Dresden Generating Station

ILT-N-1

REVERSE CIRC WATER FLOW THROUGH MAIN CONDENSER

STUCK CONTROL ROD

RECIRC RUNBACK DUE TO LOSS OF RFP

RB FUEL POOL RAD DETECTOR FAILS UPSCALE

HP FW HEATER TRIP

ISO CONDENSER TUBE LEAK

RECIRC LEAK IN DRYWELL

LOSS OF ALL FWRVs AND HPCI WITH RECIRC LEAK – EMERGENCY DEPRESSURIZATION ON RPV WATER LEVEL

Rev. 00

11/22

Developed By: _____ _____
Exam Author Date

Approved By: _____ _____
Facility Representative Date

Scenario Outline

Facility:	Dresden	Scenario #:	ILT-N-1
Scenario Source:	Site developed	Op. Test #:	2023-301
Examiners:		Applicants/ Operators:	

Initial Conditions:	Unit 2 is at 100% power
	2A EHC Pump is OOS
Turnover:	Branch dP is reading ~27 feet of water and it has been determined that Circ Water Flow through the Main Condenser shall be reversed. Once flow has been reversed, exercise CRDs A-06, D-09, and N-08 per DOS 0300-01
Critical Tasks:	RPV-1.1 – If the RPV level trend is not reversible, initiate RPV blowdown with the minimum number of available ADS valves when RPV water level is between the Top-of-Active Fuel and the Minimum Steam Cooling RPV Water Level or within 2 ½ minutes after TAF is reached, whichever is later.
	RPV-1.2 – When RPV level < Top-of-Active Fuel (TAF), injection from all available and required injection sources is not stopped or diverted until level is restored to above the Top-of-Active Fuel (TAF).
	PC-1.1 – While executing DEOP 200-1, when drywell pressure exceeds 11 psig and only if operating within the safe region of the drywell spray initiation limit (DSIL), initiate drywell sprays within 6 minutes of exceeding 11 psig or before reaching the PSP Limit, whichever is sooner.

Event No.	Malf. No.	Event Type*		Event Description
1	None	N	BOP	(New) CIRC WATER - Reversing Circ Water Flow Through Main Condenser
2	RODD09ST	C	ATC	(New) CRD - Control Rod, Stuck and Requires Higher Pressure to Move
3	RLMRFBP	C	ATC	(New) FW - Recirc Runback, due to loss of RFP
4	RMARMPFAILF(1) RMARMPFAILD(1) VRMISO42A VRMISO42B MRGFPB	I/ MC/T	BOP / CRS	(New) PRM - RB Fuel Pool Channel B Rad detector fails upscale causing RB Vent to isolate with failure of 2 isolation dampers to close; CRS will reference Tech Specs
5	HDD3103C2 HDD3103S2	R	ATC	(New) FEEDWTER HEATING - HP Heater Trip (Reactivity move)
6	ICTUBLK	C/T	BOP	(New) ISO COND - Iso Condenser tube leak; CRS will reference Tech Specs
7	F41	M	CREW	MANUAL SCRAM - Recirc leak in Drywell
8	RLMFAFC RLMFBFC FLMFFC HPPMGDG	M C M	CREW	(New) FWLC - Loss of all Feedwater Reg Valves HPCI degraded EMERGENCY DEPRESSURIZE - On lowering RPV water level

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Tech Spec, (MC)Manual Control

(New) – Event not used on previous 2 NRC Exams, (Pre) – Event used on previous 2 NRC Exams

Scenario Objective:
Evaluate the Team's ability to operate the plant with a drywell leak and degraded high pressure injection systems.

Scenario Initial Conditions

1. Unit 2 is at ~100% power.
2. The following equipment is OOS:
   a. 2A EHC Pump
3. LCOs:
   a. None

Scenario Sequence

Event #	Description
1	**CIRC WATER - Reversing Circ Water Flow Through Main Condenser** The BOP will reverse the Circ Water Flow through the Main Condenser.
2	**CRD - Control Rod, Stuck and Requires Higher Pressure to Move** ATC will perform monthly rod exercising. The first rod will perform as expected. The second rod will stick requiring drive water pressure to be increased to >325 psid in order for the rod to move.
3	**FW - Recirc Runback, due to loss of RFP** The 2B RFP loses oil pressure and trips. Insufficient feedwater flow causes RPV level to drop and the crew to respond to a Recirc runback. ATC will insert CRAM rods to reduce the FCL below the MELLLA boundary.
4	**PRM - RB Fuel Pool Channel B Rad detector fails upscale, with failure of 2 isolation dampers to close** The RB Fuel Pool Channel B Rad detector will fail upscale causing RB Vent to isolate. 2 of RB Vent Isolation Dampers will fail to close. The BOS will be able to close the dampers manually. The CRS will reference the Tech Specs..
5	**FEEDWTER HEATING - HP Heater Trip (Reactivity move)** 2D2 Feedwater Heater extraction valve fails closed. The crew will address the loss of feedwater heating and evaluate which region of feedwater heating they are operating in. The ATC will reduce power by 60 MWe with core flow.
6	**ISO COND - Iso Condenser tube leak; CRS will reference Tech Specs** The Isolation Condenser develops a tube leak and must be isolated. The CRS will reference Tech Specs.
7	**MANUAL SCRAM - Recirc leak in Drywell:** A leak will develop in the Recirc line causing Drywell pressure to rise. The crew may take scram prep actions per DGP 02-03, but will manually scram the reactor by 1.5 psig in the Drywell. Drywell pressure will rise above 11 psig and this drives the crew to spray the Drywell.
8	**EMERGENCY DEPRESSURIZE - On Lowering Reactor Water Level Due to Recirc System Leak, Loss of All Feedwater Reg Valves, and HPCI being degraded:** After the crew stabilizes the plant following the manual scram the Recirc leak will get bigger, the FWRVs will fail closed and with HPCI degraded (malfunction put in during scenario setup), Reactor water level will lower. When RWL reaches TAF (-170") the crew will enter the Blowdown Leg of DEOP 100 and blowdown the reactor.

Event One – Reversing Circ Water Flow through Main Condenser

The BOP will reverse Circ Water Flow through the Main Condenser IAW DOP 4400-08, CIRCULATING WATER SYSTEM FLOW REVERSAL

Malfunctions required: 0

- None

Success Path:

- Circ Water Flow through the Main Condenser has been reversed.

Event Two – Stuck Control Rod

A control rod sticks and requires higher pressure to move.

Malfunctions required: 1

- (Control rod stuck)

Success Path:

- Performs DOP 0400-01, REACTOR MANUAL CONTROL SYSTEM OPERATION.
- Determines Technical Specifications requirements.

Event Three – Recirc Runback

The crew recognizes and responds to failure of the 2B RFP lube oil system. Low feedwater flow causes RPV level to drop and a Recirc runback to occur.

Malfunctions required: 1

- (RFP trip with low feedwater flow)

Success Path:

- Take action for Recirc runback.

Event Four – Fuel Pool Channel B Fails Upscale

The RB Fuel Pool Channel B Rad detector fails upscale, causing RB Vent to isolate. 2 of the RB Vent Isolation Dampers will fail to close.

Malfunctions required: 2

- (Failure of 2B Fuel Pool Radiation Detector upscale)
- (Failure of two RB Vent Dampers to go closed)

Success Path:

- Team manually isolates the RB Vent Dampers manually.
- Determines Technical Specifications requirements.

Event Five – High Pressure Feedwater Heater trip (Reactivity move)

2D2 Feedwater Heater level fails upscale

Malfunctions Required: 1

- (2D2 Heater level fails upscale)

Success Path:

- Inserts CRAM rods per DGP 03-04 to clear APRM Highs OR to reduce power below MELLLA boundary
- Reduces power with core flow to maintain CTP below 100%, or at the initial power level (does NOT decrease flow $\leq$ 55 Mlbm/hour with FCL $\geq$ 58%)
- Reduces power by 60 MWE with core flow due to “D” Heater being tripped

Event Six – Isolation Condenser Tube Leak

Isolation condenser develops a tube leak.

Malfunctions required: 1

- (Isolation Condenser Tube Leak)

Success Path:

- Team isolates the Isolation Condenser
- Determines Technical Specifications requirements.

Event Seven – Recirc Leak in Drywell - Manual Scram

A LOCA in the Drywell occurs, causing DW pressure to rise, and requiring a manual scram.

Malfunctions required: 1

- (Recirc loop leak)

Success Path:

- Performs DGP 02-03, REACTOR SCRAM.
- Performs DEOP 0100, RPV CONTROL
- Performs DEOP 0200-01, PRIMARY CONTAINMENT CONTROL.

Event Eight – Loss of All FWRV's and HPCI with Recirc Leak – Emergency Depressurization due to RPV Lvl at TAF

Emergency Depressurization is required when it is determined that RPV/L cannot be maintained above TAF. RPV/L is restored using low pressure ECCS pumps.

Malfunctions Required: 2

- (FWRVs failed closed)
- (HPCI degraded)

Success Path:

- Performs Blowdown Leg of DEOP 100

PRE-SCENARIO ACTIVITIES

1. If applicable, conduct pre-scenario activities in accordance with TQ-AA-155-J040, SIMULATOR EXAMINATION BRIEFING.
   a. Direct the crew to perform their briefs prior to entering the simulator.
   b. Provide the team a marked up copy of DOP 4400-08, CIRCULATING WATER SYSTEM FLOW REVERSAL.
   c. Provide the team a marked up copy of DOS 0300-01, CONTROL ROD EXERCISE.
   d. Provide the team a clean copy of DOP 0400-01, REACTOR MANUAL CONTROL SYSTEM OPERATION.
2. Simulator Setup (the following steps can be done in any logical order)
   a. Initialize simulator in an ~100% power IC. (IC **165** used for validation, password is **iltnrc22**; sequence 2S.0.0 key 55A8)
   b. Cut in/out Cond Demins as needed, to maintain DP within limits.
   c. Ensure running Condensate pump amps within limits.
   d. Ensure CRD parameters are normal, and CRD Drive Pressure is 250 to 280 psid.
3. Verify the following simulator conditions:
   a. Verify Reactor Power ~100%, adjust rods or Recirc as appropriate.
   b. Ensure Main Condenser Circ Water Flow Select is in the WEST position.
4. Run **Pump_Sumps.cae**

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

5. Run the initial setup CAEP file: **22-1 (2023-301) ILT-N-1.cae**
6. Place the following equipment out of service:
   a. 2A EHC Pump
7. Place protected pathway on 2B EHC Pump.
8. Delete T202 from alarm processing.
9. Load **ILT 22-1 (2023-301) ILT-N-1.uvl** into SimView.
10. Complete the Simulator Setup Checklist.
11. Ensure this setup is peer checked.

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

- √ Critical Tasks
- ■ Required Actions
- o Optional Actions

Event One – Reversing Circ Water Flow through Main Condenser

Trigger	Position	Crew Actions or Behavior
28 **1 &3** **2 & 4**		**SIMULATOR OPERATOR ROLE PLAY:** If requested to set gains to 1, (wait 3 min) activate **TRIGGER 28**, then report "gains set to 1". (This trigger can be triggered OFF, then back ON to adjust gains more than once). **SIMULATOR OPERATOR ROLE PLAY:** Verify **TRIGGERS 1 & 3** automatically activate when the 4402A valve close light illuminates Verify **TRIGGERS 2 & 4** automatically activate when the 4402C valve close light illuminates If the overrides don't delete automatically (**TRIGGERS 3 & 4**) then manually delete **cwpcddps** and **cwpcddpn** after 20 seconds of the triggers coming in. EO is on station at MCC 25-2 in the event of a valve breaker tripping during the flow reversal. If asked, inform the crew that another NSO is standing by with the replacement (NON 20A) fuse associated with the SJAE suction valves control logic for 2-0902-7 UB (1-2) located in Panel 902-7. If asked, inform the crew that valve performance monitoring equipment is installed on flow reversing valves and triggers enabled to capture data during valve movement. EO at 2252-71 panel – When asked inform crew: "the LOCAL-REMOTE switch on Condenser reversing local Panel 2252-71 is in the REMOTE position."
		FLOOR INSTRUCTOR: If the crew attempts to utilize the evaluation program Excel file (K:\8310\0perations Shift\Flow Reversal\DOP 4400 08Calc Rowley–Rev 1.xls) inform them that the file has been referenced and to continue with the evolution. After the Circ Water Flow has been reversed, inform the crew that another NSO will finish DOP 4400-08.
	CRS	■ Directs BOP to reverse Circ Water Flow through the Main Condenser IAW DOP 4400-08, CIRCULATING WATER SYSTEM FLOW REVERSAL.
	BOP	■ Reverses Circ Water Flow through the Main Condenser IAW DOP 4400-08: • Contacts EO to verify the LOCAL-REMOTE switch on Condenser reversing local Panel 2252-71 is in the REMOTE position. • Verifies annunciators 902-7 H-1, COND FLOW REV VLV LOCAL CONTROL, AND 902-7 F-2, COND FLOW REV CONT PWR FAILURE, are clear. • Verifies power to all of the Circ Water flow reversal valves. • Places CIRC WTR FLOW SELECT switch to the EAST position on the 902-7 panel. • Verify the following sequence when reversing flow: ❖ First half Circ Water flow reversal valves reposition in 30 seconds. ❖ CONDR OFF GAS SUCTION VLVS reposition. ❖ Second half Circ Water flow reversal valves reposition in 30 seconds. ❖ CONDR SEAL TROUGH LVL fill and drain valves change over. ❖ Observe differential pressure on the Condenser reverse as indicated by N BRCH DP AND S BRCH DP on Panel 902-7. • Performs Attachment A, CONDENSER VACUUM INSTRUMENTATION OPERABILITY DETERMINATION. • Verifies valve positions and indications per Table 1

Event One – Reversing Circ Water Flow through Main Condenser

Trigger	Position	Crew Actions or Behavior
	ATC	■ Monitors panels and assists as directed.

Event 1 Completion Criteria:

- **Circ Water Flow through the Main Condenser has been reversed**,

  -- AND/OR --

  At the discretion of the Lead Examiner.

Event Two – Stuck Control Rod		
Trigger	**Position**	**Crew Actions or Behavior**
5		**NOTE:** The crew will start exercising control rods per DOS 0300-01, Control Rod Exercise. When CRD D-09 is exercised they will experience a stuck rod. **SIMULATOR OPERATOR:** Verify **TRIGGER 5** automatically activates when: • Control rod D-09 is selected; • Drive water pressure is greater than 350 psig; and, • Either the Rod Movement Control switch is placed to the ROD IN position, or the Rod Out Notch Override is placed to the EMERG ROD IN position. This deletes Control Rod D-09 stuck malfunction, if the malfunction does not delete automatically then delete it manually from the Summary screen. **ROLE PLAY:** EO to check D-09 accumulator: Wait 2 min, then report "I see nothing abnormal at D-09 accumulator". Shift Manager / QNE to concur with raising drive water pressure: advise the CRS that "I concur with raising drive water pressure". **FLOOR INSTRUCTOR:** After FIC 2-0340-01, CRD FLOW CONTLR, is placed back in automatic control, inform the crew "another NSO will continue DOS 0300-01."
	CRS	■ Directs ATC to exercise CRDs A-06, D-09, and N-08.
		NOTE: The following section describes actions taken when CRDs A-06 and N-08 are exercised.
	ATC	■ Places RWM is in ROD EXERCISE mode per DOP 0400-02, ROD WORTH MINIMIZER. ■ Places FIC 2-340-1, CRD FLOW CONTLR, on Panel 902-5 in MANUAL. ❑ Obtains an edit of control rod positions, if the computer is available. ■ Selects the CRD to be exercised. ■ Insert control rod one notch AND verify latched ❑ Verify indicated control rod position changes during movement. ■ While withdrawing the control rod to position 48, perform the following: • Apply a continuous withdrawal signal utilizing the Rod Out Notch Override switch. • Verify indicated control rod position changes during movement. • Verify the control rod does NOT go to the overtravel position. ■ Observe stall flow reading on FI 2-340-8, DRIVE WTR FLOW, on Panel 902-5. ■ Remove continuous withdrawal signal.
	BOP	❑ Verifies RWM is in ROD EXERCISE mode ❑ Verifies FIC 2-340-1, CRD FLOW CONTLR, is in MANUAL. ❑ Verifies the CRD to be exercised. ❑ Verifies the ATC operator is set to move the Rod Movement Switch in the proper direction.

Event Two – Stuck Control Rod

Trigger	Position	Crew Actions or Behavior
		NOTE: The following section describes actions taken when CRD D-09 is exercised and is discovered to be stuck.
	ATC	■ Observes and announces that Control Rod D-09 did not move using normal drive pressure. ■ Requests permission from CRS to raise drive water pressure per DOP 0400-01, REACTOR MANUAL CONTROL SYSTEM OPERATION, to attempt to move the control rod.
	CRS	■ May contact Shift Manager and/or QNE for concurrence to raise drive water pressure. ■ Directs ATC to raise drive water pressure per DOP 0400-01 to attempt to move the control rod.
		NOTE: The pressure is to be raised incrementally to the following ranges for each attempt to move the rod: • 280 to 320 psid (~300 psid) • 320 to 380 psid (~350 psid; the control rod will move)
	ATC	Repeats the following until the control rod moves: ■ Raises drive water pressure per DOP 0400-01, REACTOR MANUAL CONTROL SYSTEM OPERATION, (Attachment B) as follows: ○ May place FIC 2-0340-01, CRD FLOW CONTLR, in MAN if desired. • Throttles closed MO 2-0302-08, DRIVE WTR PCV, to establish the desired drive water pressure. ■ Attempts to move the control rod. ■ Observes and announces that the stuck control rod moved with ~350 psid. ■ Returns the drive water pressure to the normal band by throttling open MO 2-302-8, DRIVE WTR PCV. (250 to 280 psid) ■ May place FIC 2-340-1, CRD FLOW CONTLR, back to AUTO if desired. ■ Completes moving the rod to its target position.

Event 2 Completion Criteria:

- **Control Rod D-09 Has Been moved to its original target position**

  -- AND/OR--

At the direction of the Lead Examiner.

Event Three – 2B RFP TRIP / RECIRC RUNBACK

Trigger	Position	Crew Actions or Behavior
6 **7 & 8** **9 & 10**		**SIMULATOR OPERATOR:** At the discretion of the Floor Instructor / Lead Evaluator, activate **TRIGGER 6**, which inserts 2B RFP low oil pressure, causes failure of its auxiliary oil pump to start and trips the pump 30 seconds later. Also insert failure to cause level to drop slowly to less than 25 inches to cause the Recirc runback. Verify **TRIGGERS 7 & 8** automatically activate when 2B RFP's breaker opens. This causes: • Sets the FRV ISOL MO 2-3206A & B to 25% open to reduce FW flow enough to cause RPV level to drop. • Overrides the valves' CLOSED lights OFF so they still appear full open. ■ Verify **TRIGGERS 9 & 10** automatically activate when Recirc Pump Runback light comes ON. This causes FRV ISOL MO 3206A & B to ramp back to 100% open. **ROLE PLAY:** EO to check 2B RFP: (wait 2 min), Report, "2B RFP Oil reservoir level is low. There is a large amount of oil on the pump base-plate The oil had not reached the base plate drain yet. I plugged the base plate drain". EO to check 2B RFP breaker: (Wait 2 min), Report, "2B RFP breaker is open and no targets are up". EO to check 2B RFP Aux Oil pump breaker: (wait 2 min), Report, "I see no problems with 2B RFP Aux Oil pump breaker". EO (if requested) to verify 2B RFP is at rest: Report "2B RFP is at rest". EO (if requested) to report status of oil leak after the 2B RFP has tripped: Report: "the oil leak is down to a trickle." If QNE is contacted: Report, "I will come to the control room" If QNE is asked about ore parameters: Report, "All core parameters are within limits."
	ATC	Performs the following actions per DAN 902-6 H-8, 2B RFP BRG OIL PRESS LO: ■ Attempts to start 2B RFP Auxiliary Oil Pump. ■ Directs EO to report 2B RFP oil pressure, oil reservoir level and check for oil leaks. ■ Informs US 2B RFP is running with low oil pressure and the auxiliary oil pump will not start. ■ Announces trip of 2B RFP. ■ Announces runback of the Recirc pumps. ■ Enters DAN 902-4 H-6, RECIRC PUMP RUNBACK.

Event Three – 2B RFP TRIP / RECIRC RUNBACK

Trigger	Position	Crew Actions or Behavior
	ATC	DAN 902-4 H-6 actions; ■ IF required to control Reactor Level, THEN ENTER and perform DOA 0600-01, TRANSIENT LEVEL CONTROL, concurrently with this procedure. ■ Verify the REACTOR RECIRC RUNBACK indicating light is ON at Panel 902-4. ■ Verify BOTH Reactor Recirc pumps have runback to 68% speed. ■ Verifies not operating above MELLLA boundary, if operating above boundary inserts CRAM arrays. ■ WHEN the condition(s) requiring Recirc Pump Runback has cleared, THEN resets the runback per DOP 0202-03, REACTOR RECIRCULATION FLOW CONTROL SYSTEM OPERATION.
		FLOOR INSTRUCTOR ROLE PLAY: At the discretion of the Lead Evaluator, direct the crew to reset the Runback if they elect to not do this action.
	BOP	■ Enters DOA 6500-10, 4KV CIRCUIT BREAKER TRIP. ❑ If directed, enters DGA-7, UNEXPECTED REACTIVITY ADDITION.
	CRS	❑ May direct entry into DOA 0600-01. ■ Directs entry into DOA 6500-10. ■ Directs performance of DOP 0202-03. ■ Directs insertion of CRAM arrays if operating above MELLLA boundary. ■ Contacts the Shift Manager, and appropriate maintenance departments. ■ Directs entry into DGA-7.

Event 3 Completion Criteria:

- **Crew has taken the actions of the DANs for RR runback**

  -- AND/OR --

At the discretion of the Floor Instructor/Lead Evaluator.

Event Four – RB Fuel Pool Channel B Rad detector fails upscale, with failure of 2 isolation dampers to close

Trigger	Position	Crew Actions or Behavior
11, 12		**SIMULATOR OPERATOR:** At the discretion of the Floor Instructor / Lead Evaluator, activate **TRIGGER 11**. This fails 2B Fuel Pool Rad monitor upscale. **TRIGGER 12** will auto activate with **TRIGGER 11** to allow the malfunction to work properly. **Note:** One set of U2 RBV Isolation Dampers fail to close. **CUE:** If an operator checks the 2B Fuel Pool Rad Monitor recorder on the back panel, cue the operator the 2B Fuel Pool Rad Mon is pegged high.
24, 25		**SIMULATOR OPERATOR:** Verify **TRIGGERS 24 & 25** auto activate when the operator takes the 2-5742A & B control switch to CLOSE, this deletes the malfunction that bound them open.
26		Activate **TRIGGER 26** after the scenario has been completed prior to going to FREEZE. This will reset the necessary variable in the background of the simulator. **ROLE PLAY:** EO (if requested) sent to check RX Bldg to Atmosphere D/P on the Refuel floor: wait 2 min, then report "the RX Bldg to Atmosphere D/P is (Insert the value from Instructor Station drawing 923-5-03 OR variable VRP4)". EO (if requested) sent to check SBGT operation: wait 2 min, then report "2/3A SBGT is running normally". RP sent to survey Refuel Floor: wait 4 minutes and report "local rad readings are 10 mrem/hr and stable." Acknowledge requests as plant support groups.
	BOP	Announces alarms indicating 2B Fuel Pool Rad high and a Secondary Containment Isolation have occurred: ■ 902-3 E-16, RX BLDG FUEL POOL CH B RAD HI. ■ 923-5 A-1, U2 RX BLDG VENT/EXH FAN TRIP. ■ 923-5 C-1, RX BLDG DP LO (may not come in if dampers are closed quickly). ■ Checks back panels and determines that 2B Fuel Pool Rad monitor has failed high (all other monitors are indicating normal levels). Verifies expected automatic actions have occurred. Discovers and announces the following: ■ RX Bldg Vent Outlet Dampers AO 2-5742A & B failed to close. ❑ May take actions per DAN 902-3 E-16. o Place control switches for U2 and U3 DW and Torus Purge Fans to PTL o Place Control Room Isolation switch, CRM ISOL on Panel 923-5 to ISOLATE position. o Place CRM AIR FILT UNIT BOOSTER FANS control switch on Panel 923-5 to FAN A OR FAN B position.

Event Four – RB Fuel Pool Channel B Rad detector fails upscale, with failure of 2 isolation dampers to close

Trigger	Position	Crew Actions or Behavior
	CRS	❑ Acknowledges reports of failed 2B Fuel Pool Rad monitor and the Secondary Containment Isolation. ❑ Acknowledges report of RX Bldg Vent Outlet Dampers AO 2-5742A & B failure to close. ❑ Notifies SM and WWM ❑ May direct that CREVs be isolated
	BOP	Performs the following to complete the Secondary Containment Isolation: ■ Places RX Bldg Vent Outlet Isol Damper control switch to the CLOSE position and observes that the RX Bldg Vent Outlet Dampers AO 2-5742A & B close. ❑ Dispatches an operator to check SBGT for normal operation.
	CRS	Refers to Technical Specifications and determines: ■ Technical Specification 3.3.6.2.A Table 3.3.6.2-1 Function 4: Place channel in trip within 24 hrs. (Condition met) ❑ Technical Specification 3.6.4.1.A: Restore secondary containment to OPERABLE status within 4 hrs. ■ Technical Specification 3.6.4.2.A: Isolate the affected penetration flow path by at least one closed and de-activated automatic valve within 8 hours. (Entered individually on AO 2-5742A AND on 2-5742B) ■ Technical Specification 3.6.4.2.B: Isolate the affected penetration flow path by at least one closed and de-activated automatic valve within 4 hours. (Entered for BOTH AO 2-5742A & B)

Event 4 Completion Criteria:

- **Secondary Containment Isolation completed; AND,**
- **Technical Specifications have been referenced and required LCOs identified.**

-- AND/OR--

At the discretion of the Floor Instructor/Lead Evaluator.

Event Five – High Pressure Feedwater Heater Trip		
Trigger	**Position**	**Crew Actions or Behavior**
13		**FLOOR INSTRUCTOR/ SIMULATOR OPERATOR:** When directed, activate **TRIGGER 13** which causes 2D2 FW Heater extraction valve MO 2-3103-B to close. **ROLE PLAY:** If EO is asked to check MO 2-3103-B breaker: wait 3 min, then report "the feed breaker to MO 2-3103-B is closed and there appears to be no problem". If EO is asked to check heaters locally: wait 3 min, then report "2D2 heater level is 18 inches, both normal and emergency drain controllers indicate that they are full open. All other heaters are operating normally." If EO is asked to check 2A and 2B MSDTs: wait 3 min, then report "the 2A and 2B MSDT normal drains to 2D2 heater are closed." If QNE is asked for assistance: Report "I will come to the control room" EO sent to cut out Cond Demin beds: wait 3 min, cutout Demin beds as needed (using instructor station), then report: "Cond Demin beds cutout".
	ATC	❑ Either discovers MO 2-3103-B closed or closing, or observes that plant parameters are changing ❑ Announces that 2-3103-B Heater extraction valve is closing or closed. ❑ Monitors feedwater temperature and heater levels. ❑ Places 2-3103-B Heater extraction valve control switch in pull to stop for 2D2 heater with level indication still on scale (as desired) to minimize feedwater temperature decrease. ■ Reduces power with flow as necessary to maintain CTP < 100% OR at the initial power level if operating at off-rated conditions (Does NOT decrease flow ≤ 55 Mlbm/hr with FCL ≥ 58%) ■ Due to high pressure heater trip, reduces power by 60 MWe (OR 170 MWth) with core flow. ■ Inserts CRAM rods per DGP 03-04, CONTROL ROD MOVEMENTS, to clear APRM highs OR to reduce power below the MELLLA boundary OR to reduce power below the unstable power/flow region boundaries. (as applicable) ❑ Performs DOA 3500-02, LOSS OF FEEDWATER HEATERS, as directed. ❑ Verifies operating within limitations of the Power to Flow Map. (Requires determining which region of the Feedwater Temperature Operating Domain the unit is operating) ❑ Performs DOP 3500-03, REMOVING HIGH PRESSURE HEATERS FROM OPERATION, for the 2D2 heater, if directed. ❑ Performs DGA-07 as directed.
	CRS	■ Enters DOA 3500-02 and directs actions. ■ Directs reducing load to by 60 MWe per DGP 03-01, POWER CHANGES. ❑ Directs performing DOP 3500-03, REMOVING HIGH PRESSURE HEATERS FROM SERVICE. Verifies immediate operator actions complete. ❑ Notifies the QNE and TSO of power change. ❑ Directs insertion of CRAM rods per DGP 03-04 to reduce power below MELLLA or to clear APRM highs (as applicable). ❑ May direct entry into DGA-07.

Event Five – High Pressure Feedwater Heater Trip

Trigger	Position	Crew Actions or Behavior
	BOP	❑ Peer checks DOA 3500-02 activities. ❑ If directed, performs DGA-7.

Event 5 Completion Criteria:

- **DOA 3500-02 actions in progress or complete**

  -- AND/OR --

At the direction of the Lead Examiner.

Event Six – Isolation Condenser Tube Leak		
Trigger	**Position**	**Crew Actions or Behavior**
14		**SIMULATOR OPERATOR:** At the discretion of the Floor Instructor/Evaluator, activate **TRIGGER 14** which initiates a tube leak in the Isolation Condenser. **ROLE PLAY:** EO to IC Area: (wait 3 min.) Report, "there is no evidence of steam leakage in the area but the Isolation Condenser is making noises. It sounds like metal parts expanding (creaking)". **ROLE PLAY:** **NOTE:** (IC temps may be viewed on RNI display IC1, Isolation Condenser) EO to check IC Vent outside: (WAIT 3 MIN.) If IC shell temp is > 190°F, report "some fog/steam exiting from the vent" If IC shell temp is < 190°F, report "NO steam exiting vent". **ROLE PLAY:** Chemistry to sample IC shell side: Report "shell side sample results will take approximately 90 minutes". Rad Protection to survey IC Vent outside: Report "the radiological surveys will be initiated". Security to control access to IC Vent outside: Report "the area will be roped off". If Security is notified that the IC is unavailable: Report "I acknowledge that the IC is unavailable."
	BOP	Announces alarms for the Isolation Condenser (IC) and refers to the following DANs: ❑ 902-3 B-3, IC HI RAD ■ 902-3 C-4, IC HI TEMP ❑ Monitors temperature and radiation levels for the Isolation Condenser
	CRS	❑ Directs/verifies Operators take action per DAN 902-3 C-4. ❑ After determining there is a leak in the IC, enters DOA 1300-01, ISOLATION CONDENSER TUBE LEAK. ❑ Declares the Isolation Condenser Inoperable. ❑ Requests Chemistry to sample Iso-Condenser shell side for change in activity. ❑ Notifies SM and WWM
	BOP	Performs DOA 1300-01 as directed and monitors: ❑ IC vent rad levels. ❑ IC shell side water level. ❑ IC temperatures from TR 1340-1. ❑ IC area temperatures from 902-21 panel. ❑ IC area rad levels from 902-2 panel ❑ Reports IC vent rad above 3 mr/hr and IC shell side level and temperatures rising.

Event Six – Isolation Condenser Tube Leak

Trigger	Position	Crew Actions or Behavior
	BOP	Isolates the IC by closing the following valves per DAN 902-3 B-3 or DOA 1300-01. ■ MO 2-1301-1 ■ MO 2-1301-2 ❑ MO 2-1301-3 (May place control switch in Pull-To-Lock) ■ MO 2-1301-4 ■ AO 2-1301-17 ■ AO 2-1301-20 ❑ MO-2-1301-10 ❑ MO 2-4399-74 ❑ May dispatch an EO to the Isolation Condenser area. ❑ May bypass the IC area hi rad input to the Rx Bldg Hi Rad alarm.
	TEAM	❑ Dispatches personnel outside to investigate discharge from the vent. ❑ Calls Chemistry and requests a sample of the shell side water to analyze for a change in activity. ❑ Directs Rad Protection to conduct radiological surveys. ❑ Directs Security to limit access underneath the IC vent.
	CRS	References Tech Specs and determines: ■ LCO 3.5.3.A.1: Verify HPCI is OPERABLE immediately. ■ LCO 3.5.3.A.2: Restore IC System to OPERABLE status within 14 days.

Event 6 Completion Criteria:

- **DOA 1300-01 actions in progress or complete,**
- **The IC is isolated,**
- **Tech Spec requirements are determined,**

-- AND/OR --

At the discretion of the Lead Examiner.

Event Seven – Recirc Leak in DW – Manual Scram

Trigger	Position	Crew Actions or Behavior
15		**SIMULATOR OPERATOR:** At the discretion of the Lead examiner, activate **TRIGGER 15**, which causes a small Recirc Loop leak to develop in the Drywell. **ROLE PLAY:** U-3 NSO to report Drywell pressure status: Report "U-3 Drywell pressure is 1.2 psig and steady".
	TEAM	■ Recognizes and announces that Drywell pressure is slowly rising. ❑ May direct an operator to check the Unit 2 Drywell CAM. ❑ May direct operators to search for leaks.
		ROLE PLAY: EO to check Drywell CAM: (wait 2 min.) Report, "The Drywell CAM had a step jump and is reading 4700 counts and trending up". EO to search for leak: Report, "I am on my way out to check for leaks". EO to check Cribhouse inlet temperature: (wait 5 min.) Report, "Cribhouse inlet temp is 70°F". If NSO checks Hydrogen Addition flow: Cue the NSO that "Hydrogen Addition flows are normal".
	CRS	■ Enters and directs performance of DOA 0040-01, SLOW LEAK. ❑ Set Scram contingency of 1.5 psig DW pressure. (Since DW pressure starts much lower than normal, may set a lower pressure Scram contingency. ❑ 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.
	ATC	■ Performs the following actions per DOA 0040-01 as directed: ❑ Maintain Level with FWLCS (immediate action). ❑ Monitors leakage rate, reactor water level, and Drywell pressure. ■ Inserts manual reactor scram prior to 1.5 psig DW pressure.
	BOP	■ Performs the following actions per DOA 0040-01 as directed: ❑ Notifies Shift Supervisor and Rad Protection. ❑ Directs search for leak. ❑ Shutdown H_2 Addition. ❑ Makes PA announcement. ❑ Verify Crib House inlet temperature is <95°F. ❑ Initiates Torus cooling per DOP 1500-02, TORUS WATER COOLING MODE OF LOW PRESSURE COOLANT INJECTION SYSTEM, Hard Card.
	ATC / BOP	❑ Performs scram preparatory actions per DGP 02-03 as directed. ❑ Starts MSP and TGOP. ❑ Trips H_2 addition.

Event Seven – Recirc Leak in DW – Manual Scram

Trigger	Position	Crew Actions or Behavior
	ATC	Performs the following actions per DGP 02-03 as directed: ■ 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.
	CRS	Enters DEOP 100, RPV CONTROL, and directs actions: ■ Verification of all isolations, ECCS and EDG starts. ■ Holding RPV/L +8 to +48 inches. ■ Maintaining RPV/P <1060 psig using the BPV's.

Event 7 Completion Criteria:

- **Team has performed a reactor scram,**

  -- AND / OR --

At the discretion of the Lead Examiner.

Event Eight – Loss of High Pressure Feed / Recirc Loop Leak / Emergency Depressurization		
Trigger	**Position**	**Crew Actions or Behavior**
16 **17** **18** **19** **20**		**SIMULATOR OPERATOR:** At the discretion of the Lead examiner, activate **TRIGGER 16**, which increases the size of the Recirc Loop leak in the Drywell. Verify **TRIGGER 17**, automatically activates when the Mode Switch is placed to S/D. After 1 min, this causes all feedwater regulating valves to fail closed. **SIMULATOR OPERATOR / ROLE PLAY:** EO sent to lineup CRD crosstie: wait 4 min, activate **TRIGGER 18,** then report: "the CRD crosstie is lined up". **SIMULATOR OPERATOR / ROLE PLAY:** EO sent to lineup makeup to SBLC Boron tank: wait 4 min, activate **TRIGGER 19,** and report: "makeup lined up to SBLC Boron tank". EO sent to lineup makeup to SBLC Test tank: wait 4 min, activate **TRIGGER 20,** and report: "makeup lined up to SBLC Test tank". **ROLE PLAY:** EO sent to check EDG operation: wait 3 min, then report: "Both EDGs are operating normally". EO sent to cut out Cond Demin beds: wait 3 min, cutout Demin beds as needed (using instructor station), then report: "Cond Demin beds cutout". BOP checks OIS: Inform BOP that "the OIS display lost power". **ROLE PLAY:** Acknowledge other requests; delay as necessary.
	ATC	■ Determines/announces all feedwater regulating valves are failed closed. ■ Starts SBLC for level control as directed. ■ Maximizes CRD for level control as directed.
	TEAM	■ Determines/announces Drywell pressure rapidly rising. ■ Determines/announces RPV level is dropping.
	CRS	❑ Directs starting HPCI to maintain level. ■ Directs starting Alternate High Pressure Injection Systems: • SBLC for level control • Maximize CRD for level control
	BOP	❑ Starts HPCI as directed. ■ Determines/announces HPCI is degraded.
	CRS	Determines insufficient high pressure feed is available, then performs/directs: ■ Inhibiting ADS before -59 inches. ❑ Verifying at least two low pressure injection systems available. ❑ Waiting until RPV level drops to TAF. ❑ Verifying any low pressure system lined up with a pump running.
	BOP	■ Inhibits ADS as directed.

Event Eight – Loss of High Pressure Feed / Recirc Loop Leak / Emergency Depressurization

Trigger	Position	Crew Actions or Behavior
	CRS	Enters DEOP 0200-01, PRIMARY CONTAINMENT CONTROL, when PC/P reaches 2 psig and performs/directs: ❑ Monitoring of PC/P. ❑ Initiation of torus sprays before PC/P of 11 psig. ■ **When PC/P is above 11 psig or before DW/T reaches 281°F:** • Verification of DSIL. • Tripping of Recirc pumps. • Tripping of DW coolers. • √ **Initiation of DW sprays.** ❑ Monitoring of DW/T. (D/W sprays may be initiated for temp control) ❑ Monitoring of SP/T and initiation of torus cooling. ❑ Monitors SP/L. ❑ Verifies initiation of drywell and torus H_2/O_2 monitors. ❑ Orders Torus / DW Spray secured before Torus / DW pressure drops to 0 psig
	BOP	Performs DEOP 0200-01 actions as directed: ❑ Monitors PC/P ■ √ **Initiates** torus sprays and **drywell sprays** per Hard Card LPCI/CCSW OPERATION, as directed. ❑ Monitors DW/T. ❑ Monitors SP/T and initiates torus cooling per Hard Card LPCI/CCSW OPERATION as directed. ❑ Monitors SP/L. ❑ Verifies initiation of drywell and torus H_2/O_2 monitors. ❑ Secures Torus / DW Spray before Torus / DW pressure drops to 0 psig
		NOTE: Above a RPV pressure of 500 psig, TAF is -170 inches, and MSCRWL is -186 inches on the Fuel Zone indicators. Below 500 psig, TAF is -143 inches and MSCRWL is -163 inches on the Fuel Zone Indicators.
	CRS	If the RPV level trend is not reversible with an RPV injection source lined up, with a pump running, with RPV level between TAF and the MSCRWL directs entering the Blowdown Leg of DEOP 0100 and directs: ❑ Verification that SP/L >6 feet. ■ √ **Opening all ADS valves.** ❑ Verification all relief valves are open.
	BOP	Performs the Blowdown Leg of DEOP 0100 as directed: ❑ Verifies SP/L >6 feet. ■ √ **Opens all ADS valves.** ■ Verifies all relief valves are open.
	CRS	■ √ **Directs ATC/BOP to maximizes injection flow with minimum ECCS Pump lineups prescribed by the transient mitigation guidelines** (OP-DR-103-102-1002) to the reactor when pressure drops below 350 psig to restore level to above TAF. With both Core Spray pumps available for injection, LPCI can be maintained aligned to address containment issues.

Event Eight – Loss of High Pressure Feed / Recirc Loop Leak / Emergency Depressurization		
Trigger	**Position**	**Crew Actions or Behavior**
	ATC / BOP	■ **√ Maximizes injection flow with minimum ECCS Pump lineups prescribed by the transient mitigation guidelines** (OP-DR-103-102-1002) to the reactor when pressure drops below 350 psig to restore level to above TAF.
26		**SIMULATOR OPERATOR:** Prior to going to FREEZE activate **TRIGGER 26**, this will reset the necessary variable that was changed in the background of the simulator.

Event 8 / Scenario Completion Criteria:

- **Sprays the Drywell**
- **Emergency Depressurization in progress.**

-- AND / OR --

At the direction of the Lead Examiner.

References

PROCEDURE	TITLE
DAN 902-3 B-3	IC Hi Rad
DAN 902-3 C-4	IC Hi Temp
DAN 902-4 H-6	Recirc Loop Runback
DAN 902-6 H-8	2B RFP Brg Oil Press Lo
DEOP 0100	RPV Control
DEOP 0200-01	Primary Containment Control
DGP 02-03	Reactor Scram
DGP 03-01	Power Changes
DGP 03-04	Control Rod Movements
DOA 0040-01	Slow Leak
DOA 0600-01	Transient Level Control
DOA 1300-01	Isolation Condenser Tube Leak
DOA 3500-02	Loss of Feedwater Heaters
DOA 6500-10	4kV Circuit Breaker Trip
DOP 0400-01	Reactor Manual Control System Operation
DOP 0202-03	Reactor Recirculation Flow Control System Operation
DOP 0202-16	Reactor Recirculation System Manual Hold and Local Manual Operation
DOP 1500-02	Torus Water Cooling Mode of Low Pressure Coolant Injection System
DOP 3500-03	Removing High Pressure Heaters from Operation
DOP 3800-01	Turbine Building Closed Cooling Water System Operation
DOP 4400-08	Circulating Water System Flow Reversal
DOP 6700-20	480V Circuit Breaker Trip
DGA-7	Unpredicted Reactivity Addition
OP-DR-103-102-1002	Strategies for Successful Transient Mitigation
DOS 0300-01	Control Rod Exercise
TS 3.3.6.2	Secondary Containment Isolation Instrumentation
TS 3.5.3	IC System
TS 3.6.4.1	Secondary Containment
TS 3.6.4.2	Secondary Containment Isolation Valves (SCIVs)

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

CAEP Files

```
# CAEP file for ILT-N-1
# ILT 22-1 (2023-301) NRC Exam
# Written by DSS
# 11/22

#### INITIAL CONDITIONS ####

# Overrides the Branch dPs on the Main Condenser
ior cwpcddps 25
ior cwpcddpn 25

# Degrades HPCI
imf hppmpdg 0.95

# Fails the RBV Isolation.
imf vrmiso42a
imf vrmiso42b

# Inserts malfunction to have control rod D-09 stuck
imf rodd09st


#### Event Triggers ####

# Event Trigger 1 will activate when the OPEN light illuminates for the 4402A valve – Event 1
trgset 1 "hwcwl02cc"
trg 1 "ior cwpcddps (0 5) -20 20 25"

# Event Trigger 2 will activate when the OPEN light illuminates for the 4402A valve – Event 1
trgset 2 "hwcwl02ac"
trg 2 "ior cwpcddpn (0 5) -20 20 25"

# Event Trigger 3 will delete overrides for the South Branch dP – Event 1
trgset 3 "et_array(1)"
trg 3 "dor cwpcddps (0 21)"

# Event Trigger 4 will delete overrides for the North Branch dP – Event 1
trgset 4 "et_array(2)"
trg 4 "dor cwpcddpn (0 21)"

# Event Trigger 5 Activates when control rod D-09 is selected – Event #2
# When drive water pressure is greater than 350 psig and
# when either the Rod Movement Control switch is placed to the ROD IN position,
# or the Rod Out Notch Override is placed to the EMERG ROD IN position.
# Deletes the control rod D-09 stuck rod malfunction to allow the rod to move.
trgset 5 "rdlselw(100) .and. (rddpdriv .gt. 350.0) .and. (rds302in .or. rds303em)"|2
trg 5 "dmf rodd09st"|2

# Event Trigger 6 Simulates a lube oil leak on 2B RFP causing trip of the pump – Event #3
# Fails its aux oil pump breaker control SW to prevent pump start.
# Insert 2B RFP low oil pressure
# After 30 sec. trips 2B RFP.
trgset 6 "0"|2
ior fwdop2 (6) off|2
ior fwdop5 (6) trip|2
imf ser1375 (6) on|4
ior fwdopnc2 (6 30) off|4
imf h32 (6 30)|4
```

```
# Event Trigger 7 Activates when 2B RFP breaker opens Event #3
# Sets the FRV Isol MO 3206A to 25% open to reduce FW flow enough to cause RPV level to drop.
# Overrides the valves CLOSED light off so it still appears full open.
trgset 7 ".not. fwsacbfp(2)"|6
trg 7 "set fwv3206a(1) = 0.25"|6
ior fwl32061 (7) off|6

# Event Trigger 8 Activates when 2B RFP breaker opens. - Event #3
# Sets the FRV Isol MO 3206B to 25% open to reduce FW flow enough to cause RPV level to drop.
# Overrides the valves CLOSED light off so it still appears full open.
trgset 8 ".not. fwsacbfp(2)"|8
trg 8 "set fwv3206a(2) = 0.25"|8
ior fwl32062 (8) off|8

# Event Trigger 9 Activates when Recirc Pump Runback light comes on. - Event #3
# Returns the FRV Isol MO 3206A to 100% open.
trgset 5 "rrlrcp191"|10
trg 9 "ramp fwv3206a(1) 0.25 1.0 1:00"|10

# Event Trigger 10 Activates when Recirc Pump Runback light comes on. - Event #3
# Returns the FRV Isol MO 3206B to 100% open.
trgset 10 "rrlrcp191"|10
trg 10 "ramp fwv3206a(2) 0.25 1.0 1:00"|10

# Event Trigger 11 fails 2B Fuel Pool Rad monitor upscale. – Event #4
# Closes all but one set of RBV dampers.
trgset 11 "0"|12
trg 11 "set rmarmfpfailf(2) = true"|14

# Event Trigger 12 works with Trigger 11 to fail the 2B Fuel Pool Rad monitor
trgset 12 "et_array(11)"|14
trg 12 "set rmarmfpfaild(2) = 70.0"|14
ior mrgfpb (12) 1.0|16

# Event Trigger 13 closes the extraction valve to the 2D1 HP Heater - Event 5
trgset 13 "0" |16
ior hdd3103c2 (13) close|16
ior hdd3103s2 (13) off|16

# Event Trigger 14 inserts an IC tube to shell leak at 1% severity - Event 6
trgset 14 "0"|18
imf ictublk (14) 1.0|18

# Event Trigger 15 Inserts a small recirc loop leak. – Major – Event 7
trgset 15 "0"|18
imf f41 (15) 0.01 2:00|18

# Event Trigger 16 Increases the recirc loop leak. - Post Major – Event 7
trgset 16 "0"|20
trg 16 "mmf f41 2.0 2:00"|20

# Event Trigger 17 Activates when Mode Switch is placed to S/D – Event 8
# After 1:00 min, fails ALL FW Reg valves closed.
trgset 17 "rpdmode4"|20
imf rlmfafc (17 2:00)|20
imf rlmfbfc (17 2:00)|22
imf rlmlffc (17 2:00)|22
imf ser1277 (17 2:00)|22
```

```
# Event Trigger 18 opens U3/U2 CRD cross-tie valve
trgset 18 "0"|22
irf rdxtieu3 (18) true|24

# Event Trigger 19 lines up makeup to SBLC Main Boron tank.
trgset 19 "0"|24
irf scmumntk (19) true|24

# Event Trigger 20 lines up SBLC pumps to test tank and makeup to test tank
trgset 20 "0"|24
irf scoptttk (20) true|26

# Event Trigger 24 allows the RB Vent Dampers to close that were failed open
trgset 24 "hwvrd5742c"|26
trg 24 "dmf vrmiso42a"|26

# Event Trigger 25 allows the RB Vent Dampers to close that were failed open
trgset 25 "hwvrd5742c"|26
trg 25 "dmf vrmiso42b"|28

# Event Trigger 26 resets the variable that was set to allow the 2B FP Rad Monitor to fail
trgset 26 "0"|28
trg 26 "set rmarmfpfailf(2) = false"|28

# Event Trigger 28 sets gain for all 6 APRMs.
trgset 28 "0"|30
trg 28 "irf niagainf true"|30

#### END ####
```

Unit 2 Risk: GREEN	Unit 3 Risk: GREEN
Unit 2 is in MODE 1 at 100% power,	Unit 3 is in MODE 1 at 100% power.
Leading Thermal Limit: MFLCPR @ 0.881	Leading Thermal Limit: MFLCPR @ 0.883
Action limit: 0.980	Action Limit: 0.980
Equipment Unavailable: 2A EHC Pump	Equipment Unavailable: None
Protected Equipment: 2B EHC Pump, 2A FPC	Protected Equipment: 3A FPC

Current Action Statements

None LCO Started: N/A LCO Expires: N/A

Cause:

Unit 2 Plant Status

Today

Unit 2 Activities

**** Shift 1 Activities ****

**** Shift 2 Activities ****

- Reverse Circ Water Flow through the Main Condenser
- Exercise CRDs A-06, D-09, and N-08. Stall flows are required to be recorded.

**** Shift 3 Activities ****

Turnover:

- 2A EHC Pump is OOS for motor replacement. Expected to be returned in 48 hours.
- Branch dP is reading ~27 feet of water, and it has been determined that Circ Water Flow through the Main Condenser shall be reversed IAW DOP 4400-08, CIRCULATING WATER SYSTEM FLOW REVERSAL
  - Field Supervisor is ready to enter Heater Bay for SJAE suction failure
  - EO @ MCC 25-2 for breaker trips on reversal valves
  - EO @ local control panel
- Exercise CRDs A-06, D-09, and N-08 per DOS 0300-01, CONTROL ROD EXERCISE
  - LPRM verification is complete

Dresden Generating Station

ILT-N-2

SWAP SERVICE WATER PUMPS

RAISE POWER WITH RODS

ROD DRIFT OUT

TRIP OF BUS 28

RFP VENT FAN TRIP

STEAM LEAK IN DRYWELL

STEAM LEAK WORSENS, MANUAL SCRAM, ELECTRICAL ATWS (ARI UNSUCCESSFUL)

Rev. 00

11/22

Developed By: _____ _____
Exam Author Date

Approved By: _____ _____
Facility Representative Date

Scenario Outline

Facility:	Dresden	Scenario #:	ILT-N-2
Scenario Source:	Site developed	Op. Test #:	2023-301
Examiners:		Applicants/ Operators:	
Initial Conditions:	Unit 2 in MODE 2 ~5% power. DGP 01-01 in progress		
Turnover:	Crew will swap Service Water pumps due to abnormal noises in running pump. DGP 01-01 Step G.45 is being performed.		
Critical Tasks:	PC-1.1 – While executing DEOP 200-1, when drywell pressure exceeds 11 psig and only if operating within the safe region of the drywell spray initiation limit (DSIL), initiate drywell sprays within 6 minutes of exceeding 11 psig or before reaching the PSP Limit, whichever is sooner.		
	PC-1.2 – After initiating drywell sprays per the primary containment pressure or temperature legs of DEOP 200-1, terminate drywell sprays before drywell pressure drops to < 0 psig.		

Event No.	Malf. No.	Event Type*		Event Description
1	None	N	BOP	(New) SERVICE WATER - Swap Service Water pumps
2	None	R	ATC	REACTIVITY – Raise Power with Rods (To get 2 Bypass valves open)
3	RODJ07DO	C, TS	ATC	(New) CRD - Rod Drift
4	K40	C, TS	BOP/ CRS	(New) AUX POWER - Trip of Bus 28
5	FWSACBV	C, MC	ATC	(PRE) HVAC - RFP Vent Fan, Trips Due to Overcurrent; failure of standby fan to auto start
6	F41	M	CREW	(PRE) SLOW LEAK - Steam leak in Drywell
7	I21	M	CREW	LEAK WORSENS - Leak worsens, Manual Scram, Electrical ATWS (ARI Unsuccessful)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Tech Spec, (MC)Manual Control

(New) – Event not used on previous 2 NRC Exams, (Pre) – Event used on previous 2 NRC Exams

Scenario Objective:
Evaluate the Team's ability to operate the plant during a Startup with Electrical ATWS.

Scenario Initial Conditions

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

Scenario Sequence

Event #	Description
1	**SERVICE WATER - Swap Service Water pumps** The BOP will start standby Service Water pump and secure running Service Water pump.
2	**REACTIVITY – Raise Power with Rods** ATC will continue Startup by raising power with rods to get 2 Bypass Valves open.
3	**CRD – Rod Drift** A control rod begins to drift out. ATC must insert the rod to position 00 and the BOP will individually scram it to maintain it fully inserted. The CRS will reference Tech Specs for the Control Rod inoperability.
4	**AUX POWER - Trip of Bus 28** Bus 28 trips on overcurrent. The crew will evaluate systems lost, repower Div 2 RPS from reserve power, and reference Technical Specifications.
5	**HVAC - RFP Vent Fan, Trips Due to Overcurrent; failure of standby fan to auto start** The operating RFP vent fan trips, the standby RFP vent fan fails to auto start. The ATC will start the standby RFP vent fan.
6	**SLOW LEAK - Steam leak in Drywell** A steam leak will develop in the Drywell causing pressure to rise. The crew takes DOA 0040-01, SLOW LEAK, actions.
7	**LEAK WORSENS - Leak worsens, Manual Scram, Electrical ATWS (ARI Unsuccessful)** The steam leak will worsen driving the crew to scram the Reactor. Upon the scram an Electrical ATWS will occur and ARI will be unsuccessful in putting the rods in. The success path will be for the crew to drive rods and pull scram fuses.

Event One – Swap Service Water pumps

The BOP will start a standby Service Water pump and secure the 2B Service Water pump

Malfunctions required: 0

- None

Success Path:

- Service Water pumps have been swapped

Event Two – Raise Power with Rods

ATC will continue Startup by raising power with rods to get 2 Bypass Valves open.

Malfunctions required: 0

- None

Success Path:

- Continue withdrawing Control Rods

Event Three – Rod Drift Out

A CRD will drift out.

Malfunctions required: 1

- (Control Rod drift out)

Success Path:

- Performs DOA 0300-05, INOPERABLE OR FAILED CONTROL ROD DRIVES.
- Determines Technical Specifications requirements.

Event Four – Trip of Bus 28

Bus 28 will trip on overcurrent. The crew will investigate lost equipment, repower B RPS from reserve power, and determine Technical Specifications.

Malfunctions required: 1

- (Overcurrent trip of Bus 28)

Success Path:

- DOA 0500-05, LOSS OF REACTOR PROTECTION SYSTEM BUS, actions
  - Determines Technical Specifications requirements

Event Five – Trip of RFP Vent Fan

The running RFP Vent Fan will trip and the standby RFP Vent Fan will not auto start.

Malfunctions Required: 2

- (Trip of 2A RFP Vent Fan)
- (Failure of 2B RFP Vent Fan to auto start)

Success Path:

- Starts the 2B RFP Vent Fan

Event Six – Steam leak in Drywell

A steam leak develops in the Drywell, the crew takes DOA 0040-01, SLOW LEAK, actions.

Malfunctions required: 1

- (Steam leak in Drywell)

Success Path:

- DOA 0040-01 actions

Event Seven – Leak worsens, Manual Scram, Electrical ATWS (ARI Unsuccessful)

The steam leak worsens, which drives the crew to manually scram the Reactor. Upon scramming the Reactor, it is determined that an Electrical ATWS has occurred and ARI is unsuccessful.

Malfunctions Required: 3

- (Steam leak worsens)
- (Electrical ATWS)
- (ARI fails)

Success Path:

- Performs DEOP 0200-01, PRIMARY CONTAINMENT CONTROL, actions
- Performs DEOP 0400-05, FAILURE TO SCRAM, actions

PRE-SCENARIO ACTIVITIES

1. If applicable, conduct pre-scenario activities in accordance with TQ-AA-155-J040, SIMULATOR EXAMINATION BRIEFING.
   a. Provide the crew with a copy of DGP 01-01, UNIT STARTUP, marked up and completed through G.44, step G.45 is the next step.
   b. Proved the crew with a copy of DOP 3900-01, SERVICE WATER SYSTEM OPERATION, marked up with Prerequisites signed off.
   c. Provide the crew with a copy of the ReMA and Control Rod Move Sheets.
   d. Crew directed to swap Service Water Pumps and then continue with plant startup, per Shift Manager.
   e. Rod moves have been completed up to and including Step 09. Rod L-9 in Step 10 is the next rod to be moved.
2. Simulator Setup (the following steps can be done in any logical order)
   a. Initialize simulator in an ~3-4% power IC. (IC **171** used for validation, password is **iltnrc22**; Sequence 2I.0.0 Key A080)
   b. Cut in/out Cond Demins as needed, to maintain dP within limits.
   c. Ensure running Condensate pump amps within limits.
   d. Ensure CRD parameters are normal, and CRD Drive Pressure is 250 to 280 psid.
   e. Ensure Drywell Pressure is ~1.2 psig, vent if necessary.
3. Verify the following simulator conditions:
   a. Verify Reactor Power ~3-4%, adjust rods or Recirc as appropriate.
   b. Ensure 2A RFP Vent Fan is running, 2B is secured.
   c. Ensure 2B Condensate Transfer Pump is running, 2A is secured.
   d. Verify 2A and 3A Service Water pumps are running, all others are secured.
4. Run **Pump_Sumps.cae**

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

5. Run the initial setup CAEP file: **22-1 (2023-301) ILT-N-2.cae**
6. Place the following equipment out of service:
   a. None
7. Complete the Simulator Setup Checklist.
8. Ensure this setup is peer checked.

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

- √ Critical Tasks
- • Required Actions
- ○ Optional Actions

Event One – Swap Service Water pumps

Trigger	Position	Crew Actions or Behavior
28		**SIMULATOR OPERATOR ROLE PLAY:** If requested to set gains to 1, (wait 3 min) activate **TRIGGER 28**, then report "gains set to 1". (This trigger can be triggered OFF, then back ON to adjust gains more than once). **SIMULATOR OPERATOR ROLE PLAY:** EO is on station in Cribhouse for Service Water pump swap. When asked, "the 2-3901-B-500 valve is open." When asked, "the 2B Service Water pump is not rotating in the reverse direction." When asked , "2B Service Water pump is operating normally."
	CRS	Directs BOP to start the 2B Service Water pump and secure the 2A Service Water pump IAW DOP 3900-01, SERVICE WATER SYSTEM OPERATION.
	BOP	■ Starts 2B Service Water pump IAW DOP 3900-01: • Contacts EO to verify the 2-3901-B-500, 2B SWP DISCH VLV, is open. • Contacts EO to verify the 2B Service Water pump is not rotating in the reverse direction. • Starts the 2B Service Water pump from the 923-1 panel. • Contacts EO to check 2B Service Water pump is operating normally. ■ Secures 2A Service Water pump IAW DOP 3900-01: • Trips 2A Service Water pump at the 923-1 panel. • Contacts EO to verify the 2A Service Water pump stops rotating.
	ATC	■ Monitors panels and assists as directed.

Event 1 Completion Criteria:

- **Service Water pumps are swapped**,

  -- AND/OR --

  At the discretion of the Lead Examiner.

Event Two – Raise Power with Rods		
Trigger	**Position**	**Crew Actions or Behavior**
	CRS	Directs pulling control rods. ■ Reviews ReMA. ■ Designates second verifier. ■ Directs NSO to pulls rods.
	ATC	Performs the following actions per DOP 0400-01, REACTOR MANUAL CONTROL SYSTEM OPERATION, and DGP 03-04, CONTROL ROD MOVEMENTS, as directed <u>Verifies the following prior to moving first control rod:</u> ■ Control rod selected on the select matrix is correct rod. ■ Verifies rod pattern ■ States the following: • Controlling document • Step and array • RWM status • CRD selected • Initial position • Movement (single or continuous) • Direction • Target Position <u>Verifies the following on subsequent control rods:</u> ■ Control rod selected on the select matrix is correct rod. ■ States the following: • CRD selected • Initial position • Movement (single or continuous) • Direction • Target Position ❑ Second Verification requirements satisfied. ❑ Rod Out Permit light is illuminated. ❑ Drive water pressure at nominal 260 psid. <u>Withdraws rods as follows</u>: ■ Moves Rod Out Notch Override (RONOR) Switch to NOTCH OVERRIDE position (use of RONOR switch is optional) and the Rod Movement Control switch to ROD OUT. ❑ Verifies ON light illuminated and proper Control Rod Timer operation. ■ Releases switches before target position is reached. (If rod is being withdrawn to 48, then switches are held to 48 with coupling check) ■ Verifies rod settles to target position and proper response of nuclear instrumentation.

Event Two – Raise Power with Rods

Trigger	Position	Crew Actions or Behavior
	BOP	Performs second verification checks. <u>For first rod in a step:</u> ■ Verifies correct control rod pattern ■ Verifies correct step and array. ■ Compares CRD and intended movement with controlling document: point to, touch, or mark controlling document. ■ State the following: • Repeat back and agree with intended movement <u>For all rods moved:</u> ■ Verifies correct control rod selected. ■ Verifies planned control rod motion is correct. ■ Immediately notify the NSO of errors during rod motion. ■ Verifies control rod at target position.

<u>Event 2 Completion Criteria</u>:

- **Sufficient power increase,**

  -- AND/OR --

At the direction of the Lead Examiner.

Event Three – Control Rod Drifts Out

Trigger	Position	Crew Actions or Behavior
1 **2**		**SIMULATOR OPERATOR:** At the discretion of the Lead examiner, activate **TRIGGER 1**, which causes Control Rod J-07 to drift out. **SIMULATOR OPERATOR ROLE PLAY:** EO to check J-07 accumulator: Wait 2 min, then report "I see nothing abnormal at J-07 accumulator. WEC/EO to disarm J-07 acknowledge the request. It is not intended to complete the request. QNE to evaluate core limits or assist with DGA-7: Acknowledge the request. Wait 2 min. and report, "core parameters are within limits". EO to hydraulically isolate and electrical disarm CRD J-07: Wait 2 min. and report, "CRD J-07 is hydraulically isolated and electrically disarmed." **SIMULATOR OPERATOR:** Once directed to close 2-0305-102, activate **TRIGGER 2**, which deletes the rod drift malfunction.
	ATC	■ Announces 902-5 A-3, ROD DRIFT, alarm. ❑ Notices and announces that Control Rod J-07 is drifting out. Performs actions of DOA 0300-05, INOPERABLE OR FAILED CONTROL ROD DRIVES, as directed. Immediate: ■ Bypasses the Rod Worth Minimizer. ■ Inserts the CRD to 00 using Emergency Rod In. Subsequent: ■ Due to the CRD failing to remain at the FULL IN OR OVERTRAVEL IN position, continuously applies an emergency insert signal using EMERG ROD IN on RONOR switch.
	CRS	■ Enters DOA 0300-05 and directs actions. ❑ May enter DGA-7, UNEXPECTED REACTIVITY CHANGE ❑ Notifies SM and WWM
	BOP	■ At back panel 902-16, places the scram toggle switch for CRD J-07 to the UP position. ❑ If directed, performs actions of DGA-7.
	ATC	■ Releases RONOR switch. ❑ Announces that procedure directs entering DOA 0300-12, MISPOSITIONED CONTROL ROD. ❑ Discontinues ALL non-emergency control rod motion and notifies CRS and QNE to evaluate core parameters. ❑ Directs EO to hydraulically isolate and electrical disarm CRD J-07 to prevent CRD discharge volume from filling.
	CRS	■ References TS 3.1.3, Condition C, and determines the following actions are required: • C.1 Fully insert inoperable control rod within 3 hours • C.2 Disarm the associated CRD within 4 hours ❑ Directs disarming rod J-07. ■ Enters DOA 0300-12. ❑ Directs taking rod J-07 OOS on the RWM.

Event Three – Control Rod Drifts Out

Trigger	Position	Crew Actions or Behavior
	ATC	❑ Takes rod J-07 OOS on the RWM: o Takes RWM out of Bypass (if applicable) o On RWM, selects SECONDARY FUNCTIONS. o On Rod Select Matrix, select the inoperable CRD. o On RWM, select the inoperable CRD. o Verify the Rod is enclosed in a blue box. o Select ROD OUT OF SERVICE AND verify message Rod XXX placed out of service o Select RETURN TO PRIMARY to return to the Primary Menu. o Continuously insert inoperable CRD to "00".

Event 3 Completion Criteria:

- **When Control Rod J-07 has been inserted to position 00, AND**
- **Tech Specs have been addressed**

-- AND/OR --

At the discretion of the Floor Instructor/Lead Evaluator.

Event Four – Trip of Bus 28

Trigger	Position	Crew Actions or Behavior
3		**SIMULATOR OPERATOR:** At the discretion of the Lead Examiner, activate **TRIGGER 3**, which trips the Bus 28 on overcurrent. **SIMULATOR OPERATOR:** EO to check Bus 28 feed breaker at Bus 23-1(wait 3 min): Report "The Bus 28 feed breaker at Bus 23-1 has an overcurrent target up." EO to check Bus 28 feed breaker at Bus 28 (wait 3 min): Report "The Bus 28 feed breaker at Bus 28 is open, there are no targets up at the breaker and I do not see any problems". EMD to inspect Bus 28: wait 5 min, then report "Bus 28 is faulted, no repair estimate yet".
4		If directed to lineup condensate transfer to ECCS keepfill, wait three minutes and tell them you are ready to lineup condensate transfer to ECCS keepfill. When directed, wait a minute, and then activate **TRIGGER 4**. Report the ECCS Keepfill is supplied from Condensate Transfer.
16		EO sent to check DW Cam, wait 2 minutes and then report: "there is change to the counts on the DW Cam." If RadWaste is contacted to start the 2B FPC pump, wait 1 minute then activate **TRIGGER 16**, and report: "the 2B FPC pump is running."
5		**NOTE:** Communications from the AEER should be over the phone (not the radio) EO to power the 2B RPS bus from the alternate source: wait five minutes, call the U2 NSO on the phone and report "I am at step G.3.m of DOP 0500-03, for supplying power to RPS 2B bus. G.3.m.(1) thru (3) are your steps. When notified to continue starting at step G.3.m.(4), wait a minute, and then activate **TRIGGER 5**. Report "RPS Bus B has been reenergized from the alternate power supply". If asked: "AC voltage is 118".
6		**Simulator Operator / Role Play:** EO to swap U2 250 VDC to the 2/3 charger: wait 4 min, inform the NSO you are ready to swap to the U2 250 VDC to the 2/3 charger." When directed to proceed, wait a minute, activate **TRIGGER 6**. Report back "the 250 VDC 2/3 Battery Charger is lined up to U2".
	BOP	■ Diagnoses that Bus 28 has lost power ■ Enters DOA 6500-10, 4KV CIRCUIT BREAKER TRIP, as directed. • Based upon report that Bus 28 feed breaker at Bus 23-1 is overcurrent, takes the control switch to PTL ❑ Refers to DGA 12, PARTIAL OR COMPLETE LOSS OF AC POWER ■ Starts a Condensate Transfer pump if none running ■ Directs EO to valve in Condensate Transfer to ECCS Keepfill ■ Starts 2B Pumpback Air Compressor ■ Performs DOA 0500-05, LOSS OF RPS BUS, and directs EO to repower RPS Bus B from Reserve Power

Event Four – Trip of Bus 28

Trigger	Position	Crew Actions or Behavior
	BOP	❑ Resets the RPS Channel B half-scram (will not reset due to ATS losses) ❑ May directs EO to lineup 250 VDC 2/3 Charger to U2 IAW DOP 6900-01, 250 VDC ELECTRICAL SYSTEM
	ATC	❑ Assists as needed
	CRS	■ Directs entry into DOA 6500-10, 4KV CIRCUIT BREAKER TRIP. ❑ May enter DGA 12 ❑ Directs EO to valve in Condensate Transfer to ECCS Keepfill ❑ Enters DOA 0500-05 and directs EO to repower RPS Bus B from Reserve Power ❑ Directs resetting of the RPS Channel A half-scram (will not reset due to ATS losses) ❑ May direct lining up the 250 VDC 2/3 Charger to U2 per DOP 6900-01 References Technical Specifications and determines ■ TS 3.8.7 Action A: applies and power must be restored to Bus 28 in 8 hours.

Event 4 Completion Criteria:

- **DOA 6500-10 & DOA 6700-07 actions in progress or complete,**
- **Technical Specifications have been referenced and required LCOs identified.**

-- AND/OR--

At the discretion of the Floor Instructor/Lead Evaluator.

Event Five – RFP Vent Fan Trip

Trigger	Position	Crew Actions or Behavior
7		**SIMULATOR OPERATOR:** At the discretion of the Lead Examiner, activate **TRIGGER 7**, which causes 2A RFP vent fan to trip. The initial setup prevents 2B RFP vent fan from auto starting. **ROLE PLAY:** EO to check operation of 2B RFP vent fan, wait 2 min, and then report the following: "2B RFP vent fan is operating normally." EO to check 2A RFP vent fan breaker, wait 2 min, and then report the following: "2A RFP vent fan breaker tripped on over current and is open." **NOTE:** Per DOP 5750-06, Reactor Feed Pump Motor Ventilation System, fan control switches should be held in CLOSE for 45 seconds to allow airflow to develop. If the Team does not successfully start 2B RFP Vent fan due to not holding the control switch long enough, then the RFP high stator temperature computer alarm will come in.
	ATC	■ Announces and references DAN 902-6 F-8, RFP VENT FAN TRIP ■ Determines 2B RFP Vent Fan did not auto start as expected and manually starts it ❑ Sends operator to check status of the 2A RFP vent fan breaker at Bus 25 ❑ Sends operator to check operation of the 2B RFP vent fan ■ Performs DOP 6700-20, 480V CIRCUIT BREAKER TRIP • Places Control Switch for 2A RFP Vent Fan in PTL
	CRS	■ Directs starting 2B RFP vent fan ■ Enters DOP 6700-20 ❑ May reference DOA 5750-01, VENTILATION SYSTEM FAILURE ❑ May reference DOP 5750-06, REACTOR FEED PUMP MOTOR VENTILATION SYSTEM
	BOP	❑ Monitors panels and assists as directed.

Event 5 Completion Criteria:

- **2B RFP Vent Fan started,**

  -- AND/OR --

  At the discretion of the Lead Examiner.

Event Six – Steam leak in Drywell		
Trigger	**Position**	**Crew Actions or Behavior**
8		**SIMULATOR OPERATOR:** At the discretion of the Lead examiner, activate **TRIGGER 8**, which causes a small Main Steam line leak to develop in the Drywell. **Role Play:** U-3 NSO to report Drywell pressure status: Report "U-3 Drywell pressure is 1.2 psig and steady". **ROLE PLAY:** EO to check Drywell CAM: (wait 2 min.) Report, "The Drywell CAM had a step jump to 4700 counts and is trending up". EO to search for leak Report, "I am on my way out to check for leaks". EO to check Cribhouse inlet temperature: (wait 5 min.) Report, "Cribhouse inlet temp is 70°F".
	TEAM	❑ Recognizes and announces that Drywell pressure is slowly rising.
	CRS	❑ Enters and directs performance of DOA 0040-01, SLOW LEAK.
	ATC	Performs the following actions per DOA 0040-01 as directed: ❑ Maintain Level with FWLCS (immediate action). ❑ Monitors leakage rate, reactor water level, and Drywell pressure. ■ Inserts manual reactor scram prior to 1.5 psig DW pressure
	BOP	Performs the following actions per DOA 0040-01 as directed: ❑ Notifies Shift Supervisor and Rad Protection. ❑ Monitors for EP conditions. ❑ Directs search for leak. ❑ Shutdown H_2 Addition. ❑ Makes PA announcement. ❑ Verify Crib House inlet temperature is <95°F. ■ Initiates Torus cooling per DOP 1500-02, TORUS WATER COOLING MODE OF LOW PRESSURE COOLANT INJECTION SYSTEM, Hard Card: • Place 316A/B AND 318A/B keylock switches in MANUAL (MANUAL OVERRD). • Start one CCSW Pump in each loop AND verify 2(3)A/B valves open. (IF only one CCSW loop available, THEN start second CCSW Pump in same loop.) • Start at least one LPCI pump in each loop. (Start additional LPCI pumps as required.) • Open 21A/B AND 20A/B valves in desired loop. • Throttle open 38A/B valves until > 5000 gpm per LPCI pump is established (maintain LPCI pump discharge pressure > 125 psig OR > 100 psig if ADS is in INHIBIT). • Start additional CCSW Pumps • Adjust CCSW flow controller to > 5000 gpm for two CCSW Pumps [Maintain LPCI/CCSW dP ≥ 7 psid (1 LPCI Pump/loop) OR ≥ 20 psid (two LPCI Pumps/loop)]. • Momentarily place 11A/B valve control switches to close.

Event Six – Steam leak in Drywell

Trigger	Position	Crew Actions or Behavior
	CRS	❑ Sets Scram contingency of 1.5 psig DW pressure. ❑ May enter DGP 02-03, REACTOR SCRAM, and direct taking scram preparatory actions. ■ Prior to reaching the Drywell Pressure scram setpoint, directs a manual reactor scram per DGP 02-03.
	ATC	Performs the following actions per DGP 02-03 as directed: ■ Presses scram pushbuttons ■ Places mode switch in shutdown ■ Check rods inserted and determines an electrical ATWS. ❑ Initiates ARI / Determines ARI did not insert control rods. ❑ Announces the electrical ATWS.
	CRS	■ Enters DGP 02-03 then enters DEOP 100, RPV CONTROL.

Event 6 Completion Criteria:

- **DOA 0040-01 actions in progress or complete,**

  -- AND/OR --

At the discretion of the Lead Examiner.

Event Seven – Leak worsens, Manual Scram, Electrical ATWS (ARI Unsuccessful)

Trigger	Position	Crew Actions or Behavior
10 **11** **12** **13** **14**		**SIMULATOR OPERATOR:** After the Team has inserted control rods, and at the discretion of the Lead Evaluator, activate **TRIGGER 10**, which increases the Main Steam line leak enough to exceed 11 psig in the Drywell and inserts a spurious Group 1 Isolation. **SIMULATOR OPERATOR / ROLE PLAY:** Operator to pull scram fuses: wait 4 min, then activate **TRIGGER 11**. This sequentially pulls the scram fuses. Operator to vent the scram air header: wait 5 min, the activate **TRIGGER 12**. This vents the scram air header. **SIMULATOR OPERATOR / ROLE PLAY:** Operator to lift leads to bypass Off Gas Hi Hi Rad isolations: wait 3 min, activate **TRIGGER 13**, and then report "Off Gas Hi Hi Rad isolations have been bypassed". EO to CLOSE / OPEN the 2-0301-25, U2 CRD Sys Charging Wtr Hdr SV: wait 2 min, and then insert **TRIGGER 14**. Report "the 2-0301-25, U2 CRD Sys Charging Wtr Hdr SV is closed". **ROLE PLAY:** EO sent to check EDG operation: wait 3 min, then report: "Both EDGs are operating normally". EO sent to cut out Cond Demin beds: wait 3 min, cutout Demin beds as needed (using instructor station), then report: "Cond Demin beds cutout". BOP checks OIS: Inform BOP that "the OIS display lost power". **ROLE PLAY:** Acknowledge other requests; delay as necessary.
	TEAM	■ Recognizes and announces that Drywell pressure is rising rapidly.
	ATC	■ Scrams the Reactor when Drywell pressure > 1.5 psig (if not already done) ■ Recognizes and updates the crew regarding the Electrical ATWS ■ Performs ATWS Hardcard Actions as directed • Places MSIV LO-LO LVL BYPASS KEYLOCKs in BYPASS • Verifies Recirc pumps are running at minimum, if not depresses the 2A and 2B Recirc PP'S LOW LEVEL RUNBACK pushbuttons • Performs ATWS actions complete Update • Commences manually driving rods.
	CRS	Enters DGP 02-03 and then enters and exits DEOP 100, RPV CONTROL, and enters DEOP 0400-05, FAILURE TO SCRAM and directs: ■ ATC Operator to perform ATWS Hardcard actions ■ Placing ADS to inhibit ■ Inserting control rods using Alternate Rod Insertion. ❖ Directs driving control rods. ❖ Directs pulling scram fuses. ❖ Directs venting scram air header. ❑ Verifying required auto actions. ❑ Directs Lifting leads for the Off Gas High Rad isolations to the WEC.

Event Seven – Leak worsens, Manual Scram, Electrical ATWS (ARI Unsuccessful)

Trigger	Position	Crew Actions or Behavior
	BOP	■ Places ADS to inhibit as directed ❑ Controls HPCI to prevent injection (HPCI is degraded as part of initial setup)
	CRS	Enters DEOP 0200-01, PRIMARY CONTAINMENT CONTROL, when PC/P reaches 2 psig and performs/directs: ❑ Monitoring of PC/P. ❑ Initiation of torus sprays before PC/P of 11 psig. ■ **When PC/P is above 11 psig or before DW/T reaches 281°F:** • Verification of DSIL. • Tripping of Recirc pumps. • Tripping of DW coolers. • √ **Initiation of DW sprays.** ❑ Monitoring of DW/T. (D/W sprays may be initiated for temp control) ❑ Monitoring of SP/T and initiation of torus cooling. ❑ Monitors SP/L. ❑ Verifies initiation of drywell and torus H_2/O_2 monitors. ❑ √ Orders Torus / **DW Spray secured before** Torus / **DW pressure drops to 0 psig**
	BOP	Performs DEOP 0200-01 actions as directed: ❑ Monitors PC/P ■ √ **Initiates** torus sprays and **drywell sprays** per Hard Card LPCI/CCSW OPERATION, as directed. ❑ Monitors DW/T. ❑ Monitors SP/T and initiates torus cooling per Hard Card LPCI/CCSW OPERATION as directed. ❑ Monitors SP/L. ❑ Verifies initiation of drywell and torus H_2/O_2 monitors. ❑ √ **Secures** Torus / **DW Spray before** Torus / **DW pressure drops to 0 psig**

Event 7 / Scenario Completion Criteria:

- **Containment pressure is being controlled,**
- **All rods are in,**

-- AND / OR --

At the direction of the Lead Examiner.

References

PROCEDURE	TITLE
DAN 902-5 A-3	Rod Drift
DAN 902-5 C-3	Rod Out Block
DAN 902-6 F-8	RFP Vent Fan Trip
DEOP 0100	RPV Control
DEOP 0200-01	Primary Containment Control
DEOP 0400-05	Failure to Scram
DGP 02-03	Reactor Scram
DGP 03-01	Power Changes
DGP 03-04	Control Rod Movements
DGA 12	Partial or Complete Loss of AC Power
DOA 0040-01	Slow Leak
DOA 0600-01	Transient Level Control
DOA 0300-05	Inoperable or Failed Control Rod Drives
DOA 0500-05	Loss of RPS Bus
DOA 5750-01	Ventilation System Failure
DOP 0400-01	Reactor Manual Control System Operation
DOP 1500-02	Torus Water Cooling Mode of Low Pressure Coolant Injection System
DOP 3900-01	Service Water System Operation
DOP 5750-06	Reactor Feed Pump Motor Ventilation System
DOP 6700-20	480V Circuit Breaker Trip
DOP 6900-01	250 VDC Electrical System
OP-DR-103-102-1002	Strategies for Successful Transient Mitigation
TS 3.1.3	Control Rod OPERABILITY
TS 3.8.7	Distribution Systems-Operating

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

CAEP Files

```
# CAEP file for ILT-N-2
# ILT 22-1 (2023-301) NRC Exam
# Written by DSS
# 11/22

#### INITIAL CONDITIONS ####

# Setup for 2B RFP Vent Fan not auto starting
imf x13

# Degrades HPCI
imf hppmpdg 1.0

# Setup for Event 8 - Overrides Panel 2202-70A(B) Trouble alarm points OFF so pulling
# ARI fuses does not cause alarm. Pulls ARI fuses.
Imf ser1026 off|2
imf ser1060 off|2
irf aw4 pulled|6

#### Event Triggers ####

# Event Trigger 1 drifts J-07 out
trgset 1 "0"|2
imf rodj07do (1)|2

# Event Trigger 2 deletes the rod drift malfunction
trgset 2 "0"|4
trg 2 "dmf rodj07do"|4

# Event Trigger 3 inserts an overcurrent trip of Bus 28 (Event 4)
trgset 3 "0"|4
imf k40 (3)|4

# Trigger 4 Lines up Condensate Transfer to ECCS keepfill (Event 4)
trgset 4 "0"|6
irf csbukpfl (4) open|6

# Trigger 5 powers the B RPS bus from the alternate feed of MCC 25-2 (Event 4)
trgset 5 "0"|6
irf b04 (5) true|6

# Event Trigger 6 Swaps 250 VDC to 2/3 Charger (Event 4)
trgset 6 "0"|8
irf t50remf (6) false|8
irf t51remf (6 2) true|8

# Event Trigger 7 trips the 2A RFP Vent Fan (Event 5)
trgset 7 "0"|8
imf x10 (7)|10

# Event Trigger 8 Inserts a small DW MSL leak of 0.07% (Event 6)
trgset 8 "0"|10
imf i21 (8) 0.07 10:00 0.002|10
irf rpfuseb1 (8) pulled|10
irf rpfuseb2 (8) pulled|12
irf rpfuseb3 (8) pulled|12
irf rpfuseb4 (8) pulled|12
imf b12 (8 2)|12
```

```
# Event Trigger 10 Increases DW MSL leak to 30% to get above 11 psig in Drywell (Event 8)
trgset 10 "0"|14
trg 10 "mmf i21 30.0 30 2.0"|14
imf p00 (10)|14
imf cigp1i (10 60)|16

# Event Trigger 11 Simulates pulling RPS scram fuses (Event 8)
trgset 11 "0"|16
irf rpfusea1 (11) pulled|16
irf rpfusea2 (11 20) pulled|16
irf rpfusea3 (11 40) pulled|18
irf rpfusea4 (11 60) pulled|18

# Event Trigger 12 Simulates venting scram air header (Event 8)
trgset 12 "0"|18
irf rdscrair (12) open|18

# Event Trigger 13 lifts the leads for the Offgas High Rad isolations (Event 8)
trgset 13 "0"|20
irf ogogjp (13) in|20

# Event Trigger 14 closes the 2-0301-25 valve (EVent 8)
trgset 14 "0"|20
irf rd25pos (14) 0.0|20

# Event Trigger 15 decreases the leak size to allow Drywell Sprays to affect Drywell Pressure
trgset 15 "(.not. hwlplvlvcl(20)) .and. (.not. hwlplvlvcl(18))"|22
trg 15 "mmf i21 0.001 60 10.0" |22

# Event Trigger 16 starts the 2B FPC pump
trgset 16 "0"|22
irf fcdclb (16) close|22

# Event Trigger 28 sets gain for all 6 APRMs.
trgset 28 "0"|24
trg 28 "irf niagainf true"|24

#### END ####
```

Unit 2 Risk: GREEN	Unit 3 Risk: GREEN
Unit 2 is in MODE 2 at 5% power,	Unit 3 is in MODE 1 at 100% power.
Leading Thermal Limit: MFLCPR @ 0.881	Leading Thermal Limit: MFLCPR @ 0.883
Action limit: 0.980	Action Limit: 0.980
Equipment Unavailable: None	Equipment Unavailable: None
Protected Equipment: 2A FPC	Protected Equipment: 3A FPC

Current Action Statements

None	LCO Started:	N/A	LCO Expires:	N/A

Cause:

Unit 2 Plant Status

Today	Unit 2 Activities
	**** Shift 1 Activities ****
	**** Shift 2 Activities ****
	■ Start 2B Service Water pump and secure 2A Service Water pump
	■ Continue with Startup.
	NRC
	**** Shift 3 Activities ****

Turnover:

- Engineering has requested that the 2A Service Water pump be secured due to abnormal noises coming from the motor.
  - Startup activities will be paused until the Service Water pumps have been swapped.
- DGP 01-01, UNIT STARTUP, is in progress. Step G.45 is the step being performed.
- Rod L-09 is the next rod to be moved.

Dresden Generating Station

ILT-N-3

SECURE TORUS COOLING

CRD PUMP TRIP

MAIN POWER TRANSFORMER HIGH TEMPERATURE

APRM FAILS UPSCALE WITH NO HALF SCRAM AND ONE APRM ALREADY OUT

STATOR WATER COOLING PUMP TRIP WITH FAILURE OF STANDBY TO START

UNISOLABLE STEAM LEAK IN HPCI ROOM

EMERGENCY DEPRESSURIZATION ON RADIATION LEVELS

ERV FAILURE

Rev. 00

11/22

Developed By: _____ _____
Exam Author Date

Approved By: _____ _____
Facility Representative Date

Scenario Outline

Facility:	Dresden	Scenario #:	ILT-N-3
Scenario Source:	Site developed	Op. Test #:	2023-301
Examiners:		Applicants/ Operators:	

Initial Conditions:	Unit 2 is at 80% power APRM #6 is OOS due to faulty power supply
Turnover:	Torus Cooling was running to support a HPCI run and can now be secured.
Critical Tasks:	SC-1.1 – While executing DEOP 300-1, before any critical area(s) reach their respective maximum safe operating values with an unisolable primary system discharging into the respective area(s), manually scram the reactor. SC-1.2 – While executing DEOP 300-1, when more than one critical area reaches their respective maximum safe operating values for the same parameter with an unisolable primary system discharging into the respective area(s), perform a complete RPV blowdown per DEOP 100 (Non-ATWS) -or- to above MARP (350 psig) per DEOP 400-5 (ATWS). RPV-2.2 – After RPV Blowdown using ADS valves is required per DEOP 100, DEOP 400-1 or 400-5 and less than the minimum number of available ERV's required for blowdown (MNSRED) are open, alternate blowdown methods are used until RPV pressure is less than the decay heat removal pressure (DHRP).

Event No.	Malf. No.	Event Type*		Event Description
1	None	N	BOP	(New) LPCI – Secure Torus Cooling
2	RDPPATRP	C, TS	ATC / CRS	(Pre) CRD - CRD Pump Trip
3a	SER1633 E230	C	BOP	(New) AUX POWER - Main Power Transformer High Temperature
3b		R	ATC	REACTIVITY MOVE - Lowering power to unload MPT
4	NII12POT NIA2POT B12	I, MC, TS	ATC / CRS	(New) APRM – APRM Fails upscale with no half scram and one APRM already out
5	T50 T52	C, MC	BOP	(Pre) GENERATOR - Stator Water Cooling Pump Trip with failure of Standby to start
6	HPRMBRKP HPGP4RLY	M	CREW	(New) MANUAL SCRAM - Unisolable steam leak in HPCI Room
7	Supplemental CAEP	M	CREW	(New) EMERGENCY DEPRESSURIZE – On 2 Areas Above Max Safe Radiation Levels Due To HPCI Steam Line Leak into the HPCI Room
8	ADS3BBN	C	BOP	(New) MAIN STEAM – Failure of ERV to open during Emergency Depressurization

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Tech Spec, (MC)Manual Control

(New) – Event not used on previous 2 NRC Exams, (Pre) – Event used on previous 2 NRC Exams

Scenario Objective:
Evaluate the Team's ability to operate the plant with a HPCI leak and subsequent Emergency Depressurization.

Scenario Initial Conditions

1. Unit 2 is at ~80% power.
2. The following equipment is OOS:
   a. APRM #6
3. LCOs:
   a. None

Scenario Sequence

Event #	Description
1	**LPCI – Secure Torus Cooling** The BOP will secure Torus Cooling.
2	**CRD - CRD Pump Trip** The running CRD pump will trip on overcurrent. The ATC will start the standby CRD pump. The CRS will enter TRM 3.3.h Condition A for loss of flow to the RVWLIS backfill lines.
3	**AUX POWER - Main Power Transformer High Temperature** The Main Power Transformer oil temperature rises causing the crew to determine they must lower load on the transformer per DOA 6100-01, MAIN TRANSFORMER TROUBLE. ATC will lower power with rods and flow per direction from the DOA.
4	**NI – APRM Fails upscale with no half scram and one APRM already out** APRM 5 will spuriously fail upscale and RPS A will fail to half scram. With 2 APRMs out in the same division the CRS will determine Tech Spec requirements.
5	**GENERATOR - Stator Water Cooling Pump Trip with failure of Standby to start** 2A SWC Pump trips and the standby pump 2B does not auto start. The BOP starts the 2B SWC Pump by placing the control switch to START.
6	**MANUAL SCRAM - Unisolable steam leak in HPCI Room** An unisolable leak will develop in the HPCI Room and the crew will scram the reactor.
7	**EMERGENCY DEPRESSURIZE – On 2 Areas Above Max Safe Radiation Levels Due to HPCI Steam Line Leak into the HPCI Room** The crew will track rising radiation levels and dispatch RP to take local surveys. When 2 areas exceed the Max Safe radiation levels the crew will Emergency Depressurize the reactor.
8	**MAIN STEAM – Failure of ERV to open during Emergency Depressurization** One of the ERVs will fail to open (malfunction loaded before scenario) and the crew will have to utilize Alternate Depressurization systems.

Event One – Secure Torus Cooling

The BOP will secure Torus Cooling IAW DOP 1500-02, TORUS WATER COOLING MODE OF LOW PRESSURE COOLANT INJECTION SYSTEM.

Malfunctions required: 0

- None

Success Path:

- Torus Cooling is secured.

Event Two – CRD Pump Trip

2B CRD Pump will trip on overcurrent.

Malfunctions required: 1

- (CRD Pump overcurrent trip)

Success Path:

- Starts 2A CRD Pump.
- Determines Technical Specifications requirements.

Event Three – Main Power Transformer High Temperature

TR2 has a high oil temperature condition.

Malfunctions required: 1

- (TR 2 high oil temperature)

Success Path:

- Completes DOA 6100-01, MAIN TRANSFORMER TROUBLE.
- Begins load drop per DGP 03-01, POWER CHANGES.

Event Four – APRM Fails upscale

APRM Channel 5 fails upscale a failure of the half scram occurs. The crew will check Tech Specs and determine there is only one APRM available on B RPS and does not meet the required number and enters the Tech Spec.
Malfunctions required: 1

- (APRM Channel 5 Fails Upscale)

Success Path:

- Determines the required number of APRMs are not available and enter TS 3.3.1.1 Condition A.

Event Five – Stator Water Cooling Pump Trip

2A SWC Pump trips and the standby pump does not auto start.

Malfunctions Required: 1

- (2A SWC Pump trip)

Success Path:

- Starts standby SWC Pump

Event Six – Unisolable steam leak in HPCI Room

An unisolable HPCI steam line leak in the HPCI Room occurs and the crew will manually scram the reactor.

Malfunctions required: 1

- (Unisolable HPCI steam line leak in the HPCI Room)

Success Path:

- Performs DGP 02-03, REACTOR SCRAM.
- Performs DEOP 0100, RPV CONTROL
- Performs DEOP 0300-01, SECONDARY CONTAINMENT CONTROL.

Event Seven – Emergency Depressurization due to radiation levels in Reactor Building

Emergency Depressurization is required when it is determined that 2 areas exceed their Max Safe radiation levels

Malfunctions Required: 0

- None

Success Path:

- Performs Blowdown Leg of DEOP 100

Event Eight – Failure of ERV to open

During Emergency Depressurization it is discovered that 1 of the ERVs did not open. Crew will have to utilize Alternate Depressurization methods.

Malfunctions Required: 1

- (Mechanically bound ERV)

Success Path:

Utilize Alternate Depressurization methods IAW DEOP 0500-07, ALTERNATE EMERGENCY DEPRESSURIZATION SYSTEMS

PRE-SCENARIO ACTIVITIES

1. If applicable, conduct pre-scenario activities in accordance with TQ-AA-155-J040, SIMULATOR EXAMINATION BRIEFING.
   a. Direct the crew to perform their briefs prior to entering the simulator.
   b. Provide the team a marked up copy of DOP 1500-02, TORUS WATER COOLING MODE OF LOW PRESSURE COOLANT INJECTION SYSTEM, with the prerequisites signed off.
   c. Provide the team a clean copy of DOP 1500-07, LPCI-CORE SPRAY OPERATION FOR ECCS SUCTION STRAINER INSPECTION
2. Simulator Setup (the following steps can be done in any logical order)
   a. Initialize simulator in an ~80% power IC. (IC **166** used for validation, sequence 2.S.0.0 key 55A8; Password is **iltnrc22**)
   b. Cut in/out Cond Demins as needed, to maintain DP within limits.
   c. Ensure running Condensate pump amps within limits.
   d. Ensure CRD parameters are normal, and CRD Drive Pressure is 250 to 280 psid.
3. Verify the following simulator conditions:
   a. Verify Reactor Power ~80%, adjust rods or Recirc as appropriate.
   b. Max Torus Cooling is established IAW DOP 1500-02
   c. Ensure 2 RFPs and 3 Condensate/Condensate Booster Pumps are running only, the secured pump is in STBY.
   d. Ensure 2B CRD pump is running.
4. Run **Pump_Sumps.cae**

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

5. Run the initial setup CAEP file: **22-1 (2023-301) ILT-N-3.cae**
6. Place the following equipment out of service:
   a. APRM 6
7. Load **ILT 22-1 (2023-301) ILT-N-3.uvl** into SimView.
8. Complete the Simulator Setup Checklist.
9. Ensure this setup is peer checked.

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

- √ Critical Tasks
- ■ Required Actions
- ○ Optional Actions

Event One – Secure Torus Cooling

Trigger	Position	Crew Actions or Behavior
28		**SIMULATOR OPERATOR ROLE PLAY:** If requested to set gains to 1, (wait 3 min) activate **TRIGGER 28**, then report "gains set to 1". (This trigger can be triggered OFF, then back ON to adjust gains more than once). **SIMULATOR OPERATOR ROLE PLAY:** U2 EO is on station in the East Corner Room Aux EO is on station near Busses 23-1 and 24-1 If asked about Keepfill, report "Keepfill pressure is normal." If contacted U2 EO to verify area clear prior to securing LPCI Pumps, report: "Everyone is clear of the __ LPCI Pump." When directed to verify Charging Motor Switch and springs charged, wait 1 minute and then report: "The Charging Motor Switch is on and the springs are charged for all of the LPCI Pumps." If contacted U2 EO to verify area clear prior to securing CCSW Pumps, report: "Everyone is clear of the __ CCSW Pump." When directed to verify Charging Motor Switch and springs charged, wait 1 minute and then report: "The Charging Motor Switch is on and the springs are charged for all of the CCSW Pumps."
	CRS	❑ Directs BOP to secure Torus Cooling IAW DOP 1500-02, TORUS WATER COOLING MODE OF LOW PRESSURE COOLANT INJECTION SYSTEM.
	BOP	■ Secures Torus Cooling IAW DOP 1500-02: • Closes MO 2-1501-38A, TORUS CLG/TEST, AND verifies MO 2- 1501-13A, MIN FLOW VLV, opens • Closes MO 2-1501-20A, TORUS CLG/TEST • Closes MO 2-1501-38B, TORUS CLG/TEST, AND verifies MO 2- 1501-13B, MIN FLOW VLV, opens • Closes MO 2-1501-20B, TORUS CLG/TEST • Stop operating 2A, B, C, D LPCI pumps (1) Open MO 2(3)-1501-11A, HX BYPASS VLV (2) Open MO 2(3)-1501-11B, HX BYPASS VLV • Directs EO to verify CHARGING MOTOR SWITCH on AND springs charged at applicable LPCI Pump breakers: ❖ BUS 23-1 CUB 11, 2-1502-A, 2A LPCI PUMP ❖ BUS 23-1 CUB 5, 2-1502-B, 2B LPCI PUMP ❖ BUS 24-1 CUB 6, 2-1502-C, 2C LPCI PUMP ❖ BUS 24-1 CUB 8, 2-1502-D, 2D LPCI PUMP

Event One – Secure Torus Cooling

Trigger	Position	Crew Actions or Behavior
	BOP	■ Secures CCSW IAW DOP 1500-07, Attachment B • Per turnover Chemical Injection has been secured • Stop operating 2A, B, C, D CCSW pumps • Directs EO to verify CHARGING MOTOR SWITCH on AND springs charged at applicable CCSW Pump breakers: ❖ BUS 23 CUB 7, 2-1501-44A, 2A CCSW PUMP ❖ BUS 23 CUB 5, 2-1501-44B, 2B CCSW PUMP ❖ BUS 24 CUB 3, 2-1501-44C, 2C CCSW PUMP ❖ BUS 24 CUB 1, 2-1501-44D, 2D CCSW PUMP
	ATC	■ Monitors panels and assists as directed.

Event 1 Completion Criteria:

- **Torus Cooling is secured**,

  -- AND/OR --

At the discretion of the Lead Examiner.

Event Two – CRD Pump Trip

Trigger	Position	Crew Actions or Behavior
1		**SIMULATOR OPERATOR:** At the discretion of the Floor Instructor / Lead Evaluator, activate **TRIGGER 1** to cause a trip of 2B CRD Pump on overcurrent. **ROLE PLAY:** EO to check breaker at Bus 24, wait 2 min, and report the following: "The breaker for 2B CRD Pump is tripped open with an overcurrent flag up." EO to check 2B CRD pump, wait 2 min, and report the following: "2B CRD Pump is at rest and the motor is hot to the touch." EO to check 2A CRD pump, wait 30 seconds, and report the following: "2A CRD Pump is operating properly."
	ATC	■ Announces and references the following DANs: • DAN 902-5 B-2, ROD DRIVE PP TRIP ○ DAN 902-5 F-2, ACCUMULATOR CHARGING WTR PRESS LO ■ Takes actions per DAN 902-5 B-2 and/or DOA 0300-01, CONTROL ROD DRIVE SYSTEM FAILURE: • Takes manual control of FIC 2-340-1 CRD FLOW CONTRL (if valve has gone open). • Starts 2A CRD pump. • Verifies CRD parameters return to previous values • May take FIC 2-340-1 CRD FLOW CONTRL to open/automatic, if closed previously. • Place the control switch for 2B CRD pump in PTL per DOA 6500-10, 4KV CIRCUIT BREAKER TRIP
	CRS	■ Directs entry into DOA 0300-01 and DOA 6500-10 ❑ Establishes contingency actions if 2nd CRD pump fails ❑ Contacts outside organizations for assistance ■ Enters TRM 3.3.h, REACTOR VESSEL WATER LEVEL INSTRUMENTATION SYSTEM (RVWLIS) BACKFILL SYSTEM, due to short loss of RVWLIS supply. Restore inoperable RVWLIS Backfill System lines to OPERABLE status within 7 days.
	BOP	❑ Monitors panels and assists as directed.

Event 2 Completion Criteria:

- **2A CRD Pump started and DOA actions complete AND,**
- **TRM has been referenced and actions determined,**

-- AND/OR--

At the discretion of the Floor Instructor/Lead Evaluator.

Event Three – Main Power Transformer High Temperature / Lower Rx Power

Trigger	Position	Crew Actions or Behavior
5		**SIMULATOR OPERATOR:** At the direction of the Lead Evaluator, insert **TRIGGER 5** to cause TR2 trouble alarm and Process Computer indication of 90°C ramping up slowly to 114°C (viewable on trend for computer point E230). **ROLE PLAY:** EO sent to investigate TR2 high oil temperature, wait 3 min. then report: • "TR2 local thermometer indicates (Use pp_e230_2v) °C and rising slowly. Due to high winds, a lot of debris is covering the TR 2 cooler housings. They are still running." • If asked, "all other transformers coolers are not as badly covered as TR 2". • If asked, "TR 2 winding temperature is (Use pp_e230_2v + 10) °C". • If asked, "Outside temperature is 80 °F" • Wait about 5 min. and report: "local thermometer indicates (Use pp_e230_2v) °C and is slowly rising." NSO checks OIS to verify Recirc runback logic is NOT armed: Cue NSO that Recirc runback logic is NOT armed. If TSO is contacted and asked if Dresden can lower VARS, report: "Maintain current VAR loading at Dresden Station 12."
6		**SIMULATOR OPERATOR / ROLE PLAY:** If the EO is directed to open the TR2 high oil temperature cutout switch, wait 3 min., insert **TRIGGER 6**, and then report, "TR2 high oil temperature cutout switch is open." QNE: If contacted, inform the Team you will come to the Control Room.
7		**SIMULATOR OPERATOR:** Verify **TRIGGER 7** automatically activates when generator load is <750 MWe. This causes Process Computer indication for TR2 oil temperature to rise at a slower rate.
8		Verify **TRIGGER 8** automatically activates when generator load is <700 MWe. This causes Process Computer indication for TR2 oil temperature to rise at a slower rate.
9		Verify **TRIGGER 9** automatically activates when generator load is <650 MWe. This causes Process Computer indication for TR2 oil temperature to begin dropping to 105.0°C over 90 min.
10		Verify **TRIGGER 10** automatically activates when generator load is <600 MWe. This causes Process Computer indication for TR2 oil temperature to begin dropping to 85°C over 90 min.
	BOP	Announces Main TR2 Trouble alarm ❑ Reports TR2 high oil temperature ■ References DAN 902-8 C-11, MAIN TR2 TROUBLE ■ Enters DOA 6100-01, MAIN TRANSFORMER TROUBLE ❑ Secures BOP equipment per DGP 03-01, POWER CHANGES ❑ Determines TR 2 oil temperature using Process Computer point E230 ❑ Dispatches EO to investigate TR2 high oil temperature ❑ May direct HVO to open the cutout switch for TR2 high oil temperature
	ATC	❑ Refers to Sequence of Events Recorder

Event Three – Main Power Transformer High Temperature / Lower Rx Power

Trigger	Position	Crew Actions or Behavior
	ATC	Begins load drop per DGP 03-01 as directed: ■ IF FCL is >93%, THEN reduces power by 90 MWe of generator power OR 9% of APRM power by inserting control rods in reverse sequence (preferred) or CRAM rod insertion ■ Reduces Reactor power by decreasing core flow to ≥ 58 Mlbm/hr (58 to 62 Mlbm/hr) ❑ Reports that TR 2 temperature is dropping below the limit
	CRS	■ Announces entry into DOA 6100-01 ❑ Directs team actions ❑ Notifies TSO of TR 2 problem and load drop ❑ Notifies SM and WWM

Event 3 Completion Criteria:

- **Load drop in progress,**

  -- AND/OR --

At the discretion of the Lead Examiner.

Event Four – APRM 5 Fails Upscale

Trigger	Position	Crew Actions or Behavior
11		**SIMULATOR OPERATOR / ROLE PLAY:** At the discretion of the Lead Examiner, activate **TRIGGER 11**, which fails APRM 5 upscale.
	ATC	Responds to alarms: ❑ 902-5 A-6, APRM HI ❑ 902-5 B-4, OPRM TROUBLE/INOP ❑ 902-5 B-11, CHANNEL A/B NEUTRON MONITOR ❑ 902-5 C-3, ROD OUT BLOCK ❑ 902-5 D-13, CHANNEL 4-6 APRM HI-HI/INOP ❑ 902-5 D-15, CHANNEL B RX SCRAM Announces: ■ That APRM 5 has failed high ■ Failure of Div 2 Half Scram ■ When directed inserts Div 2 Half Scram
	CRS	❑ Notifies the SM and WWM ■ Directs ATC to insert 'B' Half Scram ■ References Technical Specifications and determines: • TS 3.3.1.1 Condition A - With APRM 5 failed and APRM 6 bypassed, there are not sufficient APRMs on B RPS channel. Required to place channel in trip within 12 hours. Condition met with the B Half Scram in. ○ TRM 3.3.a – Determines not applicable due to needing 4 of the 6 APRMS operable.

Event 4 Completion Criteria:

- **Appropriate Tech Specs referenced,**

  -- AND / OR --

  At the direction of the Lead Examiner.

Event Five – Stator Water Cooling Pump Trip

<table>
<tr><th>Trigger</th><th>Position</th><th>Crew Actions or Behavior</th></tr>
<tr><td>12

13</td><td></td><td>
<u>SIMULATOR OPERATOR:</u>
At the discretion of the Lead Examiner, activate TRIGGER 12, which trips 2A Stator Water Cooling Pump on overcurrent and 2B Stator Water Cooling Pump fails to auto start.
<u>ROLE PLAY:</u>
As the EO sent to acknowledge the stator cooling water trouble and/or the H2 Seal Oil & Alterrex Pnl Trouble alarm (wait 2 min), activate TRIGGER 13 and report: “I have acknowledged stator cooling water trouble and/or the H2 Seal Oil & Alterrex Pnl Trouble alarm. The alarms are cleared and were …”. (Use table below to determine report)
<table>
<tr><th>902-7 alarm received</th><th>Local alarm to report</th></tr>
<tr><td>902-7 C-10, STATOR CLG PANEL TROUBLE</td><td>Inlet Flow Low, &
Inlet Pressure Low</td></tr>
<tr><td>902-7 E-11, H2 SEAL OIL & ALTERREX PNL TROUBLE</td><td>Rectifier Coolant Flow Low.</td></tr>
<tr><td>902-7 C-3, TURB STATOR COOLANT RUNBACK</td><td>Turbine Runback</td></tr>
</table>
As the EO sent to check cause of 2A Stator Cooling Water Pump trip (wait 2 min), then report:
“2A Stator Cooling Water Pump breaker tripped open on overcurrent.”
As the EO sent to check cause of 2B Stator Cooling Water Pump (wait 2 min), then report:
“2B Stator Cooling Water Pump is operating properly and 2A Stator Cooling Water Pump is at rest and the motor is hot to the touch.”
</td></tr>
<tr><td></td><td>BOP</td><td>
Announces the following alarms:
■ DAN 902-7 B-10, STATOR CLG PP TRIP
■ DAN 902-7 C-10, STATOR CLG PANEL TROUBLE
❑ DAN 902-7 E-11, H2 SEAL OIL & ALTERREX PNL TROUBLE
❑ DAN 902-7 C-3, TURB STATOR COOLANT RUNBACK
❑ DAN 902-7 A-5, TURBINE CONTROL MAJOR TROUBLE
Performs appropriate actions per DOA 7400-01, FAILURE OF THE STATOR COOLANT SYSTEM:
■ Starts 2B Stator Cooling Water Pump (Immediate Action)
■ Sends EO to check breaker and 2A Stator Cooling Water Pump for cause of trip.
■ Performs DOP 6700-20, 480V CIRCUIT BREAKER TRIP.
• Places 2A Stator Cooling Water Pump control switch in PTL.
</td></tr>
<tr><td></td><td>CRS</td><td>
■ Enters and directs performance of DOA 7400-01
❑ Enters and directs performance of DOP 6700-20
</td></tr>
<tr><td></td><td>ATC</td><td>■ Monitors panels and assists as directed.</td></tr>
</table>

Event 5 Completion Criteria:

- **2B Stator Water Cooling Pump started AND,**
- **2A Stator Water Cooling Pump Control Switch in PTL,**

-- AND/OR--

At the direction of the Lead Examiner.

Event Six – Steam Leak In HPCI Room

Trigger	Position	Crew Actions or Behavior
14 **CAEP**		**Simulator Operator:** When Condensate and Feed is secured, or at the discretion of the Floor Instructor / Lead Evaluator, activate **TRIGGER 14,** this causes a HPCI Room steam line break. When **TRIGGER 14** is activated, immediately RUN CAEP file **ILT-N-3 Rad.cae**. **Role Play:** EO sent to HPCI: wait 2 min, then report "the HPCI room is filled with steam. I left the area". Several minutes after above report, report as one of the EOs sent to the Rx Bldg "there is steam coming from the West LPCI Corner Room stairway; I am leaving the area". EO to Panel 902-39 in AEER: wait 3 min, call on the phone and report "there is an acrid odor coming from the 902-39 panel, but there is no indication of a fire" **Role Play:** RP to take local RX Bldg radiation readings: Report "The highest reading is on the 1st floor near the west CRD accumulators. The reading is (provide the value from the W. CRD area as directed below)". For further reports provide EITHER: • The W. CRD ARM value; OR, • Once the W CRD area ARM is full upscale (100 mr/hr): 1000 mr/hr. **Note:** Use time compression if desired and report that radiation levels are >2500 mr/hr. **Floor Instructor:** After **TRIGGER 14** has been activated put XL3 paper on the XL3 printer and make update to crew.
	BOP	❑ Announces alarm 902-3 G-2, RX BLDG AREA HIGH TEMP. ❑ Checks back panel and determines HPCI Room temperatures are rising. Reports values to Unit Supervisor.
	ATC	■ √ Inserts manual scram when directed
	CRS	When RX BLDG AREA HIGH TEMP alarm is received for the HPCI area, enters DEOP 0300-01, SECONDARY CONTAINMENT CONTROL. ■ Directs operator to isolate the HPCI system ■ Determines steam leak cannot be isolated
	BOP	❑ When directed, attempts to close HPCI MO 2301-4 & 5 to isolate the HPCI system. Reports the valves will not close. May send operator to check its breaker
	CRS	Per DEOP 0300-01, before a Max Safe value is reached, and / or when RPV level drops below 8 inches, enters DEOP 0100, RPV CONTROL ■ √ Directs manual scram before any area exceeds Max Safe value ■ Directs injecting with CRD and SBLC
	BOP	❑ Announces alarm 902-3 A-1, RX BLDG RAD HI ❑ Obtains DEOP related ARM readings and reports values to Unit Supervisor

Event Six – Steam Leak In HPCI Room

Trigger	Position	Crew Actions or Behavior
	CRS	❑ Reenters DEOP 0300-01 due to Vent Rad above 4 mr/hr. ❑ Verifies Reactor Building Vent Isolation and SBGT start. ❑ May enter DGA-16, COOLANT HIGH ACTIVITY/FUEL ELEMENT FAILURE and directs: ■ Within 40 minutes, isolate Main Control Room Ventilation AND start the air filtration unit per DOA 5750-04, SMOKE, NOXIOUS FUMES OR AIRBORNE CONTAMINANTS IN THE CONTROL ROOM. ❑ Reenters DEOP 0300-01 due to Rx Bldg Radiation above Max Normal. (HPCI Room >150 mr/hr)
	ATC / BOP	❑ Performs DGA 16 as directed: • Isolates Main Control Room Ventilation AND starts the air filtration unit per DOA 5750-04 ❑ Announces Drywell, Main Steam Line, SPING Radiation alarms.

Event 6 Completion Criteria:

- **Reactor has been scrammed,**

  -- AND/OR --

  At the direction of the Lead Examiner.

Event Seven & Eight – Secondary Containment High Radiation / Emergency Depressurization / ERV failure		
Trigger	**Position**	**Crew Actions or Behavior**
		Role Play: RP to take local RX Bldg radiation readings: Report "The highest reading is on the 1st floor near the west CRD accumulators. The reading is (provide the value from the W. CRD area as directed below)". For further reports provide EITHER: • The W. CRD ARM value; OR, • Once the W CRD area ARM is full upscale (100 mr/hr): 1000 mr/hr. **Note:** Use time compression if desired and report that radiation levels are >2500 mr/hr. **Floor Instructor / Lead Evaluator:** When directed by the Floor Instructor/Lead Evaluator once the W. CRD area ARM is full scale, provide the Communicator with field radiation levels. "W.CRD area radiation levels are 2600 mr/hr the Reactor Building has been evacuated" This will provide the crew a second area above Max Safe.
	CRS	❑ May anticipate Emergency Depressurization by directing opening the Turbine Bypass valves and initiating the IC.
	ATC / BOP	❑ If directed, anticipates Emergency Depressurization by opening the Turbine Bypass valves and initiating the IC.
	BOP	√ Performs Blowdown Leg of DEOP 0100, **(SC-1.2)** as directed: ❑ Prevents Core Spray and LPCI injection not needed for core cooling (N/A if DW <2 psig) ■ Initiates IC to maximum flow ■ Verifies Torus level above 6' ■ Opens all available ADSVs ■ Reports 2B ERV failed to open ■ √ As directed utilizes Alternate Depressurization Systems per DEOP 0500-07, ALTERNATE EMERGENCY DEPRESSURIZATION SYSTEMS (examples are listed below) (**RPV-2.2**): • Main Turbine Bypass Valves • HPCI • RWCU (Recirculation or Blowdown mode)

Event Seven & Eight – Secondary Containment High Radiation / Emergency Depressurization / ERV failure

Trigger	Position	Crew Actions or Behavior
	CRS	√ When two Rx Bldg Radiation levels exceed Max Safe (>2500 mr/hr), enters Blowdown Leg of DOEP 0100, RPV CONTROL, **(SC-1.2)** and performs / directs: ❑ Preventing Core Spray and LPCI injection not needed for core cooling. (N/A if DW <2 psig) ■ Initiating IC to maximum flow ■ Verifying Torus level above 6' ■ Opening all ADSVs ■ √ Directs using Alternate Depressurization Systems per DEOP 0500-07 (examples are listed below) (**RPV-2.2**): • Main Turbine Bypass Valves • HPCI • RWCU (Recirculation or Blowdown mode)

Event 7 & 8 / Scenario Completion Criteria:

- **Emergency Depressurization in progress,**
- **Alternate Depressurization system is being utilized,**

-- AND/OR --

At the direction of the Lead Examiner.

References

PROCEDURE	TITLE
DAN 902-3 A-1	Rx Bldg Rad Hi
DAN 902-3 G-2	Rx Bldg Area High Temp
DAN 902-5 A-6	APRM Hi
DAN 902-5 B-2	Rod Drive Pp Trip
DAN 902-5 B-4	OPRM Trouble/Inop
DAN 902-5 B-11	Channel A/B Neutron Monitor
DAN 902-5 C-3	Rod Out Block
DAN 902-5 D-13	Channel 4-6 APRM HI-Hi/Inop
DAN 902-5 D-15	Channel B RX Scram
DAN 902-5 F-2	Accumulator Charging Wtr Press Lo
DAN 902-3 D-7	2A/B Core Spray Hdr Press Lo
DAN 902-8 C-11	Main TR2 Trouble
DAN 902-7 B-10	Stator Clg Pp Trip
DAN 902-7 C-10	Stator Clg Panel Trouble
DAN 902-7 E-11	H2 Seal Oil & Alterrex Pnl Trouble
DAN 902-7 C-3	Turb Stator Coolant Runback
DAN 902-7 A-5	Turbine Control Major Trouble
DEOP 0100	RPV Control
DEOP 0200-01	Primary Containment Control
DEOP 0300-01	Secondary Containment Control
DEOP 0500-07	Alternate Emergency Depressurization Systems
DGA-16	Coolant High Activity/Fuel Element Failure
DGP 02-03	Reactor Scram
DGP 03-01	Power Changes
DOA 0300-01	Control Rod Drive System Failure
DOA 6100-01	Main Transformer Trouble
DOA 5750-04	Smoke, Noxious Fumes or Airborne Contaminants in the Control Room
DOA 6500-10	4KV Circuit Breaker Trip
DOA 7400-01	Failure of the Stator Coolant System
DOP 1500-02	Torus Water Cooling Mode of Low Pressure Coolant Injection System
DOP 1500-07	LPCI/CORE SPRAY OPERATION FOR ECCS SUCTION STRAINER INSPECTION
DOP 6700-20	480V Circuit Breaker Trip

PROCEDURE	TITLE
OP-DR-103-102-1002	Strategies for Successful Transient Mitigation
TRM 3.3.a	Control Rod Block Instrumentation
TRM 3.3.h	Reactor Vessel Water Level Instrumentation System (RVWLIS) Backfill System
TS 3.3.1.1	Reactor Protection System (RPS) Instrumentation
TS 3.3.6.2	Secondary Containment Isolation Instrumentation
TS 3.5.1	ECCS—Operating
TS 3.5.3	IC System
TS 3.6.4.1	Secondary Containment
TS 3.6.4.2	Secondary Containment Isolation Valves (SCIVs)

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

CAEP Files

```
# CAEP file for ILT-N-3
# ILT 22-1 (2023-301) NRC Exam
# Written by DSS
# 11/22


#### INITIAL CONDITIONS ####
# Prevents the half scram during the APRM event
imf b12

# Prevents 2B Stator Water Cooling Pump from auto starting (Event 5)
imf t52

# Lifts Leads to HPCI Isolation Relays (Event 6)
irf hpgp4rly lifted

# Prevents HPCI 2-2301-5 valve from closing
ior hpdcl5 off
ior hpdop5 open

# Binds the 2B ERV closed. (Event 8)
imf ads3bbn 0.0|2


#### Event Triggers ####
# Event Trigger 1 trips the 2B CRD pump (Event 2)
trgset 1 "0"|2
imf rdppbtrp (1 5)|2

# Event Trigger 5 actuates TR2 trouble alarm due to high oil temperature and
# provides Process Computer TR 2 oil temp of 90.0 deg. and slowly rising. (Event 3)
trgset 5 "0"|6
imf ser1633 (5) on|6
imf e230 (5) 114.0 20:00 90.0|8

# Event Trigger 6 deletes TR2 trouble alarm by simulating opening the cutout switch. (Event 3)
trgset 6 "0"|8
trg 6 "dmf ser1633"|8

# Event Trigger 7 Activates when load is dropped. (MWe < 750.0) (Event 3)
# Ramps Process Computer TR 2 oil temp over longer time
# to make its increase to appear to slow down.
trgset 7 "et_array(5) .and. (ppg228 .lt. 750.0)"|8
trg 7 "mmf e230 114.0 40:00"|10

# Event Trigger 8 Activates when load is dropped. (MWe < 700.0) (Event 3)
# Ramps Process Computer TR 2 oil temp over longer time
# to make its increase to appear to slow down more.
trgset 8 "et_array(7) .and. (ppg228 .lt. 700.0)"|10
trg 8 "mmf e230 107.0 60:00"|10

# Event Trigger 9 Activates when load is dropped. (MWe < 650.0) (Event 3)
# Ramps Process Computer TR 2 oil temp down to 105.0 deg.
trgset 9 "et_array(8) .and. (ppg228 .lt. 650.0)"|10
trg 9 "mmf e230 105.0 90:00"|12

# Event Trigger 10 Activates when load is dropped. (MWe < 600.0) (Event 3)
trgset 10 "et_array(9) .and. (ppg228 .lt. 600.0)"|12
trg 10 "mmf e230 85.0 90:00"|12
```

```
# Event Trigger 11 fails APRM #5 upscale (Event 4)
trgset 11 "0"|12
imf nia5pot (11) 125 60 60|14

# Event Trigger 12 trips 2A Stator Water Cooling Pump (Event 5)
trgset 12 "0"|14
imf t50 (12)|14

# Event Trigger 13 acknowledges Trouble Alarms (Event 5)
trgset 13 "0"|14
irf t22 (13) ack|16
irf t81 (13) true|16

# Event Trigger 14 Initiates a HPCI Room steam line break (Event 6)
trgset 14 "0"|16
imf hprmbrkp (14) 100.0 15:00 5.0|18
imf hp4vlbn (14) 90.0|18

# Event Trigger 15 clears the failure to scram during the APRM event to allow putting in the B Half Scram
trgset 15 "hwrpd301b"|18
trg 15 "dmf b12"|18

# Event Trigger 28 sets gain for all 6 APRMs.
trgset 28 "0"|18
trg 28 "irf niagainf true"|18

#### END ####
```

```
# ILT-N-3 Rad.cae
# For ILT Class 22-1 NRC Exam
# Written by DSS
# Rev 00
# Date 11/22


#### This CAEP ramps Rad level for a HPCI room unisolable leak ####

# Starts a ramp of the HPCI CUBICAL ARM.
set RMARMFAILF(2) = true
ramp RMARMFAILD(2) 5.0 4000.0 8:00

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

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

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

#### END ####
```

```
# ILT-N-3 Clear Rad.cae
# For ILT Class 22-1 NRC Exam
# Written by DSS
# Rev 00
# Date 11/22

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

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

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

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

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

#### END ####
```

Unit 2 Risk: GREEN	Unit 3 Risk: GREEN
Unit 2 is in MODE 1 at 100% power, Leading Thermal Limit: MFLCPR @ 0.881 Action limit: 0.980 Equipment Unavailable: APRM 6 Protected Equipment: 2A FPC	Unit 3 is in MODE 1 at 100% power. Leading Thermal Limit: MFLCPR @ 0.883 Action Limit: 0.980 Equipment Unavailable: None Protected Equipment: 3A FPC

Current Action Statements

None	LCO Started:	N/A	LCO Expires:	N/A

Cause:

Unit 2 Plant Status

Today	Unit 2 Activities **** Shift 1 Activities **** **** Shift 2 Activities **** ■ Secure Torus Cooling **** Shift 3 Activities ****

Turnover:

- Torus Cooling was running to support a HPCI run and can now be secured.
  - DOP 1500-07 Chemical Injection has been secured.
- APRM 6 is OOS due to power supply issue, waiting on replacement from Quad Cities.

XL3 Alarm

****

DEVICE 81-12 IN ALARM **AEER ABOVE 902-39**

****

Dresden Generating Station

ILT-N-4

SWAP EHC PUMPS
MR LEVEL INSTRUMENT FAILS WITH PARTIAL HALF SCRAM
ISOLABLE LPCI LEAK
LOSS OF HYDROGEN SEAL OIL
RECIRC PUMP SPEED CONTROLLER FAILURE
NR LEVEL REFERENCE LEG LEAK / MANUAL SCRAM
LOSS OF LEVEL INDICATION – RPV FLOODING

Rev. 00

11/22

Developed By: _____ _____
Exam Author Date

Approved By: _____ _____
Facility Representative Date

Scenario Outline

Facility:	Dresden	Scenario #:	ILT-N-4
Scenario Source:	Site developed	Op. Test #:	2023-301
Examiners:		Applicants/ Operators:	
Initial Conditions:	Unit 2 in MODE 1 80% power.		
Turnover:	Swap EHC pumps.		
Critical Tasks:	RPV-4.1 – When RPV water level cannot be determined by multiple direct or indirect indications as defined by DEOP 0010-10, enter DEOP 400-1, RPV Flooding.		
	RPV-4.2 – Following blowdown per DEOP 400-1 during non-ATWS RPV Flooding, maximize injection and do not divert available RPV injection flow paths until the RPV is flooded to the Main Steam Lines.		

Event No.	Malf. No.	Event Type*		Event Description
1	None	N	BOP	(New) EHC - Swap EHC pumps
2	B15 NVM100BP	I, TS, MC	ATC / CRS	(New) NBI - MR Level Instrument Fails with Partial Half Scram
3	None	C, TS	BOP/ CRS	(New) LPCI - Isolable leak on 2A LPCI Pump Suction Piping, spraying onto the 2B LPCI Pump Motor, rendering both LPCI pumps inoperable
4a	K50 K07	C, MC	BOP	(New) - TURBINE AUX - Loss Of Hydrogen Seal Oil, With Failure Of ESOP To Start
4b		R	ATC	(New) - Lower Reactor Power to meet turbine loading requirements with loss of seal oil
5	RR02A	C, TS	ATC	(Pre) RECIRC - Recirc Pump Speed Controller Failure
6	NVMNRALP	M	CREW	(New) NBI - Narrow Range Level Reference Leg Leak, Slow rise in DW Pressure, Manual Scram
7	NVMMRALP NVML29AP NVM106AP/BP NVML112P	M	CREW	(Pre) Loss of Level Indication – RPV Flooding

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Tech Spec, (MC)Manual Control

(New) – Event not used on previous 2 NRC Exams, (Pre) – Event used on previous 2 NRC Exams

Scenario Objective:
Evaluate the Team's ability to operate the plant with a drywell leak and loss of RPV level indication.

Scenario Initial Conditions

1. Unit 2 is at ~80% power.
2. The following equipment is OOS:
   a. None
3. LCOs:
   a. None

Scenario Sequence

Event #	Description
1	**EHC – Swap EHC pumps** The BOP will start the 2B EHC Pump and secure the 2A EHC Pump.
2	**NBI - MR Level Instrument Fails with Partial Half Scram** B Medium Range Level Instrument fails low and a partial half scram occurs. The ATC manually inserts a B RPS channel half scram and the CRS will reference Tech Specs.
3	**LPCI - Isolable leak on 2A LPCI Pump spraying on 2B LPCI Pump Motor** EO will call while on rounds reporting the leak from the 2A LPCI Pump suction piping. The BOP will close the suction valve for the 2A LPCI pump and take the 2A & 2B LPCI Pumps to PTL. The CRS will reference Tech Specs for the inoperability of the 2A & 2B LPCI Pumps.
4	**TURBINE AUX - Loss of All Turbine Seal Oil, with Failure of ESOP To Start:** The BOP will start the ESOP upon the loss of the Main Seal Oil Pump. In a minute the ESOP will trip as well resulting in a loss of all Turbine Seal Oil. Based on DOP 6400-08, 345 KV VOLTAGE CONTROL, the ATC will lower MWe to <650 MWe with Recirc.
5	**RECIRC - Recirc Pump Speed Controller Failure** 2A Recirc ASD cell fault occurs causing 2A Recirc Pump Speed to lower by 6%. The ATC will lower 2B Recirc speed to match 2A Recirc speed. The CRS will enter TS 3.4.1 Condition B for the speed mismatch.
6	**Narrow Range Level Reference Leg Leak, Slow rise in DW Pressure, Manual Scram** 2B NR Level begins to fail high and Drywell pressure starts to increase due to a leak in the reference leg of the 2B NR Level Instrument. The ATC will perform a manual scram when Drywell pressure approaches 1.5 psig.
7	**Loss of Level Indication – RPV Flooding** A loss of RPV level indication occurs due to multiple transmitter failures. The CRS will enter and direct actions from DEOP 0400-01, RPV FLOODING.

Event One – Swap EHC Pumps

The BOP will start 2B EHC Pump and secure 2A EHC Pump IAW DOP 5650-01, ELECTRO HYDRAULIC CONTROL SYSTEM OPERATION.

Malfunctions required: 0

- None

Success Path:

- Torus Cooling is secured.

Event Three – MR Level Inst, Fails with 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 Three – Isolable Leak on 2A LPCI Pump suction

A leak develops on the 2A LPCI Pump suction and it sprays on both of the 2A and 2B LPCI Pump motors.

Malfunctions required: 0

- None

Success Path:

- Performs DOA 0040-02.
- Declare LPCI Pumps inoperable.
- Determines Technical Specifications requirements.

Event Four – Loss of Hydrogen Seal Oil

Failure of both hydrogen seal oil pumps results in loss of generator hydrogen.

Malfunctions required: 3

- (Trip of Main Hydrogen Seal Oil Pump)
- (Failure of ESOP to auto start)
- (Trip of ESOP)

Success Path:

- Performs DOA 5350-01, LOSS OF SEAL OIL PUMPS.
- Reduces generator load per DGP 03-01, POWER CHANGES.

Event Five – Recirc Pump Speed Controller Failure

2A Recirc ASD cell fault causes 2A Recirc Pump speed to lower by 6%.

Malfunctions required: 1

- (2A ASD cell fault)

Success Path:

- Lowers 2B Recirc Pump speed to match 2a Recirc Pump speed.
- Determines Technical Specifications requirements.

Event Six – NR Level Reference Leg Leak, Rise in DW Press - Scram

A leak in the 2B NR Level Reference Leg causes drywell pressure to rise.

Malfunctions required: 2

- (2B NR Level Reference Leg Leak)
- (Leak in the Drywell)

Success Path:

- Scrams the reactor when drywell pressure approaches 1.5 psig.

Event Seven – Loss of Level Indication - RPV Flooding

A loss of RPV Level Indication occurs due to multiple transmitter failures.

Malfunctions required: 1

- (Loss of RPV Level Indication)

Success Path:

- Performs DEOP 0400-01, RPV FLOODING.

PRE-SCENARIO ACTIVITIES

1. If applicable, conduct pre-scenario activities in accordance with TQ-AA-155-J040, SIMULATOR EXAMINATION BRIEFING.
   a. Direct the crew to perform their briefs prior to entering the simulator.
   b. Provide the team a marked up copy of DOP 5650-01, ELECTRO HYDRAULIC CONTROL SYSTEM OPERATION, with the prerequisites signed off.
2. Simulator Setup (the following steps can be done in any logical order)
   a. Initialize simulator in an ~78% power IC. (IC **167** used for validation, sequence 2.S.0.0 key 55A8 Password is **iltnrc22**)
   b. Cut in/out Cond Demins as needed, to maintain DP within limits.
   c. Ensure running Condensate pump amps within limits.
   d. Ensure CRD parameters are normal, and CRD Drive Pressure is 250 to 280 psid.
3. Verify the following simulator conditions:
   a. Verify Reactor Power ~78%, adjust rods or Recirc as appropriate.
   b. Ensure 3 C/CB pumps and 2 RFPs are running, the secured ones in STBY.
   c. Ensure 2A EHC pump is running.
4. Run **Pump_Sumps.cae**

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

5. Run the initial setup CAEP file: **22-1 (2023-301) ILT-N-4.cae**
6. Place the following equipment out of service:
   a. None
7. Complete the Simulator Setup Checklist.
8. Ensure this setup is peer checked.

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

- √ Critical Tasks
- ■ Required Actions
- ○ Optional Actions

Event One – Swap EHC Pumps

Trigger	Position	Crew Actions or Behavior
28		**SIMULATOR OPERATOR ROLE PLAY:** If requested to set gains to 1, (wait 3 min) activate **TRIGGER 28**, then report "gains set to 1". (This trigger can be triggered OFF, then back ON to adjust gains more than once). **SIMULATOR OPERATOR ROLE PLAY:** U2 EO is on station by the EHC Pumps If EO asked to verify area clear prior to starting 2B EHC Pump, report: "Everyone is clear of the 2B EHC Pump." When EO is directed to verify 2B EHC Pump discharge pressure is normal, report: "The discharge pressure for 2B EHC Pump is normal." If EO asked to verify area clear prior to securing 2A EHC Pump, report: "Everyone is clear of the 2A EHC Pump."
	CRS	■ Directs BOP to start the 2B EHC Pump and secure the 2A EHC Pump IAW DOP 5650-01, ELECTRO HYDRAULIC CONTROL SYSTEM OPERATION.
	BOP	■ Swaps EHC Pumps IAW DOP 5650-01: ○ Contacts U2 EO to verify area clear prior to starting 2BEHC Pump • Starts 2B EHC Pump from the 902-7 panel ❖ Verifies NORMAL PRESS light is lit • Contacts U2 EO to verify discharge pressure is normal for the 2B EHC Pump ○ Contacts U2 EO to verify area clear prior to starting 2A EHC Pump • Secures the 2A EHC from the 902-7 panel • Verifies EHC HMIs 2-5650-EPT-6 1(2)(3) MAIN TURBINE EHC MANIFOLD PRESSURE, indicates normal EHC System pressure (1550 to 1650 psig)
	ATC	■ Monitors panels and assists as directed.

Event 1 Completion Criteria:

- 2B EHC Pump is running and 2A EHC Pump is secured,

-- AND/OR --

At the discretion of the Lead Examiner.

Event Two – 2B Med Range Level Instrument Fails Low with a Partial Half Scram

Trigger	Position	Crew Actions or Behavior
1		**Simulator Operator / Role Play:** At the discretion of the Lead Examiner, activate **TRIGGER 1**, which fails 2B Medium Range Level Instrument downscale. The B RPS partial half scram was inserted during initial setup.
	ATC	❑ Notices and reports the B Medium Range level instrument trending down. Announces: ■ The partial half scram condition on the B RPS channel. ❑ Scram Solenoid Group lights B2 and B3 did NOT extinguish. ■ Refers to DOA 0500-02, PARTIAL ½ OR FULL SCRAM ACTUATION. ■ Depresses RPS Channel B Manual Scram pushbutton.
		Simulator Operator / Role Play: As the EO sent to the ATS Panel (wait 2 min AND the 902-4 G-20, ANALOG TRIP SYS DIV 1 2202-73A TROUBLE, 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." 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." If requested to reset gross fail light then report back (after 1 minute): attempt was made and the gross fail light is still lit. If asked: "The Yarway LI-2-263-59A on the 2202-5 rack is indicating 30 inches and steady."
	ATC / BOP	Refers to DAN 902-4 G-20, ANALOG TRIP SYS DIV 1 2202-73A TROUBLE: ■ Dispatches an operator to inspect the Div 1 ATS panel 2202-73A ❑ Notifies the Unit Supervisor of inspection results.
	CRS	Announces entry into DOA 0500-02 and performs/directs: ❑ Directs NSO to insert manual scram on RPS Channel B. ❑ May refer to DOP 0010-10, UNIT 2(3) TECHNICAL SPECIFICATION INSTRUMENTATION OPERABILITY MANUAL. ❑ Notifies the SM and WWM ■ References Technical Specifications and determines: • TS 3.3.1.1, REACTOR PROTECTION SYSTEM (RPS) INSTRUMENTATION ❖ Condition A (for function 4). Determines that RPS Channel B is INOP and that RPS Channel B must be placed in Trip within 12 hours. ❖ Condition C (for function 4). Determines need to restore RPS trip capability within 1 hour and directs B ½ scram to be put in manually. • TS 3.3.3.1, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION, Condition A1 (for Function 2.b). Restore required channel to OPERABLE status within 30 days. • TS 3.3.6.1, PRIMARY CONTAINMENT ISOLATION INSTRUMENTATION. No action required Condition A1 (for Functions 1.a, 2.a, 5.b and 6.b). Place channel in trip within 12 hours 3.3.6.2, SECONDARY CONTAINMENT ISOLATION INSTRUMENTATION. No action required Condition A1 (for Function 1). Place channel in trip within 12 hours

Event 2 Completion Criteria:

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

-- AND / OR --

At the discretion of the Lead Examiner.

Event Three – Isolable Leak on 2A LPCI Pump suction

Trigger	Position	Crew Actions or Behavior
		SIMULATOR OPERATOR ROLE PLAY: After the team has performed enough of the load drop and at the discretion of the evaluators, make the following communication: "This is the U2 EO and I'm down in the East Corner Room. The 2A LPCI Pump has a small leak on the suction line pipe near the pump and it is spraying on both the 2A and 2B LPCI Pump motors. The sumps are keeping up with the leak. The 2A Core Spray Pump is not being wetted." If EO is asked if the leak can be isolated, report: "If the suction valve, 2-1501-5A, for the 2A LPCI Pump is closed the leak should stop." If the Field Supervisor is sent to the East Corner Room, report: "There is a small through-wall leak coming from the suction piping of the 2A LPCI Pump and I agree with the 2 EO's assessment, if the suction valve for the 2A LPCI Pump is closed the leak should stop." If EMD is contacted about the wetted pump motors, respond: "We will send a troubleshooting team down to the LPCI Pumps and report back." (It is not intended for EMD to respond back on the conditions of the pumps) Once the 2A LPCI pump suction valve is closed, call in and report "The leak has slowed to a trickle"
	BOP	❑ Take report from U2 EO and inform CRS about the 2A LPCI Pump leak.
	CRS	❑ Enters DOA 0040-02, LOCALIZED FLOODING IN PLANT ■ Directs BOP to close the 2A LPCI Pump Suction Valve, 2-1501-5A. ■ Directs BOP to place the 2A and 2B LPCI Pump control switches in PTL. ❑ Notifies SM and WWM ■ References the following Tech Specs and determines the required actions: • TS 3.5.1.A – Restore LPCI pump to OPERABLE status within 30 days (applies to both pumps) • TS 3.5.1.B – Restore low pressure ECCS injection/spray subsystem to OPERABLE status within 7 days • TS 3.6.2.3.A – Restore suppression pool cooling subsystem to OPERABLE status within 7 days • TS 3.6.2.4.A – Restore suppression pool spray subsystem to OPERABLE status within 7 days • TS 3.6.2.6.A – Restore drywell spray subsystem to OPERABLE status within 7 days • TRM 3.4.a.B – Restore the structural integrity of the affected components to within its limits immediately or Isolate the affected component immediately
	BOP	■ When directed, closes the 2A LPCI Pump Suction Valve, 2-1501-5A. ❑ When directed, places the 2A and 2B LPCI Pump control switches in PTL.

Event 3 Completion Criteria:

- **2A and 2B LPCI Pumps are declared inoperable and in PTL,**
- **Tech Specs have been determined,**

-- AND/OR --

At the direction of the Lead Examiner.

Event Four – Loss of Hydrogen Seal Oil

Trigger	Position	Crew Actions or Behavior
2 **3**		**NOTE:** The emergency seal oil pump fails to auto start. It can be started manually. However, it will trip shortly after starting. **SIMULATOR OPERATOR:** After the team has completed Event 3 and at the discretion of the evaluators, activate **TRIGGER 2**, which trips the main hydrogen seal oil pump. Verify **TRIGGER 3** automatically activates when the emergency seal oil pump is started. This causes it to trip a short time later. **ROLE PLAY:** EO to check Alterrex panel: Wait until generator gas pressure is ~ 25 psig, and then report "the following alarms are up: • Machine gas pressure high or low. • Differential seal oil pressure low. EO sent to check U2 Main Seal Oil Pump breaker at MCC 28-2: Wait 3 min, and then report "the breaker for the U2 Main Seal Oil Pump is tripped open with the overload device activated." EO sent to check U2 Emergency Seal Oil Pump at 250 VDC TB MCC 2: Wait 3 min, and then report "the breaker for the U2 Emergency Seal Oil Pump is tripped open with the overload device activated." If requested to reset U2 Main Seal Oil Pump overload at MCC 28-2: Wait 2 min, and then report "the U2 Main Seal Oil Pump overload is reset". If requested to reset U2 Emergency Seal Oil Pump overload at 250 VDC TB 2: Wait 2 min, and then report "the U2 Emergency Seal Oil Pump overload is reset". EO sent to perform DOA 5350-01, steps D.2 through D.4 of DOA 5350-01: Wait 3 min, then report "Steps D.2 through D.4 of DOA 5350-01 are complete." Acknowledge requests as support personnel.
	BOP	Announces alarm 902-7 A-11, H2 SEAL OIL SYS OIL PP/VAC PP TRIP, and performs the DAN: ■ Manually starts the Emergency Seal Oil Pump. ❑ Directs an EO to reset Main Seal Oil Pump overload at MCC 28-2. ❑ Attempts to restart the pump. (It will not start). Announces alarms: • 902-7 E-11, H2 SEAL OIL & ALTERREX PNL TROUBLE • 902-7 G-11, EMERG H2 SEAL OIL PP TRIP And performs the DANs: ■ Directs an EO to reset Emergency Seal Oil Pump overload at 250 VDC TB 2. ■ Attempts to restart the pump. (It will not start). ❑ Performs DOP 6700-20, 480 V CIRCUIT BREAKER TRIP, as directed.

Event Four – Loss of Hydrogen Seal Oil

Trigger	Position	Crew Actions or Behavior
	BOP	Performs DOA 5350-01, LOSS OF SEAL OIL PUMPS, as directed: ■ Places hydrogen seal oil pump control switches in PULL-TO-LOCK: • Emergency Seal Oil Pump. • Main Seal Oil Pump. • Seal Oil Vacuum Pump. ■ Dispatches an EO to align hydrogen seal oil per steps D.2 thru D.4 of DOA 5350-01. ■ Refers to DOP 6400-08, 345KV VOLTAGE CONTROL, for generator load capability. (Generator hydrogen pressure drops to ~25 psig) ❑ May dispatch an operator to check for hydrogen at the Generator shaft seal in Alterrex housing.
	CRS	■ Enters DOA 5350-01 and directs actions. ■ Enters DGP 03-01, POWER CHANGES, and directs an emergency load drop to restore the generator to within its capability. ❑ Requests assistance of EMD. ❑ Notifies the SM and WWM ❑ Notifies TSO of load reduction ❑ Enters DOP 6700-20.
	ATC	Performs an emergency load drop per DGP 03-01: ■ IF FCL is >93%, THEN reduce power by 90 MWe of generator power OR 9% of APRM power by inserting control rods in reverse sequence (preferred) or CRAM rod insertion. ■ Reduce Reactor power by decreasing core flow to ≥ 58 Mlbm/hr (58 to 62 Mlbm/hr) ■ Continues dropping load until generator capability is reached

Event 4 Completion Criteria:

- **Load drop in progress,**

  -- AND/OR --

  At the direction of the Lead Examiner.

Event Five – Recirc Pump Speed Controller Failure

Trigger	Position	Crew Actions or Behavior
4		**SIMULATOR OPERATOR:** At the discretion of the Floor Instructor / Lead Evaluator, activate **TRIGGER 4**, which causes a cell fault in 2A Recirc ASD and lowers 2A Recirc Pump speed by 6%. **ROLE PLAY:** EO to 2A ASD Trailer, wait 3 min, and report the following: "The HMI indicates that 2A ASD generated a Speed Hold." **FLOOR INSTRUCTOR ROLE PLAY:** Operator to check ASD HMI in back panels, report the following: "The HMI indicates that 2A ASD generated a Speed Hold and cell bypass."
	ATC	■ Announces and references the following DANs: • DAN 902-4 B-1, 2A RECIRC DRIVE MINOR TROUBLE • DAN 902-4 C-1, RECIRC DRIVE A SPEED HOLD ■ Enters and performs DOA 0202-03, REACTOR RECIRCULATION SYSTEM FLOW CONTROL FAILURE, when directed. • Momentarily places 2A ASD SPEED HOLD switch 2-202-60-302A to HOLD. ■ Performs the following using DAN actions: • Dispatches EO to 2A ASD Trailer. • Checks HMI on Panel 902-18. • Determines that the flow mismatch is ≥ 5% between the Recirc Pump flow indicators and informs CRS.
	CRS	■ Directs entry into DGA-7, UNEXPECTED REACTIVITY CHANGE. ■ References Technical Specifications and determines: • TS 3.4.1 Condition B1, Declare the recirculation loop with lower flow to be "not in operation" within 2 hours. ■ Directs ATC to clear alarms and match Recirculation Pump Speeds. ■ Once flows are matched, exits TS 3.4.1 Condition B1.
	ATC	❑ May resets Speed Hold using DAN actions by performing the following: ○ Momentarily places 2A ASD Speed Hold switch to RESET. ○ Matches 2A and 2B Recirc Pump speeds as necessary.
	BOP	■ Performs DGA-7 actions. • Contacts QNE. ■ Monitors panels and assists as directed.

Event 5 Completion Criteria:

- **Recirc Pump Speeds matched AND,**
- **Tech Specs have been addressed,**

-- AND/OR --

At the discretion of the Floor Instructor/Lead Evaluator.

Event Six – NR Level Reference Leg Leak, Rise in DW Pressure - Scram

Trigger	Position	Crew Actions or Behavior
5		**SIMULATOR OPERATOR:** At the discretion of the Lead Examiner, activate **TRIGGER 5**, which causes NR Level Indication to start to fail high and drywell pressure to start to increase. **ROLE PLAY:** EO to check U2 CAM, wait 2 min, and then report the following: "U2 Cam is reading 2700 counts and rising." U3 NSO to check U3 Drywell Pressure, report the following: "U3 Drywell Pressure is 1.2 psig and steady." EO to close 2-0301-25, wait 2 min, and then report the following: "The 2-0301-25 valve is closed."
	ATC	■ Reports failure of 2B NR Level. ■ Reports Drywell Pressure rise. ❑ If directed performs Scram Prep actions per DGP 02-03, REACTOR SCRAM: • Starts MSP and TGOP. ■ Performs Manual Scram when drywell pressure approaches 1.5 psig as follows:
	CRS	❑ Enters and directs actions of DOA 0040-01, SLOW LEAK. ❑ Set Scram contingency of 1.5 psig DW pressure. (Since DW pressure starts much lower than normal, may set a lower pressure Scram contingency.) ❑ May enter DGP 02-03 and direct taking scram preparatory actions. ❑ Prior to reaching the Drywell Pressure scram setpoint, directs a manual scram per DGP 02-03. ■ After Scram, enters DEOP 100, RPV CONTROL, and directs the following actions: • Verification of all isolations, ECCS and EDG starts. • Holding RPV/L +8 to +48 inches. • Maintaining RPV/P <1060 psig using the BPV's.
	BOP	■ Performs the following actions per DOA 0040-01 as directed: • Notifies Shift Supervisor and Rad Protection. • Directs search for leak. • Makes PA announcement. • Dispatches EO to verify Crib House inlet temperature is <95°F. • Initiates Torus cooling per DOP 1500-02, TORUS WATER COOLING MODE OF LOW PRESSURE COOLANT INJECTION SYSTEM, Hard Card.

Event 6 Completion Criteria:

- **Manual Scram performed,**

  -- AND/OR --

At the discretion of the Lead Examiner.

Event Seven – Loss of Level Indication – RPV Flooding

Trigger	Position	Crew Actions or Behavior
6 **7**		**SIMULATOR OPERATOR:** Verify **TRIGGER 6** actuates automatically when the MODE switch is placed in SHUTDOWN and this fails the remaining RPV level indications 2 minutes later. WEC to bypass RFP high level trips, wait 3 min, insert **TRIGGER 7**, and report the following: "RFP High Level Trips have been bypassed." **ROLE PLAY:** EO to the 7 and 8 racks, wait 3 min, and report the following: "Level indications are…" (Use the level indications on the 902-5 and 902-3 panels)
	ATC / BOP	■ Notices and reports that RPV levels are diverging, and no valid level indication exists.
	CRS	■ √ Based on diverging RPV level indication, exits DEOP 0100 and enters DEOP 0400-01, RPV FLOODING, and performs / directs: **(RPV-4.1)** • Verifying Torus level above 6 feet • Opening all 5 ADSVs • Isolating the steam lines for flooding • √ Flooding the RPV to the Main Steam lines. **(RPV-4.2)** • Directs defeating the RFP trips. (If not already tripped) • Keeping the RPV flooded to the Main Steam lines with injection flow as low as possible
	ATC / BOP	■ √ Enters DEOP 0400-01 as directed, and performs the following **(RPV-4.1)**: • Verifies Torus level above 6 feet • Opens all 5 ADSVs • Isolates the steam lines for flooding • √ Floods the RPV to the Main Steam lines. **(RPV-4.2)** ○ Directs ATC/BOP to maximizes injection flow with minimum ECCS Pump lineups prescribed by the transient mitigation guidelines (OP-DR-103-102-1002) to flood the reactor to the Main Steam lines. With both Core Spray pumps available for injection, LPCI can be maintained aligned to address containment issues. ○ Keeps the RPV flooded to the Main Steam lines with injection flow as low as possible. ○ Slows down RPV injection once evidence of reaching the main steam lines IAW DEOP 0010-00, GUIDELINES FOR USE OF DRESDEN EMERGENCY OPERATING PROCEDURES AND SEVERE ACCIDENT MANAGEMENT GUIDELINES: ▪ ERV Tail pipe temps decreasing to subcooled values ▪ Increasing RPV pressure ▪ Actuation of Main Steam line or HPCI high steam flow logic ▪ HPCI steam line drain pot high level alarm ▪ Reactor vessel and flange metal temperatures decreasing to subcooled levels ▪ Water leakage from HPCI turbine shaft seals

Event 7 / Scenario Completion Criteria:

- **RPV flooded to Main Steam Lines,**

  -- AND / OR --

At the discretion of the Lead Examiner.

References

PROCEDURE	TITLE
DAN 902-4 B-1	2A Recirc Drive Minor Trouble
DAN 902-4 C-1	Recirc Drive A Speed Hold
DAN 902-4 G-20	Analog Trip Sys Div 1 2202-73a Trouble
DAN 902-7 A-11	H2 Seal Oil Sys Oil Pp/Vac Pp Trip
DAN 902-7 E-11	H2 Seal Oil & Alterrex Pnl Trouble
DAN 902-7 G-11	Emerg H2 Seal Oil Pp Trip
DEOP 0010-00	Guidelines for Use Of DEOPs and SAMGs
DEOP 0100	RPV Control
DEOP 0400-01	RPV Flooding
DGA-7	Unexpected Reactivity Change
DGP 02-03	Reactor Scram
DGP 03-01	Power Changes
DOA 0040-01	Slow Leak
DOA 0040-02	Localized Flooding in Plant
DOA 0202-03	Reactor Recirculation System Flow Control Failure
DOA 0500-02	Partial ½ or Full Scram Actuation
DOA 5350-01	Loss of Seal Oil Pumps
DOP 0010-10	Unit 2(3) Technical Specification Instrumentation Operability Manual
DOP 1500-02	Torus Water Cooling Mode of Low Pressure Coolant Injection System
DOP 5650-01	Electro Hydraulic Control System Operation
DOP 6400-08	345KV Voltage Control
DOP 1500-02	Torus Water Cooling Mode of Low Pressure Coolant Injection System
DOP 6700-20	480V Circuit Breaker Trip
OP-DR-103-102-1002	Strategies for Successful Transient Mitigation
TRM 3.4.a	Structural Integrity
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 3.4.1	Recirculation Loops Operating
TS 3.5.1	ECCS—Operating
TS 3.5.3	IC System

PROCEDURE	TITLE
TS 3.6.2.3	Suppression Pool Cooling
TS 3.6.2.4	Suppression Pool Spray
TS 3.6.2.6	Drywell Spray
TS 3.6.4.1	Secondary Containment
TS 3.6.4.2	Secondary Containment Isolation Valves (SCIVs)

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

CAEP Files

```
# CAEP file for ILT-N-4
# ILT 22-1 (2023-301) NRC Exam
# Written by DSS
# 11/22

#### INITIAL CONDITIONS ####
# Inserts a RPS Channel B partial half scram
imf b15

# Prevents Emergency H2 Seal Oil from autostarting
imf t53

# Prevents nuissance alarms and sets Radiation Shielding
imf ser0285 off
imf ser0278 off

#### Event Triggers ####
# Event Trigger 1 Activates fails B medium range level instrument downscale over 4 minutes (Event 2)
trgset 1 "0"
imf nvm100bp (1) -120.0 4:00

# Event Trigger 2 trips main hydrogen seal oil pump (Event 4)
trgset 2 "0"|2
imf k50 (2)|2

# Event Trigger 3 automatically activates when Trigger 2 is active and emergency seal oil pump is
# running.  After 1 min, trips emergency hydrogen seal oil pump. (Event 4)
trgset 3 "et_array(2) .and. mgzesocl"|2
imf k07 (3 60)|2
imf ser0889 (3 61) on|2

# Event Trigger 4 causes a 2A Recirc ASD Cell Fault (Event 5)
trgset 4 "0"|4
imf rr02a (4)|4

# Event Trigger 5 causes a leak in the 2B Narrow Range and Fuel Zone Reference leg
# and a small Drywell Leak (Event 6)
trgset 5 "0"|4
imf nvml29bp (5) 150 2:00|4
imf f41 (5) 0.005|6

# Event Trigger 6 fails the remaining RPV level indications 2 minutes after
# the MODE switch is placed in SHUTDOWN (Event 7)
trgset 6 "rpdmode4"|6
imf nvm100ap (6 2:00) -150 5:00|6
imf nvml29ap (6 2:00) 75 5:00|6
imf nvm106ap (6 2:00) 400 5:00|8
imf nvml112p (6 2:00) -400 5:00|8
imf nvm106bp (6 2:00) -400 5:00|8
imf nvm100bp (6 2:00) 150 2:00|8

# Event Trigger 7 bypasses the RFP high level trips (Event 7)
trgset 7 "0"|10
irf fwknife (7) open|10

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

#### END ####
```

Unit 2 Risk: GREEN	Unit 3 Risk: GREEN
Unit 2 is in MODE 1 at 80% power,	Unit 3 is in MODE 1 at 100% power.
Leading Thermal Limit: MFLCPR @ 0.881	Leading Thermal Limit: MFLCPR @ 0.883
Action limit: 0.980	Action Limit: 0.980
Equipment Unavailable: None	Equipment Unavailable: None
Protected Equipment: 2A FPC	Protected Equipment: 3A FPC

Current Action Statements

None	LCO Started:	N/A	LCO Expires:	N/A

Cause:

Unit 2 Plant Status

Today	Unit 2 Activities
	**** Shift 1 Activities ****
	**** Shift 2 Activities ****
	■ Swap running EHC Pumps
	**** Shift 3 Activities ****

Turnover:

- Engineering has requested that the 2B EHC Pump be started and the 2A EHC Pump be secured.
    - An EO is on station ready for EHC pump swap.