

# ***Dresden Generating Station***

## **SIMULATOR EXERCISE GUIDE**

**ILT 01-1 NRC RE-EXAM**

**SCENARIO**

**ILT-R-1**

**Rev. 01**

**11/02**

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Facility Representative Date

Facility: <u>Dresden</u>		Scenario No: <u>ILT-R-1</u>		Op-Test No: <u>ILT 01-1</u>
Examiners: _____		Operators: _____		
_____		_____		
_____		_____		
<u>Initial Conditions:</u> 15% reactor power, IRM channel 15 OOS, Unit 3 is in Mode 1				
<u>Turnover:</u> Unit startup in progress; transfer auxiliary power to transformer 21, then continue power ascension				
Event No.	Malf. No.	Event Type*		Event Description
1	N/A	N	ANSO SRO	Transfer Aux power from TR-22 to TR-21
2	N/A	R	NSO SRO	Raise reactor power by withdrawing control rods
3	RDFAILF5	I	NSO SRO	RPIS failure for rod F5
4	MGMATMF	I	ANSO SRO	Failure of the main generator voltage regulator in automatic
5	RRDMBSTP	C	NSO SRO	Trip of the 2B recirc pump
6	HP6	C	ANSO SRO	Trip of the 2A circ water pump with a failure of the 2B circ water pump to start
7	B12, AW4	M	ALL	Failure of RPS to deenergize and ARI to initiate
8	HP5		ANSO SRO	Loss of main condenser vacuum / Failure of SBLC to inject

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

## Dresden Generating Station

### NRC ILT EXAM

#### Scenario ILT-R-1

#### Scenario Objective

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

#### Scenario Summary

Initial Conditions:

- 15% power, unit startup in progress
- IRM 15 OOS
- 2B EHC Pump OOS
- Unit 3 is in Mode 1

#### Events:

- Transfer Aux Power from TR-22 to TR-21
- Raise reactor power by withdrawing control rods
- RPIS failure for rod F5
- Failure of the main generator voltage regulator in automatic
- Trip of the 2B recirc pump
- Trip of the 2A circ water pump with a failure of the 2B circ water pump to start
- Failure of RPS to deenergize and ARI to initiate
- Loss of main condenser vacuum

#### Scenario Sequence

- The team transfers Aux Power from TR-22 to TR-21.
- 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 failure to a rod occurs and that rod must be driven in fully.
- The main Generator Voltage Regulator trips to manual while reducing Generator Voltage. The voltage reduction is continued in the Manual Mode.
- An electrical fault causes the 2B recirc MG set to trip. The team will carry out actions for a recirc pump trip, and enter single loop operation.
- 2A Circulating Water Pump trips on overload. The 2B Circulating Water Pump will fail to start due to an internal short.
- A Spurious Channel A scram occurs. An ATWS condition exists due to a failure of RPS A to deenergize and ARI is unsuccessful. The team 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 team should control RPV level using the HPCI and / or CRD system.
- Due to 2A Circulating Water Pump tripping and the failure of 2B Circulating Water Pump to start, the Team experiences a loss of Main Condenser vacuum.
- The scenario is terminated when all rods are inserted and the plant stabilized.

### **Event One – Transfer Aux Power from TR-22 to TR-21**

The team transfers Aux Power from TR-22 to TR-21.

Malfunctions required: 0

Success Path:

- Aux Power is transferred to TR-21 IAW DOP 6500-01.

### **Event Two – Raise Reactor power by withdrawing control rods.**

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

Malfunctions required: 0

Success Path:

- Control rods pulled per applicable procedures.

### **Event Three – RPIS failure for rod F5**

A total RPIS failure for rod F5 during a reactor power increase by withdrawing rods.

Malfunctions required: 1 (RPIS failure for rod F5)

Success Path:

- The team recognizes a total RPIS failure for rod F5 and the control rod is fully inserted per DOA 0300-06

### **Event Four – Failure of the Main Generator Voltage Regulator in automatic**

The team should recognize and respond to failure of the Main Generator Voltage Regulator in automatic.

Malfunctions required: 1 (Trip main generator voltage regulator from auto to manual)

Success Path:

- The team transfers the Voltage Regulator to manual.

### **Event Five – Trip of the 2B Recirc Pump**

An electrical fault causes the MG Set to trip

Malfunctions required: 1 (Trip of Recirc MG set)

Success Path:

- Takes action to isolate tripped Recirc Pump.

**Event Six – Trip of the 2A Circ Water Pump with a failure of the 2B Circ Water Pump to start.**

The team should recognize and respond to Circulating Water Pump 2A tripping on overload. The ANSO should attempt to manually start the 2B Circulating water Pump. The 2B Circulating Water Pump fails to start.

Malfunctions required: 2 (Circulating Water Pump trip)  
(Failure of other Circ Water Pump to start)

Success Path:

- Scram the Reactor.
- Securing of 2C Circ water Pump.

**Event Seven – Failure of RPS to deenergize and ARI to initiate.**

The team should recognize and respond to an ATWS condition.

Malfunctions required: 2 (RPS failure to deenergize)  
(Failure of ARI)

Success Path:

- Inserts rods using alternate methods.
- Control RPV level.

**Event Eight – Loss of Main Condenser vacuum / Failure of SBLC to inject.**

The team should recognize and respond to the loss of Main Condenser Vacuum and the failure of SBLC to inject.

Malfunctions required: 2 (Increase air in-leakage to Condenser)  
(SBLC relief valve setpoint too low)

Success Path:

- All rods inserted

**Scenario Recapitulation**

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

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

Event Description: Transfer Aux Power from TR-22 to TR-21.

Time	Position	Applicant's Actions or Behavior
	<b>ANSO</b>	Performs the following actions per DOP 6500-01, TRANSFER OF 4160 VOLT BUS POWER SUPPLY: <ul style="list-style-type: none"> <li><input type="checkbox"/> At Panel 902-8, Synchronize incoming power source breaker.</li> <li><input type="checkbox"/> Position TR 21 to BUS 23 GCB control switch to CLOSE.</li> <li><input type="checkbox"/> Position TR 22 to BUS 23 GCB control switch to TRIP.</li> <li><input type="checkbox"/> Position TR 21 to BUS 21 GCB control switch to CLOSE.</li> <li><input type="checkbox"/> Position TR 22 to BUS 21 GCB control switch to TRIP.</li> <li><input type="checkbox"/> Verify appropriate bus ammeter and voltmeter indications normal.</li> </ul>
	<b>SRO</b>	Directs transferring Aux Power from TR-22 to TR-21 per DOP 6500-01, TRANSFER OF 4160 VOLT BUS POWER SUPPLY.
	<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>- Aux Power has been transferred from TR-22 to TR-21.</li> <li>- AND, at the direction of the NRC Chief Examiner.</li> </ul>		

Op-Test No: ILT 01-1      Scenario No.: ILT-R-1      Event No.: 2      Page 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
	<p><b>NSO</b></p> <p><b>ANSO</b></p> <p><b>SRO</b></p>	<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"/> Performs coupling check. <ul style="list-style-type: none"> <li>• Verifies rod settles to target position and proper response of nuclear instrumentation.</li> </ul> </li> </ul> <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> </ul> <p>Verifies control rod at target position.</p> <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> </ul> <p>Directs NSO to pulls rods.</p>
		<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 01-1 Scenario No.: ILT-R-1 Event No.: 3 Page 1 of 2

Event Description: A total RPIS failure for rod F5 during a reactor power increase by withdrawing rods.

Time	Position	Applicant's Actions or Behavior
		<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>Ensure rod is at 123 or 48 from previous event.</p> <p>At the discretion of the NRC Chief Examiner, activate <b>trigger 1</b>, RPIS failure for control rod F-05</p> <p><b>NSO</b> Reports annunciator DAN 902-5 A-3, ROD DRIFT, in alarm and refers to DAN:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Views Full Core Display AND identifies CRD with Rod Drift light illuminated.</li> <li><input type="checkbox"/> Selects Control Rod F-05</li> <li><input type="checkbox"/> Reports no position indication on Four Rod Display for Control Rod F-05.</li> </ul> <p><b>NSO</b> Recognizes loss of control rod F-05 position indication on Full Core Display, Four Rod Display, RWM, and/or Process Computer (OD-7)</p> <p><b>SRO</b> References Tech Spec 3.1.3., Control rod Operability</p> <p>References DOA 0300-06 RPIS Failure.</p> <p>Team may enter DOA 0300-12, Mispositioned Control Rod</p> <p><b>NSO</b> Performs immediate action of DOA 0300-06, RPIS Failure:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Stops any power change or control rod motion in progress (immediate action).</li> <li><input type="checkbox"/> May insert Rod F-05 per DOA 300-5 to 00 prior to entering DOA 0300-06.</li> </ul> <p><b>NSO</b> Performs subsequent actions of DOA 0300-06, RPIS Failure:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Enter substitute position of 48 for F-05.</li> <li><input type="checkbox"/> Insert control rod F-05 one notch.</li> <li><input type="checkbox"/> Determines no control rod position indication at alternate position.</li> <li><input type="checkbox"/> Drives control rod F-05 to fully inserted position. (verification of insertion by normal insertion time, LPRMs decreasing and Stall flow indication.)</li> </ul> <p>NOTE: Driving control rod F-05 to fully inserted should take about 60 seconds.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Electrically or hydraulically isolate the control rod F-05 HCU.</li> <li><input type="checkbox"/> May enter a substitute position and take OOS on the RWM.</li> <li><input type="checkbox"/> Notify a QNE of the action taken and to obtain further guidance.</li> </ul> <p><b><u>ROLE PLAY:</u></b></p> <p>When directed to disarm CRD F-05,</p> <p>Respond that you will disarm the CRD after you receive a brief.</p>



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

Event Description: A total RPIS failure for rod F5 during a reactor power increase by withdrawing rods.

Time	Position	Applicant's Actions or Behavior
	<p><b>NSO</b></p> <p><b>SRO</b></p>	<p>Records the failed RPIS indication per DOS 0300-06, Control Rod Drive Abnormality Record.</p> <p>May contact any or all of the following to inform of the situation or request assistance.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> System Engineer.</li> <li><input type="checkbox"/> Shift Operations Superintendent.</li> <li><input type="checkbox"/> Operations Manager</li> </ul> <p><b><u>ROLE PLAY</u></b></p> <p>Respond as the appropriate person. If asked for assistance, respond that you will come to the control room shortly.</p> <p><b><u>Event 3 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>- DOA 0300-06 actions have been taken.</li> <li>- Technical Specifications have been referenced.</li> <li>- AND, at the discretion of the NRC Chief Examiner</li> </ul>

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

Event Description: While adjusting VARs per the BPOs direction, the Main Generator Voltage Regulator fails in automatic, the Aux NSO places the Voltage Regulator in manual and continues the voltage reduction.

Time	Position	Applicant's Actions or Behavior
		<p><b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b></p> <p>After event (3) is complete and at the discretion of the NRC Chief Examiner, call the Team as the BPO and request VARs be reduced to 0. <b>Notify the Simulator Operator as soon as VAR reduction is started.</b></p> <p>Team acknowledges the request from the BPO.</p> <p><b>SRO</b> Directs the AUX NSO to adjust Main Generator VARs per DOP 6400-08, 345 KV Voltage Control.</p> <p><b>ANSO</b> Begins adjusting Main Generator VARs per DOP 6400-08:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> References Figure 2, Dresden Units 2 or 3 Generator capability Curves and Under Excitation Limiter Settings, Regulator: In Service.</li> <li><input type="checkbox"/> Uses AUTO VOLTAGE ADJUST control switch to control system voltage as directed by BPO.</li> </ul> <p><b><u>SIMULATOR OPERATOR</u></b></p> <p>As soon as Main Generator VAR adjustment is started, activate <b>trigger 2</b>, Trips the Main Generator Voltage regulator From Automatic to Manual.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Reports annunciator 902-8 B-12 GENERATOR VOLTAGE REGULATOR TRIPPED.</li> <li><input type="checkbox"/> Places the Voltage Regulator Mode Control Switch to MANUAL.</li> </ul> <p>Team dispatches an NLO to investigate Voltage Regulator Trip.</p> <p><b><u>ROLE PLAY:</u></b></p> <p>Respond as an NLO. Wait a few minutes, then report that you see nothing abnormal locally.</p> <p>Team contacts Maintenance and/or Work Week Manager for voltage Regulator investigation.</p> <p><b><u>ROLE PLAY:</u></b></p> <p>Respond as individual contacted (EMD, OAD) "The voltage regulator will work in manual"</p> <p><b>ANSO</b> Continues voltage adjustment per DOP 6400-08</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Ensure loading is within Figure 3, Dresden Units 2 or 3 Generator capability Curves and Under Excitation Limiter Settings, Regulator: Out-of-Service.</li> </ul> <p><b><u>ROLE PLAY:</u></b></p> <p>If the Team discontinues the VAR adjustment without contacting the BPO, wait approximately 5 minutes after the voltage regulator trip and call the Team back as the BPO and ask for the VAR adjustment again.</p>

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

Event Description: While adjusting VARs per the BPOs direction, the Main Generator Voltage Regulator fails in automatic, the Aux NSO places the Voltage Regulator in manual and continues the voltage reduction.

Time	Position	Applicant's Actions or Behavior
		<p>Team may set up computer alarms for VARs</p> <p><b><u>EVENT 4 COMPLETION CRITERIA:</u></b></p> <ul style="list-style-type: none"> <li>- This event is complete when the Team has transferred the Main Generator Voltage Regulator to MANUAL and adjust VARs.</li> <li>- AND, at the discretion of the NRC Chief Examiner.</li> </ul>

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

Event Description: An electrical fault will cause 2B Recirc MG Set to trip. The Team will carry out actions for a Recirc Pump trip, and enter single loop operation.

Time	Position	Applicant's Actions or Behavior
	<p style="text-align: center;"><b>NSO</b></p>	<p><b><u>SIMULATOR OPERATOR:</u></b></p> <p>At the discretion of the NRC Chief Examiner, activate <b>trigger 3</b>, which causes a Recirc MG Set "B" Failure.</p> <p><b><u>ROLE PLAY</u></b></p> <p>NLO or Field Supervisor:</p> <p>As soon as trigger is inserted, report that you heard unusual noises coming from the "B" Recirc MG Set, you noticed some arcing from the Generator and then the MG Set shutdown.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Responds to 2B Recirc Pump in accordance with DOA 0202-01.</li> <li><input type="checkbox"/> Refers to DOA 0202-01.</li> <li><input type="checkbox"/> Monitors RPV water level control.</li> <li><input type="checkbox"/> Closes discharge valve for Recirc Pump 2B.</li> <li><input type="checkbox"/> Notifies QNE.</li> <li><input type="checkbox"/> Monitors MSL and Off gas Rad monitors for increased activity.</li> <li><input type="checkbox"/> May Notify Chemistry.</li> </ul> <p><b><u>ROLE PLAY:</u></b></p> <p>QNE:</p> <p>Acknowledge the contact and inform the crew he will be in the Control Room shortly (if not presently in the control room).</p> <p>Wait approximately 5 minutes, then report to the control room that no core operating limits have been exceeded.</p> <p>NLO at Bus 22 Breaker report, when asked, "2B MG Set has tripped on overcurrent".</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> References DGP 03-03, Single Recirculation Loop Operation.</li> <li><input type="checkbox"/> After 5 minutes, may reopen the recirc discharge valve for the B recirc loop.</li> </ul>

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

Event Description: An electrical fault will cause 2B Recirc MG Set to trip. The Team will carry out actions for a Recirc Pump trip, and enter single loop operation.

Time	Position	Applicant's Actions or Behavior
	<b>SRO</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Enters DOA 0202-01.</li> <li><input type="checkbox"/> Contacts the EM department for assistance.</li> <li><input type="checkbox"/> Notifies Shift Manager.</li> </ul> <p><b><u>Role Play:</u></b></p> <p>EM Foreman:</p> <p>Acknowledge the report, and tell them you will send a crew to look at the MG set shortly.</p> <p>Wait 5 minutes then call the Unit Supervisor on the phone inform him that there appears to have been serious arcing inside the generator casing, and it will require disassembly of the MG set to correct it. You expect this will be a minimum 3 day outage for the MG set.</p> <p><b><u>Event 5 Completion Criteria:</u></b></p> <ul style="list-style-type: none"> <li>– Crew has closed the 2B Recirc Pump discharge valve.</li> <li>– AND, at the discretion of the NRC Chief Examiner.</li> </ul>

Op-Test No: ILT 01-1 Scenario No.: ILT-R-1 Event No.: 6, 7, & 8 Page 1 of 4

Event Description: Circulating Water Pump 2A trips on overload. The ANSO attempts to manually start Circulating Water Pump 2B, which fails to start. NSO inserts a manual scram. RPS fails to de-energize and ARI fails. Team must also deal with loss of Condenser vacuum.

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 <b>trigger 4</b>, which causes 2A Circulating Water Pump to trip and prevents the 2B Circulating Water Pump from starting.</p> <p><b>ANSO</b></p> <p>Performs the following actions per DAN 902-7 A-15, Circ Wtr PP Trip, DOA 4400-01, Circulating Water System Failure, and DOA 6500-10, 4KV Circuit Breaker Trip, as directed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Attempts to start 2B Circulating Water Pump. (immediate action)</li> <li><input type="checkbox"/> Reports 2B Circulating Water Pump will not start.</li> <li><input type="checkbox"/> Stops 2C Circulating Water Pump.</li> <li><input type="checkbox"/> May send NLO to check 2A and 2C Circulating Water Pump breakers.</li> </ul> <p><b><u>ROLE PLAY:</u></b></p> <p>NLO to 2A and 2B Circulating Water pump breakers (wait 3 min) Report "2A and 2B Circulating Water pump breakers have an overcurrent target up".</p> <p>NLO to check cribhouse bar racks and traveling screens (wait 3 min) Report "the cribhouse bar racks and traveling screens are clear".</p> <p>Chemistry responds they will secure hypochlorite to Unit 2.</p> <p><b>NSO</b></p> <p>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"/> Check rods inserted; discovers rods not inserted.</li> <li><input type="checkbox"/> Initiates ARI, checks rods, announces ATWS condition.</li> </ul> <p><b>NSO / ANSO</b></p> <p>Performs DEOP 100, then DEOP 400-5, Failure to Scram, actions as directed:</p> <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> <p><u>Power Leg</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> May insert IRMs &amp; SRMs</li> <li><input checked="" type="checkbox"/> <b>√ Performs Alternate Rod Insertion. (see specific actions below)</b></li> <li><input type="checkbox"/> Initiates SBLC.</li> <li><input type="checkbox"/> Reports that SBLC fails to inject.</li> </ul> <p><u>Level Leg</u></p> <p style="text-align: center;"><u>Rx Power &gt;6%</u></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> <b>√ Terminates and Prevents injection except boron and CRD until RPV/L is ≤ -35 in.</b></li> <li><input checked="" type="checkbox"/> <b>√ Maintains RPV/L between -164 in. and the level lowered to.</b></li> </ul>

Op-Test No: ILT 01-1 Scenario No.: ILT-R-1 Event No.: 6, 7 & 8 Page 2 of 4

Event Description: Circulating Water Pump 2A trips on overload. The ANSO attempts to manually start Circulating Water Pump 2B, which fails to start. NSO inserts a manual scram. RPS fails to de-energize and ARI fails. Team must also deal with loss of Condenser vacuum.

Time	Position	Applicant's Actions or Behavior
	<b>SRO</b>	<p><u>Pressure Leg</u></p> <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"/> Maintains &lt;1060 psig using IC, ADSVs and / or HPCI when Bypass valves close.</li> </ul> <p><b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b></p> <p>Operator to jumper the MSIV Group1 –59 in. and offgas hi hi radiation isolations (wait 5 min):</p> <p>Activate <b>trigger 8</b> (jumps the MSIV Group1 –59 in. and offgas hi hi radiation isolations) and report “the MSIV Group1 –59 in. and offgas hi hi radiation isolations are jumpered”.</p> <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> <p>√ <b>Directs any of the following control rod insertion methods</b> (first two most preferred) per DEOP 500-05, Alternate Insertion of Control Rods:</p> <ul style="list-style-type: none"> <li>• step G.2: pulling scram solenoid power supply fuses.</li> <li>• step G.4: venting the scram air header.</li> <li>• step G.5: using the scram test switches.</li> <li>• step G.6: manually driving of withdrawn control rods.</li> </ul> <p>Directs Injecting SBLC.</p> <p><u>Level Leg</u></p> <p>Verification water level instruments are accurate  Verification any required automatic actions have occurred  Directing jumpers installed for MSIV low level and Off Gas high Rad isolations</p> <p style="text-align: center;"><u>Rx Power &gt;6%</u></p> <p>√ <b>Terminating and Preventing injection except boron and CRD</b> until RPV/L is ≤ -35 in.</p> <p>√ <b>Maintaining RPV/L between –164 in. and the level lowered to.</b></p> <p><u>Pressure Leg</u></p> <p>Maintaining &lt;1060 psig using turbine/bypass valves.  When Bypass valves close, maintain &lt;1060 psig using IC, ADSVs or HPCI.</p>

Op-Test No: ILT 01-1      Scenario No.: ILT-R-1      Event No.: 6, 7 & 8      Page 3 of 4

Event Description: Circulating Water Pump 2A trips on overload. The ANSO attempts to manually start Circulating Water Pump 2B, which fails to start. NSO inserts a manual scram. RPS fails to de-energize and ARI fails. Team must also deal with loss of Condenser vacuum.

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</p> <ol style="list-style-type: none"> <li>1. Operator to pull scram channel A solenoid power supply fuses: Activate <b>trigger 10</b> (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".</li> <li>2. Operator to vent the scram air header: Activate <b>trigger 11</b> (vents the scram air header) and report "I have vented the scram air header".</li> <li>3. Operator to use the individual scram test switches (wait 2 min): Go to Instructor Station screen ROD5 and begin simulating flipping the scram test switches. Follow the guidance in DEOP 500-05 for selecting rods.</li> </ol> <p><b>NSO</b> If directed, attempts to drive withdrawn control rods in per step G.6 of 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 insert rods in the following order: <ul style="list-style-type: none"> <li>• intermediate 16-32</li> <li>• deep 4-14</li> <li>• shallow 34-48</li> </ul> </li> </ul> <p><b><u>SIMULATOR OPERATOR / ROLE PLAY:</u></b></p> <p>NLO to close CRD 25 valve (wait 3 min): Activate <b>trigger 9</b> (closes the CRD 25 valve) and report "the CRD 25 valve is closed".</p> <p><b>NSO</b>      <input type="checkbox"/> Reports that all rods are inserted.</p> <p><b>ANSO</b>      <input type="checkbox"/> Restores RPV level to +8 to +48 inches as directed.  <input type="checkbox"/> Begins cooldown as directed.</p> <p><b>SRO</b>      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 01-1      Scenario No.: ILT-R-1      Event No.: 6, 7 & 8      Page 4 of 4

Event Description: Circulating Water Pump 2A trips on overload. The ANSO attempts to manually start Circulating Water Pump 2B, which fails to start. NSO inserts a manual scram. RPS fails to de-energize and ARI fails. Team must also deal with loss of Condenser vacuum.

Time	Position	Applicant's Actions or Behavior
		<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>

**Critical Tasks (IDENTIFIED BY ✓ IN GUIDE)**

- With a reactor scram required and the reactor not shutdown, **TAKE ACTION TO REDUCE POWER** by injecting boron and/or inserting control rods, to prevent exceeding the primary containment design limits.
- During an ATWS with conditions met to perform power/level control **TERMINATE AND PREVENT INJECTION**, with exception of boron and CRD, into the RPV until conditions are met to re-establish injection.
- When conditions are met to establish injection use available injection systems to **MAINTAIN** RPV water level above -164".

## REFERENCES

PROCEDURE	TITLE	REVISION
DAN 902-5 A-3	Rod Drift	09
DAN 902-7 A-15	Circ Wtr PP trip	02
DAN 902-7 G-3	Turb Byp Vlv Open	01
DAN 902-8 B-12	U2 Generator Volt Reg Trip	04
DOP 0400-01	Reactor manual Control System Operation	18
DOP 6400-08	345 KV Voltage Control	14
DOP 6500-01	Transfer of 4160 Volt Bus Power Supply	05
DOS 0300-06	Control Rod Drive Abnormality Record	15
DOA 0202-01	Recirculation (Recirc) Pump Trip – One or Both Pumps	22
DOA 0300-06	RPIS Failure	14
DOA 0300-12	Mispositioned Control Rod	10
DOA 0500- 02	Partial 1/2 or Full Scram Actuation	02
DOA 0500-05	Loss of Reactor Protection System Bus	06
DOA 3300-02	Loss of Condenser Vacuum	23
DOA 4400-01	Circulating Water System Failure	17
DOA 6500-10	4KV Circuit Breaker Trip	03
DGP 01-01	Unit Startup	101
DGP 02-03	Reactor Scram	60
DGP 03-03	Single Recirculation Loop Operation	20
DGP 03-04	Control Rod Movements	43
DEOP 0100-00	RPV Control	10
DEOP 0400-02	Emergency Depressurization	04
DEOP 0400-05	Failure to Scram	12
DEOP 0500-02	Bypassing Interlocks and Isolations	12
DEOP 0500-05	Alternate Insertion of Control Rods	13

## PRE-SCENARIO ACTIVITIES

1. If applicable, conduct pre-scenario activities in accordance with TQ-AA-106-0107, SIMULATOR EXAMINATION BRIEFING.
  - a. Provide the team 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 Aux Power from TR-22 to TR-21. (Step G-84)
  - c. If the team inquires about a startup plan, inform then the Shift Manager is maintaining it.
  - d. Provide the team with a copy of the REMA.
  - e. Inform the team that (select an individual) is the QNE present in the Control Room.
  - f. Direct the team 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) Bring up "Monitor"
    - 2) At "input" box, type 'FLZ1265' and <Enter>.
    - 3) At "input" box, type '1=F' and <Enter>.
    - 4) Verify variable FLZ1265 is set to FALSE.
    - 5) Goto Run and ensure variable stays FALSE.
    - 6) Use the Rodmove program to pull rods through step 60.
    - 7) After the rod move is complete, verify with the Rodworth Minimizer that rod moves are completed through step 60. Make corrections if necessary.
    - 8) Withdraw control rods C-11 and N-05 of step 61.
    - 9) Adjust APRM gains.
    - 10) Verify 2A EHC pump running.
    - 11) Verify backpanel lights are reset.
    - 12) Start 2E Drywell Cooler.
  - b. Run the initial setup caep file: **ilt-r-1.cae**
  - c. Verify the following simulator conditions:
    - 1) Vars set at ~100
    - 2) MWe at ~130.
    - 3) Condensate Demin DP 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 15 902-5 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 for current rod positions.
  - g. Complete the Simulator Setup Checklist.

**ILT 01-1 NRC EXAM SCENARIO ILT-R-1 Initial Setup CAEP:**

```
# # ilt-r-1.cae
# Setup for ilt-r-1
#Written by MO
#Rev 00
#Date 10/02
```

**# INITIAL CONDITIONS**

```
# Clears the downscale ISO cond rad monitor
imf ser0004 1
imf ser0019 1
```

```
# Prevents the RPS system and ARI from causing a Scram, sets both SBLC relief valves to 50 psig and
prevents the 2B circ water pump from starting.
imf b12
imf scrfvad 50
imf scrfvbd 50
imf hp7
imf ser1026 1
imf ser1060 1
```

**#SETUP EVENT TRIGGERS**

```
# Event Trigger 1 insert a rpis failure for rod F4
trgset 1 "0"
imf rdfailf5 (1)
```

```
# Event Trigger 2 inserts a failure of the voltage regulator
trgset 2 "0"|2
imf mgmatmf (2)|2
```

```
# Event Trigger 3 inserts a trip of the 2B Recirc MG set
trgset 3 "0"|3
irf rrrbdmbf (3) trip|3
```

```
# Event Trigger 4 insert a trip of the 2A circ water pump and causes an air leakage into the condenser over 1
minutes and pulls ari fuses.
trgset 4 "0"|4
imf hp6 (4)|4
imf hp5 (4) 100 1:00|4
irf aw4 (4) pulled
```

```
# Event Trigger 7 pulls scram fuse for all groups
trgset 7 "0"|6
irf rpfusea4 (7) pulled|6
irf rpfusea1 (7 20) pulled|6
irf rpfusea2 (7 40) pulled|6
irf rpfusea3 (7 50) pulled|6
irf rpfuseb1 (7 1:05) pulled|7
irf rpfuseb2 (7 1:15) pulled|7
irf rpfuseb3 (7 1:30) pulled|7
irf rpfuseb4 (7 1:45) pulled|7
```

```
# 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 11 vents the scram air header.  
trgset 11 "0"|10  
irf rdscrair (11) open|10
```

```
# END
```

Date: TODAY

# Unit 2 Turnover

**ECCS Status:** All

### Online Information

130 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 15 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 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**

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---

**Events and Misc. Information**

DGP 01-01 in progress. Continue the startup. Rod moves in progress. The QNE is present 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

910 MWe  
Online Risk: Green  
Risk Equipment: None

MODE 4

### Shutdown Information

Time to Boil: N/A  
Shutdown Risk: N/A  
Protected Path: N/A

### 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

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	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 In
3 days ago	3E Cond Demin	Cut In
15 days ago	3F Cond Demin	Cut In
3 days ago	3G Cond Demin	Cut In
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**

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None

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**U3 Open Operability Determinations with Compensatory Actions**

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None

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**Events and Misc. Information**

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None

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