

Dresden Generating Station

ILT-N-1

CONTROL ROD RPIS FAILURE

SERVICE WATER PUMP TRIP

ISOLATION CONDENSER INADVERTENT INITIATION

SWAP RFP DUE TO OIL LEAK

EARTHQUAKE / TORUS LEAK / MANUAL SCRAM

EMERGENCY DEPRESSURIZE DUE TO LOWERING TORUS LEVEL

Rev. 00

09/10

Developed By:

Exam Author

Date

Approved By:

Facility Representative

Date

Scenario Outline

Station: Dresden Generating Station Scenario No.: ILT-N-1 Class ID: 10-01 (2011-301)

Evaluators _____ _____ _____	Operators / crew position _____ / ATC _____ / BOP _____ / CRS
Initial Conditions: Initial Power = 75% _____ _____ _____	
Turnover: _____ _____ _____	

Event No.	Malf. No.	Event Type*		Event Description
1	RDFAILF5	I	ATC	CRD - RPIS failure for rod F-05. ^T
2	Q22	C	BOP	SERV WATER - Pump Trip.
3	ICSPDFT	I	BOP	ISO COND - Inadvertent Initiation. ^T
4	NONE	C	ATC	RFP - 2B RFP Develops an Oil Leak / Must Swap.
5	CSBRKSEV	M	TEAM	MANUAL SCRAM - Earthquake Causes Plant Damage and Subsequent Torus Leak.
6	CSBRKSEV	M	TEAM	EMERGENCY DEPRESSURIZE - Torus ECCS Suction Line Break / ED due to Lowering Torus Level.

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

Scenario Objective

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

Scenario Summary

Initial Conditions:

1. Unit is at 75% power.
2. The following equipment is OOS:
 - a. None
3. LCOs:
 - a. None

Scenario Sequence

- Control rod F-05 loses all RPIS indication. The Team will insert the control rod, reference Tech Specs and direct taking it OOS.
- The 2B Service Water pump trips on overload. The Team will start a standby pump.
- The Isolation Condenser initiates due to setpoint drift. The Team will stop operation of the Isolation Condenser and reference Tech Specs.
- The Team receives a report from the field that 2B RFP has an oil leak. The Team starts 2C RFP and secures 2B RFP.
- Due to an earthquake, an ECCS suction line break occurs resulting in a lowering torus water level. Per DEOP 0200-01, Primary Containment Control, the Team should:
 - Scram the reactor.
 - Prevent HPCI operation.
 - Perform an emergency depressurization. (One ADSV fails to open. The Team will augment emergency depressurization with other systems.)

Event One – 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 Two – Service Water Pump Trip

- 2B Service Water pump trips on overload.

Malfunctions required: 1

- (2B Service Water pump trip)

Success Path:

- The Team starts a standby pump.

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

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

Malfunctions required: 1

- 2B RFP oil leak

Success Path:

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

Event Five and Six – Torus Leak

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

Malfunctions required: 2

- (Torus Leak)
- (ADSV fail to open)

Success Path:

- Perform manual Reactor scram.
- Prevent HPCI operation.
- Emergency Depressurize.

PRE-SCENARIO ACTIVITIES

- 1 If applicable, conduct pre-scenario activities in accordance with TQ-JA-150-08, SIMULATOR EXAMINATION BRIEFING.

- 2 Simulator Setup (the following steps can be done in any logical order)
 - a. a. Initialize simulator in an IC which allows establishing the following: (Jump Drive IC 156 can be used)
 - 1) Reactor power at ~75%.
 - 2) Generator at ~680 MWe.
 - 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. 2B and 3B Service Water pumps running.
 - b. 2A and 2B RFPs running with 2C RFP in STBY on Bus 22.
 - c. Verify Zinc Injection label in place for lined up to 2A RFP.

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

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

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

- 6 Complete the Simulator Setup Checklist.

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

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

Event One – Control Rod RPIS Failure		
Trigger	Position	Crew Actions or Behavior
1		<p><u>SIMULATOR OPERATOR:</u></p> <p>At the direction of the Lead Examiner, activate trigger 1, RPIS failure for control rod F-05.</p>
		<p><u>ROLE PLAY:</u></p> <p>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.
	ATC	Recognizes loss of control rod F-05 position indication on Full Core Display, Four Rod Display, RWM, and/or Process Computer.
	CRS	Enters DOA 0300-06, RPIS Failure, and directs its actions.
	ATC	<p>Performs subsequent actions of DOA 0300-06, RPIS Failure:</p> <ul style="list-style-type: none"> <input type="checkbox"/> May insert Rod F-05 to 00 prior to entering DOA 0300-06. <input type="checkbox"/> Enters substitute position of 48 for F-05. <input type="checkbox"/> Inserts control rod F-05 one notch. <input type="checkbox"/> Determines no control rod position indication at alternate position. ■ Selects rod F-05. ■ Drives rod F-05 to fully inserted position. <input type="checkbox"/> Calls WEC to electrically or hydraulically isolate the control rod F-05 HCU. <input type="checkbox"/> May enter a substitute position and take OOS on the RWM per DOP 0400-02, Rod Worth Minimizer.
	CRS	<p>References appropriate plant licensing documents and determines:</p> <ul style="list-style-type: none"> ■ TS 3.1.3, condition C, required actions: <ul style="list-style-type: none"> ❖ C.1 Fully insert inoperable control rod within 3 hours; AND, ❖ C.2. Disarm the associated CRD within 4 hours. <input type="checkbox"/> Directs electrically or hydraulically isolating control rod F-05 HCU.
		<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	<input type="checkbox"/> Monitors panel, provides assistance as directed.
	TEAM	<ul style="list-style-type: none"> <input type="checkbox"/> May enter DOA 0300-12, Mispositioned Control Rod. <input type="checkbox"/> Notifies the Shift Manager, QNE, Work Week Manager, Fin team, IMD, OR EMD.

Event One – Control Rod RPIS Failure

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

Event 1 Completion Criteria:

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

Event Two – Service Water Pump Trip

Trigger	Position	Crew Actions or Behavior
2		<p><u>SIMULATOR OPERATOR:</u> At the discretion of the Lead Examiner, activate trigger 2, which trips the 2B Service Water Pump.</p>
		<p><u>ROLE PLAY:</u> EO at Service Water Pump just started (wait 2 min.): Report: "The Service Water Pump is operating normally and 2B Service Water Pump shows no sign of damage". EO at 2B Service Water Pump at Bus 24 (wait 2 min.): Report: "2B Service Water Pump Breaker is open and it has overcurrent targets up". EMD Acknowledges need to go to Bus 24 and troubleshoot overcurrent flag at 2B Service Water Pump breaker.</p>
3		<p><u>SIMULATOR OPERATOR:</u> After a standby Service Water Pump is started, activate trigger 3, which returns the Remote for stopping the DFP to normal.</p>
	BOP	<ul style="list-style-type: none"> <input type="checkbox"/> Announces 2B Service Water Pump trip. <input type="checkbox"/> Refers to DAN 923-1 C-3, U2 OR U3 SERV WATER PP TRIP. ■ Starts an available Service Water Pump. <p>Refers to DOA 6500-10, 4KV Circuit Breaker Trip and:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Directs an EO to the Cribhouse to check the Service Water Pump just started and inspect 2B Service Water Pump. <input type="checkbox"/> Direct an EO to check the breaker of 2B Service Water Pump. ■ Places 2B Service Water Pump control switch in Pull to Lock. <input type="checkbox"/> Notifies Ops Shift Supervisor. <input type="checkbox"/> Requests EMD to troubleshoot.
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> Notifies Shift Manager and EMD. <input type="checkbox"/> Enters DOA 3900-01, Loss of Cooling by Service Water System. <input type="checkbox"/> Enters DOA 6500-10, 4KV Circuit Breaker Trip.
	ATC	<ul style="list-style-type: none"> <input type="checkbox"/> Assists as directed.

Event 2 Completion Criteria:

- An available Service Water pump is started,

AND / OR,

- At the discretion of the Lead Examiner.

Event Three – Isolation Condenser Inadvertent Initiation

Trigger	Position	Crew Actions or Behavior
4		<p><u>SIMULATOR OPERATOR:</u> At the direction of the Lead Examiner, activate trigger 4, 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 3 Completion Criteria:

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

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

Trigger	Position	Actions or Behavior
		<p>Role Play:</p> <p>Call the control room as the U-2 NLO and report, "While I was on rounds, I found 2B RFP has an oil leak on a line to the speed changer. It cannot be stopped".</p> <p>If asked "the oil is contained on the bed plate and I plugged the drain before the oil reached it".</p> <p>If asked 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>
	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 (the RED valve position indicating light is extinguished), THEN places 2C RFP RECIRC VLV PCV 2-3201A control switch in AUTO. ❑ Directs NLO to perform checks on 2C RFP.

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

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

Event 4 Completion Criteria:

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

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

Trigger	Position	Crew Actions or Behavior
5		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 5 which starts an ECCS suction line break in the torus basement.</p> <p><u>Note:</u></p> <p>It takes about 20 minutes for torus level to reach 11 feet. <i>At the discretion of the lead examiner, use the cues in this event to jump ahead in time to expedite level drop if desired.</i></p> <p><u>Role Play:</u></p> <p>After inserting the above trigger call the Control Room, as Security and report there has been a confirmed earthquake felt throughout the plant.</p>
	BOP	<ul style="list-style-type: none"> ■ Reports the following alarms: <ul style="list-style-type: none"> ● 923 A-3 (B-2), U2 E(W) Rbfd Sump Lvl HI-HI ● 902-4 C-23, Torus Narrow Range Wtr Lvl Lo ■ Checks the torus narrow range level indicator. Reports level dropping. □ Directs NLO to perform DOS 1600-02, Torus Level Verification Using Local Sight Glass. ■ Directs NLO to investigate leakage to torus basement. ■ Verifies proper operation of the Rbfd Sump pumps. (Will require resetting the Group 2 isolation at both the 902-5 panel and the 923-4 panel for the sump pumps to operate if a Group 2 Isolation occurs).
		<p><u>Role Play:</u></p> <p>As the NLO sent to verify Torus level locally using sight glass (wait 4 min), then report: "Local Torus level is ... (use value from variable ppc232, unless it is <20", then report it is below the sightglass)".</p> <p>As the NLO sent to investigate leakage (wait 2 min) or if not sent, then as the NLO on his round, report: "there is a large rupture from a pipe attached between the Torus shell and the Torus suction ring header near the East LPCI Corner room. The Torus basement floor is covered with water". There is no valve on the line".</p> <p>As the NLO sent to report LPCI corner status (wait 2 min), then report: "there is no water in either LPCI corner room".</p> <p>As Maintenance sent to determine if the leak can be stopped (wait 3 min), then report: "Maintenance cannot stop the leak".</p> <p>As the NLO 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 Five and Six– An ECCS suction line break occurs resulting in a lowering torus water level.

Trigger	Position	Crew 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 NLO to investigate leakage to torus basement. □ Notifies Radiation Protection and Security as time permits.
		<p><u>Cue: (if desired for time compression)</u></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.
	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. ■ √ Directs BOP to prevent HPCI from operating before torus level reaches 12 feet. □ May direct scram preparatory actions per DGP 02-03, Reactor Scram. ■ √ Directs Team to perform a manual reactor scram before torus level reaches 11 feet.
	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. ○ Reduce power with Recirc flow to 56 Mlbm/hr core flow. ○ Start the motor suction pump AND turning gear oil pump. ○ Trip hydrogen addition.
	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. ○ 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	Performs the following actions per DEOP 200-01, Primary Containment Control, as directed: <ul style="list-style-type: none"> □ May attempt to add water to the torus by opening the HPCI 14 valve. □ Monitors/Reports DEOP 200-01 entry parameters. ■ √ Prevents HPCI from operating.

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

Trigger	Position	Crew Actions or Behavior
	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	Enters DEOP 0300-01, Secondary Containment Control, and directs: <ul style="list-style-type: none"> ❑ If Reactor Building Ventilation isolates when unit is scrammed, directs restarting Reactor Building Ventilation.
	BOP	Performs DEOP 300-01, Secondary Control, as directed: <ul style="list-style-type: none"> ❑ Time permitting, restarts Reactor Building Ventilation (if it isolates when the reactor is scrammed).
		<p><u>Cue:</u> (if time compression was used above)</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	When informed that torus level is approaching 11 feet: Enters DEOP 0400-02, Emergency Depressurization, and directs: <ul style="list-style-type: none"> ❑ Initiation of Isolation Condenser to maximum flow. ■ Verification that SP/L >6 feet. ■ √ Opening all ADS valves. ■ Verification relief valves are open. ■ Due to 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)
	BOP	Performs DEOP 0400-02, Emergency Depressurization, actions as directed: <ul style="list-style-type: none"> ■ Initiates Isolation Condenser to maximum flow ❑ Verifies that SP/L >6 feet. ■ √ Opens ADS valves. <ul style="list-style-type: none"> • Verifies all relief valves are open. Determines and announces 'E' ADSV did not open.
	BOP	<ul style="list-style-type: none"> ■ Opens turbine bypass valves. (May already be open due to anticipating Blowdown)

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

Trigger

Position

Crew Actions or Behavior

Events 5 and 6 / Scenario Completion Criteria:

- **Reactor Scrammed,**
 - **HPCI operation prevented,**
 - **RPV depressurization in progress,**
- AND/OR,**
- **At the direction of the Lead Examiner.**

Critical Tasks:	
(PC-3.1)	With the Reactor at power and it is determined that suppression pool water level cannot be held above 11 feet wide range, <i>Manually Scram</i> the Reactor.
(PC-3.2)	When suppression pool level cannot be maintained above top elevation of the HPCI Exhaust (12'), TRIP AND PREVENT HPCI operation irrespective of adequate core cooling.
(PC-3.3)	When it is determined that suppression pool water level cannot be held above 11 feet wide range, INITIATE emergency depressurization

REFERENCES

PROCEDURE	TITLE
DAN 902-3 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 902-4 C-23	TORUS NARROW RANGE WTR LVL LO
DAN 902-5 A-3	ROD DRIFT ALARM
DAN 902-5 B-3	ROD WORTH MIN BLOCK
DAN 902-5 C-3	ROD OUT BLOCK
DAN 923-1 C-3	U2 OR U3 SERV WATER PP TRIP
DAN 923-4 A-3 (B-2)	U2 E(W) RBFD SUMP LVL HI-HI
DEOP 0100-00	RPV CONTROL
DEOP 0200-01	PRIMARY CONTAINMENT CONTROL
DEOP 0300-01	SECONDARY CONTAINMENT CONTROL
DEOP 0400-02	EMERGENCY DEPRESSURIZATION
DGA 07	UNPREDICTED REACTIVITY ADDITION
DGP 02-03	REACTOR SCRAM
DGP 03-04	CONTROL ROD MOVEMENTS
DOA 0010-03	EARTHQUAKES
DOA 0040-02	LOCALIZED FLOODING IN PLANT
DOA 0300-06	RPIS FAILURE
DOA 0300-12	MISPOSITIONED CONTROL ROD
DOA 0600-01	TRANSIENT LEVEL CONTROL
DOA 3900-01	LOSS OF COOLING BY SERVICE WATER SYSTEM
DOA 6500-10	4KV CIRCUIT BREAKER TRIP
DOP 0400-02	ROD WORTH MINIMIZER
DOP 3200-03	STARTUP OF SECOND OR THIRD REACTOR FEED PUMP OR SHIFTING TO ALTERNATE REACTOR FEED PUMP
DOS 0300-06	CRD ABNORMALITY RECORD
DOS 1600-02	TORUS LEVEL VERIFICATION USING LOCAL SIGHT GLASS
T.S. 3.1.3	CONTROL ROD OPERABILITY
T.S. 3.5.3	IC SYSTEM

EXAM ILT-N-1 QUANTITATIVE ATTRIBUTES

6	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)
3	Critical tasks (2-3)

Computer Aided Exercise Programs

NRC Exam ILT 10-1
SCENARIO ILT-N-1.cae
Written by DREFV
Rev 00
Date 09/10

INITIAL CONDITIONS

Prevents the 2/3 DFP from starting.
irf w14 true
imf ser1792 off

Binds 'E' ADSV full closed.
imf ads3ebn 0.0

EVENT TRIGGERS

Event Trigger 1 Fails all control rod F-05 RPIS indications.
trgset 1 "0"
imf rdfail5 (1)|2
imf cr043s (1) bad|2

Event Trigger 2 inserts a trip of the 2B service water pump. (takes several seconds to occur)
trgset 2 "0"|2
imf q22 (2)|2

Event Trigger 3 Returns the Remote for stopping the 2/3 DFP back to normal.
trgset 3 "0"|4
irf w14 (3) false"|4
imf ser1792 (3 2) normal|4

Event Trigger 4 Drifts the Iso Cond Initiation setpoint.
trgset 4 "0"|4
imf icspdf (4) 0.0|6

Event Trigger 5 Inserts an ECCS suction line break.
trgset 5 "0"|6
trg 5 "ramp wamwips 200.0 201.0 1:00:00"|6
imf csbrksev (5) 100.0|6
imf cspbbbrk (5 4:00) 100.0|8

END

Unit 2 Risk: GREEN

Unit 2 is in Mode 1 at 695 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 913 MWe

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

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 ****

Load was dropped last shift per TSO. Load pickup expected next shift.

Maintain current load.

**** Shift 3 Activities ****

Today

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

Dresden Generating Station

ILT-N-2

LOWER REACTOR POWER USING RECIRCULATION FLOW

SPURIOUS HPCI INITIATION

INDIVIDUAL RECIRC PUMP CONTROLLER SIGNAL FAILS DOWNSCALE

SWAP REACTOR BUILDING SUPPLY FANS

FWLC CONTROLLER SETPOINT DRIFTS HIGH

STEAM LEAK IN THE DRYWELL / MANUAL SCRAM

LOSS OF BUS 23-1 AND 28 / EMERGENCY DEPRESSURIZATION

Rev. 00

09/10

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>2011-301</u>	
Evaluators		Operators		/ crew position	
_____		_____		/ ATC	
_____		_____		/ BOP	
_____		_____		/ CRS	
Initial Conditions:					
<u>Initial Power = 80%</u>					

Turnover:					
<u>Lower Reactor Power with Recirc</u>					

Event No.	Malf. No.	Event Type*		Event Description	
1	NONE	R	ATC	RECIRC - Lower Reactor Power using Recirculation Flow.	
2	HPINIT	I	BOP	HPCI - Spurious HPCI Initiation. ^T	
3	RRMBBIAS	I	ATC	RECIRC - Individual Pump Controller Signal Fails Downscale. ^T	
4	None	N	BOP	HVAC - Swap Reactor Building Supply Fans.	
5	RLLMLS	I	ATC	FW - FWLC Controller Drifts High.	
6	I21	M	TEAM	Manual Scram – Steam Leak in the Drywell.	
7	I21 K23 K40	M	TEAM	EMERGENCY DEPRESSURIZE - Steam Leak inside the Drywell / Loss of Bus 23-1 & 28 / ED due to Exceeding Primary Containment Pressure.	

* (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 80% power.
2. The following equipment is OOS:
 - a. None
3. LCOs:
 - a. None

Scenario Sequence

- The Team continues reactor power reduction using recirculation flow.
- A spurious HPCI initiation occurs. The team will take action to stop HPCI and address Tech Spec requirements.
- The 2B Recirc Pump Speed Controller fails downscale. The NSO will lockout 2B Recirc Pump scoop tube. (May lockout both recirc scoop tubes)
- The Team swaps Reactor Building Supply Fans.
- The FWLC setpoint drifts high. The Team will take manual control of the FWLC system.
- A small steam leak in the Drywell begins. The Team will scram the reactor due to the rising Drywell pressure.
- Shortly after the reactor scram, the leak will increase enough that Containment sprays are required. When the Team attempts to spray the Drywell, Bus 23-1 and 28 trip resulting in a loss of one Division of Drywell Spray. The leak worsens and Primary Containment pressure will exceed the PSP limit and require the Team to Emergency Depressurize.

Event One – Lower Reactor Power Using Recirculation Flow

- The Team continues reactor power reduction using recirculation flow.

Malfunctions required: 0

- (None)

Success Path:

- The Team continues reactor power reduction using recirculation flow.

Event Two – Spurious HPCI Initiation

- A Spurious HPCI Initiation occurs.

Malfunctions required: 1

- Spurious HPCI Initiation

Success Path:

- The Team isolates the HPCI steam supply.

Event Three – 2B Recirc Speed Controller Failure

- The 2B Recirc Speed Controller fails downscale.

Malfunctions required: 1

- (2B Recirc Speed Controller output fails down)

Success Path:

- Locks out 2B (Or both) scoop tube(s).
- Performs DOA 0202-03, Reactor Recirc System Flow Control Failure.

Event Four – Swap Reactor Building Supply Fans

- When directed, swaps Reactor Building Supply Fans.

Malfunctions required: 0

- (None)

Success Path:

- Swaps Reactor Building Supply Fans.

Event Five – FWLC Setpoint Drifts High

- The FWLC setpoint will drift high.

Malfunctions required: 1

- (FWLC setpoint failure)

Success Path:

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

Event Six – Steam Leak in the Drywell / Manual Scram

A small steam leak develops in the Drywell.

Malfunctions required: 1

- (Steam Leak in the Drywell)

Success Path:

- Performs a manual scram.

Event Seven – Loss of Bus 23-1 and 28 / Emergency Depressurization

The steam leak in the Drywell increases enough to require Containment sprays. When the Team attempts to spray the Drywell, Bus 23-1 and 28 trip 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).
- (Bus 23-1 and 28 overcurrent trips).

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 with 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 a marked up CRSP for the rod insertion including a REMA for routine load drop.
 - d. Provide the Team with a clean copy of DOP 5750-02, Reactor Building Ventilation.

- 2 Simulator Setup (the following steps can be done in any logical order)
 - a. Initialize simulator in an IC which allows establishing the following: (Jump Drive IC 156 can be used)
 - 1) Adjust control rods to establish FCL @ ~95%.
 - 2) Adjust Recirc flow to establish ~730 MWe.
 - b. Cut in/out Cond Demins as needed to establish DP high in normal band in preparation for load drop.
 - c. Ensure running Condensate pump amps within limits.
 - d. Advance the chart recorders.

- 3 Verify the following simulator conditions:
 - a. 2B Recirc M/A Controller Bias RRMBBIAS is at 0.0 to -0.01. Adjust the bias pot as necessary.
 - b. 2A and 2B Reactor Building Vent Fans running with 2C Reactor Building Vent Fan off.
 - c. TR 86 LTC in AUTO.

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

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

- a. Open the ACTION Program and perform the following:
 - 1) Select tab OVERRIDE AI
 - 2) Locate override RRMBBIAS and open it.
 - 3) Set Ramp Start Value to -0.001
 - 4) Set Ramp time to 4:00
 - 5) Set Delay Time to 0:00
 - 6) Set Analog Value to -0.1
 - 7) Set Event Trigger to 3
 - 8) Click Insert.
-
- 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
- Required Actions
- Optional Actions

Event One – Lower Reactor Power Using Recirculation Flow

Trigger	Position	Crew Actions or Behavior
		<p>NOTE: The turnover directs the crew to reduce load using recirc flow to 58 Mlbm/hr core flow.</p>
1		<p><u>FLOOR INSTRUCTOR / SIMULATOR OPERATOR / ROLE PLAY:</u> If the team announces that they will adjust gains, inform them an extra NSO will perform the adjustment. Then:</p> <ul style="list-style-type: none"> ❖ Tell the team you are time compressing. ❖ Direct the SIMULATOR OPERATOR to activate trigger 1 and verify gains within limits. ❖ Inform the team the gains are adjusted. <p>(NOTE: trigger 1 can be toggled OFF, then back ON as many times as necessary to adjust gains)</p>
	CRS	<input type="checkbox"/> Directs NSO to reduce load to 58 Mlbm/hr core flow using recirculation flow.
	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"> ■ Uses MASTER RECIRC FLOW CONTLR, 2(3)-262-22, potentiometer to reduce flow AND control reactor power. <input type="checkbox"/> Notifies CRS when at 58 Mlbm/hr core flow.
	BOP	<input type="checkbox"/> Monitors Panels.

Event 1 Completion Criteria:

- Core Flow dropped to 58 Mlbm/hr,
AND / OR,
- At the discretion of the Lead Examiner.

Event Two – Spurious HPCI Initiation

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

Event 2 Completion Criteria:

- Actions taken to shutdown HPCI,
- Tech Specs addressed,
AND / OR,
- At the discretion of the Lead Examiner.

Event Three – 2B Recirc Speed Controller Failure

Trigger	Position	Crew Actions or Behavior
3		<p><u>SIMULATOR OPERATOR:</u></p> <p>When the BOP is NOT near the 902-4 panel and at the discretion of the Lead Examiner, activate trigger 3, which will cause 2B Recirc Speed Controller to slowly fail downscale.</p>
	ATC	<ul style="list-style-type: none"> ■ Determines and announces Recirculation Flow transient occurring by observing any of the following: <ul style="list-style-type: none"> ○ Decrease in Recirc Loop Flow as indicated on FR 2-260-7. ○ Decrease in Rx Power indicated on WI 2-6040-59. ○ Decrease in Core Flow and DP on DPR/FR 2-263-110. ○ Decrease in Total Stm Flow on UR 2-640-27. ○ Decrease in Rx Pressure on P/FR 2-640-28. ○ Decrease in Total Feedwater Flow on UR 2-640-26. ○ Decrease in Power Level on RR 2-750-10A/D, & RR 2-750-10B/C. ○ Alarm 902-4 E-6, 2A/B RECIRC PPS SPEED MISMATCH.
	CRS	<ul style="list-style-type: none"> ■ Enters DOA 0202-03, Reactor Recirc System Flow Control Failure. □ May enter DGA 07, Unpredicted Reactivity Addition.
		<p><u>NOTE:</u> The operator should lockout 2B Recirc M-G scoop tube. The operators may lockout BOTH scoop tubes although ONLY 2B Recirc M-G is changing speed.</p>
	ATC	<p>Performs the following actions per DOA 0202-03, Reactor Recirc System Flow Control Failure:</p> <ul style="list-style-type: none"> ■ Places 2B M-G Set Scoop Tube Power Lockout Reset Switch in the Lockout position. □ May also place 2A M-G Set Scoop Tube Power Lockout Reset Switch in the Lockout position. □ Verifies Core thermal power <2957 MWt. □ Verifies Recirc Pump NOT operating in the instability region of the MG Set voltage regulator AND uncontrolled pump flow AND speed oscillations are NOT occurring. □ Verifies NOT operating in the unstable region of the Power / Flow Map.

Event Three – 2B Recirc Speed Controller Failure

Trigger	Position	Crew Actions or Behavior
	ATC	<p>Completes actions of Recirc M-G Lockout in DOP 0202-12, Recirculation Pump Motor Generator Set Scoop Tube Operation.</p> <ul style="list-style-type: none"> ❑ Verifies alarm is received on annunciator 902-4 C-5 (1), 2B (2A) RECIRC M-G SCOOP TUBE PWR FAILURE. ■ Places 2B (& 2A) recirc pump speed control transfer stations in manual (MAN) at panel 902-4: <ul style="list-style-type: none"> • 2B (& 2A) RECIRC PP SPEED CONTRL, 2-262-25B (& 2A) ❑ Verify MASTER RECIRC FLOW CONTRL, 2-262-22, is in manual (MAN). ■ At the recirc pump speed control transfer station with the locked out scoop tube, rotate the potentiometer counterclockwise to set speed demand to minimum (30%): <ul style="list-style-type: none"> • 2B (& 2A) RECIRC PP SPEED CONTRL, 2-262-25B (& 2A) ❑ At panel 902-4, place an Equipment Status Tag on 2B (& 2A) M-G SET SCOOP TUBE POWER LOCKOUT RESET switch stating the reason the recirc MG set scoop tube is locked out.
	BOP	<ul style="list-style-type: none"> ❑ Assist ATC as directed.
	CRS	<ul style="list-style-type: none"> ❑ Verifies actions of DOA 0202-03 and DOP 0202-12 are carried out. ❑ May reference DOA 0500-01, Inadvertent Entry into the Unstable Region of the Power to Flow Map.
	TEAM	<ul style="list-style-type: none"> ❑ Performs DOS 0202-02. Jet Pump Operability and Degradation, step I.5 to verify Recirc Loop flow mismatch within limits.
		<p>NOTE: The operators may lockout the scoop tube(s) before the Tech Spec limit (Jet pump loop flow mismatch \leq 10% of rated core flow when operating at $<$ 70% of rated core flow) is reached. If that occurs, the Examiners can pose a follow up question to the CRS on requirements if the Jet pump loop flow mismatch is exceeded.</p>
	CRS	<ul style="list-style-type: none"> ■ References Technical Specifications and determines: <ul style="list-style-type: none"> ❖ TS 3.4.1 Action B.1 may apply. If Jet pump loop flow mismatch is exceeded, declare the recirculation loop with lower flow to be "not in operation" within 2 hrs.

Event 3 Completion Criteria:

- 2A (& 2B) Recirc Scoop Tubes locked out,
- AND/OR,
- At the discretion of the Lead Examiner.

Event Four – Swap Reactor Building Supply 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 start 2C Reactor Building Vent Fan and secure 2B Reactor Building Vent Fan.</p> <p>NLO stationed at Reactor Building Vent Fans: If asked, report that “the Reactor Building Vent Fans operated as expected”.</p>
	CRS	Directs starting 2C Reactor Building Vent Fan and securing 2B Reactor Building Vent Fan per DOP 5750-02, Reactor Building Ventilation.
	BOP	<p>Performs DOP 5750-02, Reactor Building Ventilation, as follows.</p> <ul style="list-style-type: none"> ■ Places switch 2B RBX vent fan C/S in TRIP. ■ <u>IMMEDIATELY places switch for 2C RBX vent fan C/S in CLOSE.</u>
	ATC	<input type="checkbox"/> Monitors panel, provides assistance as directed.

Event 4 Completion Criteria:

- Reactor Building Vent Fans swapped,
AND/OR,
- At the direction of the Lead Examiner.

Event Five – FWLC Controller Setpoint Drifts High

Trigger	Position	Crew Actions or Behavior
4		<p><u>SIMULATOR OPERATOR:</u> At the discretion of the Lead Examiner, activate trigger 4, which causes the FWLC setpoint to drift high.</p>
		<p><u>ROLE PLAY:</u> Support Personnel: respond that 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.
		<p><u>SIMULATOR OPERATOR:</u> When RPV water level is stabilized, and at the discretion of the Lead Examiner, delete the FWLC malfunction and report, as the Shift Manager, that IMD has replaced a FWLC card, and the team is directed to transfer the FWRVs to Master Auto from Master Manual.</p>
	CRS	<input checked="" type="checkbox"/> Directs the team to transfer FWRVs to Master Auto from Master Manual, per DOP 0600-06.
	TEAM	Places FWRVs to Master Auto from Master Manual, per DOP 0600-06. <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Match Master Control Station setpoint to actual RPV water level. <input checked="" type="checkbox"/> Place Master Control Station in Auto. <input checked="" type="checkbox"/> Adjust Master Control Station setpoint to desired RPV water level. <input checked="" type="checkbox"/> Place Rx Lo Flow Control Station in Auto.

Event 5 Completion Criteria:

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

Event Six - Small Steam Leak in Drywell / Manual Scram

Trigger	Position	Crew Actions or Behavior
5		<p><u>SIMULATOR OPERATOR:</u> At the discretion of the Lead examiner, activate trigger 5, 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.
	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. <input type="checkbox"/> Initiates Torus cooling per “Hard Card”.
		<p><u>Role Play:</u> NLO to check Drywell CAM: (wait 2 min.) Report, “The Drywell CAM is trending up”.</p> <p>NLO to search for leak Report, “I am on my way out to check for leaks”.</p> <p>NLO to check Cribhouse inlet temperature: (wait 5 min.) Report, “Cribhouse inlet temp is 70°F”.</p>
	CRS	<ul style="list-style-type: none"> ■ Enters and directs performance of DOA 0040-01, Slow Leak. <input type="checkbox"/> Set Scram contingency of 1.5 psig DW pressure. <input type="checkbox"/> May enter DGP 02-03, Reactor Scram, and direct taking scram preparatory actions. ■ Prior to reaching the Drywell Pressure scram setpoint, directs a manual reactor scram per DGP 02-03, Reactor Scram.
	ATC / BOP	<p>Performs scram preparatory actions per DGP 02-03, Reactor Scram, as directed.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Starts MSP and TGOP. <input type="checkbox"/> Trips H₂ addition.

Event Six - Small Steam Leak in Drywell / Manual Scram

Trigger	Position	Crew Actions or Behavior
	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. ☐ Verifies Recirc Pumps run back. ☐ Maintains RPV/L between +25 and +35 inches or as directed by Unit Supervisor. ☐ Inserts SRM/IRMs.
	BOP	<ul style="list-style-type: none"> ☐ Verifies Turbine and Generator tripped. ☐ Check auxiliary power transferred to RAT. ☐ May start maximum Torus cooling per DGP 02-03 Hardcard.
	TEAM	Verifies the following as time allows: <ul style="list-style-type: none"> ☐ Group Isolations ☐ Automatic start of ECCS systems ☐ Automatic start of EDGs.
	CRS	<ul style="list-style-type: none"> ☐ Enters DEOP 100, RPV Control, due to high Drywell Pressure and/or low Reactor water level.

Event 6 Completion Criteria:

- Reactor scrambled.

AND/OR,

- Or at the discretion of the Lead Examiner.

Event Seven – Loss Of Bus 23-1 and 28 / Emergency Depressurization

Trigger	Position	Crew Actions or Behavior
6		<p><u>SIMULATOR OPERATOR:</u></p> <p>At the discretion of the Lead Evaluator, activate trigger 6, which increases the steam leak in the DW enough to require initiating Drywell sprays.</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 performs/directs:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verifying of Torus water level <27.5 ft. <input type="checkbox"/> Initiation of Torus sprays. <input type="checkbox"/> Monitoring of Drywell temperature (Drywell sprays may be initiated for temperature control) <input type="checkbox"/> Monitoring Torus Temperature. <input type="checkbox"/> Monitors Torus level.
		<p><u>ROLE PLAY:</u></p> <p>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 0200-1, Primary Containment Control, actions as directed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Monitors Drywell temperature and pressure and attempts to initiate torus sprays and drywell sprays pre Hard Card LPCI/CCSW OPERATION, as directed.
7		<p><u>SIMULATOR OPERATOR:</u></p> <p>Verify trigger 7 automatically activates when MO 1501-27A begins to open. This trips Bus 23-1 and 28 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.
	US	<ul style="list-style-type: none"> <input type="checkbox"/> Directs Operators to investigate the loss of Bus 23-1 and 28. Directs entry into DGA-12 for Partial Loss of AC Power.

Event Seven – Loss Of Bus 23-1 and 28 / Emergency Depressurization

Trigger	Position	Crew Actions or Behavior
	BOP	<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 UNTIL after Torus bottom pressure is > 20 #.</p>
	ATC / BOP	<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>
8		<p><u>SIMULATOR OPERATOR:</u> After the Team has attempted to put on Drywell Sprays and at the discretion of the Lead Evaluator, activate trigger 8, which increases the Main Steam line leak enough to require the Team to Emergency Depressurize due to exceeding PSP curve.</p>
	CRS	<input type="checkbox"/> May anticipate Emergency Depressurization and direct opening turbine bypass valves.
	BOP	<input type="checkbox"/> If directed, opens turbine bypass valves.

Event Seven – Loss Of Bus 23-1 and 28 / Emergency Depressurization

Trigger	Position	Crew Actions or Behavior
	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"> ○ Drywell temperature cannot be maintained below 281°F. ○ Exceeding the PSP. √ Enters DEOP 400-02, Emergency Depressurization, and directs: <ul style="list-style-type: none"> ■ If Drywell pressure >2 psig, prevention of injection from LPCI/CS pumps not needed for core cooling. □ Initiation of Iso Condenser to maximum flow. □ Verification of Torus level > 6ft. ■ Opening all ADS valves. □ Verifying all relief valves open.
	BOP	<ul style="list-style-type: none"> √ Performs DEOP 400-02, Emergency Depressurization, as directed. <ul style="list-style-type: none"> □ If Drywell pressure is greater than +2 psig, prevents injection from LPCI/CS pumps not needed for Core cooling per Hard Card, LPCI INJ/CC CONTROL/SHUTDOWN. □ Initiates Iso Condenser to maximum flow per Hard Card, ISOLATION CONDENSER. □ Verifies Torus level >6 feet. ■ √ Opens all ADS valves □ Verifies all relief valves open.

Event 7 / Scenario Completion Criteria:

- **Emergency depressurization in progress.**

AND/OR

- **Or at the discretion of the Lead Evaluator.**

Critical Tasks	
(RPV-5.1)	When drywell pressure exceeds the suppression chamber spray initiation pressure or before containment pressure exceeds the Pressure Suppression Pressure, INITIATE drywell/containment sprays, while in the safe region of the drywell spray initiation limit or above the containment spray initiation pressure.
(PC-6.1)	When suppression chamber pressure cannot be maintained below the pressure suppression pressure limit, INITIATE emergency depressurization before drywell design pressure is exceeded.

REFERENCES

PROCEDURE	TITLE
DAN 902-3 C-5(1)	2B(A) RECIRC M-G SCOOP TUBE PWR FAILURE
DAN 902-3 D-12	HPCI PP FLOW LOW
DAN 902-4 E-6	2A/B RECIRC PPS SPEED MISMATCH
DAN 902-8 F-5	4KV BUS 23-1 OVERCURRENT
DEOP 0100	RPV CONTROL
DEOP 0200-01	PRIMARY CONTAINMENT CONTROL
DEOP 0400-02	EMERGENCY DEPRESSURIZATION
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 0202-03	REACTOR RECIRC SYSTEM FLOW CONTROL FAILURE
DOA 0500-01	INADVERTENT ENTRY INTO THE UNSTABLE REGION OF THE POWER TO FLOW MAP
DOA 0600-01	TRANSIENT LEVEL CONTROL
DOA 6500-10	4KV CIRCUIT BREAKER TRIP
DOP 0202-03	REACTOR RECIRCULATION FLOW CONTROL SYSTEM OPERATION
DOP 0202-12	RECIRCULATION PUMP MOTOR GENERATOR SET SCOOP TUBE OPERATION
DOP 0400-02	ROD WORTH MINIMIZER
DOP 0600-06	FEEDWATER REGULATING VALVE (FWRV) OPERATION
DOP 2300-04	HIGH PRESSURE COOLANT INJECTION SYSTEM (HPCI) SHUTDOWN
DOP 4700-03	U2/3 IA CROSS-CONNECT OPERATION
DOP 5750-02	REACTOR BUILDING VENTILATION
DOS 0202-02	JET PUMP OPERABILITY AND DEGRADATION
TS 3.5.1	ECCS OPERATING
TS 3.4.1	RECIRCULATION LOOPS OPERATING

ILT-N-2 Quantitative Attributes	
6	Total malfunctions (5-8)
2	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)

CAEP Files

```
# ILT-N-2.cae  
# For ILT Class 10-1 NRC Exam  
# Written by DREFV  
# Rev 00  
# Date 09/10
```

INITIAL CONDITIONS

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

EVENT TRIGGERS

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

```
# Event Trigger 2 Inserts a spurious HPCI initiation.  
trgset 2 "0"|2  
imf hpinit (2)|2
```

```
# Event Trigger 3 Drifts the 2B Recirc PP speed controller bias to cause speed to drop.  
trgset 3 "0"|2  
ior rrmbbias (3) -0.1 4:00|2
```

```
# Event Trigger 4 Drifts the FWLCS setpoint.  
trgset 4 "0"|4  
irf rllmls (4) 40.0 5:00|4
```

```
# Event Trigger 5 Inserts a steam leak upstream of the restrictors.  
trgset 5 "0"|4  
imf i21 (5) 0.002 5:00 0.0025|4
```

```
# Event Trigger 6 Increases DW MSL leak to 0.4%.  
trgset 6 "0"|6  
trg 6 "mmf i21 0.4"|6
```

```
# Event Trigger 7 Activates when DW Spray valve MO 1501-27A starts to open.  
# Trips Bus 23-1 and Bus 28 on overcurrent.  
trgset 7 "lpv27a .gt. 0.01"|6  
imf k23 (7)|6  
imf k40 (7)|8
```

```
# Event Trigger 8 Increases the steam leak from 2.0% to 6.0% over 5 minutes.  
trgset 8 "0"|8  
trg 8 "mmf i21 6.0 5:00 2.0"|8
```

```
# END
```

Unit 2 Risk: GREEN

Unit 2 is in Mode 1 at 730 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 913 MWe

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

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 ****

Load was dropped last shift for the TSO. The TSO requests load dropped at beginning of shift. Drop power to 58 Mlbm/hr core flow using recirc flow . Do not secure additional RFPs or Condensate/booster pumps. Load is expected to be picked up early next shift.

When directed by the Shift Manager, swap Reactor Building Supply Fans to support Maintenance. Start 2C and secure 2B Reactor Building Supply Fans.

**** Shift 3 Activities ****

Today

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

DGP 03-01, Power Changes.

Dresden Generating Station

ILT-N-3

SHUTDOWN U2 EDG FOLLOWING SURVEILLANCE TESTING

SPURIOUS ERV OPENING

INDICATED FLOW TO CRD FLOW CONTROLLER FAILS HIGH

B MED RANGE LEVEL INSTRUMENT FAILS LOW WITH A PARTIAL HALF SCRAM

CRD PUMP TRIP

LOSS OF SERVICE WATER / MANUAL REACTOR SCRAM

LOSS OF RPV WATER LEVEL INDICATION / RPV FLOODING

Rev. 00

09/10

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>10-01 (2011-301)</u>
Evaluators	Operators	/ crew position
_____	_____	/ ATC
_____	_____	/ BOP
_____	_____	/ CRS
Initial Conditions: <u>Initial Power = 5%</u>		

Turnover: <u>Shutdown the U2 EDG per DOS 6600-01</u>		

Event No.	Malfunction No.	Event Type*		Event Description
1	NONE	N	BOP	EDG - Shutdown the U2 EDG Following Surveillance Testing.
2	ADS3CBN ADS3CSD	C	BOP	ERV - Spurious ERV Opening. ^T
3	RDFCFHI	C	ATC	CRD - Indicated Flow to CRD Flow Controller Fails High.
4	B15 NVM100BP	I	ATC	NBI - B Med Range Level Inst Fails Low with Partial Half Scram. ^T
5	RDPPATRP	C	ATC	CRD - CRD Pump 2A Trip.
6	Q31	M	TEAM	Manual Scram - Loss of all Service Water.
7	AT5 NVM100BP NVML29AP NVML29BP NVML112P	M	TEAM	FLOODING - Loss of RPV Level Indication Due to Loss of Instrument Power And Transmitter Failures

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

Scenario Objective

Evaluate the crew's ability to perform during a loss of RPV water level instrumentation.

Scenario Summary

1. Unit is at 5% power.
2. Startup in progress. On hold for Steam Tunnel Entry.
3. The following equipment is OOS:
 - a. None
4. LCOs:
 - a. TS 3.8.1 for EDG 2 surveillance.

Scenario Sequence

- The Team shuts down the U2 EDG following surveillance completion.
- An ERV spuriously opens due to an electrical failure. Pulling its fuses closes the ERV.
- The indicated flow to the CRD Flow Controller fails high. This causes the controller demand to the CRD FCV to fail low. If the team does not recognize the failure quickly and restore CRD cooling flow, the ROD DRVE HI TEMP alarm comes up. The Team takes manual control of the CRD Flow Controller to restore system parameters to normal.
- Medium Range B RPV level instrument fails low. A partial half scram occurs requiring the Team to insert a manual half scram on the B RPS channel. The SRO will reference Tech Specs for failed level instrument and partial half scram.
- 2A CRD pump begins to degrade as evidenced by changing CRD system parameters and an accumulator charging water low pressure alarm. When sent to check, the NLO reports that the 2A CRD pump is making a loud grinding noise. The NSO will swap CRD pumps, placing 2B CRD pump in service. If the operators do not swap CRD pumps in a timely manner, 2A CRD pump eventually trips.
- A large leak occurs downstream of the Service Water strainers. The Team performs a manual Reactor scram due to loss of cooling to critical plant equipment.
- After the Team has the plant stabilized, RPV level indication will fail. The following failures are simulated:
 - ❖ ATS feed from MCC 29-1 trips causing loss of MR A and FZ B.
 - ❖ Common sensing leg leak for the 2202-5 instrument rack (MR B, NR A & WR) causing them to ramp downscale.
 - ❖ Bailey System NR B circuit card fails causing it to ramp upscale.
- The Team will perform RPV flooding. LPCI injections valves will fail to open from the control room. The Team sends an operator to open one of them locally.

Event One – Shutdown U2 EDG Following Surveillance Testing

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

Malfunctions required: 0

- None.

Success Path:

- Performs DOS 6600-01, Diesel Generator Surveillance Tests

Event Two – Spurious ERV Opening

- An ERV spuriously opens.

Malfunctions Required: 1

- (ERV fails open)

Success Path:

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

Event Three – Indicated Flow to CRD Flow Controller Fails High

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

Malfunctions required: 1

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

Success Path:

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

Event Four – B Med Range Level Instrument Fails Low with a Partial Half Scram

- B Medium Range Level Instrument fails low and a partial half scram occurs.

Malfunctions required: 2

- (Failure of Medium Range B level Instrument)
- (Partial Half Scram on the B channel)

Success Path:

- Manually inserts a B RPS channel half scram.
- References the Tech Specs for an inoperable level instrument and the partial half scram.

Event Five – Loss of CRD Pump

- 2A CRD pump begins to degrade as evidenced by changing CRD system parameters and an accumulator charging water low pressure alarm. When sent to check, the NLO reports that the 2A CRD pump is making a loud grinding noise. The NSO will swap CRD pumps, placing 2B CRD pump in service. If the operators do not swap CRD pumps in a timely manner, 2A CRD pump eventually trips.

Malfunctions required: 1

- CRD pump binding (Trip if NSO does not swap pumps in a timely manner)

Success Path:

- NSO swaps running CRD pumps.

Event Six – Loss of Service Water / Manual Reactor Scram

- A large leak occurs at the discharge of the Service Water strainers.

Malfunctions required: 1

- (Service Water Leak)

Success Path:

- Manually scram the Reactor.

Event Seven – Loss of RPV Water Level Indication / RPV Flooding

- The Team recognizes and responds to loss of RPV level indication. LPCI injection valves fail to open from the control room.

Malfunctions required: 2

- Failure Of RPV Level Indication
- LPCI injection valves fail to open

Success Path:

- The Team performs RPV Flooding.
- The Team sends an operator to locally open the LPCI injection valves.

PRE-SCENARIO ACTIVITIES

- 1 If applicable, conduct pre-scenario activities in accordance with TQ- JA-150-08, SIMULATOR EXAMINATION BRIEFING.
 - a. Inform the crew that the QNE (Floor Instructor) is present in the Control Room.
 - b. Direct the crew to perform their briefs prior to entering the simulator.
 - c. Provide the crew with a copy of applicable procedure(s) marked up and completed through the appropriate steps:
 - 1) DGP 01-01, Unit Startup, marked up for Reactor at 5% power.
 - 2) DOP 0400-01, Reactor Manual Control System Operation.
 - 3) DOP 0400-02, Rod Worth Minimizer.
 - 4) DOP 5600-06, Unit 2 Turbine Startup.
 - 5) DOS 6600-01, Diesel Generator Surveillance Tests (Ready to shutdown U2 EDG)

- 2 Simulator Setup (the following steps can be done in any logical order)
 - a. Initialize simulator in an IC with ~5% power (IC 149 on the jump drive can be used) and perform the following before continuing below:
 - 1) Verify control rod sequence XI.1.0 with step 21 withdrawn through control rod E-09.
 - 2) Verify Reactor power ~5%.
 - 3) Verify TR 86 LTC in MANUAL.
 - b. Run the initial setup CAEP file: ILT-N-3.cae
 - c. Verify Torus to Drywell dP within limits (vent Torus as needed).
 - d. Cut in/out Cond Demins as needed, to maintain DP within limits.
 - e. Ensure running Condensate pump amps within limits.
 - f. Advance the chart recorders.

- 3 Verify all the following completed (completed in snapped IC 149 setup):
 - a. Verify CRD drive water pressure ~260 psid.
 - b. Verify 2A CRD pump running.
 - c. Start and load U2 EDG per DOS 6600-01:
 - 1) At the instructor station, set the U2 EDG droop to 55. (if t02 true)
 - 2) At the instructor station, acknowledge the local U2 EDG annunciator panel. (if t20 acknowledge)
 - 3) Reset the U2 EDG Trouble alarm on the 902-8 panel.
 - 4) Place the U2 EDG control switch to START.
 - 5) Turn the Synchroscope for the U2 EDG output breaker ON.
 - 6) Adjust the U2 EDG voltage and frequency for synchronization.
 - 7) Close the U2 EDG output breaker.
 - 8) Adjust the U2 EDG load and frequency to the values directed by DOS 6600-01.
 - 9) Turn the Synchroscope for the U2 EDG output breaker OFF.

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

- 5 Complete the Simulator Setup Checklist.

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

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

Event One – Shutdown U2 EDG Following Surveillance Testing		
Trigger	Position	Crew Actions or Behavior
2		<p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>NLO to set U2 EDG droop to 5: Wait 1 min, activate trigger 2 which sets the droop to 5 and forces up alarm 902-8 A-7, U2 Diesel Gen Trouble.</p> <p>Verify trigger 3 activates automatically when alarm 902-8 A-7 comes in. This returns the alarm to normal after 10 seconds.</p> <p>Then report “The U2 EDG droop is set to 5”.</p>
3		
		<p><u>Role Play:</u></p> <p>NLO to check the lubrication oil level with the dipstick: wait 1 min, and then report “the U2 EDG oil level is midway between the FULL and LOW marks”.</p> <p>For other operator direction, respond as needed.</p>
	CRS	<input type="checkbox"/> Directs the BOP to Shutdown U2 EDG per DOS 6600-01, Diesel Generator Surveillance Tests.
	BOP	<p>Performs DOS 6600-01, Diesel Generator Surveillance Tests.</p> <input type="checkbox"/> Reduces the D/G load to less than 100 kW using the GOVERNOR control switch. <ul style="list-style-type: none"> ■ Opens the circuit breaker from the D/G 2 to 4 kV Bus 24-1 and records time. ■ Directs the NLO at the D/G governor to set the droop setting to 5 and reset the local annunciator. <input type="checkbox"/> Resets annunciator 902-8 A-7, U2 DIESEL GEN TROUBLE. <ul style="list-style-type: none"> ■ Adjusts D/G speed to 60 Hz with the GOVERNOR control switch. ■ Adjusts D/G voltage to 4160 volts with the VOLTAGE REG control switch. ■ Moves the D/G control switch to the STOP position momentarily, then moves the switch to the AUTO position and records time.
		<p><u>Floor Instructor Role Play:</u></p> <p>When the NSO moves the D/G control switch to the AUTO position, notify him that as the U3 ANSO, you have been directed to complete the surveillance.</p> <p>When the U2 D/G stops, acknowledge, announce and reset expected alarms:</p> <ul style="list-style-type: none"> ❖ 902-7 G-8, U2 Diesel Gen Clg Wtr PP Trip/Lockout. ❖ 902-8 A-7, U2 Diesel Gen Trouble.
<p><u>Event 1 Completion Criteria:</u></p> <ul style="list-style-type: none"> • U2 EDG shutdown, (Or in the cooldown period AND/OR, • At the direction of the Lead Examiner. 		

Event Two – Spurious ERV Opening.

Trigger	Position	Crew Actions or Behavior
4		<p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 4, which causes “E” ERV to spuriously open due to an electrical failure.</p>
5		<p>As the NLO sent to pull control power fuses for the “E” ERV (wait 3 min) activate trigger 5, 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. ❑ If > 95° and DEOP 0200-01, Primary Containment Control, entry is required. ❑ Monitors Turbine Bypass Valve Operation. ❑ May check hydrogen addition operation. ❑ May monitor torus temp per DOS 1600-20, Suppression Pool Temp Monitoring. ❑ Resets the acoustic monitor.
	CRS	<ul style="list-style-type: none"> ❑ May direct scram preparatory actions per DGP 02-03, Reactor Scram. ❑ May enter DEOP 200-01, Primary Containment Control, for high Torus level. <p>If Torus temperature reaches 95°F, then enters DEOP 200-1, Primary Containment Control, and performs/directs:</p> <ul style="list-style-type: none"> ❑ 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. <ul style="list-style-type: none"> ○ Scram preparatory conditions already exist.
	BOP	<ul style="list-style-type: none"> ■ Determines/announces that E ERV closed when fuses pulled.

Event Two – Spurious ERV Opening.

Trigger	Position	Crew Actions or Behavior
	CRS	<ul style="list-style-type: none"> ■ Declares “E” ERV inoperable. ■ Determines following Technical Specifications apply: <ul style="list-style-type: none"> • 3.4.3, Safety and Relief Valves, Condition A.1: Restore the relief valve to OPERABLE status within 14 days. • 3.5.1, ECCS Operating, Condition H.1: Restore ADS valve to OPERABLE status within 14 days. • 3.6.1.8, Suppression Chamber–to–Drywell Vacuum Breaker, SR 3.6.1.8.2: Perform a functional test of each required vacuum breaker within 12 hours.
	CRS	<ul style="list-style-type: none"> ❑ Directs performance of Suppression Chamber–to–Drywell Vacuum Breaker testing.
	TEAM	<ul style="list-style-type: none"> ❑ May enter and perform DGA 7, Unpredicted Reactivity Addition

Event 2 Completion Criteria:

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

Event Three – Indicated Flow to CRD Flow Controller Fails High		
Trigger	Position	Applicant's Actions or Behavior
6		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 6, which causes the indicated flow to the CRD Flow Controller to fail high. This causes the controller demand to the CRD FCV to fail low.</p> <p>NOTE: If the team does not recognize the failure quickly and restore CRD cooling flow, the ROD DRIVE HI TEMP alarm comes up after ~ 5 min.</p>
7		<p><u>Simulator Operator:</u></p> <p>If CRD Temperature variable rdgtemp(21) reaches 250.0 deg. F, verify the following automatic triggers:</p>
8		<p>❖ Trigger 7: automatically activates when variable rdgtemp(21) is >250.0 deg. F. Forces up alarm 902-5 F-3, ROD DRIVE HI TEMP.</p> <p>❖ Trigger 8: automatically activates alarm 902-5 F-3 is up and variable rdgtemp(21) is <245.0 deg. F. Returns alarm 902-5 F-3, ROD DRIVE HI TEMP, TO NORMAL.</p>
	ATC	<ul style="list-style-type: none"> <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 Controller. <input checked="" type="checkbox"/> Performs DOA 0300-01, Control Rod Drive System Failure, actions as directed by the CRS. <input checked="" type="checkbox"/> Restores CRD system flows and pressures to normal. <input checked="" type="checkbox"/> Places CRD Flow Controller in manual and adjusting as needed.
	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.
		<p><u>Role Play:</u></p> <p>NLO to check CRD FCV operation: (wait 2 min) Report, “ the CRD FCV appears to be operating normally and is at position is: (Use position displayed on Instructor Station drawing RD2; report as percent)”.</p> <p>NLO to check CRD system flow locally (FI 2-302-56); (wait 1 min) Report “CRD system flow indicates >100 gpm (pegged high)”.</p> <p>NLO to check drive water flow locally (FI 2-302-64): (wait 1 min) Report, “CRD drive water flow indicates (same as control room meter)”.</p> <p>NLO to check cooling water flow locally (FI 2-302-65): (wait 1 min) Report, “CRD cooling water flow indicates (same as control room meter)”.</p> <p>NLO to check CRD pumps locally: (wait 1 min) Report, “CRD Pumps appear to be operating normally”.</p> <p>Respond as groups notified.</p>
	BOP	Monitors panels and assists as directed.

Event Three – Indicated Flow to CRD Flow Controller Fails High

Event 3 Completion Criteria:

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

Event Four – B Med Range Level Instrument Fails Low with a Partial Half Scram		
Trigger	Position	Crew Actions or Behavior
9		<p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 9, which fails B medium range downscale and inserts B RPS partial half scram.</p>
	ATC	<p><input type="checkbox"/> Notices and reports the B Medium Range level instrument trending down.</p> <p>Announces:</p> <ul style="list-style-type: none"> ■ The partial half scram condition on the B RPS channel. <input type="checkbox"/> Scram Solenoid Group lights B2 and B3 did NOT extinguish. ■ Refers to DOA 0500-02, Partial ½ or Full Scram Actuation. (May insert the manual half scram as an immediate action of DOA 0500-02 then refer to the procedure). ■ Depresses RPS Channel B Manual Scram pushbutton. ■ Acknowledges appropriate annunciators.
		<p><u>SIMULATOR OPERATOR / ROLE PLAY:</u></p> <p>As the EO sent to the ATS Panel (wait 2 min AND the 902-4 G-20 alarm is up), then report: “The ‘B’ medium range level instrument MTU LIS 2-263-140B is reading full downscale and its gross failure light is lit.”</p> <p>As the EO sent to the MCC 28-1 circuit 15 and/or 125vdc Bus 2A-1 Dist Panel, circuit 27 (wait 3 min), then report: “The breaker is NOT tripped and looks normal.”</p> <p>IF asked: “The Yarway LI-2(3)-263-59A on the 2202-5 rack is indicating 30 inches and steady.”</p>
	ATC / BOP	<p>Refers to DAN 902-4 G-20:</p> <ul style="list-style-type: none"> ■ Dispatches an operator to inspect the Div 1 ATS panel 2202-73A <input type="checkbox"/> Notifies the Unit Supervisor of inspection results.
	CRS	<p>Announces entry into DOA 0500-02, Partial ½ or Full Scram Actuation and performs/directs:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Directs NSO to insert manual scram on RPS Channel A. <input type="checkbox"/> May refer to DOP 0010-10, Unit 2(3) Technical Specification Instrumentation Operability Manual.
	CRS	<ul style="list-style-type: none"> ■ References Technical Specifications and determines: <ul style="list-style-type: none"> • TS 3.3.1.1 Action A1 or A2 apply. • TS 3.3.3.1 Action A1. Restore required channel to OPERABLE status within 30 days. • TS 3.3.6.1 Condition A1. Place channel in trip within 12 hours. • TS 3.3.6.2 Condition A1. Place channel in trip within 12 hours.

Event Four – B Med Range Level Instrument Fails Low with a Partial Half Scram

Trigger

Position

Crew Actions or Behavior

Event 4 Completion Criteria:

- **Half Scram inserted, and**
- **Appropriate Tech Specs referenced,**

AND/OR

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

Event Five – Loss of CRD Pump		
Trigger	Position	Crew Actions or Behavior
10		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Examiner, activate trigger 10. This will cause a simulated binding of the 2A CRD pump over a nine minute period, and finally trip the pump on overcurrent if amps get too high and the crew has not swapped the pump yet.</p> <p>Verify trigger 11 automatically activates when the 2A CRD pump breaker opens. This stops the pump binding simulation.</p>
11		
		<p><u>Role Play:</u></p> <p>As the NLO, if asked, wait 2 min. and then report: “The 2A CRD pump is making a loud metallic grinding noise, I cannot see any oil in the pump, smoke is starting to come from the pump, and it is very hot”.</p> <p>NSO may follow DOP 0300-01 and have the NLO vent the pump. Wait 1 min, then report: “2B CRD pump has been vented”.</p>
	ATC	<ul style="list-style-type: none"> ■ Announces alarm 902-5 F-2, ACCUMULATOR CHARGING WTR PRESS LO, and / or degrading CRD system parameters. <p>Carries out actions of DOA 0300-01, Control Rod Drive System Failure:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Stops any rod motion or power changes. ■ Starts 2B CRD pump. ■ Secures 2A CRD pump. <input type="checkbox"/> Verifies normal CRD system pressures and flow. <input type="checkbox"/> Identifies and reports increasing CRD pump amps.
		<p><u>Role Play:</u></p> <p>As the NLO, if asked, report: “2B CRD pump is operating normally”.</p>
	CRS	<ul style="list-style-type: none"> <input type="checkbox"/> Enters DOA 0300-01, Control Rod Drive System Failure, due to failure of 2A CRD pump.
	TEAM	<ul style="list-style-type: none"> <input type="checkbox"/> May reference/perform DOP 0300-01, Control Rod Drive System Start Up and Operation, for swap of CRD pumps.
	BOP	Monitors panels and assists as directed.
		<p><u>Note:</u></p> <p>If the Team swaps CRD pumps before the 2A CRD pump trips, the following actions do NOT apply:</p>
	ATC	<ul style="list-style-type: none"> ■ Announces 2A CRD pump trip. ■ Per immediate action of DOA 0300-01, Control Rod Drive System Failure, starts the standby CRD pump.
	CRS	<ul style="list-style-type: none"> ■ Enters DOA 6500-10, 4KV Circuit Breaker Trip, due to trip of 2A CRD pump.

Event Five – Loss of CRD Pump

Trigger

Position

Crew Actions or Behavior

Event 5 Completion Criteria:

- 2B CRD pump has been started and the immediate actions of DOA 300-01 are complete,
AND / OR,
- At the discretion of the Lead Examiner.

Event Six – Loss of Service Water / Manual Reactor Scram		
Trigger	Position	Crew Actions or Behavior
12		<p><u>Simulator Operator:</u></p> <p>At the discretion of the Lead Evaluator, activate trigger 12. This inserts a large leak on the discharge side of the Service Water strainers. The leak results in a loss of Service Water sufficient enough to cause loss of plant equipment.</p>
	BOP	<ul style="list-style-type: none"> ■ Announces following alarms as they come up: <ul style="list-style-type: none"> • 923-1 G-4, U2/3 DIESEL FIRE PP RUNNING. • 923-1 D-3, U2/3 SERV WTR HDR PRESS LO. • Many other alarms will come in as equipment loses cooling.
	CRS	<ul style="list-style-type: none"> ■ Enters DOA 3900-01, Loss of Cooling by Service Water System. □ Notifies Shift Manager and EMD.
	BOP	<p>Performs DOA 3900-01, LOSS OF COOLING BY SERVICE WATER SYSTEM</p> <ul style="list-style-type: none"> □ May start available Service Water Pumps. □ Directs an EO to the Cribhouse to check the Service Water System. □ May direct NLO to isolate the leak.
		<p><u>Role Play:</u></p> <p>EO to check Service Water System (wait 2 min.):</p> <p>Report: "There is a very large leak downstream of the Service Water Strainers".</p> <p>EO to isolate the Service Water System leak:</p> <p>Report: "The leak cannot be isolated".</p>
	CRS	<ul style="list-style-type: none"> ■ Due to loss of cooling to equipment, directs a manual reactor scram per DGP 02-03, Reactor Scram.
	ATC	<p>Performs a manual reactor scram per DGP 02-03, Reactor Scram:</p> <ul style="list-style-type: none"> ■ Depresses BOTH Scram buttons. ■ Places RX MODE SW in SHUTDOWN. ■ Inserts SRMs. □ Controls reactor water level +25 to +35 inches or as directed by the Unit Supervisor.
	CRS	<p>Enters DEOP 0100, RPV Control, due to RPV low level and directs:</p> <ul style="list-style-type: none"> □ Verifying Isolations and Actuations. □ Maintaining RPV level +8 to +48 inches. □ Maintaining RPV Pressure <1060 psig.
	CRS	<ul style="list-style-type: none"> □ Begins to assess the affect the loss of Service Water has on stabilizing the plant.

Event Six – Loss of Service Water / Manual Reactor Scram

Trigger

Position

Crew Actions or Behavior

Event 6 Completion Criteria:

- **Manual Scram performed,**
- **Team addresses affect on plant of loss of Service Water,**

AND / OR,

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

Event Seven – Loss of RPV Level Indication / RPV Flooding		
Trigger	Position	Crew Actions or Behavior
13		<p><u>Simulator Operator:</u></p> <p>After the team has stabilized the unit following the reactor scram, and at the discretion of the Lead Evaluator, activate trigger 13, which:</p> <ul style="list-style-type: none"> • Simulates a trip of the MCC 29-1 supply to ATS Panel 2202-73B which causes loss of MR A and FZ B RPV level instruments. • After 2 min, fails the remaining RPV level instruments in a way that simulates a leak in the common sensing leg for the 2202-5 instrument rack (MR B, NR A & WR) causing them to ramp downscale. Bailey System NR B circuit card fails causing it to ramp upscale.
		<p><u>Simulator Operator / Role Play:</u></p> <p>NLO to open/close the CRD 2-0301-25 valve: On Instructor Station drawing RD2, change the CRD 2-0301-25 valve position to the requested position and then report its position.</p>
		<p><u>Role Play:</u></p> <p>When dispatched to the ATS Panel, wait a few minutes, and then report that “all instruments in the top row of panel 2202-73B are downscale and no indicating lights on the top row are lit. All other indications are normal”.</p>
		NLO sent to MCC 29-1. Wait two minutes then report from MCC 29-1 that “the breaker for circuit 4 is tripped”.
		If sent to 125 VDC Main Bus Dist. Panel 2B-1 to check breaker 17, report that it is closed.
		When/if directed to close the ATS Panel supply breaker, wait ~20 seconds, then report that you attempted to reclose the breaker and it immediately tripped again.
	BOP	<ul style="list-style-type: none"> ■ Reports annunciator 902-4 H-20, ATS Div 2 2202-73B Trouble, in alarm and references DAN. □ Sends an NLO to inspect ATS panel 2202-73B. □ May direct an NLO to MCC 29-1 to check the feed breaker (circuit 4) to ATS. □ May direct the closure of the ATS Panel power supply breaker.
	TEAM	□ Begins to determine the equipment affected by loss of the ATS feed.
	CRS	□ May refer to DOP 6800-05, Power Restoration to Analog Trip System Feeds to check for restoration requirements.
	TEAM	■ Determines that RPV level indications are diverging.
	TEAM	□ May send operators to local instrument panels.
		<p><u>Role Play:</u></p> <p>NLO to Reactor Bldg to get local RPV level indication: wait 2 min, and then report “there is steam around all the instrument racks and I am unable to get local RPV level readings”.</p>

Event Seven – Loss of RPV Level Indication / RPV Flooding		
Trigger	Position	Crew Actions or Behavior
	CRS	<ul style="list-style-type: none"> ❑ Based on diverging RPV level indication, exits DEOP 0100 and enters DEOP 0400-01, RPV Flooding, and performs / directs: ❑ Verifying Torus level above 6 feet. ■ √ Opening all 5 ADSVs. ■ Isolating the following steam lines: <ul style="list-style-type: none"> ❖ MSIVs. ❖ Main Steam line drains. ❖ IC. ❖ HPCI. ■ √ Flooding the RPV to the Main Steam lines. ■ Directs defeating the RFP trips. ■ Keeping the RPV flooded to the Main Steam lines with injection flow as low as possible.
14		<p><u>Simulator Operator / Role Play:</u></p> <p>Operator to defeat RFP trips: wait 2 min, activate Trigger 14 and then report that “the RFP trips are defeated”</p>
	ATC / BOP	<p>Performs DEOP 0400-01, RPV Flooding, as directed:</p> <ul style="list-style-type: none"> ❑ Verifies Torus level above 6 feet. ■ √ Opens all 5 ADSVs (only 4 open, since fuses pulled for one). ■ Isolates the following steam lines: <ul style="list-style-type: none"> ❖ MSIVs. ❖ Main Steam line drains. ❖ IC. ❖ HPCI. ■ √ Floods the RPV to the Main Steam lines. ■ Keeps the RPV flooded to the Main Steam lines with injection flow as low as possible.
	ATC / BOP	<ul style="list-style-type: none"> ■ Slows down RPV injection once ERV tailpipe temperatures drop below saturation and pressure is steady.
	CRS	<ul style="list-style-type: none"> ❑ Requests IMD to restore RPV level instruments.
<p><u>Event 7 / Scenario Completion Criteria:</u></p> <ul style="list-style-type: none"> • RPV has been flooded <p>AND / OR,</p> <ul style="list-style-type: none"> • At the discretion of the Lead Examiner. 		

Critical Tasks	
(RPV 2.1)	When RPV water level cannot be determined, INITIATE emergency depressurization.
(RPV 2.2)	When reactor water level cannot be determined, INJECT into the RPV to flood up to the Main Steam Lines.

REFERENCES

PROCEDURE	TITLE
DAN 902-4 G-20	ATS DIV 1 2202-73A TROUBLE
DAN 902-5 F-2	ACCUMULATOR CHARGING WTR PRESS LO
DAN 902-5 F-3	ROD DRIVE HI TEMP
DAN 902-8 A-7	U2 DIESEL GEN TROUBLE
DAN 923-1 D-3	U2/3 SERV WTR HDR PRESS LO
DAN 923-1 G-4	U2/3 DIESEL FIRE PP RUNNING
DEOP 0100	RPV CONTROL
DEOP 0400-01	RPV FLOODING
DEOP 0500-02	BYPASSING INTERLOCKS AND ISOLATIONS
DGP 01-01	UNIT STARTUP
DGP 02-03	REACTOR SCRAM
DOA 0250-01	RELIEF VALVE FAILURE
DOA 0300-01	CONTROL ROD DRIVE SYSTEM FAILURE
DOA 0500-02	PARTIAL 1/2 OR FULL SCRAM ACTUATION
DOA 3900-01	LOSS OF COOLING BY SERVICE WATER SYSTEM
DOA 6500-10	4KV CIRCUIT BREAKER TRIP
DOP 0010-10	UNIT 2(3) TECHNICAL SPECIFICATION INSTRUMENTATION OPERABILITY MANUAL
DOP 0300-01	CONTROL ROD DRIVE SYSTEM START UP AND OPERATION
DOP 6800-05	POWER RESTORATION TO ANALOG TRIP SYSTEM FEEDS
DOS 6600-01	DIESEL GENERATOR SURVEILLANCE TESTS
TS 3.3.1.1	REACTOR PROTECTION SYSTEM (RPS) INSTRUMENTATION
TS 3.3.3.1	POST ACCIDENT MONITORING (PAM) INSTRUMENTATION
TS 3.3.6.1	PRIMARY CONTAINMENT ISOLATION INSTRUMENTATION
TS 3.3.6.2	SECONDARY CONTAINMENT ISOLATION INSTRUMENTATION
TS 3.4.3	SAFETY AND RELIEF VALVES
TS 3.5.1	ECCS OPERATINGTS 3.6.1.6LOW SET RELIEF VALVES
TS 3.6.1.8.2	SUPPRESSION CHAMBER-TO-DRYWELL VACUUM BREAKERS

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

CAEP File(s):

ILT-N-3.cae
For ILT Class 10-1 NRC Exam
Written by DREFV
Rev 00
Date 09/10

INITIAL CONDITIONS

Sets APRM Master Gain pot to 1.0|4
irf niagain 1.0

Inserts CH B RPS partial half scram.
imf b15

IC 149 was snapped with 2/3 DFP remote for locally stopping it TRUE.
This puts it back to desired state of FALSE.
irf w14 false

IC 149 was snapped with IRM 11/APRM 1 select switch override to IRM 11 inserted.
This deletes it.
dor nidichs1

#EVENT TRIGGERS

Event Trigger 1 sets gain for all 6 APRMs to 1.0|2
trgset 1 "0"|2
trg 1 "irf niagainf true"|2

Event Trigger 2 Sets U2 EDG droop to 5 and forces up alarm 902-8 A-7, U2 Diesel Gen Trouble.
trgset 2 "0"|2
irf t02 (2) false|2
imf ser1589 (2) on|2

Event Trigger 3 clears alarm 902-8 A-7.
trgset 3 "sezpoint(1589)"|4
trg 3 "imf ser1589 (0 10) normal"|4

Event trigger 4 causes the E ERV setpoint to drift to fail it open.
E ERV bind malfunction is set to 25%
Trgset 4 "0"|4
imf ads3esd (4) 75.0|4
imf ads3ebn (4) 25.0|4

Event Trigger 5 Deletes e ERV binding malfunction so valve will close and removes fuses for the E ERV.
Trgset 5 "0"|6
trg 5 "dmf ads3ebn"|6
irf adsrfe (5) pulled|6

Event Trigger 6 inserts a failure high of the indicated flow to the CRD flow controller.
Sets one of the CRD's enthalpy higher, so alarm 902-5 F-3 comes up sooner.
trgset 6 "0"|6
imf rdhcfhi (6)|8
trg 6 "set rdhmech(21) = 190.0"|8

Event trigger 7 Activates when CRD temp high is reached.
Forces alarm 902-5 F-3 up.
trgset 7 "rdgtemp(21) .gt. 250.0"|8
imf ser0973 (7) on|8

Event trigger 8 Returns alarm 902-5 F-3 to normal.
trgset 8 "sezpoint(973) .and. (rdgtemp(21) .lt. 245.0)"|10
trg 8 "imf ser0973 normal"|10

Event Trigger 9 fails B medium range downscale.
trgset 9 "0"|10
imf nvm100bp (9) -120.0 4:00|10

Event Trigger 10 ramps 2A CRD PP speed lower over 9:00 min.
This simulates binding of the pump and will result in the pump tripping on overcurrent.
trgset 10 "0"|12
trg 10 "ramp rdnump(1) 0.95 0.87 9:00"|12
imf rdppatrp (10 8:58)|12

Trigger 11 Stops the 2A CRD PP speed ramp when the pump breaker opens.
trgset 11 "et_array(10) .and. (.not. rdrump(1))"|12
trg 11 "ramp rdnump(1) 0.87 0.10 2"|12

Event Trigger 12 inserts a Service Water strainer leak.
trgset 12 "0"|14
imf q31 (12) 100.0 5:00|14

Event Trigger 13 Blows the fuse for the MCC 29-1 feed to ATS panel 2202-73B.
This causes a loss of RPV MR A and FZ B.
After 2 min, fails RPV MR B level instrument downscale on 5 min. ramp.
After 2 min, fails RPV NR A level instrument to downscale on 5 min. ramp.
After 2 min, fails RPV NR B level instrument to upscale on 5 min. ramp.
After 2 min, fails RPV Wide Range level instrument to downscale on 5 min. ramp.
trgset 13 "0"|14
imf at5 (13)|14
imf nvml57ap (13 2:00) -120.0 5:00|14
imf nvml23ap (13 2:00) -120.0 5:00|16
imf nvml23cp (13 2:00) -120.0 5:00|16
imf nvml29ap (13 2:00) -75.0 5:00|16
imf nvml29bp (13 2:00) 75.0 5:00|16
imf nvml112p (13 2:00) -400.0 5:00|18

Event Trigger 14 bypasses the RFP high level trip.
trgset 14 "0"|18
irf fwknife (14) open|18

END

Unit 2 Risk: GREEN

Unit 2 is in Mode 2 at 5% power

Leading Thermal Limit: NA

Action limit: NA

Equipment Unavailable: None

Protected Equipment: None

Unit 3 Risk: GREEN

Unit 3 is in Mode 1 at 913 MWe

Leading Thermal Limit: MAPRAT @ 0.819

Action Limit: 0.980

Equipment Unavailable: None

Protected Equipment: None

Current Action Statements

U2 EDG

LCO Started: 1.5 hours ago

LCO Expires: In 7 days

TS 3.8.1

Cause: Monthly Surveillance

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 ****

- Startup in progress. On hold for Steam Tunnel inspection.
- After Steam Tunnel Inspection, and when directed by the Shift Manager, resume the startup per DGP 01-01.
- U2 EDG loaded run is complete, shutdown U2 EDG immediately following shift change.

**** Shift 3 Activities ****

- -
-

Today

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

- DGP 01-01
- DOS 6600-01