reports the “B” LOOP of Drywell Spray is initiated, but “A” LOOP could not be initiated.
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> Directs Operators to investigate the loss of Bus 23-1. Directs entry into DGA-12 for Partial Loss of AC Power.

Event Eight –Steam Leak Inside The Drywell Increases / Emergency Depressurization

Trigger	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> <input type="checkbox"/> Refers to DAN 902-8 F-5, 4KV Bus 23-1 Overcurrent. As directed, Performs DGA-12, Partial or Complete Loss of AC power: <input type="checkbox"/> Takes actions per DGA 12 for any faulted buses. <input type="checkbox"/> Recognizes the loss of Bus 28. <input type="checkbox"/> Dispatches EO to Bus 23-1 to investigate the loss of Bus 23-1. <input type="checkbox"/> May enter DOA 6500-01, 4kV Breaker Trip.
		<p><u>NOTE:</u> If team crossties Bus 28 and 29 and Bus 29 trips, allow the team to re-energize Bus 29 from Bus 24-1.</p>
		<p><u>ROLE PLAY:</u> EO to bus 23-1: Wait 2 min. then report "The feed breaker to Bus 23-1 from Bus 23 has an overcurrent flag up on it and will not reset". EO to Bus 28: Wait 2 min. then report "Bus 28 has an overcurrent flag up and will not reset"</p>
		<p><u>ROLE PLAY:</u> If contacted as EMD Foreman: Respond, "I will report to Bus 23-1". NOTE: EMD personnel will not report back. DO NOT REPORT BACK ON ATTEMPTS TO OPEN DW SPRAY VALVE TILL after Torus bottom pressure is > 20 psig.</p>
	ATC / BOP	<ul style="list-style-type: none"> <input type="checkbox"/> May dispatch an Operator to attempt to manually open "A" LOOP of drywell spray.
		<p><u>ROLE PLAY:</u> EO to open "A" LOOP of drywell spray: Wait 2 min, then report "The handwheel for MO 2-1501-28A will not engage".</p>
	CRS	<ul style="list-style-type: none"> ■ Recognizes that Emergency Depressurization per DEOP 0400-02 is necessary due to one of the below: <ul style="list-style-type: none"> o Drywell temperature cannot be maintained below 281°F. o Exceeding the PSP. √ Enters DEOP 400-02, Emergency Depressurization, and directs: (PC-1.3) ■ If Drywell pressure >2 psig, prevention of injection from LPCI/CS pumps not needed for core cooling. ■ Initiation of Iso Condenser to maximum flow. <ul style="list-style-type: none"> • ⌘ Initiate Isolation Condenser makeup after Isolation Condenser initiation (TCA14, 20 min.) <input type="checkbox"/> Verification of Torus level > 6ft. ■ √ Opening all ADS valves. <input type="checkbox"/> Verifying all relief valves open. (RPV-2.1)

Event Eight –Steam Leak Inside The Drywell Increases / Emergency Depressurization

Trigger	Position	Applicant's Actions or Behavior
	BOP	<p>√ Performs DEOP 400-02, Emergency Depressurization, as directed. (PC-1.3)</p> <ul style="list-style-type: none"> □ If Drywell pressure is greater than +2 psig, prevents injection from LPCI/CS pumps not needed for Core cooling per Hard Card, LPCI INJ/CC CONTROL/SHUTDOWN. ■ Initiates Iso Condenser to maximum flow per Hard Card, ISOLATION CONDENSER. <ul style="list-style-type: none"> • ⌘ Initiate Isolation Condenser makeup after Isolation Condenser initiation (TCA14, 20 min.) □ Verifies Torus level >6 feet. ■ √ Open all ADS valves. (RPV-2.1) □ Verifies all relief valves open.

Scenario Completion Criteria:

- **Emergency depressurization in progress.**
- **Or at the discretion of the Lead Evaluator.**

Critical Tasks	
(RPV-5.1)	With a reactor scram required and the reactor not shutdown, take action per DEOP 400-5, Failure to Scram, to reduce power by inserting control rods.
(RPV-5.4)	With a reactor scram required, the reactor not shutdown, and the automatic ADS timer initiated, inhibit ADS before an automatic actuation occurs. (Conditions not expected to occur to cause this to be critical for this scenario)
(RPV-5.5)	Once DEOP 400-5, Failure to Scram power/level control leg, is entered with reactor power is > 6% -AND- RPV level is greater than -35 inches, terminate and prevent injection (with exception of boron and CRD) into the RPV. (Conditions not expected to occur to cause this to be critical for this scenario)
(RPV-5.7)	Per DEOP 400-5, Failure to Scram, after terminate and prevent conditions are no longer required once any of the level control overrides have cleared, RPV injection is re-commenced and RPV level is maintained > the Minimum Steam Cooling RPV Water Level (-164 inches). (Conditions not expected to occur to cause this to be critical for this scenario)
(RPV-5.12)	When executing DEOP 400-5, Failure to Scram, reactor pressure is controlled as necessary to prevent an uncontrolled positive reactivity excursion of > 5% power. (Conditions not expected to occur to cause this to be critical for this scenario)
(PC-1.3)	When executing DEOP 200-1, Primary Containment Control, if cannot stay inside the limits of the Pressure Suppression Pressure (PSP) limit, enter DEOP 400-2, Emergency Depressurization and blowdown the reactor.
(RPV-2.1)	When conditions are met per DEOP 400-2, Emergency Depressurization, the minimum number of available SRV's required for emergency depressurization (MNSRED) are opened.

REFERENCES

PROCEDURE	TITLE
DAN 902-3 B-4	ISOL CONDR VLVS OFF NORM
DAN 902-3 C-4	ISOL CONDR TEMP HI
DAN 902-4 A-15	ISOL CONDR CH A/B INITIATION
DAN 902-5 F-3	ROD DRIVE HI TEMP
DAN 902-8 F-5	4KV BUS 23-1 OVERCURRENT
DAN 923-1 D-2	U2 OR U3 TBCCW PRESS LO
DEOP 0100	RPV CONTROL
DEOP 0200-01	PRIMARY CONTAINMENT CONTROL
DEOP 0400-02	EMERGENCY DEPRESSURIZATION
DEOP 0400-05	FAILURE TO SCRAM
DEOP 500-05	ALTERNATE INSERTION OF CONTROL RODS
DGA 07	UNPREDICTED REACTIVITY ADDITION
DGA 12	PARTIAL OR COMPLETE LOSS OF AC POWER
DGP 02-03	REACTOR SCRAM
DGP 03-01	POWER CHANGES
DOA 0040-01	SLOW LEAK
DOA 0300-01	CONTROL ROD DRIVE SYSTEM FAILURE
DOA 0300-12	MISPOSITIONED CONTROL ROD
DOA 0600-01	TRANSIENT LEVEL CONTROL
DOA 3800-01	LOSS OF TURBINE BUILDING CLOSED COOLING WATER
DOA 6500-01	4KV BREAKER TRIP
DOP 0202-03	REACTOR RECIRCULATION FLOW CONTROL SYSTEM OPERATION
DOP 0300-03	CONTROL ROD DRIVE SYSTEM FLOW CONTROL VALVE TRANSFER
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 4700-03	U2/3 IA CROSS-CONNECT OPERATION
DOP 6700-20	480 VOLT BREAKER TRIP
TS 3.3.5.2	ISOLATION CONDENSER (IC) SYSTEM INSTRUMENTATION
TS 3.5.3	IC SYSTEM
TRM 3.3.h	RVWLIS

Simulator Scenario Review Checklist (cont'd)

ILT-N-2 Quantitative Attributes	
8	Total malfunctions (5 to 8)
1	Malfunctions after EOP entry (1 to 2)
4	Abnormal events (2 to 4)
2	Major transients (1 to 2)
2	EOPs entered/requiring substantive actions (1 to 2)
2	EOPs contingency requiring substantive actions (0 to 2)
3	Crew critical tasks (2 to 3)

CAEP Files

14-1 ILT-N-1.cae
For ILT Class 14-1 NRC Exam
Written by MP
Rev 00
Date 11/14

INITIAL CONDITIONS

Sets APRM Master Gain pot to 1.0
irf niagain 1.0

Overrides Panel 2202-70A(B) Trouble alarm points OFF so pulling ARI fuses does not cause alarm.
Pulls ARI fuses.
Imf ser1026 off
imf ser1060 off
irf aw4 pulled|4

Inserts an electrical ATWS.
imf b12

EVENT TRIGGERS

Event Trigger 1 Simulates 2B TBCCW pump degradation by ramping down pump speed.
trgset 1 "0"|2
trg 1 "ramp wtnp(2) 1.0 0.0 5:00"|2

Event Trigger 2 Activates when 2B TBCCW pump speed is <0.02
or 2B TBCCW pump breaker opens.
Holds pump speed near 0.
trgset 2 "(wtnp(2) .lt. 0.1) .or. (.not. wtnp(2))"|2
trg 2 "ramp wtnp(2) 0.01 0.001 1:00:00"|2

Event Trigger 3 inserts a CRD flow control valve fail closed.
trgset 3 "0"|4
imf rdfcvfcl (3)|4

Event Trigger 4 Holds one of the CRD's temperature higher so alarm 902-5 F-3 comes up sooner.
trgset 4 "0"|4
trg 4 "ramp rdtcrdm(3) 251.0 252.0 1:00:00"|4

Event Trigger 5 Releases the CRD's temperature hold so alarm 902-5 F-3 clears.
trgset 5 "0"|4
trg 5 "ramp rdtcrdm(3) 251.1 251.0 1"|4

Event Trigger 6 deletes the CRD flow control valve fail closed.
trgset 6 "0"|6
trg 6 "dmf rdfcvfcl"|6

Event Trigger 7 Drifts the Iso Cond Initiation setpoint.
trgset 7 "0"|6
imf icspdf (7) 0.0|6

Event Trigger 8 Inserts a small DW MSL leak of 0.004%.
trgset 8 "0"|6
imf i21 (8) 0.002 2:00 0.004|6

Event trigger 9 Simulates pulling RPS scram fuses.


```
Trgset 9 "0"|8
irf rpfusea1 (9) pulled|8
irf rpfusea2 (9 20) pulled|8
irf rpfusea3 (9 40) pulled|8
irf rpfusea4 (9 60) pulled|8
irf rpfuseb1 (9 1:20) pulled|10
irf rpfuseb2 (9 1:40) pulled|10
irf rpfuseb3 (9 2:00) pulled|10
irf rpfuseb4 (9 2:20) pulled|10

# Event trigger 10 Simulates venting scram air header.
trgset 10 "0"|12
irf rdsclair (10) open|12

# Event Trigger 11 installs MSL Group 1 RPV level byp and Offgas High Rad byp jumpers.
trgset 11 "0"|12
irf ci59jp (11) in|12
irf ogogjp (11) in|12

# Event Trigger 12 Increases DW MSL leak to 0.5%.
trgset 12 "0"|14
trg 12 "mmf i21 6.0 5:00 2.0"|16

# Event Trigger 13 Activates when DW Spray valve MO 1501-27A starts to open.
# Trips Bus 23-1 and Bus 28 on overcurrent.
trgset 13 "lplvlvop(17)"|14
imf k23 (13)|14
imf k40 (13)|14

# Event Trigger 28 sets gain for all 6 APRMs.
trgset 28 "0"|16
trg 28 "irf niagainf true"|16

# END
```

Unit 2 Risk: GREEN

Unit 2 is in Mode 1 at 630 MWe,

Leading Thermal Limit: MFLCPR @ 0.881

Action limit: 0.980

Equipment Unavailable: None

Protected Equipment: None

Unit 3 Risk: GREEN

Unit 3 is in Mode 1 at full power

Leading Thermal Limit: MAPRAT @ 0.819

Action Limit: 0.980

Equipment Unavailable: None

Protected Equipment: None

Current Action Statements

None	LCO Started:	LCO Expires:
TS		
Cause:		

Unit 1 Plant Status

Today	U1 Diesel Oil Storage Tank Transfer House has grating removed. Currently roped off with pump installed to pump to U1 Oil Separator Pit as required. Outside operator monitor and pump as necessary.
-------	---

Today	Chem Cleaning ventilation status: HV-1A/EF-1A are secured due to HV-1A inlet and outlet dampers being shut with fan on, IR# 913157, WO 1239746. HV-1B/EF-1B are secured due to HV-1B throwing its belts. WO 1156150. HVAC -1 ON. HV-2 running.
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Switchyard Status

Today	138 KV Bus 1 Feed To TR 22 Combi Units has low oil in the 'C' phase, ComEd WO #276162
-------	---

Today	HVO: Exercise CAUTION while in the 345 kV Yard due to excavation being performed in the area. Marv Evans reports holes being dug near manual switch disconnects 345KV Blue Bus. Plywood will be installed over the holes if access is needed, but be aware there are holes under the plywood. SSC called from the 345Kv yard reporting that the cable trough covers are removed to prep for upcoming work. Be careful.
-------	--

Today	Switching orders have been received for removing 345KV L0302 from service. Backfeed is off. An operator is standing by in the 345KV Switchyard.
-------	---

Unit 2 Plant Status

Today

Unit 2 Activities

**** Shift 1 Activities ****

**** Shift 2 Activities ****

The TSO is expected to request Load picked up early in the shift. The QNE recommends raising Core flow for the upcoming load pickup.

**** Shift 3 Activities ****

Today

**** Unit 2 Procedures In-Progress **** Do Not Delete ****

DGP 03-01, Power Changes.

Dresden Generating Station

ILT-N-3

RFP VENT FANS SWAP FOR MAINTENANCE

LOSS OF CONTROL ROD POSITION INDICATION

**RX BLDG VENT RAD MONITOR FAILURE UPSCALE /
WITH FAILURE OF SBTG TO AUTO START**

IRM FAILS UPSCALE CAUSING HALF SCRAM

CIRCULATING WATER PUMP TRIP DUE TO OVERCURRENT

FWLC CONTROLLER SETPOINT DRIFTS HIGH

FLOODING IN CONDENSATE PUMP ROOM / MANUAL SCRAM

**HPCI STEAM LINE LEAK INTO THE HPCI ROOM /
2 AREAS ABOVE MAX SAFE RADIATION LEVELS / EMERGENCY DEPRESSURIZE**

Rev. 00

11/14

Developed By:

Exam Author

Date

Approved By:

Facility Representative

Date

Scenario Outline

Station: <u>Dresden Generating Station</u>		Scenario No.: <u>ILT-N-3</u>		Class ID: <u>14-1 (2015-301)</u>	
Evaluators		Operators		/crew position	
_____		_____		/ ATC	
_____		_____		/ BOP	
_____		_____		/ CRS	
Initial Conditions:					
Startup; Steady at ~ 5% Power					

Turnover:					
Plant Inspections in progress. Resume pulling control rods next shift.					
After shift turnover, swap RFP vent fans					

Event No.	Malf. No.	Event Type*	Event Description		
1	NONE	N	HVAC – RFP Vent Fan, Swap For Maintenance (ATC)		
2	RDFAILF5	I / T	CRD - RPIS, Loss of Control Rod Position Indication (ATC)		
3	RADRBVAH	C / T	CONTAINMENT - Monitor, Failure For Rx Bldg Vent Rad With Failure of SBGT To Auto Start (BOP)		
4	NII12POT	I / T	NI – IRM, Fails Upscale Causing Half Scram (ATC)		
5	HP6 HP7	C	CIRC WATER - Pump, Trip Due To Overcurrent (BOP)		
6	RLLMLS	I	FW - FWLC Controller Drifts High (ATC)		
7	HP3	M	MANUAL SCRAM - Flooding in Condensate Pump Room		
8	HPRMBRKP	M	EMERGENCY DEPRESSURIZE – On 2 Areas Above Max Safe Radiation Levels Due To HPCI Steam Line Leak into the HPCI Room		

* (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 steam leak requiring Emergency Depressurization.

Scenario Summary

Initial Conditions:

1. Unit is at ~5% power.
2. The following equipment is OOS:
 - a. None
3. LCOs:
 - a. None

Scenario Sequence

- The Team swaps RFP Vent Fans for Maintenance.
- Control rod F-05 loses all RPIS indication. The Team will insert the control rod, reference Tech Specs and direct taking it OOS.
- The 2A RX Bldg Vent Rad monitor fails upscale. This causes a Secondary Containment Isolation initiation. The SBGT system fails to start and the RBV fails to completely isolate. The Team starts 2/3B SBGT train and completes the RBV isolation. The Team will address Technical Specifications for the failed SBGT system and RBV isolation.
- IRM channel 12 then fails upscale and a half-scam occurs on the RPS "A" channel. The SRO addresses the technical specification requirements for the failure. Then the NSO bypasses the failed IRM channel and resets the half scram.
- The 2A Circulating water pump trips on overload. The Team starts the 2B Circulating water pump.
- The FWLC setpoint drifts high. The Team will take manual control of the FWLC system.
- An unisolable leak in the Condensate System causes flooding in the Condensate Pump Room. As a result, the Team performs a manual scram and shuts down the Condensate pumps.
- A Fuel Element Failure (FEF) and an unisolable HPCI steam line leak in the HPCI Room occur. When the HPCI Room temperature reaches Max Normal Level, (150 °F) the Team will enter DEOP 0300-01, Secondary Containment Control. The HPCI Room High Temperature isolation fails and the crew will attempt to close the HPCI steam line isolation valves MO 2301-4 & 5 manually. Failures in the control logic for the MO 2301-4 & 5 valves prevent closing the valves. The Team will Emergency Depressurize when 2 or more reactor building radiation levels exceed Max Safe Levels.

Event One – Swap RFP Vent Fans

- When directed, swaps RFP Vent Fans.

Malfunctions required:

- (None)

Success Path:

- Swaps RFP Vent Fans.

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 – Rx Bldg Vent Rad Fails Upscale With Failure of SBGT to Auto Start

- Failure of 2A Rx Bldg Ventilation Rad Monitor upscale causes a Secondary Containment Isolation. Both SBGT system trains fail to automatically start. The Team is able to manually start the 2/3B SBGT train. One set of Secondary Containment Isolation valves fail open. Both SBGT trains and the Secondary Containment Isolation are declared inoperable and Technical Specifications are referenced.

Malfunctions required: 2

- (Failure of 2A Rx Bldg Ventilation Rad Monitor upscale)
- (Failure of SBGT to start and the RBV Isolation.)

Success Path:

- Starts SBGT and isolates the RBV.
- References Technical Specifications

Event Four – IRM Channel Fails Upscale

- The Team recognizes and responds to an IRM failing upscale resulting in a half scram.

Malfunctions required: 1

- (IRM Fails Upscale)

Success Path:

- Bypasses the IRM and resets the half scram.
- Determines Technical Specifications requirements.

Event Five – 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 Six – 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 Seven – Flooding in Condensate Pump Room / Manual Scram

- An unisolable Condensate System leak occurs in the Condensate Pump Room.

Malfunctions required: 1

- (Flooding in Condensate Pump Room)

Success Path:

- Performs DOA 0040-02, Localized Flooding in Plant.
- Manually scrams the reactor.

Event Eight – FEF / Steam Leak in HPCI Room / Secondary Containment High Radiation / Emergency Depressurization

- A fuel element failure and an unisolable HPCI steam line leak in the HPCI Room occur

Malfunctions required: 2

- (Fuel Element Failure)
- (Unisolable HPCI steam line leak in the HPCI Room)

Success Path:

- Performs DEOP 0300-01, Secondary Containment Control.
- Performs DEOP 0400-02, Emergency Depressurization

PRE-SCENARIO ACTIVITIES

- 1 If applicable, conduct pre-scenario activities in accordance with TQ-JA-155-04, SIMULATOR EXAMINATION BRIEFING.
- 2 Provide the Team with marked up copies of the following:
 - a. DOP 5750-06, Reactor Feed Pump Motor Ventilation System.
- 3 Simulator Setup (the following steps can be done in any logical order)
 - a. Initialize simulator in an IC with Reactor power at ~5%. (IC 156 used for validation, sequence 2I.0.0 BF78)
 - 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.
- 4 Verify the following simulator conditions:
 - a. Verify MSL drains MO 2-220-1, 2, 3 & 4 open.
 - b. 2B RFP running with 2A RFP in STBY.
 - c. Verify Zinc Injection label in place for lined up to 2B RFP.
 - d. Verify 2A RFP Vent Fan running.
 - e. Verify 2A and 2C Circ Wtr pumps running with 2B available.
 - f. Verify 2A & 2B IACs are operating with 3C IAC OFF.
- 5 Place the following equipment out of service:
 - a. None

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

- 6 Run the initial setup CAEP file: ILT-N-3.cae
- 7 Load but DO NOT RUN CAEP file: ILT-N-3 Rad.cae
- 8 Complete the Simulator Setup Checklist.
- 9 The Rad Malfunctions used in CAEP file ILT-N-3 Rad.cae do not reset when the IC is reset. Therefore, when the scenario is completed, EITHER:
 - a. Run CAEP file: ILT-N-3 Clear Rad.cae; OR,
 - b. Stop and Restart MST.

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

- √ Critical Tasks
- ⌚ Time Critical / Sensitive Actions (Includes PRA Actions)
- Required Actions
- Optional Actions

Event One – Swap Reactor Feed Pump Vent Fans		
Trigger	Position	Crew Actions or Behavior
		<p><u>ROLE PLAY:</u></p> <p>At the direction of the Lead Examiner, call as the Shift Manager and direct the Team to <u>start</u> 2B RFP Vent Fan and <u>secure</u> 2A RFP Vent Fan.</p> <p>EO stationed at RFP Vent Fans: If asked, report that “the RFP Vent Fans operated as expected”.</p>
	CRS	Directs <u>starting</u> 2B RFP Vent Fan and <u>securing</u> 2A RFP Vent Fan per DOP 5750-06, Reactor Feed Pump Motor Ventilation System.
	ATC	<p>Performs DOP 5750-06, Reactor Feed Pump Motor Ventilation System, as follows.</p> <ul style="list-style-type: none"> ■ Places the on-coming RFP VENT FAN control switch to START AND hold. ■ Places the off-going RFP VENT FAN control switch to TRIP. <input type="checkbox"/> Releases the on-coming RFP VENT FAN control switch.
	BOP	<input type="checkbox"/> Monitors panel, provides assistance as directed.
<p style="text-align: center;"><u>Event 1 Completion Criteria:</u></p> <ul style="list-style-type: none"> • RFP Vent Fans swapped, <p>AND/OR,</p> <ul style="list-style-type: none"> • At the direction of the Lead Examiner. 		

Event Two – Control Rod RPIS Failure		
Trigger	Position	Crew Actions or Behavior
1		<p><u>SIMULATOR OPERATOR:</u> At the direction of the Lead Examiner, activate trigger 1, RPIS failure for control rod F-05.</p>
		<p><u>CUE:</u> If Team checks Process Computer for Control Rod F-05 position, cue that “the Process Computer displays BAD for F-05 position.</p>
		<p><u>ROLE PLAY:</u> Respond as Support Groups notified.</p>
	ATC	<p>Reports and responds to DANs 902-5 A-3 ROD DRIFT, and B-3 ROD WORTH MIN BLOCK.</p> <ul style="list-style-type: none"> ■ Views Full Core Display and identifies CRD with Rod Drift light. ■ Selects Control Rod F-05 and reports no indication on Four Rod Display for Control Rod F-05.
	ATC	<p>Recognizes loss of control rod F-05 position indication on Full Core Display, Four Rod Display, RWM, and/or Process Computer.</p>
	CRS	<p>Enters DOA 0300-06, RPIS Failure, and directs its actions.</p>
	ATC	<p>Performs subsequent actions of DOA 0300-06, RPIS FAILURE:</p> <ul style="list-style-type: none"> ■ Stops any power change or control rod motion in progress. □ May insert Rod F-05 to 00 prior to entering DOA 0300-06. ■ Enters substitute position of 48 for F-05. ■ Inserts control rod F-05 one notch. □ Determines no control rod position indication at alternate position. ■ Bypasses the RWM (DOP 0400-02) ■ 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.

Event Two – Control Rod RPIS Failure

Trigger	Position	Crew Actions or Behavior
	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. ■ TS 3.3.2.1, condition C, Rod worth minimizer (RWM) inoperable during reactor startup, required actions: <ul style="list-style-type: none"> ❖ C.1. Suspend control rod movement except by scram immediately <u>OR</u> ❖ C.2.1.1 Verify ≥ 12 rods withdrawn immediately. <u>OR</u> ❖ C.2.1.2 Verify by administrative methods that startup with RWM inoperable has not been performed in the last 12 months immediately. <u>AND</u> ❖ C.2.2 Verify movement of control rods is in compliance with analyzed rod position sequence by a second licensed operator or other qualified member of the technical staff during control rod movement. <p><input type="checkbox"/> Directs electrically or hydraulically isolating control rod F-05 HCU.</p>
		<p><u>ROLE PLAY</u></p> <p>As QNE acknowledge reports. If concurrence is requested for any action, report “I concur with (insert requested action here)”</p>
	BOP	<p><input type="checkbox"/> Monitors panel, provides assistance as directed.</p>
	TEAM	<p><input type="checkbox"/> May enter DOA 0300-12, Mispositioned Control Rod.</p> <p><input type="checkbox"/> Notifies the Shift Manager, QNE, Work Week Manager, FIN team, IMD, OR EMD.</p>
		<p><u>ROLE PLAY:</u></p> <p>When EO 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).</p>
	ATC	<p><input type="checkbox"/> Records failed RPIS indication per DOS 0300-06, CRD Abnormality Record.</p>

Event 2 Completion Criteria:

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

Event Three – Rx Bldg Vent Rad Fails Upscale With Failure of SGBT To Auto Start		
Trigger	Position	Crew Actions or Behavior
2		<p>Simulator Operator:</p> <p>At the discretion of the Floor Instructor / Lead Evaluator, activate trigger 2. This fails 2A RX Bldg Vent Rad monitor upscale.</p> <p>Note: BOTH SGBT system trains fail to automatically start. One set of U2 RBV Isolation Dampers fail to close.</p>
		<p>Role Play:</p> <p>Operator/maintenance sent to in-plant panel 2223-28A for 2/3A SGBT system: Wait 4 min, then report that: “smoke came from the panel when I opened it, but there is no fire. It smells like burnt electrical insulation”.</p> <p>If directed to check fuses in panel 2223-28A, wait 2 min. and report: “fuse FU2 is blown”.</p>
		<p>CUE:</p> <p>If an operator checks the RBV Rad Mon recorder on the backpanel, cue the operator the pen for 2A RBV Rad Mon is pegged high.</p>
		<p>Role Play:</p> <p>EO to check RX Bldg to Atmosphere D/P on the Refuel floor: wait 2 min, the report “the RX Bldg to Atmosphere D/P is (Insert the value from Instructor Station drawing 923-5-03 OR variable VRP4)”.</p> <p>Acknowledge requests as plant support groups.</p>
	BOP	<p>Announces alarms indicating 2A RX Bldg Vent Rad high and a Secondary Containment Isolation have occurred:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 902-3 F-14, Rx BLDG Vent Ch A Rad Hi Hi. <input type="checkbox"/> 923-5 A-1(4), U2(3) Rx BLDG Vent/Exh Fan Trip. <input type="checkbox"/> 923-5 C-1, Rx Bldg DP Lo.
	BOP	<ul style="list-style-type: none"> <input type="checkbox"/> Checks back panels and determines that 2A RX Bldg Vent Rad monitor has failed high (all other monitors are indicating normal levels).
	BOP	<p>Verifies expected automatic actions have occurred. Discovers and announces the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Both SGBT system trains failed to automatically start. <input type="checkbox"/> RX Bldg Vent Outlet Dampers AO 2-5742A & B failed to close.
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> Acknowledges reports of failed 2A RX Bldg Vent Rad monitor and the Secondary Containment Isolation. <input type="checkbox"/> Acknowledges report of SGBT system failure and RX Bldg Vent Outlet Dampers AO 2-5742A & B failure to close. <input checked="" type="checkbox"/> Enters DOA 7500-01, Standby Gas Treatment System Fan Trip.

Event Three – Rx Bldg Vent Rad Fails Upscale With Failure of SBTG To Auto Start

Trigger	Position	Crew Actions or Behavior
	BOP	Performs the following to complete the Secondary Containment Isolation: <ul style="list-style-type: none"> ■ Places 2/3B SBTG train control switch to START (Per DOA 7500-01, Standby Gas Treatment Fan Trip) □ May place 2/3A SBTG Train control switch to OFF. ■ Places RX Bldg Vent Outlet Isol Damper control switch to the CLOSE position and observes that the RX Bldg Vent Outlet Dampers AO 2-5742A & B close. ■ Places the control switches for U2 AND U3 DW & Torus Purge Fans in PULL-TO-LOCK (PTL) at Panel 923-5.
	CRS	Refers to Technical Specifications and determines: <ul style="list-style-type: none"> ■ Technical Specification 3.3.6.2 Table 3.3.6.2-1 Function 3: Place channel in trip within 24 hrs. (Condition met) ■ Technical Specification 3.6.4.1.A: Restore secondary containment to OPERABLE status within 4 hrs. (If D/P drops to below -2.5 inches) ■ Technical Specification 3.6.4.2.A: Isolate the affected penetration flow path by at least one closed and de-activated automatic valve within 4 hours. ■ Technical Specification 3.6.4.3.D: Restore one SGT subsystem to Operable status within 1 hour. ■ Technical Specification 3.3.7.1.A.2: Restore CREV System Instrument Channel to OPERABLE within 6 hrs.

Event 3 Completion Criteria:

- **Secondary Containment Isolation completed; AND,**
 - **Technical Specifications have been referenced and required LCOs identified.**
- OR,**
- At the discretion of the Floor Instructor/Lead Evaluator.**

Event Four – IRM Fails Upscale with Half Scram		
Trigger	Position	Crew Actions or Behavior
3		<p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 3, which fails IRM channel 12 upscale.</p>
	ATC	<p>Perform the following actions per DAN 902-5 C-10, CHANNEL A IRM HI HI/INOP:</p> <ul style="list-style-type: none"> <input type="checkbox"/> If not in the RUN Mode, verifies the following occurred: <ul style="list-style-type: none"> ○ Channel A half scram ○ No rods Scrammed. ○ Rod Block. <input type="checkbox"/> Verifies IRM 12 readings against other IRMs on 902-5 panel. <input type="checkbox"/> Verifies IRM range switch in correct position ■ Bypasses IRM 12 after T. S. compliance verified by CRS. ■ Resets RPS channel A per DOP 0500-07, Insertion/Reset of Manual Half Scram, as follows: <ul style="list-style-type: none"> ○ Verifies half scram no longer required ● Turns the Scram Reset switch in each direction and verifies all eight white group solenoid lights are lit. ○ Verifies alarm 902-5 A-10, Channel A Manual Trip, resets.
	BOP	<p>Performs the following actions per DAN 902-5 C-10:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verifies IRM 12 readings against other IRMs on 902-36 panel. <input type="checkbox"/> Verifies IRM 12 function switch in operate.
	CRS	<ul style="list-style-type: none"> ■ Directs IRM 12 bypassed and the half scram reset per DOP 0500-07, Insertion/Reset of Manual Half Scram. <input type="checkbox"/> Notifies the Shift Manager and IMD.
		<p><u>ROLE PLAY:</u></p> <p>At the discretion of the Lead Examiner, as the QNE, phone the control room and report, “While analyzing the rod pattern I determined that control rods G-08 and J-08 do not comply with the analyzed rod sequence”.</p> <p>If asked, report: “I will work on rod move sheets for control rods G-08 and J-08”.</p>
	CRS	<ul style="list-style-type: none"> ■ References plant technical documents and determines: <ul style="list-style-type: none"> ● TS 3.1.6 Condition A.1: Move associated control rod(s) to correct position within 8 hours; OR, ● TS 3.1.6 Condition A.2: Declare associated control rod(s) inoperable within 8 hours.

Event Four – IRM Fails Upscale with Half Scram

Trigger

Position

Crew Actions or Behavior

Event 4 Completion Criteria:

- IRM 12 bypassed,
- Half scram reset, AND
- Tech Spec determination complete.

AND / OR

- At the direction of the Lead Examiner.

Event Five – Circulating Water Pump 2A Trips on Overload.		
Trigger	Position	Crew Actions or Behavior
4		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 4, which trips 2A Circulating Water pump.</p>
	BOP	<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 EO 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 EO to check Cribhouse bar racks and traveling screens.
		<p><u>Role Play:</u></p> <p>As the EO 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 EO sent to 2A Circulating Water pump (wait 3 min), then report: “2A Circulating Water pump motor is hot to the touch”. If asked, report “the 2A Circulating Water pump discharge valve is closed”</p> <p>As the EO sent to check 2B Circulating Water pump operation (wait 2 min), then report: “2B Circulating Water pump is operating normally”.</p> <p>As the EO 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><u>Event 5 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 Six – FWLC Controller Setpoint Drifts High

Trigger	Position	Crew Actions or Behavior
15		<p><u>SIMULATOR OPERATOR:</u> At the discretion of the Lead Examiner, activate trigger 15, which causes the FWLC setpoint to drift high.</p>
		<p><u>ROLE PLAY:</u> Support Personnel: respond you will assist as directed.</p>
	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 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.

Event 6 Completion Criteria:

- RPV level stabilized,
- AND/OR,**
- At the direction of the Lead Examiner.

Event Seven – Condensate Pump Room Flooding / Reactor Scram

Trigger	Position	Crew Actions or Behavior
5		<p><u>SIMULATOR OPERATOR:</u> At the discretion of the Lead Examiner, activate trigger 5, which starts Condensate Pump Room flooding.</p>
		<p><u>ROLE PLAY:</u> As the EO sent to investigate the Condensate Pump Room: wait 2 min, then report: “there is a large amount of water spraying from the Condensate Booster Pump common discharge header”. If asked as the EO at the leak: “the leak cannot be isolated”.</p>
	BOP	<p><input type="checkbox"/> Announces alarms:</p> <ul style="list-style-type: none"> ○ 902-4 D-20, Turb Bldg Flr Drn Sump Lvl Hi. ○ 902-4 C-20, Turb Bldg Equip Drn Sump Lvl Hi. ○ 902-6 H-2, Condenser Lvl Lo. ○ 902-6 H-4, Cond Emerg Make-up Vlv Open. ○ 902-6 G-11, Condensate Make-up Pp Auto Start. ○ 902-7 F-16, Cond Pp Rm Wtr Lvl Hi.
	CRS	<p>■ Enters DOA 0040-02, Localized Flooding in Plant, and directs actions.</p>
	BOP	<p>Performs DOA 0040-02, Localized Flooding in Plant, actions as directed.</p> <p><input type="checkbox"/> Makes PA announcement.</p> <p><input type="checkbox"/> Sends operator(s) to investigate.</p>
	CRS	<p>Determines the Condensate System leak cannot be stopped and performs / directs:</p> <p>■ Manual scram per DGP 02-03, Reactor Scram.</p>
	ATC / BOP	<p>Performs manual scram per DGP 02-03, Reactor Scram:</p> <p>■ Places Mode Switch to Shutdown and depresses the Scram pushbuttons.</p> <p>■ Determines all rods are inserted.</p> <p><input type="checkbox"/> Maintains RPV level as directed by CRS.</p> <p><input type="checkbox"/> Inserts SRMs and IRMs.</p>
	BOP	<p>Performs manual scram per DGP 02-03, Reactor Scram.</p>
	CRS	<p>■ Directs the RFP and Condensate pumps shutdown.</p>
	ATC	<p>■ Shuts down the RFP and Condensate Pumps.</p>

Event Seven – Condensate Pump Room Flooding / Reactor Scram

Trigger	Position	Crew Actions or Behavior
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Event 7 Completion Criteria:

- **Reactor scram actions in progress,**
 - **Condensate Pumps shutdown,**
- AND/OR,**
- **At the direction of the Lead Examiner.**

Event Eight – FEF / Steam Leak In HPCI Room / Secondary Containment High Radiation / Emergency Depressurization

Trigger	Position	Crew Actions or Behavior
6		<p>Simulator Operator:</p> <p>At the discretion of the Floor Instructor / Lead Evaluator, activate trigger 6. This causes:</p> <ul style="list-style-type: none"> • A FEF. • A HPCI Room steam line break. <p>When trigger 6 is activated, immediately RUN CAEP file ILT-N-3 Rad.cae.</p>
		<p>Role Play:</p> <p>EO sent to HPCI: wait 2 min, then report “the HPCI room is filled with steam. I left the area”.</p> <p>Several minutes after above report, report as one of the EOs sent to the Rx Bldg “there is steam coming from the West LPCI Corner Room stairway; I am leaving the Rx Bldg”. For any subsequent requests to enter the Unit 2 Rx Bldg, report “I cannot enter the Rx Bldg due to the presence of steam.</p> <p>EO to Panel 902-39 in AEER: wait 3 min, call on the phone and report “there is an acrid odor coming from the 902-39 panel, but there is no indication of a fire”...</p>
		<p>Role Play:</p> <p>RP to take local RX Bldg radiation readings: Report “I cannot enter the Unit 2 RX Bldg due to the steam leak. I am able to get radiation levels through the doorways. The highest reading is on the 1st floor through the door from Unit 3. The reading is (provide the value from the W. CRD area ARM on the Monitor screen)”.</p> <p>Once the W CRD area ARM is full upscale (100 mr/hr), for further reports provide EITHER:</p> <ul style="list-style-type: none"> • The W. CRD ARM value; OR, • Value provided by the Floor Instructor.
		<p>Note: Use time compression if desired and report that radiation levels are .2500 mr/hr.</p>
		<p>Floor Instructor / Lead Evaluator:</p> <p>If desired once the W. CRD area ARM is full scale, provide the Communicator with field radiation levels. A W.CRD area radiation level of >2500 mr/hr will provide the crew a second area above Max Safe.</p>
	BOP	<ul style="list-style-type: none"> <input type="checkbox"/> Announces alarm 902-3 G-2 for Area High Temperature. <input type="checkbox"/> Checks back panel and determines HPCI Room temperatures are rising. Reports values to Unit Supervisor.
	CRS	<p>When Rx Bldg Area High Temp alarm is received for the HPCI area, enters DEOP 0300-01, Secondary Containment Control.</p> <ul style="list-style-type: none"> ■ Directs operator to isolate the HPCI system. ■ Determines steam leak cannot be isolated.

Event Eight – FEF / Steam Leak In HPCI Room / Secondary Containment High Radiation / Emergency Depressurization

Trigger	Position	Crew Actions or Behavior
	BOP	<input type="checkbox"/> When directed, attempts to close HPCI MO 2301-4 & 5 to isolate the HPCI system. Reports the valves will not close. May send operator to check its breaker.
	CRS	Per DEOP 0300-01, before a Max Safe value is reached, and / or when RPV level drops below 8 inches, enters DEOP 0100, RPV Control. <ul style="list-style-type: none"> ■ Directs injecting with CRD and SBLC.
	BOP	<input type="checkbox"/> Announces alarm 902-3 A-1 for Rx Bldg Rad Hi. <input type="checkbox"/> Obtains DEOP related ARM readings and reports values to Unit Supervisor.
	CRS	<input type="checkbox"/> Reenters DEOP 0300-01, Secondary Containment Control, due to Vent Rad above 4 mr/hr. <input type="checkbox"/> Verifies Reactor Building Vent Isolation and SBGT start. <input type="checkbox"/> Enters DGA-16, Coolant High Activity/Fuel Element Failure and directs: <ul style="list-style-type: none"> ■ ⌚ Within 40 minutes, isolate Main Control Room Ventilation AND start the air filtration unit per DOA 5750-04, Smoke, Noxious Fumes or Airborne Contaminants in the Control Room. (TCA15, 40 min.)
	CRS	<input type="checkbox"/> Reenters DEOP 0300-01, Secondary Containment Control, due to Rx Bldg Radiation above Max Normal. (HPCI Room >150 mr/hr)
	ATC / BOP	<input type="checkbox"/> Performs DGA 16, Coolant High Activity/Fuel Element Failure as directed: <ul style="list-style-type: none"> ■ ⌚ Isolates Main Control Room Ventilation AND starts the air filtration unit per DOA 5750-04, Smoke, Noxious Fumes or Airborne Contaminants in the Control Room. (TCA15, 40 min.)
	ATC / BOP	<input type="checkbox"/> Announces Drywell, Main Steam Line, SPING Radiation alarms.
	CRS	<input type="checkbox"/> May anticipate Emergency Depressurization direct opening the Turbine Bypass valves.
	BOP	<input type="checkbox"/> May anticipate Emergency Depressurization direct opening the Turbine Bypass valves.
	CRS	<input checked="" type="checkbox"/> When two Rx Bldg Radiation levels exceed Max Safe (>2500 mr/hr), enters DEOP 0400-02, Emergency Depressurization, (SC-1.2) and performs / directs: <ul style="list-style-type: none"> <input type="checkbox"/> If Drywell Pressure above 2 psig, preventing Core Spray and LPCI injection not needed for core cooling. (Not expected to reach 2 psig in the Drywell so this may be N/A) <input type="checkbox"/> Initiating IC to maximum flow <input type="checkbox"/> Verifying Torus level above 6' ■ <input checked="" type="checkbox"/> Opening all ADSVs (RPV-2.1)

Event Eight – FEF / Steam Leak In HPCI Room / Secondary Containment High Radiation / Emergency Depressurization

Trigger	Position	Crew Actions or Behavior
	BOP	<ul style="list-style-type: none"> √ Performs DEOP 0400-02, Emergency Depressurization, (SC-1.2) as directed: <ul style="list-style-type: none"> <input type="checkbox"/> Prevents Core Spray and LPCI injection not needed for core cooling (Not expected to reach 2 psig in the Drywell so this may be N/A) <input type="checkbox"/> Initiates IC to maximum flow <input type="checkbox"/> Verifies Torus level above 6' ■ √ Opens all available ADSVs (RPV-2.1)

Event 8 / Scenario Completion Criteria:

- **Emergency Depressurization in Progress,**
 - **RPV stabilized,**
- AND/OR,**
- **At the direction of the Lead Examiner.**

Critical Tasks:	
(SC-1.2)	When executing DEOP 300-1, Secondary Containment Control, when more than one critical area reaches their respective maximum safe operating values for the same parameter with an unisolable primary system discharging into the respective area(s), perform an emergency depressurization of the reactor.
(RPV-2.1)	When conditions are met per DEOP 400-2, Emergency Depressurization, the minimum number of available SRV's required for emergency depressurization (MNSRED) are opened.

REFERENCES

PROCEDURE	TITLE
DAN 902-3 A-1	Rx Bldg Rad Hi
DAN 902-3 F-14	Rx BLDG Vent Ch A Rad Hi Hi.
DAN 902-3 G-2	Area High Temperature
DAN 902-4 C-20	Turb Bldg Equip Drn Sump Lvl Hi
DAN 902-4 D-20	Turb Bldg Flr Drn Sump Lvl Hi
DAN 902-5 A-3	Rod Drift
DAN 902-5 C-10	CHANNEL A IRM HI HI/INOP
DAN 902-6 H-2	Condenser Lvl Lo
DAN 902-6 H-4	Cond Emerg Make-up Vlv Open
DAN 902-6 G-11	Condensate Make-up Pp Auto Start
DAN 902-7 A-15	Circ Wtr PP Trip
DAN 902-7 F-16	Cond Pp Rm Wtr Lvl Hi
DAN 923-5 A-1(4)	U2(3) Rx BLDG Vent/Exh Fan Trip.
DAN 923-5 C-1	Rx Bldg DP Lo.
DEOP 0100	RPV Control
DEOP 0200-01	Primary Containment Control
DEOP 0300-01	Secondary Containment Control
DEOP 0400-02	Emergency Depressurization
DGA 07	Unpredicted Reactivity Addition
DGA 16	Coolant High Activity/Fuel Element Failure
DGP 02-03	Reactor Scram
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 4400-01	Circulating Water System Failure
DOA 6500-10	4KV Circuit Breaker Trip
DOA 7500-01	Standby Gas Treatment System Fan Trip
DOS 0300-06	CRD Abnormality Record
DOS 1600-20	Suppression Pool Temp Monitoring
DOP 0500-07	Insertion/Reset of Manual Half Scram
DOP 5750-06	Reactor Feed Pump Motor Ventilation System
TS 3.1.3	Control Rod Operability
TS 3.1.6	Rod Pattern Control
TS 3.3.2.1	Control Rod Block Instrumentation
TS 3.3.7	Control Room Emergency Ventilation (CREV) System Instrumentation
TS 3.4.3	Safety and Relief Valves
TS 3.6.4	Secondary Containment

EXAM ILT-N-3 QUANTITATIVE ATTRIBUTES	
8	Total malfunctions (5-8)
1	Malfunctions after EOP entry (1-2)
3	Abnormal events (2-4)
2	Major transients (1-2)
2	EOPs entered/requiring substantive actions (1-2)
1	EOP contingencies requiring substantive actions (0-2)
2	Critical tasks (2-3)

Computer Aided Exercise Programs

14-1 ILT-N-3.cae
For ILT Class 14-1 NRC Exam
Written by MP
Rev 00
Date 11/14

INITIAL CONDITIONS

Sets APRM Master Gain pot to 1.0
irf niagain 1.0

Overrides OFF the alarm that comes up due to the 2/3A SGBT control switch in OFF
imf ser1896 off

Holds 2B RFP motor winding temperature on PPC @80 deg. F. (Below alarm point)
imf m295 80.0

Fails 2/3A SGBT by overriding its control switch
ior vgdstbya off
ior vgdprima off
ior vgdstrta off

Overrides OFF the alarm that comes up due to the 2/3B SGBT control switch in OFF
imf ser1910 off|2

Fails 2/3B SGBT STBY position of its control switch.
ior vgdstbyb off|2

Fails the RBV Isolation.
irf cirbvall lifted||2

Binds HPCI 4 valve @ 90%.
Overrides HPCI 5 valve control switch to prevent closing.
imf hp4vlbn 90.0|2
ior hpdcl5 1|2

Lifts Leads to HPCI Isolation Relays.
irf hpgp4rly lifted|4

EVENT TRIGGERS

Event Trigger 1 Fails all control rod F-05 RPIS indications.
trgset 1 "0"|4
imf rdfailf5 (1)|4
imf rpis_pos_cr043s (1) bad|4

Event Trigger 2 fails RX Bldg Vent Rad monitor upscale.
Closes all but one set of RBV dampers.
trgset 2 "0"|4
imf radrbvah (2)|6
ior vrd5741c (2) close|6
ior vrd741c3 (2) close|6
ior vrd742c3 (2) close|6
ior vglaua06 (2) true|6

Event Trigger 3 IRM 12 channel fails upscale over a two minute ramp.

trgset 3 "0"|8
imf nii12pot (3) 125.0|8

Event Trigger 4 Trips 2A Circ Water pump.
trgset 4 "0"|8
imf hp6 (4)|8

Event Trigger 15 Drifts FWLC setpoint up over 5:00 min.
trgset 15 "0"|8
irf rllmls (15) 60 5:00|8

Event Trigger 5 Floods the Condensate Pump Room.
trgset 5 "0"|8
imf hp3 (5) 20.0|8

Event Trigger 6 Initiates a HPCI Room steam line break.
trgset 6 "0"|10
imf hprnbrkp (6) 100.0 15:00 5.0|10
imf radffd (6) 4.0 15:00 1.0|10

Event Trigger 28 sets gain for all 6 APRMs.
trgset 28 "0"|10
trg 28 "irf niagainf true"|10

END

ILT-N-3 Rad.cae
For ILT Class 14-1 NRC Exam
Written by MP
Rev 00
Date 11/14

This CAEP ramps Rad level for a HPCI room unisolable leak with a FEF.

Starts a ramp of the HPCI CUBICAL ARM.
set RMARMFAILF(2) = true
ramp RMARMFAILD(2) 5.0 3000.0 8:00

After 1 min, starts a ramp of the WEST LPCI PUMP AREA ARM.
set RMARMFAILF(3) = true|1:00
ramp RMARMFAILD(3) 2.0 1000.0 5:00|1:00

After 2 min, starts a ramp of the WEST CRD MODULE AREA ARM.
set RMARMFAILF(5) = true|2:00
ramp RMARMFAILD(5) 0.2 100.0 2:00|2:00

After 2 min, starts a ramp of the REACTOR BUILDING SOUTH ACCESS ARM.
set RMARMFAILF(7) = true|2:00
ramp RMARMFAILD(7) 1.0 100.0 2:00|2:00

END

ILT-N-3 Clear Rad.cae
For ILT Class 14-1 NRC Exam
Written by MP

Rev 00
Date 11/14

This CAEP Clears the Rad level ramps.
Resetting the IC does not clear them.
Restarting MST will also clear them.

Stops ramp of the HPCI CUBICAL ARM.
set RMARMFAILF(2) = false

Stops ramp of the WEST LPCI PUMP AREA ARM.
set RMARMFAILF(3) = false

Stops ramp of the WEST CRD MODULE AREA ARM.
set RMARMFAILF(5) = false

Stops ramp of the REACTOR BUILDING SOUTH ACCESS ARM.
set RMARMFAILF(7) = false

END

Unit 2 Risk: GREEN

Unit 2 is in Mode 2 with 1 Turb Bypass Open,

Leading Thermal Limit: MFLCPR @ 0.881

Action limit: 0.980

Equipment Unavailable: None

Protected Equipment: None

Unit 3 Risk: GREEN

Unit 3 is in Mode 1 at Full Power

Leading Thermal Limit: MAPRAT @ 0.819

Action Limit: 0.980

Equipment Unavailable: None

Protected Equipment: None

Current Action Statements

None

LCO Started:

LCO Expires:

TS

Cause:

Unit 1 Plant Status

Today

Today

Switchyard Status

Today

Today

Unit 2 Plant Status

Today

Unit 2 Activities

**** Shift 1 Activities ****

**** Shift 2 Activities ****

Unit startup in progress, steady at ~ 5% Power. Holding for plant inspections. Resume pulling Control Rods next shift.

When directed by the Shift Manager, start 2B RFP Vent Fan and secure 2A RFP Vent Fan per DOP 5750-06, Reactor Feed Pump Motor Ventilation System.

**** Shift 3 Activities ****

Today

**** Unit 2 Procedures In-Progress ****

DGP 01-01, Unit Startup