

Facility: <u>DRESDEN</u> Date of Exam: <u>6/3/02</u> Scenario Numbers: <u>1/2/3/4/5</u> Operating Test No. <u>16701</u>					
QUALITATIVE ATTRIBUTES		Initials			
		a	b*	c#	
1	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events	MO	Dh	sun	
2	The scenarios consist mostly of related events	MO	Dh	sun	
3	Each event description consists of • the point in the scenario when it is to be initiated • the malfunction(s) that are entered to initiate the event • the symptoms/cues that will be visible to the crew • the expected operator actions (by shift position) • the event termination point (if applicable)	MO	Dh	sun	
4	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.	MO	Dh	sun	
5	The events are valid with regard to physics and thermodynamics.	MO	Dh	sun	
6	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	MO	Dh	sun	
7	If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.	MO	Dh	sun	
8	The simulator modeling is not altered.	MO	Dh	sun	
9	The scenarios have been validated. Any open simulator performance deficiencies have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.	MO	Dh	sun	
10	Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.4 of ES-301.	MO	Dh	sun	
11	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	MO	Dh	sun	
12	Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).	MO	Dh	sun	
13	The level of difficulty is appropriate to support licensing decisions for each crew position.	MO	Dh	sun	
<b>TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.4.D)</b>		Actual Attributes	-	-	-
1.	Total malfunctions (5-8)	9/7/8/5/6	MO	Dh	sun
2.	Malfunctions after EOP entry (1-2)	1/1/2/1/2	MO	Dh	sun
3.	Abnormal events (2-4)	4/4/4/4/4	MO	Dh	sun
4.	Major transients (1-2)	1/1/1/2/1	MO	Dh	sun
5.	EOPs entered/requiring substantive actions (1-2)	1/3/2/2/2	MO	Dh	sun
6.	EOP contingencies requiring substantive actions (0-2)	1/1/1/1/1	MO	Dh	sun
7.	Critical tasks (2-3)	3/3/2/2/4	MO	Dh	sun

# Dresden Generating Station

## SIMULATOR EXERCISE GUIDE

ILT 01-1 NRC EXAM

SCENARIO

ILT-N-1

Rev. 00

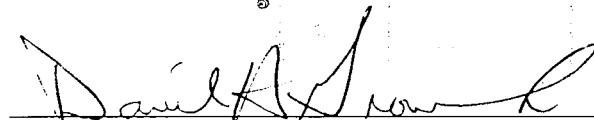
02/02

DEVELOPED BY:

  
Exam Author

3/29/02  
Date

APPROVED BY:

  
Facility Representative

3-28-02  
Date

Facility: DresdenScenario No: ILT-N-1Op-Test No: ILT 01-1

Examiners: \_\_\_\_\_

Operators: \_\_\_\_\_

Initial Conditions: ~33% reactor power, RM channel 15 out of service; 2B EHC Pump OOS; Unit 3 is in Mode 4.

Turnover: Unit startup in progress; *raise reactor flow* ~~put rods~~, then transfer FWLC to 3-element control.

Event No.	Malfunction No.	Event Type*		Event Description
1	N/A	R	NSO SRO	raise reactor power recirculation flow
2	N/A	N	NSO SRO	transfer FWLC to 3-element control
3	• EHD626	I	ANSO SRO	spurious opening of main turbine bypass valve
4	NIA5POT	I	NSO	ARPM channel 5 fails downscale
5	NII15POT B15	C	NSO SRO	ARPM channel 5 companion IRM 15 spike upscale causing partial half-scam
6	K49 T12	C	ANSO SRO	main feed breaker to Bus 23-1 trips with failure of emergency diesel generator to start automatically
7	B12 AW4	M	ALL	failure of RPS to deenergize and ARI to initiate
8	H31, H32, H33, H44		ANSO SRO	trip of all reactor feed pumps

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

## Dresden Generating Station

### NRC ILT EXAM

#### Scenario ILT-N-1

##### Scenario Objective

Evaluate the operators in using the Failure to Scram contingency procedure.

##### Scenario Summary

###### Initial Conditions:

- ~33% power, unit startup in progress
- IRM 16 CCS
- 2B EHC Pump OOS
- Unit 3 is in Mode 4

###### Events:

- Raise Power with Recirculation Flow
- Transfer FWLC to 3-Element Control
- Spurious Bypass Valve Opening
- APRM Fail Downscale with Partial Half Scram
- Bus 23-1 Loss of Power
- ATWS (Failure of RPS and ARI) with Loss of RFPs

##### Scenario Sequence

- The crew increases reactor power by increasing recirculation flow.
- The crew transfers the FWLC system to 3-Element control.
- The main turbine bypass valve #1 opens spuriously. The valve is closed when the ANSO takes manual action at the EHC control panel
- APRM channel 5 fails downscale followed by a companion IRM 15 spike upscale and a partial half-scam occurs. The NSO inserts a complete half-scam.
- The SRO addresses the technical specification requirements for the APRM channel. The APRM channel is bypassed but the half-scam should not be reset by the NSO.
- The main feed breaker to Bus 23-1 then trips and the 2/3 EDG fails to automatically start. The 2/3 EDG does run when manually started by the ANSO and power is restored to Bus 23-1.
- A Spurious Channel A scram occurs. An ATWS condition exists due to a failure of RPS A to deenergize and ARI is unsuccessful. The crew should perform the ATWS DEOP. Pulling RPS fuses, venting the scram air header and driving control rods are successful. The event is complicated by a loss of RFPs and the crew should control RPV level using the HPCI and / or CRD system.
- The scenario is terminated when all rods are inserted and the plant stabilized.

### Event One – Raise Power with Recirculation Flow

The crew raises reactor power by increasing recirculation flow.

Malfunctions required: 0

Success Path:

- Increase recirculation flow per procedures.

### Event Two – Transfer FWLC to 3-Element Control

The crew transfers FWLC to 3-Element control per DOP 0600-06, Feedwater Regulating Valve (FRV) Operation.

Malfunctions required: 0

Success Path:

- Follows DOP 0600-06.

### Event Three – Spurious Bypass Valve Opening

The crew should recognize and respond to main turbine bypass valve #1 opening spuriously. The valve will close when the ANSO takes manual action at the EHC control panel.

Malfunctions required: 1 (Bypass Jack drift)

Success Path:

- Close the bypass valve with the bypass jack.

### Event Four and Five – APRM Fail Downscale/Partial Half Scram

The crew should recognize and respond to failure of APRM 15 downscale and a channel B partial half scram.

Malfunctions required: 3 (APRM fail downscale)  
(IRM spike upscale)  
(partial half scram)

Success Path:

- Bypass APRM channel 5
- Manually scram RPS channel B

### Event Six – Bus 23-1 Loss of Power

The crew recognizes and responds to a loss of normal power to Bus 23-1 and failure of the 2/3 EDG to automatically start.

Malfunctions required: 2 (Bus 23-1 feed breaker trips)  
(EDG 2/3 fails to auto start)

Success Path:

- Manually starts the 2/3 EDG.

### Event Seven and Eight – ATWS (Failure of RPS and ARI) with Loss of RFPs

The crew should recognize and respond to an ATWS condition with a loss of RFPs.

Malfunctions required: 3 (RPS failure to deenergize)  
(failure of ARI)  
(Loss of RFPs)

Success Path:

- Inserts rods using alternate methods.
- Control RFP level with HPCI and / or CRD.

### Scenario Recapitulation

Total Malfunctions:	9	
Abnormal Events:	4	
Major Transients:	1	(ATWS)
EOPs Entered:	1	
EOP Contingencies:	1	(ATWS)

Op-Test No: ILT 01-1Scenario No: ILT-N-1Event No: 1Page 1 of 1

Event Description: The team raises power using recirculation flow

Time	Position	Applicant's Actions or Behavior
	<b>NSO</b>	Performs the following actions per DGP 01-01, Unit Startup, and DOP 0202-03, Reactor Recirculation Flow Control System Operation: <ul style="list-style-type: none"> <li>Phases recirculation pump speed using the master controller potentiometer.</li> <li>Verifies expected power increase.</li> </ul>
	<b>SRO</b>	Directs raising reactor power per DGP 01-01, Unit Startup, and DOP 0202-03, Reactor Recirculation Flow Control System Operation, by raising recirculation pump speed.
		<b>ROLE PLAY:</b>
		QNE: request for a ramp rate, respond "limit ramp rate to 250 MWe/hr".
	<b>ANSO</b>	Monitors panels and assists as directed.
		<b>Event 1 Completion Criteria:</b> <ul style="list-style-type: none"> <li>Significant power increase <b>902-5 G8</b></li> <li>AND, at the direction of the NRC chief examiner.</li> </ul>

Adjust REMA to say go to 56 Mlbm  
core flow  
52 to 58 % FC  
~~Option go ahead with rod pulls~~ <sup>NOT</sup> NECESSARY

Op-Test No. ILT 01-1Scenario No.: ILT-N-1Event No. 2Page 1 of 1

Event Description: The crew transfers Feedwater Level Control System to 3-Element control.

Time	Position	Applicant's Actions or Behavior
	<b>NSO</b>	<p>Performs the following actions per DOP 0600-06, Feedwater Regulating Valve (FRV) Operation:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Verifies the AUTO Control mode pushbutton is not amber.</li> <li><input type="checkbox"/> Verifies that annunciator 902-5 G-8, 1-Element FW Control Active at Hi Flow, is in alarm.</li> <li><input type="checkbox"/> Verifies that FWLCS is in Master Auto.</li> <li><input type="checkbox"/> Depresses AUTO pushbutton and verifies that the AUTO and 3-ELEM white indicating lights are lit and the 1-ELEM light goes out.</li> </ul>
	<b>SRO</b>	<p>Directs transferring FWLC to 3-Element Control per DOP 0600-06, Feedwater Regulating Valve (FRV) Operation.</p> <p>Note: RPV level may take a couple of inch swing during the transfer to 3-Element Control, so the NSO may take Manual Control of the FRV. If the crew requests Instrument Maintenance (IMD) assistance to check out FWLC, tell the crew that you are time compressing and that IMD reports the FWLC system is functioning normally. The crew should then transfer FWLC back to AUTO Mode.</p>
	<b>ANSO</b>	Monitors panels and assists as directed.
		<p><b>Event 2 Completion Criteria:</b></p> <ul style="list-style-type: none"> <li>- FWLC in 3-Element Control.</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>



Op-Test No: ILT 01-1Scenario No: ILT-N-1Event No: 3Page 1 of 1

Event Description: The main turbine bypass valve #1 opens spuriously. The valve is closed when the ANSO takes manual action at the EHC control panel

Time	Position	Applicant's Actions or Behavior
		<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC chief examiner, activate trigger 1, which works in conjunction with trigger 2 to open the #1 turbine bypass valve until the partial open light is lit.</p> <p>If after 2 minutes the team has not noticed the bypass valve open, activate trigger 16, which works in conjunction with trigger 17 to open the #1 turbine bypass valve until the full open light is lit and the bypass valve open alarm is received.</p> <p>Note: when the crew depresses the bypass valve jack decrease pushbutton, triggers 18 and 19 will activate to delete the bypass jack increase pushbutton and light overrides.</p>
	<b>ANSO</b>	<p>Performs the following actions per DAN 902-7 G-3, Turb Byp Vlv Open, and/or DOA 5650-03, Turbine Control Valve or Bypass Valve Failed Oper as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Verifies reactor pressure stable</li> <li><input type="checkbox"/> Verifies bypass valve should be closed</li> <li><input type="checkbox"/> Closes the bypass valve with the bypass valve jack.</li> </ul>
	<b>NSO</b>	Acknowledges and announces alarm 902-5 C-8, Main Stm-Turbine Stm 10% Mismatch. He should recognize it alarmed due to the bypass valve opening.
	<b>SRO</b>	<p>Enters and directs performance of DOA 5650-03, Turbine Control Valve or Bypass Valve Failed Open.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Places startup on hold.</li> <li><input type="checkbox"/> Notifies Shift Manager.</li> </ul> <p>May refer to the site technical requirements and determine:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> ITS 3.3.1 is not applicable.</li> <li><input type="checkbox"/> ITS 3.3.1 is not applicable.</li> <li><input type="checkbox"/> ITS 3.7 is not applicable.</li> </ul>
		<p><b><u>ROLE PLAY:</u></b> <i>closes</i></p> <p><i>Not unit after Valve closed</i></p> <p>One minute after the crew notices the bypass valve open, call the control room as the IM Supervisor and report "my crew was hooking up a Fluke to take readings on the bypass valve control circuits in panel 903-31 in the AEER. The technician thinks he inadvertently shorted between two terminal points that may have caused the bypass jack to operate. Then he discovered he was in the wrong panel. He was in the 902-31 panel instead of the 903-31 panel. The Unit 2 EHC Control system should operate normally now".</p> <p>Respond as groups notified.</p>
		<p><b><u>Event 3 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- Bypass valve closed</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

Op-Test No: ILT 01-1

Scenario No: ILT-N-1

Event No: 4 &amp; 5

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Event Description: APRM channel 5 fails downscale. IRM 15 spikes upscale and a partial half-scam occurs. The NSO inserts a complete half-scam. The SRO addresses the technical specification requirements for the APRM channel. The APRM channel is bypassed but the half-scam should not be reset by the NSO.

Time	Position	Applicant's Actions or Behavior
		<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC chief examiner, activate trigger 3, which fails APRM 5 downscale and 5 seconds later spikes IRM 15 upscale.</p> <p>NOTE: trigger 4 activates on the half scram signal to remove IRM 15 upscale so it appears to be a spike.</p> <p>NOTE: If the team attempts to reset the half scram, trigger 5 will activate to fail the fuses for scram groups B2 and B3.</p>
	NSO	<p>Performs the following actions per DC - 0500-02, Partial 1/2 or Full Scram Actuation:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Recognizes and announces partial half scram.</li> <li><input type="checkbox"/> Manually scrams RPS channel B. (immediate action)</li> <li><input type="checkbox"/> Determines all channel B scram solenoid lights are off.</li> </ul>
	SRO	Enters and directs performance of DC - 0500-02, Partial 1/2 or Full Scram Actuation.
	NSO	<p>Performs the following actions per DA's 902-5 C-6, APRM Downscale, as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Compares to other APRMs.</li> <li><input type="checkbox"/> Notifies SRO</li> <li><input type="checkbox"/> Bypasses APRM channel 5.</li> </ul>
	ANSO	<p>Performs the following actions per DA's 902-5 C-6, APRM Downscale, as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Checks APRM parameters on 902-37 panel.</li> </ul>
	SRO	<p>References plant Technical documents</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> ITS Table 3.3.1.1.A-1, verifies sufficient RPS APRM trip channels (2 available / 2 required for B channel)</li> <li><input type="checkbox"/> TRM Table T3.3.a-1, verifies sufficient APRM rod block channels available (5 available / 4 required)</li> </ul> <p>Directs bypassing APRM 5.</p> <p>Notifies the Shift Manager and IMD.</p>
		<p><b><u>Events 4 &amp; 5 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- RPS channel B manually scrammed.</li> <li>- APRM 5 bypassed.</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

like  
burned out  
OK  
Energy  
IRM 15  
H/ + HTH  
May need  
a cue

Op-Test No. ILT 11-1Scenario No. ILT-N-1Event No. 6Page 1 of 2

Event Description: The main feed breaker to Bus 23-1 then trips and the 2/3 EDG fails to automatically start. The 2/3 EDG does run when manually started by the ANSO and power is restored to Bus 23-1.

Time	Position	Applicant's Actions or Behavior
	ANSO	<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC chief examiner, activate trigger 6, which inserts failure of RPS to deenergize, pulls ARI fuses, and main feed breaker to MCC 23-1 trip with failure of 2/3 EDG to start automatically</p> <p>Diagnoses that Bus 23-1 has lost power and that the 2/3 EDG failed to auto start to pick up the bus</p> <p>Should perform the following actions of DGA 12, Partial or Complete Loss of AC Power, and DOA 6600-01, Diesel Generator Failure:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Places the 2/3 EDG control switch to start.</li> <li><input type="checkbox"/> Dispatches an operator to the 2/3 EDG with Attachment A.</li> <li><input type="checkbox"/> Verifies power restored to Bus 23-1 and Bus 28.</li> <li><input type="checkbox"/> Resets annunciators and verifies the ones remaining are expected.</li> <li><input type="checkbox"/> Dispatches an operator to check the U2 EDG trouble alarm</li> </ul> <p>May perform the following actions of DOA 6500-10, 4KV Circuit Breaker Trip if time permits:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Dispatches NLO to check for signs of fault or overload.</li> <li><input type="checkbox"/> Verifies no other reason for trip.</li> </ul>
	NSO	<p>Monitors panels and assists as directed.</p> <p><b><u>ROLE PLAY:</u></b></p> <p>NLO to check Bus 23-1 feed breaker (wait 3 min):</p> <p>Report "There are no targets up at the breaker".</p> <p>NLO to perform Attachment A of DOA 6600-01:</p> <p>Respond "I will get a copy of Attachment A of DOA 6600-01 and complete it for the 2/3 EDG".</p> <p><b><u>SIMULATOR OPERATOR/ROLE PLAY:</u></b></p> <p>NLO to check U2 EDG trouble alarm (wait 3 min):</p> <p>Activate trigger 12 then report "the alarms were circulating lube oil and turbo charger lube oil pumps trouble alarms. The pumps are operating normally and the alarms have reset".</p>

The breaker is open and

at Bus 23

add for breaker at 23-1 also

Op-Test No. ILT 01-1Scenario No. ILT-N-1Event No. 6Page 2 of 2

Event Description: The main feed breaker to Bus 23-1 then trips and the 2/3 EDG fails to automatically start. The 2/3 EDG does run when manually started by the ANSO and power is restored to Bus 23-1.

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Enters and directs actions for the following as the permits:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> DGA 12, Partial or Complete Loss of -D Power.</li> <li><input type="checkbox"/> DOA 6600-01, Diesel Generator Failure</li> <li><input type="checkbox"/> DOA 0500-05, Loss of Reactor Protection System Bus.</li> <li><input type="checkbox"/> DOA 6500-01, 4KV Bus Failure.</li> <li><input type="checkbox"/> DOA 6500-10, 4KV Circuit Breaker Trip</li> </ul> <p>The major actions to direct are:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Starting the 2/3 EDG</li> <li><input type="checkbox"/> Verifying major loads reenergize.</li> </ul>
	SRO	<p>Notifies Shift Manager and EMD.</p> <p><b>Role Play:</b></p> <p>Acknowledge requests for actions not already addressed earlier. If the crew request status of previous requests, report "I am working on it as fast as I can".</p> <p><b>NOTE:</b> The intent here is to proceed to the next event soon after the 2/3 EDG is started and the crew has begun to address recovery of equipment. Equipment recovery is not necessary for the remainder of the scenario.</p> <p><b>Event 6 Completion Criteria:</b></p> <ul style="list-style-type: none"> <li>- 2/3 EDG supplying Bus 23-1.</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

*CDE from QNE "No Thermal limits violated" if asked*

*In turnover state QNE present in control room*

Op-Test No. ILT 01-1Scenario No. ILT-N-1Event No. 733 Page 1 of 4

Event Description: A spurious RPS Channel A scram begins an ATWS condition. The team should perform the ATWS DEOP and insert the control rods. The RPS trip and the crew should use HPCI for RPV level control.

Time	Position	Applicant's Actions or Behavior						
		<b><u>SIMULATOR OPERATOR:</u></b>  At the discretion of the NRC chief examiner, activate trigger 7 which causes a spurious RPS channel A half scram. <i>*Trip RFP</i>  <b>NSO</b>  Performs the following actions per DGP 02-03, Reactor Scram: <ul style="list-style-type: none"><li><input type="checkbox"/> Presses scram pushbuttons</li><li><input type="checkbox"/> Places mode switch in shutdown</li><li><input type="checkbox"/> Check rods inserted; discovers rods not inserted.</li><li><input type="checkbox"/> Initiates ARI, checks rods, announces ATWS condition.</li></ul> Performs the following actions per DGP 02-03, Reactor Scram: <ul style="list-style-type: none"><li><input type="checkbox"/> Verifies turbine and generator tripped (only if Group 1 has occurred or reactor power has dropped low enough that this should occur)</li><li><input type="checkbox"/> Inserts SRM/IRMs</li></ul> <b>NSO / ANSO</b>  Performs DEOP 400-5, Failure to Scram, actions as directed: <ul style="list-style-type: none"><li><input type="checkbox"/> Places ADS to inhibit</li><li><input type="checkbox"/> Places both CS pumps in PTL</li></ul> <u>Power Leg</u> <ul style="list-style-type: none"><li><input type="checkbox"/> Inserts IRMs &amp; SRMs</li><li><input checked="" type="checkbox"/> <b>Performs Alternate Rod Insertion. (see specific actions below)</b></li><li><input type="checkbox"/> May Inject SBLC.</li></ul> <u>Level Leg</u> <table><tr><td><u>Rx Power &gt;6%</u></td><td><u>Rx Power ≤6%</u></td></tr><tr><td><input checked="" type="checkbox"/> <b>Terminates and Prevents injection except boron and CRD until RPV/L is ≤ -35 in.</b></td><td><input type="checkbox"/> Maintains level between -164 and 48 in.</td></tr><tr><td><input checked="" type="checkbox"/> <b>Maintains RPV/L between -164 in. and the level lowered to.</b></td><td></td></tr></table> <u>Pressure Leg</u> <ul style="list-style-type: none"><li><input type="checkbox"/> Verifies turbine/bypass valves maintaining RPV/P &lt; 1060 psig.</li><li><input type="checkbox"/> If MSIVs isolate, maintains &lt;1060 psig using IC ADS's and / or HPCI.</li></ul> <b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b>  Operator to jumper the MSIV Group1 -59 in. and offgas high radiation isolations (wait 5 min):  Activate trigger 8 (jumps the MSIV Group1 -59 in. and offgas high radiation isolations) and report "the MSIV Group1 -59 in. and offgas high radiation isolations are jumpered".	<u>Rx Power &gt;6%</u>	<u>Rx Power ≤6%</u>	<input checked="" type="checkbox"/> <b>Terminates and Prevents injection except boron and CRD until RPV/L is ≤ -35 in.</b>	<input type="checkbox"/> Maintains level between -164 and 48 in.	<input checked="" type="checkbox"/> <b>Maintains RPV/L between -164 in. and the level lowered to.</b>	
<u>Rx Power &gt;6%</u>	<u>Rx Power ≤6%</u>							
<input checked="" type="checkbox"/> <b>Terminates and Prevents injection except boron and CRD until RPV/L is ≤ -35 in.</b>	<input type="checkbox"/> Maintains level between -164 and 48 in.							
<input checked="" type="checkbox"/> <b>Maintains RPV/L between -164 in. and the level lowered to.</b>								

Op-Test No: ILT 01-1Scenario No: ILT-N-1Event No 7 & 8Page 2 of 4

Event Description: A spurious RPS Channel A scram begins an ATWS condition. The team should perform the ATWS DEOP and insert the control rods. The RFPs trip and the crew should use HPC for RPV level control.

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Enters and directs performance of DGP 02-03, Reactor Scram, and DEOP 100, RPV Control.</p> <p>Due to report of ATWS condition, exits DEOP 100 and enters and directs performance of DEOP 400-05, Failure to Scram.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Placing ADS to inhibit</li> <li><input type="checkbox"/> Placing both CS pumps in PTL</li> </ul> <p><u>Power Leg</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Directs any of the following control rod insertion methods</b> (first two most preferred) per DEOP 500-05, Alternate Insertion of Control Rods: <ul style="list-style-type: none"> <li>• pulling scram channel A solenoid power supply fuses.</li> <li>• venting the scram air header.</li> <li>• using the scram test switches.</li> <li>• Manually driving of withdrawn control rods. <i>IAW ???</i></li> </ul> </li> <li><input checked="" type="checkbox"/> <b>May direct Injecting SBLC</b></li> </ul> <p><u>Level Leg</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Verification water level instruments are accurate</li> <li><input type="checkbox"/> Verification any required automatic actions have occurred</li> <li><input type="checkbox"/> Directing jumpers installed for MSIV low level and Off Gas high Rad isolations</li> </ul> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><u>Rx Power &gt;6%</u></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> <b>Terminating and Preventing injection except boron and CRD until RPV/L s ≤ -35 in.</b></li> <li><input checked="" type="checkbox"/> <b>Maintaining RPV/L between -164 in. and the level lowered to.</b></li> </ul> </div> <div style="width: 45%;"> <p><u>Rx Power ≤6%</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Maintaining level between -164 and 48 in.</li> </ul> </div> </div> <p><u>Pressure Leg</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Maintaining &lt;1060 psig using turbine/bypass valves.</li> <li><input type="checkbox"/> If MSIV's isolate, maintaining &lt;1060 psig using IC, ADSVs or HPCI.</li> </ul>

*step G.2**step G.4**step G.5**step G.6*

*with note explaining which rods first*

*put on next pag for NSO actions*

De-Test No. ILT 01-1Scenario No.: ILT-N-1Event No. 7 & 8Page 3 of 3

Event Description: A spurious RPS Channel A scram begins an ATWS condition. The team should perform the ATWS DEOP and insert the control rods. The RFPs trip and the crew should use HPCI for RPV level control.

Time	Position	Applicant's Actions or Behavior
		<p><b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b></p> <p><b>Note:</b> For the first two requested actions below, wait about 10 minutes and/or at the discretion of the NRC chief examiner <i>2:30</i></p> <p>1. Operator to pull scram channel A solenoid power supply fuses:</p> <p>Activate trigger 10 (pulls Channel A RPS fuses and trips reactor feed pumps) and then after the fuses are all pulled report "the scram channel A solenoid power supply fuses are pulled".</p> <p>2. Operator to vent the scram air header:</p> <p>Activate trigger 11 (vents the scram air header) and report "I have vented the scram air header".</p> <p>3. Operator to use the individual scram test switches (wait 2 min):</p> <p>Go to Instructor Station screen ROD5 and begin simulating flipping the scram test switches. Follow the guidance in DEOP 500-05 for selecting rods.</p> <p>If directed, attempts to drive withdrawn control rods in per DEOP 500-05, Alternate Insertion of Control Rods:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> May close CRD 25 charging water valve.</li> <li><input type="checkbox"/> Throttles open the CRD FCV.</li> <li><input type="checkbox"/> May start a second CRD pump.</li> <li><input type="checkbox"/> May maximize drive water pressure using the CRD 8 valve</li> <li><input type="checkbox"/> Bypasses the RWM.</li> <li><input type="checkbox"/> Applies an insert signal to the insert rods, <i>in the following order:</i></li> </ul> <p><i>Intermediate 16-32</i>  <i>deep 4-14</i>  <i>shallow 34-48</i></p> <p><b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b></p> <p>NLO to close CRD 25 valve (wait 3 min):</p> <p>Activate trigger 9 (closes the CRD 25 valve) and report "the CRD 25 valve is closed".</p> <p><b>NSO</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Reports that all rods are inserted.</li> </ul> <p><b>ANSO</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Restores RPV level to +8 to +48 inches as directed.</li> <li><input type="checkbox"/> Begins cooldown as directed.</li> </ul> <p><b>SRO</b></p> <p>When receives report that all rods are inserted, exits DEOP 400-05, Failure to Scram and enters DEOP 100 and directs:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Controlling RPV water level between +8 to +48 inches.</li> <li><input type="checkbox"/> May direct depressurizing the RPV at &lt;100 °F/hr.</li> </ul>

Op-Test No: ILT 01-1Scenario No: ILT-N-1Event No: 7 & 8Page 4 of 4

Event Description: A spurious RPS Channel A scram begins an ATWS condition. The team should perform the ATWS DEOP and insert the control rods. The RFPs trip and the crew should use HPCI for RPV level control.

Time	Position	Applicant's Actions or Behavior
		<p><b>Critical Tasks: (identified by 4 in guide)</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> With a reactor scram required and the reactor not shutdown, <b>TAKE ACTION TO REDUCE POWER</b> by injecting boron and/or inserting control rods, to prevent exceeding the primary containment design limits.</li> <li><input type="checkbox"/> During an ATWS with conditions met to perform power/level control <b>TERMINATE AND PREVENT INJECTION</b>, with exception of boron and CRD, into the RFP until conditions are met to re-establish injection. (May not apply if power becomes &lt;6% before the step requiring this action is reached)</li> <li><input type="checkbox"/> When conditions are met to establish injection use available injection systems to <b>MAINTAIN</b> RPV water level above -164".</li> </ul> <p><b>Scenario Completion Criteria:</b></p> <ul style="list-style-type: none"> <li>- Control rods inserted.</li> <li>- Plant stabilized.</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>



## REFERENCES

PROCEDURE	TITLE	REVISION
DAN 902-5 C-3	Feed Out Block	09
DAN 902-5 C-6	APRM Downscale	07
DAN 902-5 C-15	Channel B IRM Hi Hi/Inop	07
DAN 902-5 D-15	Channel B Rx Scram	10
DAN 902-5 G-8	Core Element FW Control Active at Hi Flow	09
DAN 902-7 G-3	Turbine Byp Vlv Open	01
DOP 0202-03	Reactor Recirculation Flow Control System Operation	20
DOA 0500-02	Partial 1/2 or Full Scram Actuation	02
DOA 0500-05	Loss of Reactor Protection System Bus	04
DOA 5650-03	Turbine Control Valve or Bypass Valve Failed Closed	09
DOA 6500-10	400V Circuit Breaker Trip	03
DOA 6600-01	Diesel Generator Failure	12
DGP 01-01	Unit Startup	96
DGP 02-03	Reactor Scram	55
DGP 03-04	Control Rod Movements	41
DGA 12	Partial or Complete Loss of AC Power	47
DEOP 0100-00	RPV Control	10
DEOP 0200-01	Primary Containment Control	10
DEOP 0400-02	Emergency Depressurization	04
DEOP 0400-05	Failure to Scram	12
DEOP 0500-02	Bypassing Interlocks and Isolations	10
DEOP 0500-05	Alternate Insertion of Control Rods	12

## PRE-SCENARIO ACTIVITIES

1. If applicable, conduct pre-scenario activities in accordance with TQ-AA-106-0107, SIMULATOR EXAMINATION BRIEFING
  - a. Provide the crew with a copy of Control Room work request list.
  - b. Provide the team with a copy of DGP 01-01, Unit Startup, which is marked up to the point of transferring FWLC to 3-Element Control.
  - c. If the crew inquires about a startup plan, inform them the Shift Manager is maintaining it.
  - d. Provide the crew with a copy of the REMA.
  - e. Inform the crew that (select an individual) is the QNE present in the Control Room.
  - f. Direct the crew to perform their briefs prior to entering the simulator.
2. Simulator Setup (the following steps can be done in any logical order)

- a. Initialize simulator in IC 10 and perform the following prior to proceeding below:

- 1) Transfer Auxiliary Power to the normal full power lineup.
- 2) Use the Rodmove program to pull rods through step 72. *← 1.5) Place FWLC Master Control into control (Low FRV closed)*
- 3) After the rod move is complete, verify with the Rodworth Minimizer that rod moves are completed through step 72. Make corrections if necessary. *Then withdraw G-11 & J-15 of step 64.*
- 4) Run CAEP file *63* **ilt-n-1 cut in heaters.cae** to cut in the heaters. (this will take over 5 minutes) *Verify FCL between 52 and 58%.*
- 5) After **ilt-n-1 cut in heaters.cae** has completed running, verify the heaters are latched. (no alarms)
- 6) Run the Summary program and clear ALL remotes and overrides.
- 7) Verify 2A EHC and 2A Stator Cooling Water pumps running. *← 6.5) Set Stator Cooling Water PCV to 28.0. mpa 4/26/12*
- 8) Verify FWLC is in 1-Element control. *← Raise recirc so feedwater flow ~ 3.5 MLBM/hr.*
- 9) Verify backpanel lights are reset. *← 10) Start 2E D/W Cooler.*

- b. Run the initial setup caep file: **ilt-n-1.cae**

- c. Verify the following simulator conditions:

- 1) Master Recirc Flow controller at *~40%* minimum.
- 2) MWe at ~245.
- 3) Condensate Demin CP between 20 and 45 psid.
- 4) Condensate pump amps between 160 and 255 amps

- d. Secure the following equipment and tag out of service:

- 1) Place IRM 16 902-5 panel joystick in bypass and place an Equipment Status Tag on it.
- 2) Place 2B EHC Pump control switch in PTL and hang an OOS card on it.

- e. Advance the chart recorders.

- f. Mark up rod sequence as completed through step 72. *necessary for current rod positions. 63 and rods G-11 and J-15 of step 64.*

- g. Place the REMA sheets in the appropriate book. *It is given to trainees above.*

- h. Complete the Simulator Setup Checklist.

ILT 01-1 NRC EXAM SCENARIO ILT-N-X Initial Setup CAEP:

# ilt-n-1-cae  
# Setup for ilt-n-1  
# Written by JAS  
# Rev 00  
# Date 02/02

# INITIAL CONDITIONS

# Inserts a partial RPS CH B scram failure and overrides the bypass jack increase light off  
imf b15  
ior eh1626 off  
# overrides isolation condenser vent monitor downscale.  
imf ser0004 off  
imf ser0019 off

# SETUP EVENT TRIGGERS

# Event Trigger 1 in conjunction with trigger 2 causes turbine bypass valve #1 to ramp open until the partial open light is lit.  
trgset 1 "0"  
ior ehd626 (1) depressed

# Event Trigger 2 turns off the bypass jack increase override when the partial open light is lit.  
trgset 2 "eh1bpvi(1)"|2  
trg 2 "ior ehd626 off"|2

# Event Trigger 3 ARPM channel 5 fails downscale and 5 sec later spikes IRM 15 upscale  
trgset 3 "0"|2  
imf nia5pot (3) 0.0|2  
imf nii15pot (3 5) 125|2

# Event Trigger 4 removes IRM 15 spike when half scram received.  
trgset 4 ".not. rpxgp1b"|4  
trg 4 "dmf nii15pot"|4

# Event Trigger 5 when scram reset switch is placed in GP 2&3 position, causes blown fuse RPS B2 and B3.  
trgset 5 "rpd30323"|4  
irf rpfuseb2 (5) pulled|4  
irf rpfuseb3 (5) pulled|4

# Event Trigger 6 inserts failure of RPS to deenergize, pulls ARI fuses, and main feed breaker to MCC 23-1 trip with failure of 2/3 EDG to start automatically  
trgset 6 "0"|4  
imf b12 (6)|4  
irf aw4 (6) pulled|4  
irf k45 (6) open|4  
imf t13 (6)|4

# Event Trigger 7 pulls scram fuse for group A4. *and trips reactor feed pumps.*  
trgset 7 "0"|6  
irf rpfusea4 (7) pulled|6 *← add tripping RFPs from ~~trigger 10~~ trigger 10*

# Event Trigger 8 jumpers MSIV -59 GP 1 and offgas HI HI rad isolations.  
trgset 8 "0"|6

irf ci59jp (8) in|6  
irf ogogjp (8) in|6

# Event Trigger 9 closes CRD 25 valve  
trgset 9 "0"|6  
irf rd25pos (9) 0.0|6

# Event Trigger 10 trips all RFPs and pulls RFP Channel A fuses.

trgset 10 "0"|8

imf h31 (10)|8

imf h32 (10)|8

imf h33 (10)|8

imf h34 (10)|8

irf rpfusea1 (10) pulled|8

irf rpfusea2 (10 20) pulled|8

irf rpfusea3 (10 40) pulled|8

*move to trigger*

# Event Trigger 11 vents the scram air header

trgset 11 "0"|10

irf rdscrair (11) open|10

# Event Trigger 12 locally acknowledges U2 E2 B trouble alarm.

trgset 12 "0"|10

irf t20 (12) acknowledge|10

# Event Trigger 16 in conjunction with trigger 17 causes turbine bypass valve #1 to ramp open until the partial open light is lit.

trgset 16 "0"|10

trg 16 "ior ehd626 depressed"|10

# Event Trigger 17 turns off the bypass jack increase override when the full open light is lit.

trgset 17 "ehlbpvo(1)"|12

trg 17 "ior ehd626 off"|12

# Event Triggers 18 and 19 delete the bypass jack increase pushbutton and light overrides when the decrease pushbutton is depressed.

trgset 18 "ehd627"|12

trg 18 "dor ehd626"|12

trgset 19 "ehd627"|12

trg 19 "dor eh1626"|12

# END

Date TODAY

## Unit 2 Turnover

ECCS Status: All

### Online Information

245 MWe

Online Risk: Green CDF: 1.00

Risk Equipment:

MODE 1

### Shutdown Information

Time to Boil: N/A

Shutdown Risk: N/A

Protected Path: N/A

### Unit 2 Priorities

Continue startup

### Station Priorities

### LCORAs

LCORA #  
Title

Start  
Clock Ends

#### Shift 1 Activities (X = Completed)

☐  
☐

#### Shift 2 Activities

☐  
☐

Continue Power Ascension

#### Shift 3 Activities

☐  
☐

#### Common Unit Activities

#### Shift 1 Activities (X = Completed)

☐  
☐

#### Shift 2 Activities

☐  
☐

#### Shift 3 Activities

☐  
☐

### Common Unit Procedures / Surveillances in Progress

### Unit 2 Conditions, Status, Abnormalities

2 hr ago	0500	IRM 16 OOS due to power supply failure. IMD waiting for replacement power supply to arrive from Quad Cities Station. Placed in DEL for tracking.
6 hr ago	5650	2B EHC pump OOS due to a problem with its pressure compensator. Expected BIS next shift.

### Compensatory Actions, Extra Checks

### Equipment OCS

2 hr ago 990145554 IRM 15  
6 hr ago 990145552 2B EHC pump

### Service Unit Status

9 days ago	2A Cond Demin	Cut In
7 days ago	2B Cond Demin	Cut In
15 days ago	2C Cond Demin	Cut In
2 days ago	2D Cond Demin	Cut Out
11 days ago	2E Cond Demin	Cut Out
6 days ago	2F Cond Demin	Cut Out
2 days ago	2G Cond Demin	Cut Out
376 days ago	2A RWCU	Cut In
240 days ago	2B RWCU	Cut Out
20 days ago	2C RWCU	Cut Out
76 days ago	U2 FPC Demin	Cut In

### Unit 2 Abnormal Component Position

### U2 Open Operability Determinations with Compensatory Actions

### Events and Misc. Information

DGP 01-01 in progress. Continue the startup. QNE is present in the control room

#### DW samples:

Iodine 131	$2.5 \times 10^{-13}$
Beta Gamma	$1.5 \times 10^{-11}$

Rod moves completed. ~~Step 14~~ partially withdrawn. Raise power with recirculation flow next.

Date: TODAY

## Unit 3 Turnover

ECCS Status: All available

### Online Information

N/A MWe

Online Risk: N/A

Risk Equipment: N/A

MODE 4

### Shutdown Information

Time to Boil: 24 hrs.

Shutdown Risk: Green

Protected Path: None

### Unit 3 Priorities

Complete startup checklists

### Station Priorities

### LCORAs

LCORA # None  
Title

Start  
Clock Ends

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐  
☐

### Shift 3 Activities

☐  
☐

### Common Unit Activities

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐  
☐

### Shift 3 Activities

☐  
☐

### Common Unit Procedures / Surveillances in Progress

None

### Unit 3 Conditions, Status, Abnormalities

DGP 01-S1, Start-up Checklist, in progress.

IMD taking voltage readings in the EHC Control Panel 903-31.

### Compensatory Actions, Extra Checks

None

**Equipment OOS**

None

**Service Unit Status**

5 days ago	34	0000	Demin	Cut In
8 days ago	3E	0000	Demin	Cut In
10 days ago	30	0000	Demin	Cut In
5 days ago	30	0000	Demin	Cut Out
3 days ago	3E	0000	Demin	Cut Out
15 days ago	3F	0000	Demin	Cut Out
3 days ago	30	0000	Demin	Cut Out
750 days ago	34	F	CU	Cut In
390 days ago	3E	F	CU	Cut Out
60 days ago	30	F	CU	Cut Out
444 days ago	U3	FFF	Demin	Cut In

**Unit 3 Abnormal Component Position**

None

**U3 Open Operability Determinations with Compensatory Actions**

None

**Events and Misc. Information**

DGP 01-S1, Start-up Checklist in progress



# Dresden Generating Station

## SIMULATOR EXERCISE GUIDE

ILT 01-1 NRC EXAM

SCENARIO

ILT-N-2

Rev. 00

02/02

DEVELOPED BY:

Exam Author

Date

APPROVED BY:

Facility Representative

Date

Facility: Dresden Scenario No: ILT-N-2 Op-Test No: ILT 01-

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Initial Conditions: Unit in Mode 2 at approximately 2% reactor power; IRM channel 16 out of service; 2B EHC Pump OOS; Unit 3 is in Mode 4.

Turnover: Unit startup in progress; return TBCCW pump 2B to service following maintenance then continue power ascension

Event No.	Malf. No.	Event Type*		Event Description
1	N/A	N	ANSO SRO	swap TBCCW pumps
2	N/A	R	NSO SRO	raise reactor power by withdrawing control rods
3	RODC13DO	C	NSO SRO	control rod double notches during withdrawal
4	NII12POT	I	NSO SRO	IRM channel fails upscale
5	PCPDWTOR	I	ANSO SRO	drywell to torus differential pressure controller failure
6	HP8	C	ANSO SRO	circulating water pump trip
7	CSBRKSEV	M	ANSO SRO	lowering torus level from ECCS suction line break
8	J33	C	ANSO SRO	loss of EHC system

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

5a | AT23 | I | ANSO SRO | fails 2A Rx Bldg to torus vacuum breaker op.  
QNE in Control Room  
Added to Turnover

# Dresden Generating Station

## NRC ILT EXAM

### Scenario ILT-N-2

#### Scenario Objective

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

#### Scenario Summary

Initial Conditions:

- Mode 2 at approximately 2% reactor power.
- IRM channel 16 out of service.
- 2B EHC Pump OOS
- Unit 3 is in Mode 4.

#### Events:

- Swap TBCCW Pumps
  - Power Change with Rods
  - Control Rod Double Notch
  - IRM Channel Fails Upscale
  - Drywell to Torus Differential Pressure Controller Failure
  - Circulating Water Pump Trip
  - Lowering Torus Water Level
- 2A Rx Bldg to Torus Vacuum Breaker Fails Open*

#### Scenario Sequence

- Maintenance has been completed on TBCCW pump 2B and the SRO directs the ANSO to switch running pumps and place the TBCCW pump 2B in service.
- The NSO, as directed by the SRO, then continues the power ascension for unit startup by control rod withdrawal.
- During the control rod withdrawal, a control rod double notches beyond the withdraw limit and must be repositioned.
- IRM channel 12 then fails upscale and a half-scam occurs on the RPS "A" channel. The NSO bypasses the failed IRM channel and the SRO addresses the technical specification requirements for the failure.
- Drywell to torus differential pressure then begins to decrease and pressure control is regained when the ANSO takes manual control of the drywell to torus differential pressure controller.
- Circulating water pump 2C then trips on overload and the ANSO manually starts circulating water pump 2B to maintain condenser vacuum.
- An ECCS suction line break occurs resulting in a lowering torus water level. HPCI spuriously initiates 5 minutes later. The HPCI System should be secured, the reactor scrammed and an emergency depressurization performed as directed by the DEOP for primary containment control. The EHC system is lost when the reactor is scrammed.
- The scenario terminates when an Emergency Depressurization has been performed.

*A drifting  
The Rx Bldg to Torus differential pressure instrument will cause the 2A Rx Bldg to Torus Vacuum Breaker to open.  
The US will address Tech Spec.*

### **Event One – Swap TBCCW Pumps**

The crew swaps TBCCW pumps by starting 2B TBCCW pump and stopping the 2A TBCCW pump

Malfunctions required: 0

Success Path

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

### **Event Two – Power Change with Rods**

The crew increases reactor power by withdrawing control rods per DGP 0400-01, and DGP 03-04, .

Malfunctions required: 0

Success Path

- Control rods pulled per applicable procedures.

### **Event Three – Control Rod Double Notch**

The crew recognizes and responds to control rod that double notches. The crew should insert the control rod to its target position

Malfunctions required: 1 (control rod double notch)

Success Path

- The control rod moved to its target position.

### **Event Four – IRM Channel Fails Upscale**

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

Malfunctions required: 1 (IRM Fails Upscale)

Success Path

- Bypasses the IRM and resets the half scram.

### **Event Five – Drywell to Torus Differential Pressure Controller Failure**

The crew recognizes and responds to a failure of the automatic mode of the drywell pressure controller.

Malfunctions required: 1 (Controller input fails high)

Success Path

- Place the drywell to torus differential pressure controller in manual mode and controls differential pressure manually

*Insert next page*

### Event Six – Circulating Water Pump Trip

The crew should recognize and respond to Circulating water pump 2C tripping on overload. The ANSO should manually start circulating water pump 2B to maintain condenser vacuum.

Malfunctions required: 1 (Circulating Water Pump trip)

Success Path:

- Start 2B Circulating Water Pump

### Events Seven and Eight – Torus Leak

The crew should recognize and respond to a lowering torus water level.

Malfunctions required: 3 (Torus Leak)  
(2A EHC pump trip)  
(HPCI spurious initiation)

Success Path:

- Prevent HPCI operation
- Emergency Depressurize
- Stabilizes the plant

### Scenario Recapitulation

Total Malfunctions:	8	
Abnormal Events:	4	
Major Transients:	1	(emergency depressurization)
EOPs Entered:	3	
EOP Contingencies:	1	(emergency depressurization)

Op-Test No: ILT 01-1Scenario No.: ILT-N-2Event No. 1Page 1 of 1

Event Description: Maintenance has been completed on TBCCW pump 2B and the SRO directs the ANSO to switch running pumps and place the TBCCW pump 2B in service.

Time	Position	Applicant's Actions or Behavior
	<b>ANSO</b>	<p>Performs the following actions per DOP 3800-01, Turbine Building Closed Cooling Water System(TBCCW):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Directs NLO to verify 2B TBCCW pump suction and discharge valves open.</li> <li><input type="checkbox"/> Directs NLO to verify 2B TBCCW pump oil levels</li> <li><input type="checkbox"/> Starts 2B TBCCW pump and verifies proper operation.</li> <li><input type="checkbox"/> Stops 2A TBCCW pump.</li> <li><input type="checkbox"/> Verifies system parameters normal.</li> </ul> <p><b><u>ROLE PLAY:</u></b></p> <p>NLO to verify 2B TBCCW pump suction and discharge valves open (wait 1 min):</p> <p>Report "2B TBCCW pump suction and discharge valves are open".</p> <p>NLO to verify 2B TBCCW pump oil levels (wait 1 min):</p> <p>Report "2B TBCCW pump oil levels are normal".</p> <p>NLO to report on operation of 2B TBCCW pump:</p> <p>Report "2B TBCCW pump is operating normally" ←</p>
	<b>SRO</b>	Directs swapping from 2A TBCCW pump to 2B TBCCW pump per DOP 3800-01, Turbine Building Closed Cooling Water System (TBCCW).
	<b>NSO</b>	Monitors panels and assists as directed.
		<p><b><u>Event 1 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- 2B TBCCW pump running and 2A TBCCW pump stopped.</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

NLO to check TBCCW system parameters after 2A TBCCW pump off (wait 1 min):  
Report "TBCCW system parameters are normal".

Op-Test No: ILT 01-1Scenario No: ILT-N-2Event No. 2Page 1 of 1

Event Description: The NSO, as directed by the SRO, then continues the power ascension for unit startup by control rod withdrawal.

Time	Position	Applicant's Actions or Behavior
	<b>NSO</b>	<p>Performs the following actions per DOP 0400-01, Reactor Manual Control System Operation, and DGP 03-04, Control Rod Movements, as directed</p> <p><u>Verifies the following prior to moving any control rod:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Control rod selected on the select matrix is correct rod.</li> <li><input type="checkbox"/> Second Verification requirements satisfied.</li> <li><input type="checkbox"/> Rod Out Permit light is illuminated.</li> <li><input type="checkbox"/> Drive water pressure at nominal 260 psid.</li> </ul> <p><u>Withdraws rods as follows:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 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.</li> <li><input type="checkbox"/> Verifies ON light illuminated and proper Control Rod Timer operation.</li> <li><input type="checkbox"/> Releases switches before target position is reached.</li> <li><input type="checkbox"/> Verifies rod settles to target position and proper response of nuclear instrumentation.</li> </ul>
	<b>ANSO / or Surrogate</b>	<p>Performs second verification checks.</p> <p><u>For first rod in a step:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Verifies correct control rod pattern</li> <li><input type="checkbox"/> Verifies correct step and array.</li> <li><input type="checkbox"/> Verifies RWM rod blocks enabled</li> </ul> <p><u>For all rods moved:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Verifies correct control rod selected.</li> <li><input type="checkbox"/> Verifies planned control rod motion is correct.</li> <li><input type="checkbox"/> Immediately notify the NSO of errors during rod motion.</li> <li><input type="checkbox"/> Verifies control rod at target position.</li> </ul>
	<b>SRO</b>	<p>Directs pulling control rods.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Reviews REMA.</li> <li><input type="checkbox"/> Designates second verifier.</li> <li><input type="checkbox"/> Directs NSO to pull rods.</li> </ul>
		<p><b><u>Event 2 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- Sufficient power increase.</li> <li>- AND at the direction of the NRC chief examiner.</li> </ul>

Op-Test No: ILT 01-1Scenario No: ILT-N-2Event No: 3Page 1 of 1

Event Description: During the control rod withdrawal, a control rod double notches beyond the withdraw limit and must be repositioned

Time	Position	Applicant's Actions or Behavior
	<b>NSO</b>	<p>Two possible paths can occur:</p> <p><b>Either:</b> Observes and announces that control rod N-13 has moved to position 14 (1 notch beyond its target position) and responds to alarms:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 902-5 B-3 Rod Worth Min Block</li> <li><input type="checkbox"/> 902-5 C-3 Rod Out Block</li> </ul> <p>Should perform the following actions per DOA 0300-12, Mispositioned Control Rod:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Discontinues rod movement and notifies SRO.</li> <li><input type="checkbox"/> Moves the mispositioned rod to its target position.</li> <li><input type="checkbox"/> Records - DOS-0300-06, Control Rod Abnormality Record.</li> </ul> <p><b>Or:</b> When observes rod N-13 moving past its target position of 12, then:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Uses the Emerg Rod In position of the Rod Out Notch Override switch to move the rod back to its target position prior to it latching in to position 14.</li> <li><input type="checkbox"/> Notifies the SRO.</li> <li><input type="checkbox"/> Records - DOS-0300-06, Control Rod Abnormality Record.</li> </ul>
	<b>SRO</b>	<p>May enter and direct performance of DOA 0300-12, Mispositioned Control Rod.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Notifies the Shift Manager.</li> <li><input type="checkbox"/> May refer to ITS 3.1.3 and determine that no actions are required.</li> </ul> <p>May enter DOA 0300-05, Inoperable or Failed Control Rod Drives.</p> <p><b>ROLE PLAY:</b></p> <p>Respond as the Shift Manager.</p> <p>QNE: If crew requests guidance from the QNE, respond "I recommend inserting rod N-13 to position 12."</p>
	<b>ANSO</b>	<p>Monitors panels and assists as directed.</p>
		<p><b>Event 3 Completion Criteria:</b></p> <ul style="list-style-type: none"> <li>- Rod returned to target position</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>



Op-Test No: ILT 01-1Scenario No.: ILT-N-2Event No. 4Page 1 of 1

Event Description: IRM channel 12 then fails upscale and a half-scam occurs on the RPS "A" channel. The NSO bypasses the failed IRM channel and the SRO addresses the technical specification requirements for the failure.

Time	Position	Applicant's Actions or Behavior
		<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC chief examiner, activate trigger 1, fails IRM 12 channel upscale</p> <p><b>NSO</b></p> <p>Should perform the following actions per DAN 902-5 C-15:</p> <ul style="list-style-type: none"> <li>□ If not in the RUN Mode, verifies the following occurred: <ul style="list-style-type: none"> <li>• Channel A half scam</li> <li>• Rod Block.</li> </ul> </li> <li>□ Verifies IRM 12 readings against other IRMs on 902-5 panel.</li> <li>□ Verifies IRM range switch in correct position</li> <li>□ Bypasses IRM 12 after T. S. compliance verified by SRO.</li> <li>□ Resets RPS channel A per DOP 0500-07, Insertion/Reset of Manual Half Scram, as follows: <ul style="list-style-type: none"> <li>• Verifies half scam no longer required</li> <li>• Turns the Scram Reset switch in each direction and verifies all eight white group solenoid lights are lit.</li> <li>• Verifies alarm 902-5 A-10, Channel A Manual Trip, resets.</li> </ul> </li> </ul> <p><b>ANSO</b></p> <p>Should perform the following actions per DAN 902-5 C-10:</p> <ul style="list-style-type: none"> <li>□ Verifies IRM 12 readings against other IRMs on 902-36 panel.</li> <li>□ Verifies IRM 12 function switch in operate.</li> <li>□ Verifies power supplies operating properly.</li> </ul> <p><b>SRO</b></p> <ul style="list-style-type: none"> <li>□ Should references plant technical documents: <ul style="list-style-type: none"> <li>• ITS Table 3.3.1.1.A-1, verifies sufficient RPS IRM trip channels (3 available / 3 required for A channel) for Mode 2.</li> <li>• TRM Table T3.3.a-1, verifies sufficient APRM rod block channels available (7 available / 6 required) for Mode 2.</li> </ul> </li> <li>□ Should direct IRM 12 bypassed and the half scam reset per DOP 0500-07, Insertion/Reset of Manual Half Scram.</li> <li>□ Notifies the Shift Manager and IMD.</li> </ul> <p><b><u>Role Play:</u></b></p> <p>Respond as persons notified.</p> <p><b><u>Event 4 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- IRM 12 bypassed.</li> <li>- Half scam reset.</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

Op-Test No: ILT 01-1Scenario No.: ILT-N-2Event No.: 5Page 1 of 1

Event Description: Drywell to Torus differential pressure then begins to decrease and pressure control is regained when the ANSO takes manual control of the Drywell to Torus differential pressure controller.

Time	Position	Applicant's Actions or Behavior
		<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC chief examiner, activate trigger 2, which causes drywell to torus differential pressure controller input to fail high causing the demand to fail to 0%.</p> <p><b>ANSO</b></p> <p>Acknowledges and announces alarm 902-4 B-15, DW to Torus DP Hi/Lo, and performs the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Should diagnose failure of the drywell to torus differential pressure controller AUTO mode of operation.</li> </ul> <p>Performs any of the following as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Places the drywell to torus differential pressure controller to MAN and controls the drywell to torus differential pressure manually;</li> <li><input type="checkbox"/> AND / OR, vents the torus to Reactor Building Ventilation per DOP 1600-01, Normal Pressure Control of the Drywell or Torus: <ul style="list-style-type: none"> <li>• Verifies atmospheric sample results allow venting.</li> <li>• Verifies U2 Reactor Building Ventilation operating.</li> <li>• Verifies AO 2-1601-91 open.</li> <li>• Opens AO 2-1601-24 (closes when desired to stop venting)</li> <li>• Opens AO 2-1601-61 (closes when desired to stop venting)</li> </ul> </li> <li><input type="checkbox"/> May close AO 2-1601-58 per DOP 1600-05, Primary Containment Inerting and Atmosphere Control.</li> </ul> <p><b>SRO</b></p> <p>To maintain Primary Containment pressures to those specified in DOP 1600-05, Primary Containment Inerting and Atmosphere Control, should direct performance of any of the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Placing the drywell torus differential pressure controller to MAN and controlling Drywell to Torus differential pressure manually;</li> <li><input type="checkbox"/> AND / OR, venting the torus to Reactor Building Ventilation per DOP 1600-01, Normal Pressure Control of the Drywell or Torus, to maintain the required differential pressure.</li> <li><input type="checkbox"/> May direct closing AO 2-1601-58 per DOP 1600-05, Primary Containment Inerting and Atmosphere Control.</li> <li><input type="checkbox"/> May notify IMD.</li> </ul> <p><b>NSO</b></p> <p>Monitors panels and assists as directed.</p> <p><b><u>ROLE PLAY:</u></b></p> <p>IMD to investigate drywell pressure controller:</p> <p>Respond "I will send a technician to investigate".</p> <p><b><u>Event 5 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- Drywell to Torus differential pressure control in progress.</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

Op-Test No. ILT-01-1Scenario No. ILT-N-2Event No. 6Page 1 of 1

Event Description: Circulating water pump 2C then trips on overload and the ANSO manually starts circulating water pump 2A to maintain condenser vacuum.

Time	Position	Applicant's Actions or Behavior
	ANSO	<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC chief examiner, activate trigger 3, which trips 2C Circulating Water pump.</p> <p>Performs the following actions per DAN 932-1 A-15, Circ Wtr PP Trip, DOA 4400-01, Circulating Water System Failure, and DOA 6500-10, 4KV Circuit Breaker Trip, as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Starts 2B Circulating Water pump (immediate action)</li> <li><input type="checkbox"/> Verifies condenser vacuum returning to normal.</li> <li><input type="checkbox"/> Verifies 2C Circulating Water pump discharge valve closes.</li> <li><input type="checkbox"/> Sends NLO to check 2C Circulating Water pump breaker and operation of 2B Circulating Water pump.</li> <li><input type="checkbox"/> Places 2C Circulating Water pump control switch in PTL.</li> <li><input type="checkbox"/> Verifies Circulating Water Flow reversal valves lined up normally.</li> <li><input type="checkbox"/> May send NLO to check cribhouse bar racks and traveling screens.</li> </ul> <p><b><u>ROLE PLAY:</u></b></p> <p>NLO to 2C Circulating Water pump breaker (wait 3 min)</p> <p>Report "2C Circulating Water pump breaker has an overcurrent target up".</p> <p>NLO to check 2B Circulating Water pump operation (wait 2 min)</p> <p>Report "2B Circulating Water pump is operating normally".</p> <p>NLO to check cribhouse bar racks and traveling screens (wait 3 min)</p> <p>Report "the cribhouse bar racks and traveling screens are clear".</p>
	SRO	<p>Enters and directs performance of DOA 4400-01, Circulating Water System Failure, and DOA 6500-10, 4KV Circuit Breaker Trip.</p> <p>Notifies the Shift Manager and EMD.</p> <p><b><u>Role Play:</u></b></p> <p>Respond as persons notified.</p>
	NSO	<p>Monitors panels and assists as directed.</p> <p><b><u>Event 6 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- 2B Circulating Water pump started.</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

Op-Test No: ILT 01-1 Scenario No: ILT-N-2 Event No: 7 & 8 Page 1 of 3

Event Description: An ECCS suction line break occurs resulting in a lowering torus water level. HPCI spuriously initiates. HPCI should be secured, the reactor should be scrammed and an emergency depressurization should be performed as directed by the DEOP for primary containment control.

Time	Position	Applicant's Actions or Behavior
	ANSO	<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC chief examiner, activate trigger 4, which starts an ECCS suction line break in the torus basement and spuriously initiates HPCI after 5 minutes.</p> <p>When the unit is manually scrammed, verify trigger 5 automatically activates to trip 2A EHC Pump.</p> <p><b>Note:</b> It takes about 30 minutes for torus level to reach 12 feet. At the discretion of the lead NRC examiner, use the cues later in this event to jump ahead in time to expedite the level drop if desired.</p> <ul style="list-style-type: none"> <li>- Reports the following alarms: <ul style="list-style-type: none"> <li>• 902-4 C-23 Torus Narrow Range Wtr Lvl Lo</li> <li>• 923-4 A-3 U2 E RBFD Sump Lvl Hi Hi</li> <li>• 923-4 B-2 U2 W RBFD Sump Lvl Hi Hi</li> </ul> </li> <li>- Checks the torus narrow range level indicator. Reports level dropping.</li> <li>- Directs NLO to perform DOS 1600-02, Torus Level Verification Using Local Sight Glass.</li> <li>- Directs NLO to investigate leakage to torus basement.</li> <li>- Verifies proper operation of the RBFD Sump pumps. (will require resetting the Group 2 isolation at both the 902-5 panel and the 923-4 panel for the sump pumps to operate if a Group 2 Isolation occurs)</li> </ul> <p><b><u>ROLE PLAY:</u></b></p> <p>NLO to perform DOS 1600-02, Torus Level Verification Using Local Sight Glass: (wait 5 min)</p> <p>Report "Local Torus level is (use value from variable ppc232, unless it is &lt;20", then report it is below the sightglass)".</p> <p>NLO to investigate leakage (wait 2 min).</p> <p>Report "There is a large rupture from a pipe attached between the torus shell and the torus suction ring header near the East LPCI Corner room. The torus basement floor is covered with water". There is no valve on the line".</p> <p>NLO to report LPCI corner status (wait 2 min):</p> <p>Report "there is no water in either LPCI corner room".</p> <p>Maintenance to determine if the leak can be stopped (wait 3 min);</p> <p>Report "Maintenance cannot stop the leak".</p>

Op-Test No. ILT 01-1 Scenario No. ILT-N-2 Event No. 7 & 8 Page 2 of 3

Event Description: An ECCS suction line break occurs resulting in a lowering torus water level. HPCI spuriously initiates. HPCI should be secured, the reactor should be scrammed and an emergency depressurization should be performed as directed by the DEOP for primary containment control.

Time	Position	Applicant's Actions or Behavior
	ANSO	<p>Performs the following actions per DEOP 200-01, Primary Containment Control, as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> May attempt to add water to the torus by opening the HPCI 14 valve.</li> <li><input type="checkbox"/> Monitors/Reports DEOP 200-01 entry parameters.</li> <li><input checked="" type="checkbox"/> <b>Prevents HPCI operation</b> by placing the HPCI 4 valve in PTL.</li> </ul>
	ANSO	<p>Performs the following actions per DOA 0040-02, Localized Flooding in Plant, as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Makes PA announcement.</li> <li><input type="checkbox"/> Directs NLO to investigate leakage to torus basement.</li> <li><input type="checkbox"/> Notifies Radiation Protection and Security as time permits.</li> </ul> <p><b>Cue: (if desired for time compression)</b> <i>handled by Delf</i></p> <p>When torus level is &lt; 14.5 feet and/or at the discretion of the lead NRC examiner, cue the crew that we are taking a time jump and that both torus wide range level meters indicate 12.5 feet and are dropping at about 0.1 ft per minute.</p>
	SRO	<p>Enters and directs performance of DEOP 0200-01, Primary Containment Control:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> May attempt to add water to the torus by opening the HPCI 14 valve.</li> <li><input type="checkbox"/> May decide to anticipate RPV Blowdown: <ul style="list-style-type: none"> <li>• directs a manual scram per DGP 02-03, Reactor Scram.</li> <li>• enters DEOP 100, RPV Control.</li> <li>• directs opening turbine bypass valves.</li> </ul> </li> <li><input checked="" type="checkbox"/> <b>Directs ANSO to secure HPCI</b> by placing the HPCI 4 valve in PTL before torus level reaches 12 feet.</li> </ul> <p>Enters DEOP 0300-01, Secondary Containment Control, and directs:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> If Reactor Building Ventilation Isolates when unit is scrammed, directs restarting Reactor Building Ventilation.</li> </ul>
	ANSO	<p>Performs DEOP 300-01, Secondary Control, as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Time permitting, restarts Reactor Building Ventilation (if isolates when the reactor is scrammed).</li> </ul>
	NSO	<p><b>Performs DGP 02-03, Reactor Scram</b>, as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Presses scram pushbuttons</li> <li><input type="checkbox"/> Places mode switch in shutdown</li> <li><input type="checkbox"/> Checks rods inserted</li> <li><input type="checkbox"/> Maintain RPV/L between +25 and +35 inches or as directed by DEOPs</li> </ul>

Op-Test No: ILT 01-1 Scenario No: ILT-N-2 Event No: 7 & 8 Page: 3 of 3

Event Description: An ECCS suction line break occurs resulting in a lowering torus water level. HPCI spuriously initiates. HPCI should be secured, the reactor should be scrammed and an emergency depressurization should be performed as directed by the DEOP for primary containment control.

Time	Position	Applicant's Actions or Behavior
	ANSO	<p><input type="checkbox"/> When attempts to open bypass valves (if directed), reports that the 2B EHC pump tripped.</p> <p><b>Cue: (if time compression was used above)</b></p> <p>10 minutes after the initial time compression cue and/or at the discretion of the lead NRC examiner, cue the crew that both torus wide range level meters indicate 11.5 feet and are dropping at about 0.1 ft per minute.</p>
	SRO	<p>When informed that torus level is approaching 11 feet:</p> <p><input checked="" type="checkbox"/> <b>Directs a manual scram</b> (if not already directed above per DGP 02-03, Reactor Scram.</p> <p>Enters DEOP 0400-02, Emergency Depressurization, and directs:</p> <p><input type="checkbox"/> Initiation of Iso Condenser to maximum flow</p> <p><input type="checkbox"/> Verification that SP/L &gt;6 feet.</p> <p><input checked="" type="checkbox"/> <b>Opening all ADS valves</b></p> <p><input type="checkbox"/> Verification all relief valves are open.</p>
	ANSO	<p>Performs DEOP 0400-02, Emergency Depressurization, actions as directed:</p> <p><input type="checkbox"/> Initiates Iso Condenser to maximum flow</p> <p><input type="checkbox"/> Verifies that SP/L &gt;6 feet.</p> <p><input checked="" type="checkbox"/> <b>Opens all ADS valves</b></p> <p><input type="checkbox"/> Verifies all relief valves are open.</p> <p><b>Critical Tasks: (identified by ✓ in guide)</b></p> <p><input type="checkbox"/> With reactor at power and suppression pool water level cannot be maintained in the safe region of the heat capacity temperature limit, <b>MANUALLY SCRAM</b> the reactor.</p> <p><input type="checkbox"/> When it is determined that suppression pool water level cannot be held above 12 feet wide range (level of HPCI exhaust), <b>TRIP AND PREVENT HPCI</b> operation irrespective of adequate core cooling.</p> <p><input type="checkbox"/> When it is determined that suppression pool water level cannot be held above 11 feet wide range (level of the downcomers), <b>INITIATE</b> emergency depressurization.</p> <p><b>Scenario Completion Criteria:</b></p> <ul style="list-style-type: none"> <li>- HPCI secured.</li> <li>- Reactor scrammed.</li> <li>- RPV depressurization in progress.</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

## REFERENCES

PROCEDURE	TITLE	REVISION
DAN 9000 G-2	Area Temp High	06
DAN 9000 B-15	DW to Torus DP Hi/Lo	06
DAN 9000 H-17	Vlv Leak Det Sys Temp Hi	10
DAN 9000 A-15	Channel B Manual Trip	04
DAN 9000 B-3	Rod Worth Min Block	06
DAN 9000 C-3	Rod Out Block	09
DAN 9000 C-15	Channel B IRM Hi Hi/Inop	07
DOP 0400-01	Reactor Manual Control System Operation	16
DOP 0500-07	Insertion/Reset of Manual Half Scram	02
DOP 1600-01	Normal Pressure Control of the Drywell or Torus	18
DOP 1600-05	Primary Containment Inerting and Atmosphere Control	37
DOP 3800-01	Turbine Building Closed Cooling Water System (TBCCW)	06
DOS 1600-02	Torus Level Verification Using Local Sight Glass.	12
DOA 0300-05	Inoperable or Failed Control Rod Drives	20
DOA 6500-10	4KV Circuit Breaker Trip	03
DGP 02-03	Reactor Scram	54
DGP 03-04	Control Rod Movements	41
DEOP 0100-00	RPV Control	10
DEOP 0200-01	Primary Containment Control	10
DEOP 0300-01	Secondary Containment Control	07
DEOP 0400-02	Emergency Depressurization	04

## PRE-SCENARIO ACTIVITIES

### 1. If applicable, conduct pre-scenario activities in accordance with TQ-AA-106-0107, SIMULATOR EXAMINATION BRIEFING

- Provide the crew with a copy of Control Room work request list.
- Provide the team with a copy of DGP 01-01, Unit Startup, which is marked up to the point of "verifying main turbine bypass valves open and maintaining pressure at 920 psig".
- Provide the team with a copy of DOP 3800-01, Turbine Building Closed Cooling Water System (TBCCW).
- If the crew inquires about a startup plan, inform them the Shift Manager is maintaining it.
- Provide the crew with a copy of the REMA.
- Inform the crew that (select an individual) is the QNE present in the Control Room.
- Inform the crew that an IM technician is on site to adjust gains.
- Direct the crew to perform their briefs prior to entering the simulator.

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

- Initialize simulator in IC 7 and perform the following before moving continuing below:

1) Use the Rodmove program to pull rods through step 34.

2) Verify 2A Stator Cooling Water and 2A EHC Pumps running.

3) Add the following variables to a Monitor program screen and change the first two as necessary to obtain a DW pressure of ~1.1 psig and torus pressure of ~0.0 psig:

a) comndw(1)

b) comnww(1)

c) ~~cc268~~

d) ~~cc268~~

b. Run the initial setup caep file: **ilt-n-2.cae**.

c. Verify the Primary Containment controllers are in AUTO and controlling in the normal at power pressures.

d. Verify the following simulator conditions:

2) Condensate Demin dP between 20 and 45 psid.

3) Condensate pump amps between 160 and 255 amps.

4) Oper AO 2-1601-58.

5) Verify 2A TBCCW pump running and 2B off.

6) Verify backpanel lights reset.

d. Secure the following equipment and tag out of service:

1) Place IRM 16 902-5 panel joystick in bypass and place an Equipment Status Tag on it.

2) Place 2B EHC Pump control switch in PTL and hang an OOS card on it.

e. Add variable ppc232 to a Monitor program screen.

f. Advance the chart recorders.

g. Mark up rod sequence as completed through step 34.

~~h. Place the REMA sheet in the appropriate book.~~

i. Complete the Simulator Setup Checklist.

Run Caep file  
Inert.cae

← 1.5) Set Stator Cooling Water  
PCY to 28.0 MP 4/26/02

← 4) Start 2E DW Cooler. MP 4/26/02



ILT 01-1 NRC EXAM SCENARIO ILT-N-2 Initial Setup CAEP:

# ilt-n-2.cae  
# Setup for ilt-n-2  
# Written by JAS  
# Rev 00  
# Date 02/02

# INITIAL CONDITIONS

# overrides IC rad mon downscale alarm off  
imf ser0004 off  
imf ser0019 off  
# opens the N2 makeup inlet isolation.  
irf p33 true  
# lowers the isolation condenser temperatures.  
set ich2la = 50.0  
set ich2lb = 50.0  
set ichshell = 50.0

# SETUP EVENT TRIGGERS

# Event Trigger 1 IRM 12 channel fails upscale  
trgset 1 "0"|2  
imf nii12pot (1) 125.0|2

# Event Trigger 2 drywell to torus DP controller input fails upscale.  
trgset 2 "0"|2  
ior pcpdwtor (2) 3.0|2

# Event Trigger 3 inserts a 2C circulating water pump trip  
trgset 3 "0"|4  
imf hp8 (3)|4

# Event Trigger 4 inserts an ECCS suction line break and spuriously initiates HPCI 5 minutes later. HPCI injection is prevented.  
trgset 4 "0"|2  
imf csbrksev (4) 100.0|4  
irf hp8vbkr (4) tripped|4  
imf hpinit (4 05:00)|4

# Event Trigger 5 trips 2A EHC pump when the reactor is scrammed  
trgset 5 "rpdmode4 .or. rpdmode3"|6  
imf j33 (5)|6

Trigger 6 for 2A Rx Bldg to Torus Vacuum Breaker

# Event Trigger 16 insert rod N-13 drift out malfunction when it is out past position 11  
trgset 16 "rdzactls(163) > 31.0"|6  
imf rodn13do (16)|6

# Event Trigger 17 deletes rod N-13 drift out malfunction when it is out past position 12  
trgset 17 "rdzactls(163) > 38.0 .or. (rds303em .and. rdlseiw(163))"|6  
trg 17 "dmf rodn13do"|6

# END

Date: TODAY

## Unit 2 Turnover

ECCS Status: All

### Online Information

N/AMWe

Online Risk: Green CDF: 1.00

Risk Equipment:

MODE 1

### Shutdown Information

Time to Boil: N/A

Shutdown Risk: N/A

Protected Path: N/A

### Unit 2 Priorities

Continue startup

### Station Priorities

### LCORAs

LCORA # None  
Title

Start  
Clock Ends

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐ Start 2B TBCCW pump  
☐ Continue startup

### Shift 3 Activities

☐  
☐

### Common Unit Activities

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐  
☐

### Shift 3 Activities

☐  
☐

### Common Unit Procedures / Surveillances in Progress

None

### Unit 2 Conditions, Status, Abnormalities

2 hr ago	0500	IRM 16 OCS due to power supply failure. IMD waiting for replacement power supply to arrive from Quad Cities Station.
6 hr ago	5650	2B EHC pump OOS due to a problem with its pressure compensator. Expected BIS next shift.

### Compensatory Actions, Extra Checks

**Equipment OOS**

2 hr ago 990045654 IRM 16  
6 hr ago 990045652 2B EHC Pump

**Service Unit Status**

9 days ago	2A Cond Demin	Cut In
7 days ago	2B Cond Demin	Cut In
16 days ago	2C Cond Demin	Cut In
2 days ago	2D Cond Demin	Cut Out
11 days ago	2E Cond Demin	Cut Out
6 days ago	2F Cond Demin	Cut Out
2 days ago	2G Cond Demin	Cut Out
376 days ago	2A RWCU	Cut In
240 days ago	2B RWCU	Cut Out
20 days ago	2C RWCU	Cut Out
76 days ago	U2 FPC Demin	Cut In

**Unit 2 Abnormal Component Position**

---

**U2 Open Operability Determinations with Compensatory Actions**

---

**Events and Misc. Information**

DGP 01-01 in progress. Rods pulled up through step 34. Continue the startup.  
2B TBCCW maintenance complete; swap TBCCW pumps. (start 2B, stop 2A)

*QNE is in the control room*

**DW samples:**

Iodine 131	$2.5 \times 10^{-13}$
Beta/Gamma	$1.5 \times 10^{-11}$

---

Date TODAY

## Unit 3 Turnover

ECCS Status: All available

### Online Information

N/A MWe

Online Risk: N/A

Risk Equipment: N/A

MODE 4

### Shutdown Information

Time to Boil: 24 hrs.

Shutdown Risk: Green

Protected Path: None

### Unit 3 Priorities

Complete startup checklists

### Station Priorities

### LCORAs

LCORA # None

Title

Start

Clock Ends

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐  
☐

### Shift 3 Activities

☐  
☐

### Common Unit Activities

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐  
☐

### Shift 3 Activities

☐  
☐

### Common Unit Procedures / Surveillances in Progress

None

### Unit 3 Conditions, Status, Abnormalities

DGP 01-S1, Start-up Checklist, in progress

### Compensatory Actions, Extra Checks

None

**Equipment OOS**

None

**Service Unit Status**

5 days ago	3A Cond Demin	Cut In
8 days ago	3B Cond Demin	Cut In
10 days ago	3C Cond Demin	Cut In
5 days ago	3D Cond Demin	Cut Out
3 days ago	3E Cond Demin	Cut Out
15 days ago	3F Cond Demin	Cut Out
3 days ago	3G Cond Demin	Cut Out
750 days ago	3A RWCU	Cut In
390 days ago	3B RWCU	Cut Out
60 days ago	3C RWCU	Cut Out
444 days ago	U3 FPC Demin	Cut In

---

**Unit 3 Abnormal Component Position**

None

---

**U3 Open Operability Determinations with Compensatory Actions**

None

---

**Events and Misc. Information**

DGP 01-S1, Start-up Checklist, in progress

---

## "ReMA for D2C18 Startup"

Unit: 2  
 Sequence: ~~2X.0~~ <sup>X4.0</sup>  
 Cycle: 18

ACR: \_\_\_\_\_ Date Time: Yesterday/2200  
 Term: \_\_\_\_\_ on Date Time: \_\_\_\_\_  
 ACN: \_\_\_\_\_ Date Time: \_\_\_\_\_  
 Term: \_\_\_\_\_ on Date Time: \_\_\_\_\_

## PART II: REACTIVITY MANEUVER APPROVAL

Instructions/Steps to Accomplish the Evolution (use FORMs O and P, if needed)  
 Pull rods to criticality, heatup to rated pressure, and to  $\sim 25\%$  CTP.

## Limiting Parameters ('X' the applicable limits, if any):

☐ FLCPR(OD-20) ☐ APRAT(OD-20) ☐ FDLRX(OD-20) ☐ FDLRA(OD-20) ☐ FLPD(OD-20) ☐ MFLPD/FRP(OD-20)  
☐ CTP(OD-3 or -9) ☐ FCL (OD-76) ☐ P-PCS (OD-20) ☒ Other (record below)

## Comments (indicate range of values and monitoring frequency, if any):

1. Monitor moderator temperature once per hour during approach to critical. Per 17-AA-233, moderator temperature must be less than 240 F when the reactor reaches criticality. Moderator temperature should not fall below 140 F without a new Estimated Critical Position (ECP) calculated by a QNE.
2. Reactor period should not be less than 30 seconds prior to, or upon criticality.
3. During the approach to criticality, calculate the reactor period before pulling the next notch upon continuously increasing SRM count rates.

## Other Information:

Upon achieving criticality, calculate the reactor period before pulling the next notch with continuously increasing SRM count rates.

Remain within the analyzed rod position sequence by following sequence ~~2X.0~~ <sup>X4.0</sup> until power  $> 10\%$ .

Criticality is predicted in the group 3 rods 12-48. Several rods in group 3 are predicted to have high notch worths between 24-48, and these rods are noted in the sequence. The QNE will provide a recommendation on the necessity of single notching each rod between 24-48.

The ECP using sequence ~~2X.0~~ <sup>X4.0</sup> with a moderator temperature of 190 F is Step 11, K-15 @ 36.

ECP with approximately  $-1\%$  delta Keff: Step 3, J-14 @ 26.

ECP with approximately  $+1\%$  delta Keff: Step 11, H-13 @ 32.

The ECP using sequence ~~2X.0~~ <sup>X4.0</sup> with a moderator temperature of 140 is step 11, F-11 @ 22.

The ECP using sequence ~~2X.0~~ <sup>X4.0</sup> with a moderator temperature of 240 is step 11, H-05 @ 16.

The analyzed rod position sequence must be followed until achieving 10% of Rated Thermal Power for RDA concerns. The analyzed rod position sequence allows up to 8 rods OOS. Rods are only considered OOS for the purposes of the analyzed rod position sequence if they are unmovable AND they are not at the target position. QNE will provide assistance in ensuring compliance with the analyzed rod position sequence.

~~Once above 10% CTP, the adherence to analyzed rod position sequence is not required. 10% CTP is  $\sim 2.1$  BPV and  $\sim 25$  on range 10 of IRMs. Once above 10% CTP, out of sequence rod maneuvers per Spec. Instructions to rapidly proceed through start up and scram time testing of L-06 and L-13 can occur. The reactor must be brought to mode 1 prior to scram time testing to prevent the mode 2 APRM rod blocks and scram from interfering with the scram timing.~~

Prepared by: J.M. Qne/2 days ago  
 NE/QNE/Date

Reviewed by: U.R. Kohnen/2 days ago  
 QNE/Date or N/A

Approved by: P. Seper/yesterday  
 Unit Supervisor/Date

Change for same as item 1

# Dresden Generating Station

## SIMULATOR EXERCISE GUIDE

ILT 01-1 NRC EXAM

SCENARIO

ILT-N-3

Rev. 00

02/02

DEVELOPED BY

Exam Author

Date

APPROVED BY

Facility Representative

Date

Facility: <u>Dresden</u>	Scenario No: <u>ILT-N-3</u>	Op-Test No: <u>ILT 01-1</u>
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">           Examiners: _____            _____            _____         </div> <div style="width: 45%;">           Operators: _____            _____            _____         </div> </div>		
<p><b>Initial Conditions:</b> Approximately 78% reactor power; IRM channel 16 out of service; 2B EHC Pump out of service; Unit 3 is in Mode 4.</p> <p><b>Turnover:</b> Unit shutdown in progress for forced outage; shutdown reactor condensate pump 2B, then continue power reduction for unit shutdown</p>		

Event No.	Malf. No.	Event Type*		Event Description
1	N/A	N	ANSO SRO	shutdown condensate pump for unit shutdown
2	N/A	R	NSO SRO	lower reactor power by reducing recirculation flow
3	SER1375 FWDOP2 FWDOP5	C	NSO SRO	reactor feed pump 2B failure
4	ADS3ESD	I	ANSO SRO	spurious ADS valve opening
5	K11 MGDSCBTR	C	ANSO SRO	stator cooling water pump trips on overload and standby pump fails to start automatically
6	RLLMLS	I	NSO SRO	feedwater level control system setpoint drifts high
7	F44	M	ALL	small recirculation loop break
8	ACDTP21 ACDCL21		ANSO SRO	TR 22 feed to Bus 21 fails to close
9	HP8VBKR HPLCL8		ANSO SRO	HPC injection valve failure

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



## Dresden Generating Station

### NRC ILT EXAM

#### Scenario ILT-N-3

#### Scenario Objective

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

#### Scenario Summary

Initial Conditions:

- ~80% power.
- IRM 16 CCS.
- 2B EHC Pump OOS
- Ready to secure a Condensate Pump.
- Unit 3 is in Mode 4

#### Events:

- Shutdown 2B Condensate Pump
- Power reduction with recirculation flow
- 2B RFP Failure
- E ADSV setpoint drifts low
- 2A stator water cooling pump trips
- Failure of FWLC auto mode
- Recirculation loop leak with loss of high pressure feed.

#### Scenario Sequence

- The team continues the shut down by securing 2B condensate pump.
- Next the team reduces power using recirculation flow.
- A 2B RFP low lube oil condition will require the team to start 2C RFP and secure 2B RFP.
- The E ADSV setpoint will drift low causing it to open. The team should close it by placing its control switch in OFF. The SRO will address Technical Specification requirements.
- The 2A stator cooling water pump trips on overload and the standby pump fails to start automatically. The team should manually start the 2B stator cooling water pump.
- The FWLC system setpoint will begin drifting up. The team should take manual control of the FWLC system.
- A small recirculation loop break occurs causing a reactor scram and high drywell pressure. During the generator trip, Bus 21 will fail to transfer to TR 22 and the 2C RFP Bus 22 breaker will not close resulting in a total loss of high pressure feedwater. The HPCI injection valve fails to open. The team should perform the RPV Control and Primary Containment Control DEOPs. Due to the loss of high pressure injection and RPV level dropping to TAF, the team should Emergency Depressurize and restore RPV level with low pressure injection systems.

### Event Two – Power Reduction With Recirculation Flow

The crew reduces power with recirculation flow per procedures.

Malfunctions required: 0

Success Path:

- Reduces power with recirculation flow per procedures

### Event Three – 2B RFP Failure

The crew recognizes and responds to failure of the 2B RFP lube oil system.

Malfunctions required: 2 (Low Lube Oil Pressure)  
(Failure of aux oil pump to start)

Success Path:

- Starts 2C RFP and secures 2B RFP

### Event Four – E ADSV Setpoint Drifts Low

The crew recognizes and responds to E ADSV setpoint drifting low causing the valve to open.

Malfunctions required: 1 (E ADSV setpoint drift)

Success Path:

- Places the E ADSV control switch to OFF

### Event Five – 2A Stator Water Cooling Pump Trips

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

Malfunctions required: 1 (loss of stator water cooling)

Success Path:

- Manually start 2B stator water cooling pump.

### Event One – Shutdown 2B Condensate Pump

The crew shutdown 2B Condensate Pump

Malfunctions required: 4

Success Path:

- Shuts down 2B Condensate Pump per procedures

2B  
4/26/02

### Event Six – Failure of FWLC Auto Mode

The crew recognizes and responds to failure of the automatic mode of the FWLC system.

Malfunctions required: 1 (FWLC setpoint drift)

Success Path:

- Takes manual control of the FWLC system.

### Event Seven and Eight – Recirculation Loop Leak With Loss Of High Pressure Feed

The crew recognizes and responds to a recirculation loop leak with a loss of high pressure injection systems.

Malfunctions required: 3 (recirculation loop leak)  
(loss of RFPs)  
(HPCI injection valve failure)

Success Path:

- Emergency Depressurize
- Use low pressure injection systems to restore RPV level.

### Scenario Recapitulation

Total Malfunctions	8	
Abnormal Events:	4	
Major Transients:	1	(emergency depressurization)
EOPs Entered:	2	
EOP Contingencies	1	(emergency depressurization)

Op-Test No: ILT 01-1Scenario No: ILT-N-3Event No: 1Page 1 of 1

Event Description: The team continues the shut down by securing 2B Condensate Pump.

Time	Position	Applicant's Actions or Behavior
	<b>SRO</b>	Directs ANSO to secure 2B Condensate Pump per DOP 3300-03, Condensate System Shutdown.
	<b>ANSO</b>	Performs the following actions per DOP 3300-03, Condensate System Shutdown, to shutdown 2B Condensate Pump as directed: <ul style="list-style-type: none"> <li>- Verifies Reactor Feed Pump Suction Pressure &gt;230 psig.</li> <li>- Verifies closed the hydrogen isolation valves. (on turnover)</li> <li>- Stops 2B Condensate Pump</li> <li>- Selects 2B Condensate Pump for standby.</li> <li>- Directs NLO to verify Condensate Pre-filter operating parameters.</li> </ul>
	<b>NSO</b>	Monitors panels and assists as directed.
		<b><u>ROLE PLAY:</u></b> NLO to verify 2B Condensate Pump hydrogen isolation valves closed: Report: "hydrogen isolation valves are closed". NLO to verify 2B Condensate Pump stopped rotating: Report: "2B Condensate Pump has stopped rotating". NLO to verify Condensate Pre-filter operating parameters (wait 2 min): Report: "Condensate Pre-filter operating parameters are normal."
		<b><u>Event 1 Completion Criteria:</u></b> <ul style="list-style-type: none"> <li>- 2B Condensate Pump secured.</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

66 Rev for  
Shutdown

Op-Test No: ILT 01-1Scenario No.: ILT-N-3Event No 2Page 1 of 1

Event Description: The team reduces power using recirculation flow.

Time	Position	Applicant's Actions or Behavior
	<b>NSO</b>	Performs the following actions per DGP 02-01, Unit Shutdown, and DOP 0202-03, Reactor Recirculation Flow Control System Operation: <ul style="list-style-type: none"> <li><input type="checkbox"/> Lowers recirculation pump speed using the master controller potentiometer.</li> <li><input type="checkbox"/> Verifies expected power reduction.</li> </ul>
	<b>SRO</b>	Directs reducing reactor power per DGP 02-01, Unit Shutdown, and DOP 0202-03, Reactor Recirculation Flow Control System Operation, by lowering recirculation pump speed.
	<b>ANSO</b>	Monitors panels and assists as directed.
		<b>Event 2 Completion Criteria:</b> <ul style="list-style-type: none"> <li>- Significant power reduction</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

Op-Test No: ILT 01-1Scenario No: ILT-N-3Event No 3Page 1 of 1

Event Description: A 2B RFP low oil condition will require the team to start 2C RFP and secure 2B RFP.

Time	Position	Applicant's Actions or Behavior
	<b>NSO</b>	<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC chief examiner, activate trigger 1, which inserts 2B RFP low oil pressure and causes failure of its auxiliary oil pump to start.</p> <p>Performs the following actions per DAN 902-6 H-8, 2B RFP Brg Oil Press Loc:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Attempts to start 2B RFP Auxiliary Oil Pump.</li> <li><input type="checkbox"/> Directs NLO to report 2B RFP oil pressure, oil reservoir level and check for oil leaks.</li> <li><input type="checkbox"/> Informs SRO 2B RFP is running with low oil pressure and the auxiliary oil pump will not start.</li> </ul> <p><b><u>ROLE PLAY:</u></b></p> <p>NLO to check 2B RFP (wait 2 min):</p> <p>Report "2B RFP oil pressure is 16 psig. 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".</p> <p>NLO to check 2B RFP Aux Oil pump breaker: (wait 2 min)</p> <p>Report "I see no problems with 2B RFP Aux Oil pump breaker".</p>
	<b>SRO</b>	<p>Directs starting 2C RFP and securing 2B RFP.</p> <p>Contacts the Shift Manager, and appropriate maintenance departments.</p>
	<b>ANSO</b>	Monitors panels and assists as directed.
	<b>NSO</b>	<p>Starts 2C RFP per DOP 3200-03, Startup of second Reactor Feed Pump or Shifting to Alternate Reactor Feed Pump, as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> May direct NLO to perform pre-startup checks.</li> <li><input type="checkbox"/> Places RFPs Standby selector switch in OFF.</li> <li><input type="checkbox"/> Closes the discharge valve.</li> <li><input type="checkbox"/> Opens the recirculation valve.</li> <li><input type="checkbox"/> Verifies RPV level stable.</li> <li><input type="checkbox"/> Starts discharge valve opening.</li> <li><input type="checkbox"/> Starts the RFP. (should start it on Bus 22 per procedure)</li> <li><input type="checkbox"/> Verifies RPV level stable.</li> <li><input type="checkbox"/> Closes the recirculation valve.</li> <li><input type="checkbox"/> Directs NLO to perform post-startup checks.</li> <li><input type="checkbox"/> Verifies auxiliary oil pump stops.</li> </ul>

Op-Test No: ILT 01-1Scenario No: ILT-N-3Event No: 3Page 2 of 3

Event Description: A 2B RFP low lube oil condition will require the team to start another RFP and secure 2B RFP.

Time	Position	Applicant's Actions or Behavior
	NSO	<p><b>ROLE PLAY:</b></p> <p>NLO to perform RFP pre-startup checks (wait 5 min):</p> <p>Respond "I have completed the requested RFP startup pre-checks per step G.1 through G.11 of DOP 3200-03".</p> <p>NLO to perform post-startup checks: (wait 5 min)</p> <p>Respond "The RFP post-startup checks are completed per G.31 of DOP 3200-03".</p> <p>Performs the following actions per DOP 3200-05, Reactor Feed Pump Shutdown, to shutdown 2B RFP as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Verifies zinc injection is not lined up to 2B RFP (may not wait on this).</li> <li><input type="checkbox"/> Places RFPs standby selector switch to OFF.</li> <li><input type="checkbox"/> Opens the recirculation valve.</li> <li><input type="checkbox"/> Verifies RPV level stable</li> <li><input type="checkbox"/> Closes the discharge valve.</li> <li><input type="checkbox"/> Verifies RPV level stable</li> <li><input type="checkbox"/> Stops the RFP.</li> <li><input type="checkbox"/> Verifies the running RFP amps below 1115 amps.</li> <li><input type="checkbox"/> Closes the recirculation valve.</li> <li><input type="checkbox"/> Has NLO verify the RFP has come to rest.</li> <li><input type="checkbox"/> Has NLO adjust zinc injection to ~20 gpm.</li> <li><input type="checkbox"/> Has NLO verify 2-5772-43B closed.</li> </ul> <p><b>ROLE PLAY:</b></p> <p>NLO to verify lineup of zinc injection (wait 1 min):</p> <p>Respond "Zinc injection is lined up to 2A RFP".</p> <p>NLO to verify 2B RFP has come to rest (wait 1 min):</p> <p>Respond "2B RFP has stopped rotating".</p> <p>NLO to verify 2B RFP is not rotating in reverse direction:</p> <p>Respond "2B RFP is not rotating in reverse direction".</p> <p>NLO to adjust zinc injection to ~20 gpm (wait 2 min):</p> <p>Respond "I adjusted zinc injection to ~20 gpm".</p> <p>NLO to verify 2-5772-48B closed (wait 1 min):</p> <p>Respond "5772-48B is closed".</p>

Op-Test No. <u>ILT-01-1</u> Scenario No.: <u>ILT-N-3</u> Event No.: <u>3</u> Page <u>1</u> of <u>3</u>		
Event Description: A 2B RFP low lube oil condition will require the team to start another RFP and secure 2B RFP.		
Time	Position	Applicant's Actions or Behavior
		<b><u>Event 3 Completion Criteria:</u></b> <ul style="list-style-type: none"><li>- 2C RFP started</li><li>- 2B RFP shutdown</li><li>- AND, at the direction of the NRC chief examiner.</li></ul>



Op-Test No: ILT 01-1Scenario No.: ILT-N-3Event No. 4Page 1 of 1

Event Description: The E ADSV setpoint will drift low causing it to open. The team should close it by placing its control switch in OFF.

Time	Position	Applicant's Actions or Behavior
		<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC chief examiner, activate trigger 2, which sets the E ADS valve's setpoint to 390 psig causing it to open.</p> <p><b>ANSO</b> Performs the following actions per EAN 902-3 E-12, 2E Electromatic Relief Vlv Open:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Verifies valve actually opening, checking any of the following: <ul style="list-style-type: none"> <li>• Valve position indicator</li> <li>• Generator output decrease.</li> <li>• Acoustic monitor tripped</li> <li>• Increasing tailpipe temperature.</li> <li>• Torus temperature increasing</li> </ul> </li> <li><input type="checkbox"/> Notifies SRO the valve is open.</li> </ul> <p><b>SRO</b> Enters and directs performance of DOA 0250-01, Relief Valve Failure.</p> <p><b>ANSO</b> Performs DOA 0250-01, Relief Valve Failure, as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Places the 2E Electromatic Relief valve control switch to OFF. (immediate action)</li> <li><input type="checkbox"/> Verifies RPV level stable. (immediate action)</li> <li><input type="checkbox"/> Verifies and reports the valve closed.</li> <li><input type="checkbox"/> Resets the acoustic monitor</li> </ul> <p><b>SRO</b> References Technical Specifications and determines:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> ITS 3.6.2.1, Suppression Pool Average Temperature, is not applicable.</li> <li><input type="checkbox"/> ITS 3.5.1.G, ECCS, if decides the failure does affect its ADS function, then restore the ADS valve to OPERABLE status within 14 days, otherwise, this is not applicable.</li> <li><input type="checkbox"/> ITS 3.4.3.A, Safety and Relief Valves, restore the relief valve to OPERABLE status within 14 days.</li> <li><input type="checkbox"/> ITS SR 3.6.1.8.2, Suppression Chamber to Drywell Vacuum Breakers, perform a functional test of each required vacuum breaker within 12 hours.</li> </ul> <p><b><u>Event 4 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- 2E Electromatic Relief valve closed.</li> <li>- Referenced Technical Specifications.</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

Op-Test No. ILT 01-1Scenario No. ILT-N-3Event No. 5Page 1 of 1

Event Description: The 2A stator cooling water pump trips on overload and the standby pump fails to start automatically. The team should manually start the 2B stator cooling water pump.

Time	Position	Applicant's Actions or Behavior
	ANSO	<p><b><u>SIMULATOR OPERATOR:</u></b> At the discretion of the NRC chief examiner, activate trigger 3, which causes 2A stator cooling water pump to trip on overload and 2B to fails to auto start.</p> <p>Announces the following alarms:</p> <ul style="list-style-type: none"> <li>- DAN 902-7 B-10, Stator Clg PP Trip</li> <li>- DAN 902-7 C-3, Turb Stator Coolant Runback</li> </ul> <p>Performs appropriate actions per DOA 7400-01, Failure of the Stator Coolant System:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Starts 2B Stator Cooling Water Pump (Immediate Action)</li> <li><input type="checkbox"/> Verifies Runback condition clears.</li> <li><input type="checkbox"/> Sends NLO to verify 2B Stator Cooling Water Pump operating normally.</li> </ul> <p>Performs appropriate actions per DOA 6700-06, 480V Circuit Breaker Trip:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Sends NLO to check breaker and 2A Stator Cooling Water Pump for cause of trip.</li> <li><input type="checkbox"/> Places 2A Stator Cooling Water Pump control switch in PTL.</li> </ul> <p><b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b> NLO to acknowledge stator cooling water trouble alarm: (wait 2 min) Activate trigger 9 and report "I have acknowledged stator cooling water trouble alarm. The alarms were Inlet Pressure Low and Turbine Runback". NLO to check operation of 2B Stator Cooling Water Pump: (wait 2 min) Report "2B Stator Cooling Water Pump is operating normally". NLO to check cause of 2A Stator Cooling Water Pump trip (wait 2 min) Report "2A Stator Cooling Water Pump trip on overload".</p>
	SRO	<p>Enters and directs performance of DOA 7400-01, Failure of the Stator Coolant System.</p> <p>Enters and directs performance of DOA 6700-06, 480V Circuit Breaker Trip.</p> <p>Notifies Work Week Manager, IMD and/or EMD</p>
	NSO	<p>Monitors panels and assists as directed.</p> <p><b><u>ROLE PLAY:</u></b> Respond to calls for assistance.</p> <p><b><u>Event 5 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- 2B Stator Cooling Water Pump started</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

Op-Test No. ILT 01-1Scenario: ILT-N-3Event No. 6Page 1 of 1

Event Description: The FWLC system setpoint will begin drifting up. The team should take manual control of the FWLC system.

Time	Position	Applicant's Actions or Behavior
		<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC chief examiner, activate trigger 7, which causes feedwater level control system setpoint to drift high (to 60") over 10 min.</p> <p><b>NSO</b></p> <p>Observes and announces RPV level rising or responds to alarm 902-5 E-8, RPV Lvl Hi</p> <p>Performs the following actions per DOA 0600-01 Transient Level Control:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Takes manual control of the Feedwater Regulating Valves.</li> <li><input type="checkbox"/> Restores level to within band specified by the SRO</li> </ul> <p><b>SRO</b></p> <p>Enters and directs performance of DOA 0600-01 Transient Level Control.</p> <p>Notifies Shift Manager and IMD.</p> <p><b><u>ROLE PLAY:</u></b></p> <p>Respond to calls for assistance.</p> <p><b><u>Cue:</u></b></p> <p>If ANSO goes to check OIS screen, prompt him that the OIS Monitor is blank.</p> <p><b>ANSO</b></p> <p>Monitors panels and assists as directed.</p> <p><b><u>Event 6 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- Feedwater level control system under manual control.</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

Add to start next event if crew  
scrams the unit during this event

Op-Test No. ILT 01-1Scenario No. ILT-N-3Event No. 7, 8, 9Page 1 of 3

Event Description: A small recirculation loop break occurs with a loss of high pressure injection. The team should perform the RPV Control and Primary Containment Control DEOPs. Due to the loss of high pressure injection and RPV level dropping to TAF, the team should Emergency Depressurize and restore RPV level with low pressure injection systems.

Time	Position	Applicant's Actions or Behavior
		<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC chief examiner, activate trigger 8, causes a 2% recirc loop leak and failure of the HPCI 8 vlv to open.</p> <p><b>NSO</b></p> <p>Announces Reactor Scram on high Drywell pressure.</p> <p>Performs the following actions per DGP 02-03, Reactor Scram, and DEOP 100, RPV Control, as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Places Mode Switch to Shutdown and depresses the Scram pushbuttons.</li> <li><input type="checkbox"/> Checks rods inserted.</li> <li><input type="checkbox"/> Maintains RPV level as directed by SRO.</li> <li><input type="checkbox"/> Checks turbine and generator tripped.</li> <li><input type="checkbox"/> Checks recirc pumps run back to minimum speed.</li> <li><input type="checkbox"/> Inserts SRMs and IRMs</li> </ul> <p><b>ANSO</b></p> <p>Should inform the SRO that High Pressure Feedwater and HPCI are not available.</p> <p><b>SRO</b></p> <p>Enters DEOP 100, RPV Control, due to high PC/P and/or low RPV L and performs/directs:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Entering DGP 2-3</li> <li><input type="checkbox"/> Verification of water level instrument accuracy</li> <li><input type="checkbox"/> Verification of all isolations, ECCS and EDGs starts</li> <li><input type="checkbox"/> Holding RPV/L +8 to +48 inches</li> <li><input type="checkbox"/> Maintaining RPV/P &lt;1060 psig</li> </ul> <p>When informed no high pressure feed is available other than CRD then directs:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Inhibiting ADS before -59 inches.</li> <li><input type="checkbox"/> Initiating the isolation condenser</li> <li><input type="checkbox"/> Directing use of high pressure Alternate Injection systems (SBLC and CRD Crosstie)</li> <li><input type="checkbox"/> Verifies at least two low pressure injection systems available</li> <li><input type="checkbox"/> Waits until RPV level drops to TAF.</li> <li><input type="checkbox"/> Verifies any low pressure system lined up with a pump running</li> </ul> <p><b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b></p> <p>NLO to lineup CRD crosstie (wait 5 min.):</p> <p>Verify trigger 10 is activated then report "the CRD crosstie is lined up".</p>

Op-Test No: ILT 01-1Scenario No: ILT-N-3Event No: 7, 8 & 9 Page 2 of 3

Event Description: A small recirculation loop break occurs with a loss of high pressure injection. The team should perform the RPV Control and Primary Containment Control DEOPs. Due to the loss of high pressure injection and RPV level dropping to TAF, the team should Emergency Depressurize and restore RPV level with low pressure injection systems.

Time	Position	Applicant's Actions or Behavior
		<b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b>
		NLO to lineup makeup to SBLC Boron tank (wait 5 min.): Verify trigger 11 is activated then report "makeup is lined up to SBLC Boron tank".
	<b>SRO</b>	Before RPV level reaches -164 inches, enters DEOP 400-02, Emergency Depressurization, and directs: <ul style="list-style-type: none"> <li><input type="checkbox"/> Initiation of Iso Condenser to maximum flow</li> <li><input type="checkbox"/> Verification that SP/L &gt;6 feet.</li> <li><input checked="" type="checkbox"/> <b>Opening all ADS valves</b></li> <li><input type="checkbox"/> Verification all relief valves are open</li> </ul>
	<b>ANSO</b>	Performs DEOP 400-02, Emergency Depressurization, as directed: <ul style="list-style-type: none"> <li><input type="checkbox"/> Prevents injection from LPCI/CS pumps not needed for core cooling per Hard Card, LPCI INJ/CC CONTROL/SHUTDOWN</li> <li><input type="checkbox"/> Initiates Iso Condenser to maximum flow per Hard Card, ISOLATION CONDENSER</li> <li><input type="checkbox"/> Verifies SP/L &gt;6 feet</li> <li><input checked="" type="checkbox"/> <b>Opens all ADS valves</b></li> <li><input type="checkbox"/> Verifies all relief valves are open</li> </ul>
	<b>SRO</b>	✓ <b>Directs NSO/ANSO to control RPV level above TAF</b> using any of the preferred injection systems listed below: <ul style="list-style-type: none"> <li>- Condensate</li> <li>- Core Spray</li> <li>- LPCI</li> </ul>
	<b>NSO / ANSO</b>	✓ <b>Restores RPV level to that directed by the SRO (above TAF)</b> using the systems specified by the SRO.

Op-Test No: ILT-01-1Scenario No.: ILT-N-3Event No.: 7, 8 & 9Page 3 of 3

Event Description: A small recirculation loop break occurs with a loss of high pressure injection. The team should perform the RPV Control and Primary Containment Control DEOPs. Due to the loss of high pressure injection and RPV level dropping to TAF, the team should Emergency Depressurize and restore RPV level with low pressure injection systems.

Time	Position	Applicant's Actions or Behavior
	<b>SRO</b>	<p>Enters DEOP 200-1, Primary Containment Control, when PC/P reaches 2 psig and performs/directs:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Monitoring of PC/P</li> <li><input type="checkbox"/> Initiation of torus sprays before PC/P of 9 psig</li> <li><input type="checkbox"/> When PC/P is above 9 psig or before DW/T reaches 281°F: <ul style="list-style-type: none"> <li>• Verification of DSIL</li> <li>• Tripping of recirc pumps</li> <li>• Tripping of DW coolers</li> <li>• Initiation of DW sprays</li> </ul> </li> <li><input type="checkbox"/> Monitoring of DW/T (drywell sprays may be initiated for temperature control)</li> <li><input type="checkbox"/> Monitoring of SP/T and initiation of torus cooling</li> <li><input type="checkbox"/> Monitors SP/L</li> <li><input type="checkbox"/> Verifies initiation of drywell and torus H<sub>2</sub>/O<sub>2</sub> monitors</li> </ul>
	<b>ANSO</b>	<p>Performs DEOP 200-1, Primary Containment Control, actions as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Monitors PC/P and initiates torus sprays and drywell sprays per Hard Card LPCI/CCSW OPERATION, as directed</li> <li><input type="checkbox"/> Monitors DW/T</li> <li><input type="checkbox"/> Monitors SP/T and initiates torus cooling per Hard Card LPCI/CCSW OPERATION as directed</li> <li><input type="checkbox"/> Monitors SP/L</li> <li><input type="checkbox"/> Verifies initiation of drywell and torus H<sub>2</sub>/O<sub>2</sub> monitors</li> </ul> <p><b>ROLE PLAY:</b></p> <p>NLO to check EDG operation (wait 3 min)</p> <p>Report "Both EDGs are operating normally"</p> <p><b>Critical Tasks: (identified by ✓ in guide)</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> With Reactor pressure greater than shutoff head of the low pressure systems and when RPV water level reaches <b>TAF</b>, <b>INITIATE</b> emergency depressurization before level reaches Minimum Zero-Injection RPV Water Level.</li> <li><input type="checkbox"/> Action is taken to restore RPV water level above <b>TAF</b> by <b>OPERATING</b> available low pressure systems, when RPV pressure decreases below the shutoff head of low pressure systems.</li> </ul> <p><b>Scenario Completion Criteria:</b></p> <ul style="list-style-type: none"> <li>- Performed Emergency Depressurization</li> <li>- Restored RPV level above TAF</li> <li>- AND, at the direction of the NRC chief examiner.</li> </ul>

## REFERENCES

PROCEDURE	TITLE	REVISION
DAN 902-5 E-8	RPV Lvl Hi	06
DAN 902-6 H-8	2B RFP Brg Oil Press Lo	02
DAN 902-7 B-10	Stator Clg PP Trip	04
DAN 902-7 C-3	Turb Stator Coolant Runback	09
DOP 3200-03	Startup of second Reactor Feed Pump or Shifting to Alternate Reactor Feed Pump	32
DOP 0202-03	Reactor Recirculation Flow Control System Operation	20
DOP 3200-05	Reactor Feed Pump Shutdown	20
DOP 3300-03	Condensate System Shutdown	20
DOA 0250-01	Relief Valve Failure	21
DOA 6700-06	480V Circuit Breaker Trip	08
DOA 7400-01	Failure of the Stator Coolant System	14
DGP 02-01	Unit Shutdown	65
DGP 02-03	Reactor Scram	54
DGP 03-01	Routine Power Changes	40
DEOP 0100	Reactor Control	10
DEOP 0200-01	Primary Containment Control	10
DEOP 0400-02	Emergency Depressurization	04
DEOP 0500-02	Bypassing Interlocks and Isolations	10
DEOP 0500-03	Alternate Water Injection Systems	12

## PRE-SCENARIO ACTIVITIES

1. If applicable, conduct pre-scenario activities in accordance with TSCAA-100-1107, SIMULATOR EXAMINATION BRIEFING.
  - a. Provide the crew with a copy of Control Room work request list.
  - b. Provide the team with a copy of DGP 02-01, Unit Shutdown, which is marked up to the point of taking off the fourth condensate pump.
  - c. Provide the team with a copy of DOP 3300-03, Condensate System Shutdown.
  - d. Inform the crew that an IM technician is on site to adjust gains.
  - e. Direct the crew to perform their briefs prior to entering the simulator.
2. Simulator Setup (the following steps can be done in any logical order).
  - a. Initialize simulator in IC 12 and perform the following before continuing below:
    - 1) Reduce recirculation pump speed to just below the exclusion range. *(465%)*
    - 2) Verify feed water flow  $\leq 9.0$  Mlbm/hr; if not, reduce recirculation pump until it is.
    - 3) Shutdown 2C RFP and place it in standby on Bus 22.
    - 4) Verify 2A Stator cooling and 2A EHC pumps on. *← 3.5) Verify Stator Cooling Water PCV set at 28.0 MP 4/26/02*
  - b. Run the initial setup caep file: ilt-n-3.cae.
  - c. Verify the following simulator conditions:
    - 1) Master Recirc Flow controller at *465%* *(recirc speed should be 465% so continuous monitoring not required for exclusion zone)*
    - 2) MWe at *715 700*
    - 3) Condensate Demin dP between 20 and 45 psid [EPU]
    - 4) Condensate pump amps between 160 and 255 amps [EPU]
  - d. Secure the following equipment and tag out of service:
    - 1) Place IRM 16 902-5 panel joystick in bypass and place an Equipment Status Tag on it.
    - 2) Place 2B EHC Pump control switch in PTL and place an OCS card on it.
  - e. Advance the chart recorders.
  - f. Mark up rod sequence as completed through step 130.
  - ~~g. Place the REMA sheet in the appropriate book.~~
  - h. Complete the Simulator Setup Checklist.



ILT 01-1 NRC EXAM SCENARIO ILT-N-3 Initial Setup CAEP:

# ilt-n-3 cae  
# Setup for ilt-n-3  
#Written by JAS  
#Rev 00  
#Date 02/02

# INITIAL CONDITIONS

# Prevents TR 22 feed to Bus 21 from closing in.  
ior acdtp21 trip  
ior acdcl21 off  
# overrides 2B stator cooling water pump auto trip light off.  
ior mglschat off

#SETUP EVENT TRIGGERS

# Event Trigger 1 Insert 2B RFP low oil pressure and failure of its aux oil pump to start  
trgset 1 "0"  
ior fwdop2 (1) off  
ior fwdop5 (1) trip  
imf ser1375 (1) on

# Event Trigger 2 Sets the 3E ADS valves setpoint to 890 psig.  
trgset 2 "0"|1  
imf ads3esd (2) 890.0|2

# Event Trigger 3 2A stator cooling water pump trips on overload and 2B fails to start  
trgset 3 "0"|2  
ior mgdscbtr (3) trip|2  
imf k11 (3 2)|2

# Event Trigger 4 when 2B stator cooling water pump control switch is placed to close, removes trip override.  
trgset 4 "mgdscbcl"|4  
trg 4 "dor mgdscbtr"|4

# Event Trigger 5 when the 2B stator cooling water pump control switch trip override is deleted and the 2A stator cooling water pump is off, sets the 2B stator cooling water pump breaker to closed.  
trgset 5 ".not. (mgdscbtr .or. mgzsccl(1) ")|4  
trg 5 "set mgzsccl(2) = true":4

# Event Trigger 6 when 2B stator cooling water pump is running, deletes the auto trip light override.  
trgset 6 "mgzsccl(2)"|6  
trg 6 "dor mglschat"|6

# Event Trigger 7 causes feedwater level control system setpoint to drift high (60") over 10 min  
trgset 7 "0"|6  
irf rllmls (7) 60 10:00|6

# Event Trigger 8 trips 2C RFP Bus 22 breaker, inserts a 0.5% recirc loop leak and failure of the HPCI 8 vlv to open.  
trgset 8 "0"|6  
ior fwdrfp8 (8) trip|6  
ior fwdrfp4 (8) off|6  
imf f44 (8) 0.5|6  
ior hplcl8 (8) on|6

irf hp8vbkr (8) trippedj6

Event Trigger 9 acknowledges stator cooling water trouble alarm  
trgset 9 "0"  
irf t22 (9) acknowledge

Event Trigger 10 lineup CRD crosstie.  
trgset 10 "0"  
irf rdxtieu3 (10) true

Event Trigger 11 lineup makeup to SBLC Boron tank.  
trgset 11 "0"  
irf scmumntk (11) true

Event Trigger 12 lineup makeup to SBLC Boron tank.  
trgset 12 "0"  
irf s45 (12) false

# END

Date: TODAY

## Unit 2 Turnover

ECCS Status: All

### Online Information

715 MW: [EPU]

Online Risk: Green CDF: 1.00

Risk Equipment:

MODE 1

### Shutdown Information

Time to Boil: N/A

Shutdown Risk: N/A

Protected Path: N/A

### Unit 2 Priorities

Continue Shutdown

### Station Priorities

### LCORAs

LCORA # None  
Title

Start  
Clock Ends

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐ Continue Unit Shutdown  
☐

### Shift 3 Activities

☐  
☐

### Common Unit Activities

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐  
☐

### Shift 3 Activities

☐  
☐

### Common Unit Procedures / Surveillances in Progress

None

### Unit 2 Conditions, Status, Abnormalities

2 hr ago	0500	IRM 16 OOS due to power supply failure. IMD waiting for replacement power supply to arrive from Quad Cities Station.
6 hr ago	5650	2B EHC pump OOS due to a problem with its pressure compensator. Expected BIS next shift.

### Compensatory Actions, Extra Checks

**Equipment OOS**

2 hr ago 990045654      IRM 16  
 6 hr ago 990045652      2B EHC Pump

**Service Unit Status**

1 days ago	2A Cond Demin	Cut In
1 days ago	2B Cond Demin	Cut In
1 days ago	2C Cond Demin	Cut In
1 days ago	2D Cond Demin	Cut In
1 days ago	2E Cond Demin	Cut In
1 days ago	2F Cond Demin	Cut In
1 days ago	2G Cond Demin	Cut Out
173 days ago	2A RWCU	Cut In
173 days ago	2B RWCU	Cut Out
173 days ago	2C RWCU	Cut Out
75 days ago	U2 FPC Demin	Cut In

**Unit 2 Abnormal Component Position****U2 Open Operability Determinations with Compensatory Actions****Events and Misc. Information**

Plant shut down in progress per DGP 02-01. Ready to take off 2B Condensate/Booster Pump. Hydrogen addition already isolated to 2B Condensate/Booster Pump. QNE directed shutting down per station procedures using reverse sequence. No REMA is required.

**DW samples:**

Iodine 131	$2.5 \times 10^{-13}$
Beta/Gamma	$1.5 \times 10^{-11}$

Date: TODAY

## Unit 3 Turnover

ECCS Status: All available

### Online Information

N/A MWe [EPU]

Online Risk: N/A

Risk Equipment: N/A

MODE 4

### Shutdown Information

Time to Boil: 24 hrs.

Shutdown Risk: Green

Protected Path: None

### Unit 3 Priorities

Maintain operation per BPO

### Station Priorities

### LCORAs

LCORA # None  
Title

Start  
Clock Ends

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐  
☐

### Shift 3 Activities

☐  
☐

### Common Unit Activities

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐  
☐

### Shift 3 Activities

☐  
☐

### Common Unit Procedures / Surveillances in Progress

None

### Unit 3 Conditions, Status, Abnormalities

DGP 01-S1. Start-up Checklist, in progress

### Compensatory Actions, Extra Checks

None

**Equipment OOS**

None

**Service Unit Status**

5 days ago	3A Cond Demin	Cut In
8 days ago	3B Cond Demin	Cut In
10 days ago	3C Cond Demin	Cut In
5 days ago	3D Cond Demin	Cut Out
3 days ago	3E Cond Demin	Cut Out
15 days ago	3F Cond Demin	Cut Out
3 days ago	3G Cond Demin	Cut Out
750 days ago	3A RWCU	Cut In
390 days ago	3B RWCU	Cut Out
60 days ago	3C RWCU	Cut Out
444 days ago	U3 FPC Demin	Cut In

**Unit 3 Abnormal Component Position**

None

**U3 Open Operability Determinations with Compensatory Actions**

None

**Events and Misc. Information**

DGP 01-S1, Start-up Checklist in progress

# Dresden Generating Station

## SIMULATOR EXERCISE GUIDE

ILT 01-1 NRC EXAM

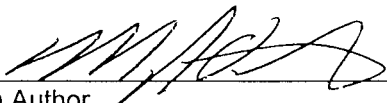
SCENARIO

ILT-N-5

Rev. 00

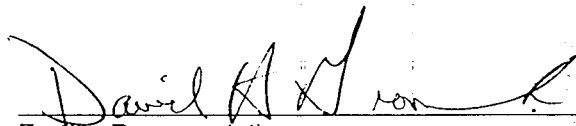
02/02

DEVELOPED BY:

  
Exam Author

3/28/02  
Date

APPROVED BY:

  
Facility Representative

3-28-02  
Date

Facility: DresdenScenario No: ILT-N-5Op-Test No: ILT 01

Examiners: \_\_\_\_\_

Operators: \_\_\_\_\_

Initial Conditions: Approximately 78% reactor power; IRM channel 16 out of service; 2B EHC Pump OOS; Unit 3 is in Mode 4.

Turnover: Power reduction in progress for drywell entry.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N ANSO SRO	rotating idle SDC pumps
2	N/A	R NSO SRO	lower reactor power by reducing recirculation flow
3	MGGH2CON	I ANSO SRO	main generator hydrogen temperature controller output fails low
4	ICTUBLK	C ANSO SRO	isolation condenser tube leak
5	N/A	C NSO SRO	CRC pump failure
6	RRMAFDBK	I NSO SRO	recirculation pump controller speed signal failure
7	CIGP1I	M ALL	spurious group 1 actuation and reactor scram
8	RDHLVFPA RDHLVFPB RDHLDEGA RDHLDEGB		SD: partial hydraulic lock (ATWS)
9	SCRLFVAD SCRLFVBD		SBEC pump relief valves fail open

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



## Dresden Generating Station

### NRC ILT EXAM

#### Scenario ILT-N-5

#### Scenario Objective

Evaluate the operators in using the Failure to Scram DEOP contingency procedure.

#### Scenario Summary

##### Initial Conditions

- ~78% power
- IRM channel 16 out of service
- 2B EHC Pump OOS
- Load drop in progress per DGP 03-01, Routine Power Changes
- Unit 3 is in Mode 4.

##### Events:

- Rotating idle SDC pumps
- Load drop with recirculation flow
- Main generator hydrogen temperature controller failure
- Isolation condenser tube leak
- CRD pump failure
- Recirculation pump controller speed signal failure
- ATWS with Spurious Group 1 Isolation

#### Scenario Sequence

- The crew assumes the shift with reactor power at about 78% and a power reduction in progress to conduct a drywell entry for leakage inspections.
- The ANSO, as directed by the SRO, performs DOP 1001-06, Rotating Idle SDC Pumps.
- The NSO then lowers reactor power by reducing recirculation flow following direction by the SRO.
- Alarms are then received due to high main generator hydrogen temperature resulting from a failed controller. Hydrogen temperature is restored after the controller is placed in manual and adjusted by the ANSO.
- Alarms are then received due to an isolation condenser tube leak. The isolation condenser is manually isolated by the ANSO. The SRO addresses the technical specification requirements for the inoperable isolation condenser.
- A field report is received that the 2B CRD pump is failing due to rapid oil loss from a leak. The NSO shutdowns the 2B CRD pump and starts the 2A CRD pump.
- During the power reduction, the speed control signal fails low for recirculation pump 2A and the pump flow increase is stopped when the NSO locks out the scoop tube.
- During IMD work on main steam line flow transmitters, a spurious group 1 isolation and a reactor scram occurs. A hydraulic lock of the scram discharge volume results in partial inward rod motion and an ATWS. When boron injection is initiated, the SBLC pumps do not inject boron into the reactor due to the pump relief valves failing open. The crew then initiates actions for alternate SBLC injection. The scenario terminates after manual driving in of control rods is in progress and a scram/reset has been successfully initiated.

### **Event One – Rotating Idle SDC Pumps**

The crew performs DOP 1000-06, Rotating Idle SDC Pumps

Malfunctions required: 0

Success Path:

- Performs DOP 1000-06, Rotating Idle SDC Pumps.

### **Event Two – Load Drop with Recirculation Flow**

The crew lowers reactor power by reducing recirculation flow.

Malfunctions required: 0

Success Path:

- Load dropped per procedures.

### **Event Three – Main Generator Hydrogen Temperature Controller Failure**

The crew recognizes and responds to a high main generator hydrogen temperature resulting from a failed controller.

Malfunctions required: 1 (failure of auto mode of main generator hydrogen temperature controller)

Success Path:

- Takes manual control of main generator hydrogen temperature controller.

### **Event Four – Isolation Condenser Tube Leak**

The crew recognizes and responds to isolation condenser high temperatures / radiation levels.

Malfunctions required: 1 (isolation condenser tube leak)

Success Path:

- Isolates the Isolation Condenser.

### **Event Five – CRD Pump Failure**

The crew recognizes and responds to a field report that the 2B CRD pump is failing due to rapid oil loss from a leak.

Malfunctions required: 0

Success Path:

- Swaps CRD pumps.

### Event Six – Recirculation Pump Controller Speed Signal Failure

The crew recognizes and responds to a recirculation pump speed control signal failing low for recirculation pump 2A.

Malfunctions required: 1 (Loss of recirculation pump speed feedback signal)

Success Path:

- Locks out the scoop tube

### Events Seven, Eight and Nine – ATWS with Spurious Group 1 Isolation

The crew recognizes and responds to a spurious Group 1 Isolation with an ATWS condition. The event is complicated by failure of the SBLC system.

Malfunctions required: 3 (Spurious Group 1)  
(SDV hydraulic lock)  
(SBLC relief valve failure)

Success Path:

- Control rod insertion in progress.
- Plant stabilized.

### Scenario Recapitulation

Total Malfunctions:	6	
Abnormal Events:	4	
Major Transients:	1	(ATWS)
EOPs Entered:	2	
EOP Contingencies:	1	(level and power control)

Op-Test No. ILT 01-1Scenario No. ILT-N-5Event No. 1Page 1 of 1

Event Description: The ANSO, as directed by the SRO, performs DOP 1000-06, Rotating Idle SDC Pumps.

Time	Position	Applicant's Actions or Behavior
	<b>SRO</b>	Directs ANSO to perform DOP 1000-06, Rotating Idle SDC Pumps.
	<b>ANSO</b>	<p>Performs the following actions per DOP 1000-06, Rotating Idle SDC Pumps:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Verifies the following valves closed: <ul style="list-style-type: none"> <li>• MO 2-1001-2A, B &amp; C.</li> <li>• MO 2-1001-4A, B &amp; C.</li> </ul> </li> <li><input type="checkbox"/> Places each SDC pump control switch to start and then within 3 sec places each pump control switch to stop.</li> <li><input type="checkbox"/> Requests operator to confirm rotation for each pump.</li> </ul>
	<b>NSO</b>	<p>Monitors panels and assists as directed.</p> <p><b>ROLE PLAY:</b></p> <p>NLO to confirm SDC pump rotation:</p> <p>Report "the (requested pump) rotated".</p>
		<p><b>Event 1 Completion Criteria:</b></p> <ul style="list-style-type: none"> <li>- DOP 1000-06 completed.</li> <li>- OR, at the direction of the NRC chief examiner.</li> </ul>

Op-Test No. ILT 01-1Scenario No.: ILT-N-5Event No.: 2Page 1 of 1

Event Description: The NSO lowers reactor power by reducing recirculation flow following direction by the SRO.

Time	Position	Applicant's Actions or Behavior
	<b>NSO</b>	Performs the following actions per DGP 03-01, Routine Power Changes, and DOP 0202-03, Reactor Recirculation Flow Control System Operation: <ul style="list-style-type: none"> <li><input type="checkbox"/> Lowers recirculation pump speed using the master controller potentiometer.</li> <li><input type="checkbox"/> Verifies expected power reduction.</li> </ul>
	<b>SRO</b>	Directs reducing reactor power per DGP 03-01, Routine Power Changes, and DOP 0202-03, Reactor Recirculation Flow Control System Operation, by lowering recirculation pump speed.
	<b>ANSO</b>	Monitors panels and assists as directed.
<b>Event 2 Completion Criteria:</b> <ul style="list-style-type: none"> <li>- Sufficient power reduction.</li> <li>- OR, at the direction of the NRC chief examiner.</li> </ul>		

Op-Test No. ILT 01-1Scenario No. ILT-N-5Event No. 3Page 1 of 1

Event Description: Alarms are then received due to high main generator hydrogen temperature resulting from a failed controller. Hydrogen temperature is restored after the controller is placed in manual and adjusted by the ANSO.

Time	Position	Applicant's Actions or Behavior
	<b>ANSO</b>	<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC chief examiner, activate trigger 2, which fails the main generator hydrogen temperature controller output.</p> <p>Verify trigger 3 automatically activates when the main generator hydrogen temperature controller is placed to MAN.</p> <p>Performs the following actions per DAN 902-7 E-11, H2 Sea Oil &amp; Alterrex Pnl Trouble and DAN 2252-7 A-8,</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Directs NLO to local panel 2252-7 to determine alarm received.</li> <li><input type="checkbox"/> Diagnosis that the main generator hydrogen cooler temperature controller auto mode has failed and places in MAN mode and restores temperature to normal band.</li> </ul> <p><b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b></p> <p>NLO to panel 2252-7 (wait 2 min):</p> <p>Activate trigger 4 then Report "the alarm is A-8, Machine Gas Temperature High, and I have acknowledged it".</p> <p>NLO to check hydrogen cooler TCV operation: (wait 1 min)</p> <p>Report "the hydrogen cooler TCV appears to be operating normally".</p>
	<b>SRO</b>	<p>Directs ANSO to take manual control of the main generator hydrogen temperature controller.</p> <p>Notifies Shift Manager and IMD of controller problem.</p> <p><b><u>ROLE PLAY:</u></b></p> <p>Respond as individual notified.</p>
	<b>NSO</b>	<p>Monitors panels and assists as directed.</p> <p><b><u>Event 3 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- Takes Manual control of the main generator hydrogen temperature controller.</li> <li>- OR, at the direction of the NRC chief examiner.</li> </ul>

Op-Test No: ILT 01-1Scenario No: ILT-N-5Event No: 4Page 1 of 1

Event Description: Alarms are received due to an isolation condenser tube leak. The isolation condenser is manually isolated by the ANSO. The SRO addresses the technical specification requirements for the inoperable isolation condenser.

Time	Position	Applicant's Actions or Behavior
	<b>ANSO</b>	<p><b><u>SIMULATOR OPERATOR:</u></b> At the discretion of the NRC chief examiner, activate trigger 5 which inserts an Isolation Condenser tube leak (15%).</p> <p>Performs the following actions per EAN 902-3 C-4, Isol Cond Temp Hi, and / or DOA 1300-01, Isolation Condenser Tube Leak:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> May try to reseal the MC 2-1301-3 valve:             <ul style="list-style-type: none"> <li>• Closes MO 2-1301-4</li> <li>• Opens MO 2-1301-3</li> <li>• Closes MO 2-1301-3</li> <li>• Opens MO 2-1301-4</li> <li>• Opens AO 2-1301-17 &amp; 20</li> <li>• Checks indication that leak has stopped</li> </ul> </li> <li><input type="checkbox"/> Isolates the Isolation Condenser by closing:             <ul style="list-style-type: none"> <li>• MO 2-1301-1</li> <li>• MO 2-1301-2</li> <li>• MO 2-1301-3</li> <li>• MO 2-1301-4</li> <li>• AO 2-1301-17 &amp; 20</li> <li>• MO 2-1301-10</li> <li>• MO 2-4399-74</li> </ul> </li> </ul>
	<b>SRO</b>	<p>Enters DOA 1300-01, Isolation Condenser Tube Leak, and directs:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> May try reseating the MC 2-1301-3</li> <li><input type="checkbox"/> Isolating the Isolation Condenser.</li> <li><input type="checkbox"/> Radiation Protection to survey below the IC vent.</li> <li><input type="checkbox"/> Security to limit access below IC vent.</li> <li><input type="checkbox"/> Chemistry Department to sample IC shell side for activity.</li> <li><input type="checkbox"/> Declares IC inoperable.</li> </ul> <p>References Technical Specifications and determines:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> ITS 3.5.3.A.1; verifies HPC system operable immediately.</li> <li><input type="checkbox"/> ITS 3.5.3.A.2; restore IC system to OPERABLE within 14 days.</li> </ul> <p>Notifies Shift Manager and MMD of IC tube leak.</p>
	<b>NSO</b>	<p>Monitors panels and assists as directed.</p> <p><b><u>ROLE PLAY:</u></b> Respond as departments contacted:</p> <p><b><u>Event 4 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- Isolation Condenser isolated.</li> <li>- Technical Specifications referenced.</li> <li>- OR, at the direction of the NRC chief examiner.</li> </ul>

security report after temp 15212  
steam outside Re Build.  
RP report slightly elevated  
rad levels

Op-Test No: ILT 01-1Scenario No: ILT-N-5Event No: 5Page 1 of 1

Event Description: A field report is received that the 2B CRD pump is failing due to rapid oil loss from a leak. The NSO shuts down the 2B CRD pump and starts the 2A CRD pump.

Time	Position	Applicant's Actions or Behavior
	NSO	<p><b>ROLE PLAY:</b></p> <p>At the discretion of the NRC chief examiner, report as NLO that "the 2B CRD pump is rapidly losing oil from the pump outboard bearing".</p> <p>Performs the following actions per DOP 0300-01, Control Rod Drive System Startup and Operation:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> May direct the NLO to perform pre-startup checks per the procedure.</li> <li><input type="checkbox"/> Verifies 2A CRD pump discharge valve MO 2-0301-2A open.</li> <li><input type="checkbox"/> Starts 2A CRD pump.</li> <li><input type="checkbox"/> Stops 2B CRD pump</li> <li><input type="checkbox"/> Verifies charging water pressure between 1450 to 1500 psig.</li> <li><input type="checkbox"/> Directs NLO to perform post-startup checks per the procedure.</li> </ul> <p><b>ROLE PLAY:</b></p> <p>NLO to perform 2A CRD pump pre-startup checks (wait 3 min):</p> <p>Report "I have completed the pre-startup checks for 2A CRD pump".</p> <p>NLO to perform 2A CRD pump post-startup checks (wait 3 min):</p> <p>Report "I have completed the post-startup checks for 2A CRD pump".</p>
	SRO	<p>Directs NSO to swap CRD pumps per DOP 0300-01, Control Rod Drive System Startup and Operation;</p> <p>OR, directs NSO to immediately swap CRD pumps per DOA 0300-01, Control Rod Drive System Failure.</p> <p>Notifies Shift Manager and MMD of CRD pump problem.</p>
	ANSO	<p>Monitors panels and assists as directed</p>
		<p><b>Event 5 Completion Criteria:</b></p> <ul style="list-style-type: none"> <li>- CRD pumps swapped.</li> <li>- OR, at the direction of the NRC chief examiner.</li> </ul>



Op-Test No. ILT-01-1Scenario No.: ILT-N-5Event No.: 6Page 1 of 2

Event Description: The speed control signal fails low for recirculation pump 2A and the pump flow increase is stopped when the NSO locks out the scoop tube.

Time	Position	Applicant's Actions or Behavior
	NSO	<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC chief examiner, activate trigger 6, which fails the 2A Recirculation Pump speed feedback signal.</p> <p>Performs the following actions per DAN 902-4 E-6, 2A/B Recirc PPs Speed Mismatch, and DOA 0202-03, Reactor Recirculation System Flow Control Failure:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Places the 2A M-G Set Scoop Tube Power Lockout Reset Switch in the Lockout position.</li> <li><input type="checkbox"/> Verifies Core thermal power &lt;2927 MWth.</li> <li><input type="checkbox"/> Completes actions of 2A Recirc M-G Lockout in DOP 0202-12, Recirculation Pump Motor Generator Set Scoop Tube Operation. <ul style="list-style-type: none"> <li>• Places both recirc pump speed control transfer stations to manual.</li> <li>• Runs 2A Recirc M-G Set speed demand to minimum.</li> <li>• Places caution card on its Lockout Reset switch.</li> </ul> </li> <li><input type="checkbox"/> Coordinates with licensed operator at the 2A Recirc M-G Set Scoop Tube to lower its speed to match 2B Recirc M-G Set per DOP 0202-12, Recirculation Pump Motor Generator Set Scoop Tube Operation.</li> </ul> <p><b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b></p> <p>Licensed Operator to lower 2A Recirc M-G Set speed locally (wait 3 min)</p> <p>Report "I am ready to begin lowering 2A Recirc M-G Set speed". When directed to lower the speed, toggle trigger 7 active and then inactive about every 10 seconds to "bump" the speed down until the NSO directs stopping the speed drop.</p>
	SRO	<p>Enters and directs performance of DOA 0202-03, Reactor Recirculation System Flow Control Failure.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Enters and directs performance of DGA 7, Unpredicted Reactivity Addition.</li> <li><input type="checkbox"/> Contacts QNE.</li> <li><input type="checkbox"/> May request NLO to take local speed readings</li> <li><input type="checkbox"/> Directs NSO to coordinate with a licensed operator at the 2A Recirc M-G Set Scoop Tube to lower its speed to match 2B Recirc M-G Set.</li> <li><input type="checkbox"/> Notifies Shift Manager and IMD of controller problem.</li> </ul>
	ANSO	<ul style="list-style-type: none"> <li><input type="checkbox"/> Begins working through the steps of DGA 7, Unpredicted Reactivity Addition, but will not have time to complete the required actions.</li> </ul>

Op-Test No: ILT 01-1Scenario No: ILT-N-5Event No: 6Page 2 of 2

Event Description: The speed control signal fails low for recirculation pump 2A and the pump flow increase is stopped when the NSO locks out the scoop tube.

Time	Position	Applicant's Actions or Behavior
		<p><b><u>ROLE PLAY:</u></b></p> <p>NLO to obtain local speed of the 2A Recirc MG Set: (Wait 5 min for initial reading, 1 min for subsequent)</p> <p>Take variable RRNMGGGEN(1) times 1150 RPM and report the result as the 2A Recirc MG Set speed.</p> <p>NLO to obtain local speed of the 2B Recirc MG Set: (Wait 1 min)</p> <p>Take variable RRNMGGGEN(2) times 1150 RPM and report the result as the 2B Recirc MG Set speed.</p> <p><b><u>Event 6 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- Efforts in progress to lower 2A Recirc M-G Set speed.</li> <li>- OR, at the direction of the NRC chief examiner</li> </ul>

Op-Test No: ILT 01-1Scenario No: ILT-N-5Event No: 7, 8 & 9 Page 1 of 4

Event Description: A spurious group 1 isolation and a reactor scram occurs. A partial hydraulic lock of the scram discharge volume results in an ATWS. The SBLC system fails due pump relief valves failing open. The crew initiates alternate SBLC injection.

Time	Position	Applicant's Actions or Behavior
		<p><b><u>SIMULATOR OPERATOR:</u></b> At the discretion of the NRC chief examiner, activate trigger 8, which inserts a spurious Group 1 Isolation and SBLC relief valve setpoint drift.</p> <p><b>NSO</b> Performs the following actions per DGP 02-03, Reactor Scram</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Presses scram pushbuttons</li> <li><input type="checkbox"/> Places mode switch in shutdown</li> <li><input type="checkbox"/> Checks rods inserted; discovers ATWS condition</li> <li><input type="checkbox"/> Initiates ARI</li> <li><input type="checkbox"/> Verifies recirc pump speed at minimum.</li> </ul> <p><b>SRO</b> Enters DEOP 0100 RPV Control. When receives report that ATWS condition exists, exits DEOP 100 and enters DEOP 400-5, Failure to Scram, and directs the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <input checked="" type="checkbox"/> <b>Placing ADS to inhibit</b></li> <li><input type="checkbox"/> Placing both CS pumps in PTL</li> </ul> <p><b><u>Power Leg</u></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Running back recirc to minimum.</li> <li><input type="checkbox"/> Tripping the recirc pumps</li> <li><input type="checkbox"/> <input checked="" type="checkbox"/> <b>Directing Alternate Rod Insertion</b> per DEOP 500-05 <ul style="list-style-type: none"> <li>• manually driving rods.</li> <li>• repeated scram/resets.</li> </ul> </li> <li><input type="checkbox"/> Initiating SBLC before SP/T of 110°F.</li> </ul> <p><b><u>Level Leg</u></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Verification water level instruments are accurate</li> <li><input type="checkbox"/> Verification any required automatic actions have occurred</li> <li><input type="checkbox"/> Directing jumpers installed for MSIV low level and Off Gas high Rad isolations</li> <li><input type="checkbox"/> <input checked="" type="checkbox"/> <b>Terminating and Preventing injection except boron and CRD</b> until RPV/L is <math>\leq -35</math> inches.</li> <li><input type="checkbox"/> If SP/T is above 110°F, lets level drop until: <ul style="list-style-type: none"> <li>• Power is below 6%, OR</li> <li>• Level drops to -143 in. (TAF), OR</li> <li>• All ADSVs stay closed and PC/P stays below 2 psig</li> </ul> </li> <li><input type="checkbox"/> <input checked="" type="checkbox"/> <b>Re-establishing injection to MAINTAIN RPV water level above -164 inches.</b></li> </ul> <p><b><u>Pressure Leg</u></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Dropping RPV/P to 945 psig using ADSVs</li> <li><input type="checkbox"/> Maintaining <math>\leq 1060</math> psig using HPCI/ADSVs</li> </ul> <p><b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b> Operator to jumper the MSIV Group1-59 in. and offgas high radiation isolations (wait 5 min); Activate trigger 9 and report "the MSIV Group1-59 in. and offgas high radiation isolations are jumpered".</p>

Core Test No. ILT 01-1Scenario No. ILT-N-5Event No. 7, 8 & 9 Page 2 of 4

Event Description: A spurious group 1 isolation and a reactor scram occurs. A partial hydraulic lock of the scram discharge volume results in an ATWS. The SBLC system fails due pump relief valves failing open. The crew initiates alternate SBLC injection.

Time	Position	Applicant's Actions or Behavior
	<b>NSO / ANSO</b>	<p>Performs DEOP 400-5 Failure to Scram, actions as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <input checked="" type="checkbox"/> <b>Places ADS to inhibit</b></li> <li><input type="checkbox"/> Places both CS pumps in PTL</li> </ul> <p><u>Power Leg</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Trips recirculation pumps</li> <li><input type="checkbox"/> <input checked="" type="checkbox"/> <b>Performs Alternate Rod Insertion.</b> (see below for specific actions)</li> <li><input type="checkbox"/> Initiates boron injection. Reports SBLC has failed to inject.</li> </ul> <p><u>Level Leg</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <input checked="" type="checkbox"/> <b>Terminates and Prevents injection except boron and CRD until RPV/L is <math>\leq -15</math> inches.</b></li> <li><input type="checkbox"/> If SP/T is above 110°F, lets level drop until: <ul style="list-style-type: none"> <li>• Power is below 6%, OR</li> <li>• Level drops to -143 in. (TAF), OR</li> <li>• All ADSs stay closed and PC/P stays below 2 psig</li> </ul> </li> <li><input type="checkbox"/> <input checked="" type="checkbox"/> <b>Re-establishes injection to <i>MAINTAIN</i> RPV water level above -164 inches</b></li> </ul> <p><u>Pressure Leg</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Drops RPV/P to 945 psig ADSVs</li> <li><input type="checkbox"/> Maintains &lt; 1060 psig using HPCI/ADSVs</li> </ul>
	<b>NSO</b>	<p><input checked="" type="checkbox"/> <b>Performs manual control rod insertion</b> per DEOP 500-05, Alternate Insertion of Control Rods, as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Bypasses the RWM</li> <li><input checked="" type="checkbox"/> <del>Starts the second CRD pump</del></li> <li><input type="checkbox"/> Maximizes core water pressure using one or more of the methods in DEOP 500-05.</li> <li><input type="checkbox"/> Inserts rods using RONOR in EMERG IN or the normal rod movement control switch</li> </ul>
	<b>NSO</b>	<p><input checked="" type="checkbox"/> <b>Performs repeated scram/resets</b> per DEOP 500-05, Alternate Insertion of Control Rods, as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Depresses those pushbuttons for SDV vent and drain valves</li> <li><input type="checkbox"/> If RPV/L &lt; -55 inches, directs pulling ARI fuses.</li> <li><input type="checkbox"/> Attempts to reset scram</li> <li><input type="checkbox"/> Directs scram jumpers installed.</li> <li><input type="checkbox"/> Resets the scram</li> <li><input type="checkbox"/> Verifies all scram valves closed</li> <li><input type="checkbox"/> Opens the SDV vent and drains</li> <li><input type="checkbox"/> When 902-500-1 clears, scrams reactor</li> <li><input type="checkbox"/> Repeats as necessary</li> </ul>

Test No: ILT 01-1Scenario No. ILT-N-5Event No. 7, 8 & 9 Page 3 of 4

Event Description: A spurious group 1 isolation and a reactor scram occurs. A partial hydraulic lock of the scram discharge volume results in an ATWS. The SBLC system fails due pump relief valves failing open. The crew initiates alternate SBLC injection.

Time	Position	Applicant's Actions or Behavior
		<p><b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b></p> <p>Operator to pull ARI fuses (wait 5 min):</p> <p>Verify trigger 10 activated and report "the ARI fuses are pulled".</p> <p>Operator to install scram jumpers (wait 5 min):</p> <p>Verify trigger 11 activated and report "the scram jumpers are installed".</p> <p><b>SRO</b>      <input type="checkbox"/> Based on failure of SBLC to inject, directs performance of DEOP 0500-01, Alternate Standby Liquid Control Injection.</p> <p><b>SRO</b>      Enters DEOP 200-1, Primary Containment Control, when PC/P reaches 2 psig and performs/directs:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> May direct starting Drywell Coolers per DEOP 0500-02.</li> <li><input type="checkbox"/> Initiation of torus sprays before PC/P of 9 psig</li> <li><input type="checkbox"/> When PC/P is above 9 psig or before DW/T reaches 281°F: (may not reach these levels) <ul style="list-style-type: none"> <li>• Verification of DSIL</li> <li>• Tripping of recirc pumps</li> <li>• Tripping of DW coolers</li> <li>• Initiation of DW sprays</li> </ul> </li> <li><input type="checkbox"/> Initiation of torus cooling</li> <li><input type="checkbox"/> Verifies initiation of drywell and torus H<sub>2</sub>/O<sub>2</sub> monitors</li> </ul> <p><b>ANSO</b>      Performs DEOP 200-1, Primary Containment Control, actions as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> May start Drywell Coolers after jumpers installed per DEOP 0500-02.</li> <li><input type="checkbox"/> May initiate torus sprays and drywell sprays per Hard Card LPCI/CCSW OPERATION, as directed</li> <li><input type="checkbox"/> Initiates torus cooling per Hard Card LPCI/CCSW OPERATION as directed</li> <li><input type="checkbox"/> Verifies initiation of drywell and torus H<sub>2</sub>/O<sub>2</sub> monitors</li> </ul> <p><b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b></p> <p>Operator to install jumpers to defeat DW Cooler trips (wait 5 min):</p> <p>Verify trigger 12 activated and report "the DW Cooler trip jumpers are installed".</p> <p><b><u>ROLE PLAY:</u></b></p> <p>Five minutes after the start of this event, call the Control Room as an IMD Supervisor and report "While checking the Main Steam Line Flow instruments in the LPCI corner room, I slipped and fell into the instrument rack. I do not require medical attention".</p>

Move to start of event; set for comm

Op-Test No: ILT 01-1Scenario No.: ILT-N-5Event No: 7, 8 & 9 Page 4 of 4

Event Description: A spurious group 1 isolation and a reactor scram occurs. A partial hydraulic lock of the scram discharge volume results in an ATWS. The SBLC system fails due pump relief valves failing open. The crew initiates alternate SBLC injection.

Time	Position	Applicant's Actions or Behavior
		<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>After the crew has reset the scram and at the discretion of the NRC chief examiner, RUN CAEP File CtrHydLk.cae which will remove the SDV hydraulic lock.</p> <p><b>SRO</b> Based on report that all rods are inserted, exits DEOP 400-05, Failure to Scram, and enters DEOP 10, RPV Control and directs:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Securing Boron injection if any was started.</li> <li><input type="checkbox"/> Restoring RPV level to +8 to +48 inches.</li> <li><input type="checkbox"/> Develop a cooldown strategy (i.e.; reopen MSIVs and/or restart RWCU)</li> </ul> <p><b>NSO</b> Reports that all rods inserted and performs the following as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Restores level to -3 to +48 inches.</li> </ul> <p><b>Critical Tasks: (identified by ✓ in guide)</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> With a reactor scram required and the reactor not shutdown, <b>TAKE ACTION TO REDUCE POWER</b> by injecting boron and/or inserting control rods, to prevent exceeding the primary containment design limits.</li> <li><input type="checkbox"/> With a reactor scram required, reactor not shutdown, and conditions for ADS blowdown are met, <b>INHIBIT ADS</b> to prevent an uncontrolled RPV depressurization, to prevent causing a significant power excursion.</li> <li><input type="checkbox"/> During an ATWS with conditions met to perform power/level control <b>TERMINATE AND PREVENT INJECTION</b>, with exception of boron and CRD, into the RPV until conditions are met to re-establish injection.</li> <li><input type="checkbox"/> When conditions are met to re-establish injection use available injection systems to <b>MAINTAIN</b> RPV water level above -164".</li> </ul> <p><b><u>Scenario Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Control rods inserted.</li> <li><input type="checkbox"/> RPV level and pressure stabilized.</li> <li><input type="checkbox"/> OR, at the direction of the NRC chief examiner.</li> </ul>

## REFERENCES

PROCEDURE	TITLE	REVISION
DAN 902-3 C-4	Isol Cond Temp Hi	12
DAN 902-4 E-6	2A/B Reactor PPs Speed Mismatch	13
DAN 902-7 E-11	H2 Seal & Alterrex Pnl Trouble	05
DAN 2252-7 A-8	Machine Gas Temperature High	
DOP 0202-03	Reactor Recirculation Flow Control System Operation	20
DOP 0202-12	Recirculation Pump Motor Generator Set Scoop Tube Operation	20
DOP 1000-06	Rotating Seal SDC Pumps	03
DOP 0300-01	Control Rod Drive System Startup and Operation	32
DOA 0202-03	Reactor Recirculation System Flow Control Failure	05
DOA 0300-01	Control Rod Drive System Failure	18
DOA 1300-01	Isolation Condenser Tube Leak	15
DGP 02-03	Reactor Scram	54
DGP 03-01	Routine Power Changes	40
DGA 7	Unpredicted Reactivity Addition	14
DEOP 0100-00	RPV Control	09
DEOP 0200-01	Primary Containment Control	09
DEOP 0400-05	Failure to Scram	12
DEOP 0500-01	Alternate Standby Liquid Control Injection	09
DEOP 0500-02	Bypassing Interlocks and Isolations	10
DEOP 0500-05	Alternate Insertion of Control Rods	12

## PRE-SCENARIO ACTIVITIES

1. If applicable, conduct pre-scenario activities in accordance with TQ-AA-106-0107. SIMULATOR EXAMINATION BRIEFING.
  - a. Provide the crew with a copy of Control Room work request list
  - b. Provide the crew with a copy of DGP 03-01, Routine Power Ch down the second reactor feed pump.
  - c. Provide the crew with a copy of DOP 1000-06, Rotating Idle SI
  - d. Provide the crew with a shutdown plan.
  - ~~e. Provide the crew with a copy of the REMA.~~
  - f. Inform the crew that (select an individual) is the QNE present in
  - g. Direct the crew to perform their briefs prior to entering the sim.
2. Simulator Setup (the following steps can be done in any logical order)
  - a. Initialize simulator in IC 12 and reduce recirc pump speed to 62%. (below exclusion range)
  - b. Run the initial setup caep file: **ilt-n-5.cae**
  - c. Establish the following simulator conditions:
    - 1) Master Recirc Flow controller at ~62%
    - 2) MWe at ~710
    - 3) Condensate Demin dP between 20 and 45 psid [EPU]
    - 4) Condensate pump amps between 160 and 255 amps [E]
  - d. Secure the following equipment and tag out of service:
    - 1) Place IRM 16 902-5 panel joystick in bypass and place
    - 2) Place 2B EHC Pump control switch in PTL and hang an OOS card on it.
  - e. Advance the chart recorders.
  - f. Add variables RRNMGGEN(1) and RRNMGGEN(2) to a Monitor screen
  - g. Mark up rod sequence as completed through step 130.
  - ~~h. Place the REMA sheet in the appropriate book.~~
  - i. Complete the Simulator Setup Checklist.

Set 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

Set 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

monitoring requirement  
Set Stator Cooling Water  
PCV to 28.0.  
← 65%  
700 mwe



ILT 01-1 NRC EXAM SCENARIO ILT-N-5 Initial Setup CAEP:

# ilt-n-5.cae  
# Setup for ilt-n-5  
#Written by JAS  
#Rev 00  
#Date 12/01

# INITIAL CONDITIONS

# Inserts SDV hydraulic lock.  
mf rdhlvfp 89.0  
mf rdhlvfpb 89.0  
mf rdhldega 89.0  
mf rdhldeg 89.0  
# overrides 902-3 G-13 off.  
imf ser0240 off  
# overrides IC rad mon downscale alarm off  
imf ser0004 off  
imf ser0019 off  
# overrides SDC pump pressure meters to 25 psig and isolates the suction pressure trip switch.  
ior sdgppad 25.0|8  
ior sdgppbd 25.0|8  
ior sdgppcd 25.0|8  
irf sd1044OA closed|8  
irf sd1044OB closed|8  
irf sd1044OC closed|8

#SETUP EVENT TRIGGERS

# Event Trigger 2 Inserts main generator hydrogen temperature controller output fails low  
trgset 2 "0"|2  
ior mgdh2cmn (2) man|2  
ior mgth2man (2) 0.0|2

# Event Trigger 3 When main generator hydrogen temperature controller is not in AUTO or BAL, removes MAN override.  
trgset 3 ".not. (mgdh2cau .or. mgdh2cbl) .and. mgdh2cmn"|2  
trg 3 "dor mgth2man"|2

# Event Trigger 4 acknowledges the alterrex panel trouble alarm  
trgset 4 "0"|2  
irf t81 (4) true|2

# Event Trigger 5 inserts an Isolation Condenser tube leak (0.5%).  
trgset 5 "0"|2  
imf ictublk (5) 0.5|2

# Event Trigger 6 inserts 2A recirculation pump controller speed feedback signal failure  
trgset 6 "0"|4  
imf rrmfdbk (6)|4

# Event Trigger 7 lowers 2A recirculation M-G Set speed at scoop tube.  
trgset 7 "0"|4  
trg 7 "irf rrrascdc decrease"|4

# Event Trigger 8 inserts spurious group 1 actuation and reactor scram and SBLC pump relief valves fail open  
 Inserts full SDV hydraulic lock after 2 min  
 trgset 8 "0"|4  
 imf cigp1i (8)|4  
 imf scrifvad (8) 200.0|4  
 imf scrifvbd (8) 200.0|4  
 imf rdfhylk (8 02:00)|4

# Event Trigger 9 installs MSL Group 1 RPV level bypass and Offgas High Radiation bypass jumpers.  
 trgset 9 "0"|6  
 irf ci59jp (9) in|6  
 irf ogogjp (9) in|6

# Event Trigger 10 pulls ARI fuses  
 trgset 10 "0"|6  
 irf aw4 (10) pulled|6

# Event Trigger 11 installs scram jumpers  
 trgset 11 "0"|6  
 irf rpjumpas (11) on|6

# Event Trigger 12 installs DW cooler jumpers  
 trgset 12 "0"|8  
 irf cidw28jp (12) in|8  
 irf cidw29jp (12) in|8

# Event Trigger 16 ramps 2A SDC PP Pressure up  
 trgset 16 "sddpastr(1)"|10  
 trg 16 "ior sdgppad 100.0 00:02"|10

# Event Trigger 17 ramps 2A SDC PP Pressure down  
 trgset 17 "sddpastp(1)"|10  
 trg 17 "ior sdgppad 25.0 00:02"|10

# Event Trigger 18 ramps 2B SDC PP Pressure up  
 trgset 18 "sddpastr(2)"|10  
 trg 18 "ior sdgppbd 100.0 00:02"|10

# Event Trigger 19 ramps 2B SDC PP Pressure down  
 trgset 19 "sddpastp(2)"|10  
 trg 19 "ior sdgppbd 25.0 00:02"|10

# Event Trigger 20 ramps 2C SDC PP Pressure up  
 trgset 20 "sddpastr(3)"|10  
 trg 20 "ior sdgppcd 100.0 00:02"|10

# Event Trigger 21 ramps 2C SDC PP Pressure down  
 trgset 21 "sddpastp(3)"|10  
 trg 21 "ior sdgppcd 25.0 00:02"|10

# END

# Clears Hydraulic Lock

dmf rdfhylk

imf rdhivfpa 0.0 2

imf rdhivfpa 0.0 2

imf rdhldega 0.0 2

imf rdhldegb 0.0 2

# END

Date: TODAY

## Unit 2 Turnover

ECCS Status: All

### Online Information

710 MWe

Online Risk: Green CDF: 1.00

Risk Equipment:

MODE 1

### Shutdown Information

Time to Boil: N/A

Shutdown Risk: N/A

Protected Path: N/A

### Unit 2 Priorities

Continue Unit Shutdown

### Station Priorities

### LCORAs

LCORA # None  
Title

Start  
Clock Ends

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐ Perform DOP 1000-06  
☐ Continue Power Reduction

### Shift 3 Activities

☐  
☐

### Common Unit Activities

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐  
☐

### Shift 3 Activities

☐  
☐

### Common Unit Procedures / Surveillances in Progress

None

### Unit 2 Conditions, Status, Abnormalities

2 hr ago	0500	IRM 16 OOS due to power supply failure. IMD waiting for replacement power supply to arrive from Quad Cities Station.
6 hr ago	5650	2B EHC pump OOS due to a problem with its pressure compensator. Expected BIS next shift.

### Compensatory Actions Extra Checks

**Equipment OOS**

2 hr ago 990045654      IRM 16  
 6 hr ago 990045652      2B EHC Pump

**Service Unit Status**

9 days ago	2A Cond Demin	Cut In
7 days ago	2B Cond Demin	Cut In
16 days ago	2C Cond Demin	Cut In
2 days ago	2D Cond Demin	Cut In
11 days ago	2E Cond Demin	Cut In
6 days ago	2F Cond Demin	Cut In
2 days ago	2G Cond Demin	Cut Out
376 days ago	2A RWC	Cut In
240 days ago	2B RWC	Cut Out
20 days ago	2C RWC	Cut Out
76 days ago	U2 FPC Demin	Cut In

**Unit 2 Abnormal Component Position**

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**U2 Open Operability Determinations with Compensatory Actions**

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**Events and Misc. Information**

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Power reduction in progress per DGP 03-01, Routine Power Changes.

The QNE directed reducing power per station procedures using reverse control rod sequence. No REMA is required. A Drywell entry is required to perform a leak inspection. Drywell deinerting will be performed next shift.

DOP 1000-06, Rotating Idle SDC Pumps, step G.1, Bumping the Motor should be performed next. Step G.3 of DOP 1000-06, Clearing Low Suction Pressure Trip Signal, was performed the previous shift.

Then continue the shutdown.

DW samples:

Iodine 131	$2.5 \times 10^{-13}$
Beta/Gamma	$1.5 \times 10^{-11}$

Date: TODAY

## Unit 3 Turnover

**ECCS Status:** All available

### Online Information

N/A MWe

Online Risk: N/A

Risk Equipment: N/A

MODE 4

### Shutdown Information

Time to Boil: 24 hrs.

Shutdown Risk: Green

Protected Path: None

### Unit 3 Priorities

Complete startup checklists

### Station Priorities

### LCORAs

LCORA # None  
Title

Start  
Clock Ends

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐ Continue startup activities  
☐

### Shift 3 Activities

☐  
☐

### Common Unit Activities

### Shift 1 Activities (X = Completed)

☐  
☐

### Shift 2 Activities

☐  
☐

### Shift 3 Activities

☐  
☐

### Common Unit Procedures / Surveillances in Progress

None

### Unit 3 Conditions, Status, Abnormalities

DGP 01-S1, Start-up Checklist. n progress

### Compensatory Actions, Extra Checks

None

**Equipment OOS**

None

**Service Unit Status**

5 days ago	3A Cond Demin	Cut In
8 days ago	3B Cond Demin	Cut In
10 days ago	3C Cond Demin	Cut In
5 days ago	3D Cond Demin	Cut Out
3 days ago	3E Cond Demin	Cut Out
15 days ago	3F Cond Demin	Cut Out
3 days ago	3G Cond Demin	Cut Out
750 days ago	3A RWCU	Cut In
390 days ago	3B RWCU	Cut Out
60 days ago	3C RWCU	Cut Out
444 days ago	U3 FPC Demin	Cut In

**Unit 3 Abnormal Component Position**

None

**U3 Open Operability Determinations with Compensatory Actions**

None

**Events and Misc. Information**

DGP 01-S1, Start-up Checklist, in progress